

มหาวิทยาลัยเชียงใหม่
Chiang Mai University

ภาคผนวก

มหาวิทยาลัยเชียงใหม่
Chiang Mai University

ภาคผนวก ก

ตารางแสดงผลการทดลอง

ตาราง ก-1 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ไส้สาร HP62 Di 0.66 mm. L1 5 m. Le 5 cm.

| อุณหภูมิ องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δτ (°C) | q (W/m ²) |
|------------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|------------|--------------------------|
| 90 | 1 | 21.2 | 21.4 | 22.1 | 22.1 | 77.7 | 22.0 | 22.0 | 39.7 | 36.4 | 21.30 | 22.10 | 0.80 | 6263.70 |
| | 1 | 21.2 | 21.2 | 22.3 | 22.1 | 77.8 | 22.0 | 22.0 | 39.7 | 36.3 | 21.20 | 22.20 | 1.00 | 7829.63 |
| | 1 | 21.3 | 21.2 | 22.1 | 22.1 | 77.8 | 22.0 | 22.0 | 40.3 | 35.8 | 21.25 | 22.10 | 0.85 | 6655.18 |
| 80 | 1 | 21.1 | 21.1 | 22.0 | 22.0 | 77.8 | 22.0 | 22.0 | 39.0 | 35.8 | 21.10 | 22.00 | 0.90 | 7046.66 |
| | 1 | 21.2 | 21.1 | 22.0 | 22.0 | 77.9 | 21.9 | 21.9 | 39.5 | 35.9 | 21.15 | 22.00 | 0.85 | 6655.18 |
| | 1 | 21.1 | 21.1 | 22.0 | 22.0 | 78.0 | 22.0 | 22.0 | 40.2 | 36.2 | 21.10 | 22.00 | 0.90 | 7046.66 |
| 70 | 1 | 21.3 | 21.2 | 22.1 | 21.9 | 77.8 | 22.1 | 22.1 | 39.3 | 36.0 | 21.25 | 22.00 | 0.75 | 5872.22 |
| | 1 | 21.2 | 21.3 | 22.1 | 22.1 | 78.2 | 22.3 | 22.3 | 38.6 | 36.0 | 21.25 | 22.10 | 0.85 | 6655.18 |
| | 1 | 21.3 | 21.2 | 22.1 | 22.1 | 78.1 | 22.1 | 22.1 | 38.9 | 36.0 | 21.25 | 22.10 | 0.85 | 6655.18 |
| 60 | 1 | 21.3 | 21.2 | 22.2 | 22.2 | 78.3 | 21.6 | 21.6 | 38.3 | 35.7 | 21.25 | 22.20 | 0.95 | 7438.14 |
| | 1 | 21.3 | 21.2 | 22.2 | 22.1 | 78.0 | 21.6 | 21.6 | 39.0 | 36.0 | 21.25 | 22.15 | 0.90 | 7046.66 |
| | 1 | 21.3 | 21.2 | 22.2 | 22.2 | 78.2 | 21.6 | 21.6 | 38.9 | 35.2 | 21.25 | 22.20 | 0.95 | 7438.14 |
| 50 | 1 | 21.3 | 21.4 | 22.2 | 22.2 | 77.9 | 21.7 | 21.7 | 39.8 | 35.1 | 21.35 | 22.20 | 0.85 | 6655.18 |
| | 1 | 21.2 | 21.2 | 22.2 | 22.1 | 78.1 | 21.7 | 21.7 | 38.2 | 35.9 | 21.20 | 22.15 | 0.95 | 7438.14 |
| | 1 | 21.2 | 21.2 | 22.2 | 22.1 | 77.9 | 21.6 | 21.6 | 38.1 | 35.6 | 21.20 | 22.15 | 0.95 | 7438.14 |
| 40 | 1 | 21.4 | 21.3 | 22.3 | 22.1 | 77.8 | 21.6 | 21.6 | 39.2 | 35.5 | 21.35 | 22.20 | 0.85 | 6655.18 |
| | 1 | 21.4 | 21.3 | 22.3 | 22.1 | 77.9 | 21.7 | 21.7 | 37.4 | 35.4 | 21.35 | 22.20 | 0.85 | 6655.18 |
| | 1 | 21.2 | 21.2 | 22.3 | 22.1 | 77.8 | 21.6 | 21.6 | 38.6 | 34.9 | 21.20 | 22.20 | 1.00 | 7829.63 |
| 30 | 1 | 21.2 | 21.2 | 22.4 | 22.2 | 77.8 | 21.5 | 21.5 | 37.4 | 35.7 | 21.20 | 22.30 | 1.10 | 8612.59 |
| | 1 | 21.2 | 21.4 | 22.3 | 22.2 | 77.3 | 21.5 | 21.5 | 37.0 | 35.4 | 21.30 | 22.25 | 0.95 | 7438.14 |
| | 1 | 21.2 | 21.2 | 22.3 | 22.3 | 77.6 | 21.7 | 21.7 | 38.3 | 35.0 | 21.20 | 22.30 | 1.10 | 8612.59 |
| 20 | 1 | 21.3 | 21.2 | 22.6 | 22.1 | 77.7 | 21.5 | 21.5 | 38.2 | 35.5 | 21.25 | 22.35 | 1.10 | 8612.59 |
| | 1 | 21.2 | 21.2 | 22.6 | 22.1 | 77.6 | 21.7 | 21.7 | 37.3 | 34.9 | 21.20 | 22.35 | 1.15 | 9004.07 |
| | 1 | 21.3 | 21.2 | 22.5 | 22.1 | 77.7 | 21.6 | 21.6 | 38.4 | 35.7 | 21.25 | 22.30 | 1.05 | 8221.11 |
| 10 | 1 | 21.3 | 21.3 | 22.3 | 22.1 | 77.6 | 21.7 | 21.7 | 37.5 | 35.4 | 21.30 | 22.20 | 0.90 | 7046.66 |
| | 1 | 21.3 | 21.2 | 22.2 | 22.1 | 77.5 | 21.7 | 21.7 | 40.3 | 35.4 | 21.25 | 22.15 | 0.90 | 7046.66 |
| | 1 | 21.4 | 21.2 | 22.3 | 22.1 | 78.0 | 21.7 | 21.7 | 38.6 | 35.7 | 21.30 | 22.20 | 0.90 | 7046.66 |
| 0 | 1 | 21.3 | 21.3 | 22.6 | 22.4 | 78.1 | 21.7 | 21.7 | 37.5 | 34.8 | 21.30 | 22.50 | 1.20 | 9395.55 |
| | 1 | 21.3 | 21.3 | 22.6 | 22.4 | 77.5 | 21.6 | 21.6 | 36.2 | 34.8 | 21.30 | 22.50 | 1.20 | 9395.55 |
| | 1 | 21.3 | 21.2 | 22.7 | 22.4 | 77.6 | 21.6 | 21.6 | 38.1 | 35.2 | 21.25 | 22.55 | 1.30 | 10178.51 |
| -10 | 1 | 21.4 | 21.4 | 22.2 | 22.3 | 77.7 | 22.7 | 22.7 | 39.9 | 35.6 | 21.40 | 22.25 | 0.85 | 6655.18 |
| | 1 | 21.4 | 21.4 | 22.2 | 22.4 | 77.8 | 22.8 | 22.8 | 39.3 | 35.7 | 21.40 | 22.30 | 0.90 | 7046.66 |
| | 1 | 21.5 | 21.5 | 22.2 | 22.3 | 77.8 | 22.8 | 22.8 | 39.5 | 35.4 | 21.50 | 22.25 | 0.75 | 5872.22 |
| -30 | 1 | 21.3 | 21.5 | 22.0 | 22.1 | 79.3 | 22.4 | 22.4 | 41.1 | 37.0 | 21.40 | 22.05 | 0.65 | 5089.26 |
| | 1 | 21.4 | 21.5 | 21.9 | 22.0 | 79.1 | 22.4 | 22.4 | 41.8 | 36.2 | 21.45 | 21.95 | 0.50 | 3914.81 |
| | 1 | 21.4 | 21.4 | 21.9 | 22.0 | 79.0 | 22.4 | 22.4 | 41.9 | 36.7 | 21.40 | 21.95 | 0.55 | 4306.29 |
| -50 | 1 | 21.4 | 21.4 | 21.7 | 21.7 | 78.8 | 22.1 | 22.1 | 44.7 | 39.9 | 21.40 | 21.70 | 0.30 | 2348.89 |
| | 1 | 21.2 | 21.4 | 21.7 | 21.8 | 78.8 | 22.1 | 22.1 | 43.7 | 41.1 | 21.30 | 21.75 | 0.45 | 3523.33 |
| | 1 | 21.2 | 21.4 | 21.7 | 21.7 | 78.8 | 22.1 | 22.1 | 44.5 | 42.7 | 21.30 | 21.70 | 0.40 | 3131.85 |
| -70 | 1 | 21.1 | 21.4 | 21.7 | 21.7 | 79.1 | 22.0 | 22.0 | 47.6 | 46.1 | 21.25 | 21.70 | 0.45 | 3523.33 |
| | 1 | 21.1 | 21.4 | 21.6 | 21.7 | 79.1 | 22.1 | 22.1 | 47.5 | 44.3 | 21.25 | 21.65 | 0.40 | 3131.85 |
| | 1 | 21.1 | 21.4 | 21.7 | 21.6 | 79.1 | 22.0 | 22.0 | 46.5 | 43.9 | 21.25 | 21.65 | 0.40 | 3131.85 |
| -90 | 1 | 21.2 | 21.4 | 21.4 | 21.4 | 78.9 | 22.0 | 22.0 | 49.9 | 48.3 | 21.30 | 21.40 | 0.10 | 782.96 |
| | 1 | 21.1 | 21.3 | 21.5 | 21.5 | 79.1 | 22.0 | 22.0 | 48.2 | 46.3 | 21.20 | 21.50 | 0.30 | 2348.89 |
| | 1 | 21.2 | 21.3 | 21.6 | 21.5 | 79.1 | 21.9 | 21.9 | 51.7 | 51.6 | 21.25 | 21.55 | 0.30 | 2348.89 |

ตาราง ก-2 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 0.66 mm. Lt 5 m. Le 10 cm.

| มุม องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|----------------------------|
| 90 | 1 | 21.4 | 21.2 | 21.7 | 21.7 | 78.8 | 22.7 | 22.7 | 37.9 | 67.0 | 11.20 | 21.45 | 10.25 | 2908.15 |
| | 1 | 21.2 | 21.2 | 21.7 | 21.7 | 78.8 | 22.6 | 22.6 | 37.9 | 66.9 | 11.10 | 21.45 | 10.35 | 3635.18 |
| | 1 | 21.2 | 21.1 | 21.7 | 21.7 | 78.8 | 22.7 | 22.7 | 37.8 | 67.4 | 11.10 | 21.40 | 10.30 | 3998.70 |
| 80 | 1 | 21.3 | 21.2 | 21.8 | 21.8 | 78.8 | 22.7 | 22.7 | 37.9 | 66.7 | 11.15 | 21.50 | 10.35 | 3998.70 |
| | 1 | 21.3 | 21.2 | 21.8 | 21.8 | 78.5 | 22.6 | 22.6 | 37.5 | 67.1 | 11.15 | 21.50 | 10.35 | 3998.70 |
| | 1 | 21.2 | 21.2 | 21.8 | 21.7 | 78.8 | 22.6 | 22.6 | 37.9 | 66.8 | 11.10 | 21.50 | 10.40 | 3998.70 |
| 70 | 1 | 21.2 | 21.2 | 21.7 | 21.7 | 78.6 | 22.4 | 22.4 | 37.8 | 66.3 | 11.10 | 21.45 | 10.35 | 3635.18 |
| | 1 | 21.2 | 21.1 | 21.8 | 21.8 | 78.6 | 22.4 | 22.4 | 37.5 | 66.8 | 11.10 | 21.45 | 10.35 | 4725.74 |
| | 1 | 21.2 | 21.3 | 21.8 | 21.7 | 78.6 | 22.4 | 22.4 | 37.9 | 66.8 | 11.10 | 21.55 | 10.45 | 3635.18 |
| 60 | 1 | 21.3 | 21.2 | 21.8 | 21.7 | 78.7 | 22.4 | 22.4 | 37.8 | 66.0 | 11.15 | 21.50 | 10.35 | 3635.18 |
| | 1 | 21.3 | 21.2 | 21.7 | 21.7 | 78.7 | 22.4 | 22.4 | 37.9 | 65.6 | 11.15 | 21.45 | 10.30 | 3271.67 |
| | 1 | 21.3 | 21.2 | 21.7 | 21.7 | 78.7 | 22.3 | 22.3 | 38.1 | 65.1 | 11.15 | 21.45 | 10.30 | 3271.67 |
| 50 | 1 | 21.4 | 21.2 | 21.9 | 21.9 | 78.5 | 23.8 | 23.8 | 35.4 | 68.0 | 11.20 | 21.55 | 10.35 | 4362.22 |
| | 1 | 21.2 | 21.2 | 21.9 | 21.9 | 78.3 | 23.8 | 23.8 | 35.7 | 68.0 | 11.10 | 21.55 | 10.45 | 5089.26 |
| | 1 | 21.3 | 21.3 | 21.9 | 21.9 | 78.3 | 23.8 | 23.8 | 35.7 | 68.1 | 11.15 | 21.60 | 10.45 | 4362.22 |
| 40 | 1 | 21.2 | 21.2 | 21.7 | 21.7 | 79.1 | 22.5 | 22.5 | 36.1 | 66.5 | 11.10 | 21.45 | 10.35 | 3635.18 |
| | 1 | 21.2 | 21.2 | 21.8 | 21.8 | 79.0 | 22.4 | 22.4 | 36.0 | 66.6 | 11.10 | 21.50 | 10.40 | 4362.22 |
| | 1 | 21.2 | 21.2 | 21.8 | 21.8 | 79.1 | 22.5 | 22.5 | 36.0 | 66.5 | 11.10 | 21.50 | 10.40 | 4362.22 |
| 30 | 1 | 21.2 | 21.2 | 21.7 | 21.7 | 79.1 | 21.7 | 21.7 | 37.3 | 67.3 | 11.10 | 21.45 | 10.35 | 3635.18 |
| | 1 | 21.2 | 21.2 | 21.7 | 21.7 | 79.0 | 21.7 | 21.7 | 37.0 | 67.2 | 11.10 | 21.45 | 10.35 | 3635.18 |
| | 1 | 21.2 | 21.1 | 21.7 | 21.6 | 79.0 | 21.8 | 21.8 | 37.6 | 67.3 | 11.10 | 21.40 | 10.30 | 3635.18 |
| 20 | 1 | 21.2 | 21.1 | 21.4 | 21.4 | 79.4 | 21.3 | 21.3 | 42.9 | 64.8 | 11.10 | 21.25 | 10.15 | 1817.59 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.4 | 79.4 | 21.3 | 21.3 | 42.8 | 65.0 | 11.05 | 21.25 | 10.20 | 2181.11 |
| | 1 | 21.2 | 21.1 | 21.5 | 21.5 | 79.6 | 21.4 | 21.4 | 42.9 | 65.2 | 11.10 | 21.30 | 10.20 | 2544.63 |
| 10 | 1 | 21.2 | 21.3 | 21.4 | 21.4 | 79.4 | 21.3 | 21.3 | 45.1 | 62.8 | 11.10 | 21.35 | 10.25 | 1090.56 |
| | 1 | 21.4 | 21.3 | 21.4 | 21.5 | 79.6 | 21.3 | 21.3 | 45.2 | 62.8 | 11.20 | 21.35 | 10.15 | 727.04 |
| | 1 | 21.3 | 21.3 | 21.6 | 21.4 | 79.4 | 21.4 | 21.4 | 45.3 | 62.8 | 11.15 | 21.45 | 10.30 | 1454.07 |
| 0 | 1 | 21.3 | 21.3 | 21.7 | 21.7 | 79.5 | 21.4 | 21.4 | 53.4 | 52.7 | 11.15 | 21.50 | 10.35 | 2908.15 |
| | 1 | 21.3 | 21.2 | 21.8 | 21.7 | 79.5 | 21.4 | 21.4 | 53.3 | 52.6 | 11.15 | 21.50 | 10.35 | 3635.18 |
| | 1 | 21.3 | 21.2 | 21.7 | 21.7 | 79.6 | 21.4 | 21.4 | 53.3 | 52.8 | 11.15 | 21.45 | 10.30 | 3271.67 |
| -10 | 1 | 21.4 | 21.4 | 21.4 | 21.4 | 79.4 | 21.6 | 21.6 | 53.3 | 52.7 | 11.20 | 21.40 | 10.20 | 0.00 |
| | 1 | 21.2 | 21.3 | 21.4 | 21.5 | 79.5 | 21.5 | 21.5 | 53.3 | 52.7 | 11.10 | 21.35 | 10.25 | 1454.07 |
| | 1 | 21.2 | 21.3 | 21.5 | 21.4 | 79.4 | 21.5 | 21.5 | 53.3 | 52.7 | 11.10 | 21.40 | 10.30 | 1454.07 |
| -30 | 1 | 21.3 | 21.4 | 21.6 | 21.6 | 79.5 | 21.5 | 21.5 | 54.0 | 53.6 | 11.15 | 21.50 | 10.35 | 1817.59 |
| | 1 | 21.2 | 21.4 | 21.7 | 21.5 | 79.6 | 21.4 | 21.4 | 54.0 | 53.5 | 11.10 | 21.55 | 10.45 | 2181.11 |
| | 1 | 21.3 | 21.3 | 21.7 | 21.5 | 79.6 | 21.4 | 21.4 | 53.9 | 53.0 | 11.15 | 21.50 | 10.35 | 2181.11 |
| -50 | 1 | 21.2 | 21.4 | 21.5 | 21.6 | 79.4 | 21.4 | 21.4 | 54.2 | 53.5 | 11.10 | 21.45 | 10.35 | 1817.59 |
| | 1 | 21.2 | 21.3 | 21.5 | 21.5 | 79.4 | 21.4 | 21.4 | 53.9 | 53.3 | 11.10 | 21.40 | 10.30 | 1817.59 |
| | 1 | 21.2 | 21.3 | 21.5 | 21.5 | 79.4 | 21.2 | 21.2 | 54.2 | 53.3 | 11.10 | 21.40 | 10.30 | 1817.59 |
| -70 | 1 | 21.1 | 21.2 | 21.7 | 21.7 | 79.4 | 21.4 | 21.4 | 54.2 | 53.3 | 11.05 | 21.45 | 10.40 | 3998.70 |
| | 1 | 21.3 | 21.3 | 21.6 | 21.6 | 79.5 | 21.4 | 21.4 | 53.9 | 53.3 | 11.15 | 21.45 | 10.30 | 2181.11 |
| | 1 | 21.3 | 21.4 | 21.7 | 21.6 | 79.4 | 21.4 | 21.4 | 54.2 | 53.4 | 11.15 | 21.55 | 10.40 | 2181.11 |
| -90 | 1 | 21.3 | 21.3 | 21.4 | 21.7 | 79.4 | 21.4 | 21.4 | 54.0 | 53.3 | 11.15 | 21.35 | 10.20 | 1817.59 |
| | 1 | 21.3 | 21.2 | 21.6 | 21.7 | 79.4 | 21.4 | 21.4 | 54.2 | 53.5 | 11.15 | 21.40 | 10.25 | 2908.15 |
| | 1 | 21.3 | 21.3 | 21.7 | 21.7 | 79.4 | 21.4 | 21.4 | 54.2 | 53.3 | 11.15 | 21.50 | 10.35 | 2908.15 |

ตาราง ก-3 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 0.66 mm. Lt 5 m. Le 15 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δτ (°C) | q (W m ⁻²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|------------|---------------------------|
| 90 | 1 | 21.3 | 21.4 | 21.8 | 21.8 | 77.5 | 23.4 | 23.4 | 29.9 | 66.3 | 11.15 | 21.60 | 10.45 | 3053.55 |
| | 1 | 21.3 | 21.3 | 21.8 | 21.7 | 77.5 | 23.4 | 23.4 | 29.8 | 66.4 | 11.15 | 21.55 | 10.40 | 3053.55 |
| | 1 | 21.3 | 21.3 | 21.8 | 21.8 | 77.6 | 23.4 | 23.4 | 29.3 | 66.4 | 11.15 | 21.55 | 10.40 | 3392.84 |
| 80 | 1 | 21.3 | 21.3 | 21.7 | 21.7 | 77.5 | 23.8 | 23.8 | 30.6 | 66.5 | 11.15 | 21.50 | 10.35 | 2714.27 |
| | 1 | 21.3 | 21.2 | 21.7 | 21.7 | 77.6 | 24.0 | 24.0 | 30.4 | 66.7 | 11.15 | 21.45 | 10.30 | 3053.55 |
| | 1 | 21.3 | 21.2 | 21.7 | 21.7 | 77.5 | 24.0 | 24.0 | 30.2 | 66.7 | 11.15 | 21.45 | 10.30 | 3053.55 |
| 70 | 1 | 21.4 | 21.5 | 21.8 | 21.7 | 77.8 | 23.5 | 23.5 | 31.3 | 66.6 | 11.20 | 21.65 | 10.45 | 2035.70 |
| | 1 | 21.4 | 21.2 | 21.7 | 21.6 | 77.8 | 23.7 | 23.7 | 30.8 | 67.1 | 11.20 | 21.47 | 10.27 | 2273.20 |
| | 1 | 21.4 | 21.2 | 21.8 | 21.7 | 77.8 | 23.5 | 23.5 | 30.4 | 67.0 | 11.20 | 21.50 | 10.30 | 3053.55 |
| 60 | 1 | 21.4 | 21.4 | 21.9 | 21.8 | 78.2 | 23.0 | 23.0 | 30.4 | 67.3 | 11.20 | 21.65 | 10.45 | 3053.55 |
| | 1 | 21.4 | 21.4 | 21.8 | 21.9 | 78.1 | 23.1 | 23.1 | 30.8 | 67.5 | 11.20 | 21.60 | 10.40 | 3053.55 |
| | 1 | 21.5 | 21.4 | 21.8 | 21.8 | 78.1 | 23.0 | 23.0 | 30.7 | 67.4 | 11.25 | 21.60 | 10.35 | 2374.99 |
| 50 | 1 | 21.4 | 21.3 | 21.7 | 21.7 | 78.5 | 22.5 | 22.5 | 31.1 | 67.4 | 11.20 | 21.50 | 10.30 | 2374.99 |
| | 1 | 21.4 | 21.4 | 21.7 | 21.9 | 78.5 | 22.4 | 22.4 | 31.1 | 67.2 | 11.20 | 21.55 | 10.35 | 2714.27 |
| | 1 | 21.4 | 21.3 | 21.7 | 21.7 | 78.5 | 22.4 | 22.4 | 30.7 | 67.2 | 11.20 | 21.50 | 10.30 | 2374.99 |
| 40 | 1 | 21.4 | 21.3 | 21.7 | 21.6 | 78.9 | 21.7 | 21.7 | 31.7 | 65.2 | 11.20 | 21.50 | 10.30 | 2035.70 |
| | 1 | 21.4 | 21.3 | 21.7 | 21.5 | 79.1 | 21.6 | 21.6 | 32.2 | 64.7 | 11.20 | 21.50 | 10.30 | 1696.42 |
| | 1 | 21.3 | 21.4 | 21.6 | 21.6 | 79.2 | 21.6 | 21.6 | 32.3 | 64.8 | 11.15 | 21.50 | 10.35 | 1696.42 |
| 30 | 1 | 21.4 | 21.4 | 21.5 | 21.4 | 79.3 | 21.4 | 21.4 | 33.4 | 60.7 | 11.20 | 21.45 | 10.25 | 339.28 |
| | 1 | 21.4 | 21.5 | 21.4 | 21.5 | 79.4 | 21.4 | 21.4 | 33.2 | 60.7 | 11.20 | 21.45 | 10.25 | 0.00 |
| | 1 | 21.4 | 21.4 | 21.4 | 21.4 | 79.3 | 21.4 | 21.4 | 33.1 | 60.9 | 11.20 | 21.40 | 10.20 | 0.00 |
| 20 | 1 | 21.3 | 21.3 | 21.4 | 21.4 | 79.4 | 21.4 | 21.4 | 32.7 | 58.0 | 11.15 | 21.35 | 10.20 | 678.57 |
| | 1 | 21.4 | 21.4 | 21.4 | 21.4 | 79.4 | 21.4 | 21.4 | 32.7 | 57.8 | 11.20 | 21.40 | 10.20 | 0.00 |
| | 1 | 21.3 | 21.4 | 21.4 | 21.4 | 79.4 | 21.4 | 21.4 | 32.7 | 57.9 | 11.15 | 21.40 | 10.25 | 339.28 |
| 10 | 1 | 21.3 | 21.4 | 21.4 | 21.3 | 79.4 | 21.3 | 21.3 | 38.3 | 51.0 | 11.15 | 21.40 | 10.25 | 0.00 |
| | 1 | 21.4 | 21.4 | 21.4 | 21.4 | 79.4 | 21.2 | 21.2 | 40.1 | 50.6 | 11.20 | 21.40 | 10.20 | 0.00 |
| | 1 | 21.3 | 21.3 | 21.4 | 21.4 | 79.3 | 21.4 | 21.4 | 41.1 | 50.5 | 11.15 | 21.35 | 10.20 | 678.57 |
| 0 | 1 | 21.4 | 21.3 | 21.3 | 21.4 | 79.4 | 21.1 | 21.1 | 46.3 | 47.6 | 11.20 | 21.30 | 10.10 | 0.00 |
| | 1 | 21.4 | 21.3 | 21.3 | 21.4 | 79.4 | 21.2 | 21.2 | 46.6 | 47.8 | 11.20 | 21.30 | 10.10 | 0.00 |
| | 1 | 21.4 | 21.4 | 21.4 | 21.4 | 79.4 | 21.1 | 21.1 | 46.6 | 47.8 | 11.20 | 21.40 | 10.20 | 0.00 |
| -10 | 1 | 21.3 | 21.4 | 21.4 | 21.4 | 79.5 | 21.3 | 21.3 | 45.5 | 46.7 | 11.15 | 21.40 | 10.25 | 339.28 |
| | 1 | 21.3 | 21.4 | 21.4 | 21.4 | 79.4 | 21.3 | 21.3 | 45.5 | 46.7 | 11.15 | 21.40 | 10.25 | 339.28 |
| | 1 | 21.3 | 21.4 | 21.4 | 21.4 | 79.4 | 21.3 | 21.3 | 45.4 | 46.7 | 11.15 | 21.40 | 10.25 | 339.28 |
| -30 | 1 | 21.2 | 21.2 | 21.3 | 21.4 | 79.5 | 21.2 | 21.2 | 45.0 | 44.9 | 11.10 | 21.25 | 10.15 | 1017.85 |
| | 1 | 21.3 | 21.3 | 21.4 | 21.4 | 79.4 | 21.2 | 21.2 | 45.0 | 45.1 | 11.15 | 21.35 | 10.20 | 678.57 |
| | 1 | 21.3 | 21.4 | 21.4 | 21.4 | 79.4 | 21.3 | 21.3 | 44.7 | 44.7 | 11.15 | 21.40 | 10.25 | 339.28 |
| -50 | 1 | 21.4 | 21.3 | 21.4 | 21.4 | 79.5 | 21.3 | 21.3 | 44.7 | 45.0 | 11.20 | 21.35 | 10.15 | 339.28 |
| | 1 | 21.3 | 21.4 | 21.3 | 21.4 | 79.4 | 21.2 | 21.2 | 44.2 | 44.6 | 11.15 | 21.35 | 10.20 | 0.00 |
| | 1 | 21.3 | 21.2 | 21.4 | 21.3 | 79.5 | 21.2 | 21.2 | 44.4 | 44.6 | 11.15 | 21.30 | 10.15 | 678.57 |
| -70 | 1 | 21.1 | 21.2 | 21.3 | 21.3 | 79.4 | 21.1 | 21.1 | 43.9 | 44.2 | 11.05 | 21.25 | 10.20 | 1017.85 |
| | 1 | 21.2 | 21.2 | 21.3 | 21.3 | 79.4 | 21.1 | 21.1 | 44.0 | 44.3 | 11.10 | 21.25 | 10.15 | 678.57 |
| | 1 | 21.4 | 21.2 | 21.4 | 21.4 | 79.6 | 21.2 | 21.2 | 43.9 | 44.1 | 11.20 | 21.30 | 10.10 | 678.57 |
| -90 | 1 | 21.3 | 21.2 | 21.4 | 21.3 | 79.6 | 21.4 | 21.4 | 44.1 | 44.3 | 11.15 | 21.30 | 10.15 | 678.57 |
| | 1 | 21.3 | 21.2 | 21.4 | 21.4 | 79.5 | 21.3 | 21.3 | 43.8 | 44.0 | 11.15 | 21.30 | 10.15 | 1017.85 |
| | 1 | 21.1 | 21.1 | 21.2 | 21.2 | 79.6 | 21.2 | 21.2 | 44.2 | 44.6 | 11.05 | 21.15 | 10.10 | 678.57 |

ตาราง ก-4 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 0.66 mm. Lt 10 m. Le 5 cm.

| มุมองศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δτ (°C) | q (W m ²) |
|---------|------------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-------------|-------------|---------|-----------------------|
| 90 | 1 | 21.1 | 21.2 | 23.1 | 23.3 | 76.8 | 27.2 | 27.2 | 49.3 | 45.9 | 11.05 | 22.15 | 11.10 | 7452.13 |
| | 1 | 21.1 | 21.1 | 23.1 | 23.3 | 78.5 | 25.4 | 25.4 | 47.3 | 45.5 | 11.05 | 22.10 | 11.05 | 7633.89 |
| | 1 | 21.1 | 21.1 | 23.1 | 23.4 | 78.1 | 25.4 | 25.4 | 49.2 | 44.9 | 11.05 | 22.10 | 11.05 | 7815.64 |
| 80 | 1 | 21.1 | 21.1 | 23.1 | 23.5 | 77.5 | 26.7 | 26.7 | 48.0 | 44.3 | 11.05 | 22.10 | 11.05 | 7997.40 |
| | 1 | 21.1 | 21.1 | 23.1 | 23.2 | 78.4 | 24.5 | 24.5 | 48.7 | 44.8 | 11.05 | 22.10 | 11.05 | 7452.13 |
| | 1 | 21.1 | 21.2 | 22.8 | 23.4 | 78.5 | 27.1 | 27.1 | 47.7 | 46.0 | 11.05 | 22.00 | 10.95 | 7088.61 |
| 70 | 1 | 21.0 | 21.1 | 22.9 | 23.1 | 76.5 | 25.4 | 25.4 | 51.1 | 45.9 | 11.00 | 22.00 | 11.00 | 7088.61 |
| | 1 | 20.9 | 21.1 | 22.9 | 23.1 | 77.8 | 25.3 | 25.3 | 47.2 | 46.0 | 10.95 | 22.00 | 11.05 | 7270.37 |
| | 1 | 21.0 | 21.1 | 22.8 | 23.1 | 78.3 | 25.8 | 25.8 | 49.5 | 46.3 | 11.00 | 21.95 | 10.95 | 6906.85 |
| 60 | 1 | 21.1 | 21.1 | 23.0 | 23.1 | 77.9 | 25.4 | 25.4 | 48.1 | 47.5 | 11.05 | 22.05 | 11.00 | 7088.61 |
| | 1 | 21.1 | 21.1 | 23.0 | 23.2 | 77.5 | 26.5 | 26.5 | 47.5 | 46.6 | 11.05 | 22.05 | 11.00 | 7270.37 |
| | 1 | 21.1 | 21.1 | 23.0 | 23.2 | 78.7 | 26.1 | 26.1 | 49.7 | 46.8 | 11.05 | 22.05 | 11.00 | 7270.37 |
| 50 | 1 | 21.1 | 21.1 | 23.0 | 23.1 | 78.4 | 24.5 | 24.5 | 48.5 | 47.2 | 11.05 | 22.05 | 11.00 | 7088.61 |
| | 1 | 21.0 | 21.1 | 23.1 | 23.1 | 78.1 | 26.1 | 26.1 | 50.6 | 46.3 | 11.00 | 22.10 | 11.10 | 7452.13 |
| | 1 | 21.0 | 21.1 | 22.8 | 23.1 | 78.6 | 25.1 | 25.1 | 46.5 | 46.3 | 11.00 | 21.95 | 10.95 | 6906.85 |
| 40 | 1 | 21.1 | 21.1 | 22.9 | 23.2 | 77.9 | 25.5 | 25.5 | 47.2 | 45.9 | 11.05 | 22.00 | 10.95 | 7088.61 |
| | 1 | 21.1 | 21.1 | 23.0 | 23.2 | 77.8 | 23.5 | 23.5 | 47.0 | 45.9 | 11.05 | 22.05 | 11.00 | 7270.37 |
| | 1 | 21.0 | 21.1 | 23.0 | 23.2 | 78.2 | 24.4 | 24.4 | 46.7 | 46.3 | 11.00 | 22.05 | 11.05 | 7452.13 |
| 30 | 1 | 20.9 | 21.1 | 23.0 | 23.3 | 76.8 | 26.0 | 26.0 | 48.0 | 46.3 | 10.95 | 22.05 | 11.10 | 7815.64 |
| | 1 | 21.0 | 21.2 | 23.0 | 23.1 | 78.7 | 25.9 | 25.9 | 47.2 | 46.9 | 11.00 | 22.10 | 11.10 | 7088.61 |
| | 1 | 21.0 | 21.1 | 23.1 | 23.2 | 77.8 | 24.8 | 24.8 | 50.1 | 48.1 | 11.00 | 22.10 | 11.10 | 7633.89 |
| 20 | 1 | 21.0 | 21.1 | 22.8 | 23.3 | 78.3 | 25.4 | 25.4 | 47.9 | 46.6 | 11.00 | 21.95 | 10.95 | 7270.37 |
| | 1 | 21.0 | 21.1 | 22.8 | 23.4 | 77.5 | 25.0 | 25.0 | 47.3 | 45.7 | 11.00 | 21.95 | 10.95 | 7452.13 |
| | 1 | 21.1 | 21.1 | 23.0 | 23.3 | 78.3 | 27.6 | 27.6 | 48.1 | 48.4 | 11.05 | 22.05 | 11.00 | 7452.13 |
| 10 | 1 | 21.1 | 21.1 | 23.0 | 23.4 | 76.9 | 25.5 | 25.5 | 50.1 | 47.5 | 11.05 | 22.05 | 11.00 | 7633.89 |
| | 1 | 21.0 | 21.1 | 22.7 | 23.6 | 76.9 | 25.6 | 25.6 | 48.9 | 48.8 | 11.00 | 21.90 | 10.90 | 7633.89 |
| | 1 | 21.0 | 21.1 | 23.3 | 23.6 | 77.8 | 26.3 | 26.3 | 47.2 | 47.5 | 11.00 | 22.20 | 11.20 | 8724.44 |
| 0 | 1 | 21.1 | 21.2 | 23.1 | 23.4 | 78.2 | 25.2 | 25.2 | 50.1 | 50.4 | 11.05 | 22.15 | 11.10 | 7633.89 |
| | 1 | 21.1 | 21.1 | 23.0 | 23.2 | 78.1 | 25.1 | 25.1 | 51.4 | 50.1 | 11.05 | 22.05 | 11.00 | 7270.37 |
| | 1 | 21.1 | 21.1 | 22.7 | 23.4 | 77.2 | 25.0 | 25.0 | 50.6 | 50.9 | 11.05 | 21.90 | 10.85 | 7088.61 |
| -10 | 1 | 21.1 | 21.2 | 22.8 | 22.7 | 78.0 | 25.6 | 25.6 | 53.5 | 52.0 | 11.05 | 22.00 | 10.95 | 5816.29 |
| | 1 | 21.1 | 21.1 | 22.6 | 22.7 | 78.4 | 26.1 | 26.1 | 52.8 | 51.6 | 11.05 | 21.85 | 10.80 | 5634.53 |
| | 1 | 21.1 | 20.9 | 22.4 | 22.7 | 78.7 | 25.6 | 25.6 | 51.7 | 51.6 | 11.05 | 21.65 | 10.60 | 5634.53 |
| -30 | 1 | 21.2 | 21.2 | 22.8 | 22.9 | 78.7 | 27.6 | 27.6 | 51.5 | 50.9 | 11.10 | 22.00 | 10.90 | 5998.05 |
| | 1 | 21.1 | 21.3 | 22.7 | 23.0 | 78.4 | 26.9 | 26.9 | 52.3 | 51.7 | 11.05 | 22.00 | 10.95 | 5998.05 |
| | 1 | 21.1 | 21.2 | 22.4 | 22.8 | 78.6 | 26.7 | 26.7 | 52.7 | 51.4 | 11.05 | 21.80 | 10.75 | 5271.02 |
| -50 | 1 | 21.3 | 21.3 | 22.7 | 22.7 | 78.6 | 27.7 | 27.7 | 52.8 | 52.2 | 11.15 | 22.00 | 10.85 | 5089.26 |
| | 1 | 21.3 | 21.2 | 22.4 | 22.7 | 78.4 | 28.7 | 28.7 | 52.4 | 50.1 | 11.15 | 21.80 | 10.65 | 4725.74 |
| | 1 | 21.1 | 21.1 | 22.4 | 22.6 | 78.8 | 28.9 | 28.9 | 55.1 | 52.3 | 11.05 | 21.75 | 10.70 | 5089.26 |
| -70 | 1 | 21.0 | 21.1 | 22.1 | 22.4 | 79.2 | 23.7 | 23.7 | 60.4 | 58.3 | 11.00 | 21.60 | 10.60 | 4362.22 |
| | 1 | 21.1 | 21.2 | 21.9 | 22.1 | 79.4 | 22.7 | 22.7 | 60.6 | 58.2 | 11.05 | 21.55 | 10.50 | 3089.91 |
| | 1 | 20.7 | 21.2 | 21.7 | 22.0 | 79.3 | 22.6 | 22.6 | 60.4 | 58.3 | 10.85 | 21.45 | 10.60 | 3271.67 |
| -90 | 1 | 20.9 | 21.1 | 22.1 | 22.2 | 78.6 | 27.1 | 27.1 | 54.1 | 53.2 | 10.95 | 21.60 | 10.65 | 4180.46 |
| | 1 | 21.0 | 21.0 | 21.8 | 22.1 | 78.7 | 26.0 | 26.0 | 54.6 | 53.3 | 11.00 | 21.40 | 10.40 | 3453.42 |
| | 1 | 21.0 | 21.1 | 22.0 | 22.4 | 78.9 | 25.3 | 25.3 | 55.8 | 52.8 | 11.00 | 21.55 | 10.55 | 4180.46 |

ตาราง ก-5 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 0.66 mm. Lt 10 m. Le 10 cm.

| อุณหภูมิ | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δ T (°C) | q (W/m ²) |
|----------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 21.0 | 21.0 | 21.7 | 21.8 | 78.8 | 21.7 | 21.7 | 41.5 | 41.8 | 11.00 | 21.35 | 10.35 | 2385.59 |
| | 1 | 21.0 | 21.1 | 21.9 | 21.8 | 78.8 | 21.7 | 21.7 | 41.7 | 41.0 | 11.00 | 21.50 | 10.50 | 2544.63 |
| | 1 | 21.0 | 21.0 | 21.7 | 21.8 | 78.8 | 21.7 | 21.7 | 40.4 | 42.3 | 11.00 | 21.35 | 10.35 | 2385.59 |
| 80 | 1 | 21.0 | 21.1 | 21.8 | 21.9 | 78.8 | 21.4 | 21.4 | 41.5 | 41.7 | 11.00 | 21.45 | 10.45 | 2544.63 |
| | 1 | 21.0 | 21.0 | 21.8 | 21.7 | 78.8 | 21.4 | 21.4 | 41.1 | 42.5 | 11.00 | 21.40 | 10.40 | 2385.59 |
| | 1 | 21.1 | 21.1 | 22.0 | 22.0 | 78.1 | 21.6 | 21.6 | 38.3 | 42.4 | 11.05 | 21.55 | 10.50 | 2862.71 |
| 70 | 1 | 21.1 | 21.1 | 22.0 | 21.9 | 79.0 | 21.4 | 21.4 | 42.0 | 41.0 | 11.05 | 21.55 | 10.50 | 2703.67 |
| | 1 | 21.1 | 21.1 | 21.7 | 21.9 | 78.5 | 21.4 | 21.4 | 40.8 | 36.2 | 11.05 | 21.40 | 10.35 | 2226.55 |
| | 1 | 21.4 | 21.1 | 21.9 | 22.0 | 78.5 | 21.4 | 21.4 | 42.4 | 41.5 | 11.20 | 21.50 | 10.30 | 2226.55 |
| 60 | 1 | 21.1 | 21.1 | 21.7 | 21.8 | 78.5 | 21.3 | 21.3 | 38.0 | 37.3 | 11.05 | 21.40 | 10.35 | 2067.51 |
| | 1 | 21.1 | 21.1 | 21.9 | 21.8 | 78.8 | 21.4 | 21.4 | 40.2 | 37.3 | 11.05 | 21.50 | 10.45 | 2385.59 |
| | 1 | 21.1 | 21.1 | 22.1 | 21.9 | 79.1 | 21.3 | 21.3 | 41.7 | 37.5 | 11.05 | 21.60 | 10.55 | 2862.71 |
| 50 | 1 | 21.1 | 20.9 | 21.8 | 22.0 | 78.6 | 21.4 | 21.4 | 39.8 | 38.0 | 11.05 | 21.35 | 10.30 | 2862.71 |
| | 1 | 21.4 | 21.1 | 21.9 | 22.0 | 79.0 | 21.3 | 21.3 | 38.3 | 40.3 | 11.20 | 21.50 | 10.30 | 2226.55 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.9 | 79.4 | 21.3 | 21.3 | 40.0 | 51.1 | 11.05 | 21.45 | 10.40 | 2385.59 |
| 40 | 1 | 21.2 | 21.1 | 21.9 | 22.0 | 78.8 | 21.4 | 21.4 | 38.7 | 42.0 | 11.10 | 21.50 | 10.40 | 2544.63 |
| | 1 | 21.1 | 21.1 | 21.9 | 22.0 | 78.3 | 21.4 | 21.4 | 38.8 | 40.2 | 11.05 | 21.50 | 10.45 | 2703.67 |
| | 1 | 21.1 | 21.1 | 22.1 | 22.2 | 78.5 | 21.4 | 21.4 | 37.3 | 37.2 | 11.05 | 21.60 | 10.55 | 3339.82 |
| 30 | 1 | 21.0 | 21.1 | 22.0 | 22.1 | 78.3 | 21.4 | 21.4 | 37.6 | 39.5 | 11.00 | 21.55 | 10.55 | 3180.79 |
| | 1 | 21.1 | 21.1 | 22.0 | 22.2 | 78.5 | 21.3 | 21.3 | 38.6 | 37.6 | 11.05 | 21.55 | 10.50 | 3180.79 |
| | 1 | 21.1 | 21.1 | 22.1 | 22.1 | 78.8 | 21.3 | 21.3 | 37.0 | 36.7 | 11.05 | 21.60 | 10.55 | 3180.79 |
| 20 | 1 | 21.0 | 21.1 | 22.3 | 22.3 | 78.2 | 21.3 | 21.3 | 37.5 | 39.2 | 11.00 | 21.70 | 10.70 | 3975.98 |
| | 1 | 21.0 | 21.0 | 22.3 | 22.4 | 78.8 | 21.3 | 21.3 | 38.7 | 38.1 | 11.00 | 21.65 | 10.65 | 4294.06 |
| | 1 | 21.1 | 21.1 | 22.4 | 22.3 | 78.4 | 21.4 | 21.4 | 37.1 | 38.5 | 11.05 | 21.75 | 10.70 | 3975.98 |
| 10 | 1 | 21.1 | 21.1 | 22.3 | 22.4 | 78.5 | 21.4 | 21.4 | 36.8 | 38.3 | 11.05 | 21.70 | 10.65 | 3975.98 |
| | 1 | 21.0 | 21.1 | 22.3 | 22.4 | 78.5 | 21.4 | 21.4 | 38.1 | 41.3 | 11.00 | 21.70 | 10.70 | 4135.02 |
| | 1 | 21.0 | 21.3 | 22.7 | 22.6 | 78.4 | 21.4 | 21.4 | 39.1 | 40.7 | 11.00 | 22.00 | 11.00 | 4771.18 |
| 0 | 1 | 21.0 | 21.2 | 21.8 | 21.9 | 78.9 | 21.7 | 21.7 | 41.7 | 41.5 | 11.00 | 21.50 | 10.50 | 2385.59 |
| | 1 | 21.1 | 21.2 | 21.8 | 21.9 | 78.8 | 21.7 | 21.7 | 43.6 | 40.5 | 11.05 | 21.50 | 10.45 | 2226.55 |
| | 1 | 21.0 | 21.2 | 21.7 | 22.1 | 78.8 | 21.7 | 21.7 | 44.3 | 41.4 | 11.00 | 21.45 | 10.45 | 2544.63 |
| -10 | 1 | 21.1 | 21.3 | 22.0 | 22.1 | 79.1 | 21.7 | 21.7 | 41.1 | 46.1 | 11.05 | 21.65 | 10.60 | 2703.67 |
| | 1 | 21.2 | 21.4 | 21.9 | 22.0 | 78.9 | 21.8 | 21.8 | 47.0 | 43.1 | 11.10 | 21.65 | 10.55 | 2067.51 |
| | 1 | 21.1 | 21.3 | 21.7 | 22.0 | 79.4 | 21.7 | 21.7 | 55.4 | 57.0 | 11.05 | 21.50 | 10.45 | 2067.51 |
| -30 | 1 | 21.1 | 21.3 | 21.4 | 21.5 | 79.4 | 21.7 | 21.7 | 55.1 | 56.8 | 11.05 | 21.35 | 10.30 | 795.20 |
| | 1 | 21.0 | 21.2 | 21.4 | 21.5 | 79.4 | 21.4 | 21.4 | 54.9 | 56.7 | 11.00 | 21.30 | 10.30 | 1113.27 |
| | 1 | 21.0 | 21.2 | 21.3 | 21.4 | 79.4 | 21.4 | 21.4 | 54.9 | 56.7 | 11.00 | 21.25 | 10.25 | 795.20 |
| -50 | 1 | 21.0 | 21.2 | 21.4 | 21.5 | 79.4 | 21.3 | 21.3 | 54.1 | 56.1 | 11.00 | 21.30 | 10.30 | 1113.27 |
| | 1 | 21.1 | 21.2 | 21.4 | 21.4 | 79.4 | 21.3 | 21.3 | 54.3 | 56.2 | 11.05 | 21.30 | 10.25 | 795.20 |
| | 1 | 21.1 | 21.2 | 21.3 | 21.4 | 79.4 | 21.4 | 21.4 | 54.1 | 56.1 | 11.05 | 21.25 | 10.20 | 636.16 |
| -70 | 1 | 21.1 | 21.2 | 21.4 | 21.4 | 79.4 | 21.4 | 21.4 | 54.0 | 56.1 | 11.05 | 21.30 | 10.25 | 795.20 |
| | 1 | 21.1 | 21.2 | 21.3 | 21.4 | 79.4 | 21.4 | 21.4 | 53.9 | 56.1 | 11.05 | 21.25 | 10.20 | 636.16 |
| | 1 | 21.0 | 21.2 | 21.3 | 21.3 | 79.3 | 21.4 | 21.4 | 53.9 | 56.1 | 11.00 | 21.25 | 10.25 | 636.16 |
| -90 | 1 | 21.1 | 21.2 | 21.3 | 21.4 | 79.4 | 21.3 | 21.3 | 54.1 | 56.1 | 11.05 | 21.25 | 10.20 | 636.16 |
| | 1 | 21.0 | 21.1 | 21.2 | 21.3 | 79.3 | 21.2 | 21.2 | 54.1 | 56.2 | 11.00 | 21.15 | 10.15 | 636.16 |
| | 1 | 21.1 | 21.2 | 21.3 | 21.3 | 79.3 | 21.3 | 21.3 | 54.3 | 56.3 | 11.05 | 21.25 | 10.20 | 477.12 |

ตาราง ก-6 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้งาน HP62 Di 0.66 mm. Lt 10 m. Le 15 cm.

| อุณหภูมิ องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W·m ⁻²) |
|------------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|---------------------------|
| 90 | 1 | 21.1 | 21.1 | 21.3 | 21.7 | 79.2 | 20.9 | 20.9 | 51.2 | 45.9 | 11.05 | 21.20 | 10.15 | 1357.14 |
| | 1 | 21.2 | 21.1 | 21.3 | 21.4 | 79.1 | 21.0 | 21.0 | 52.8 | 45.7 | 11.10 | 21.20 | 10.10 | 678.57 |
| | 1 | 21.1 | 21.1 | 21.3 | 21.4 | 79.4 | 21.0 | 21.0 | 48.2 | 45.9 | 11.05 | 21.20 | 10.15 | 848.21 |
| 80 | 1 | 21.2 | 21.1 | 21.2 | 21.4 | 79.1 | 21.1 | 21.1 | 48.5 | 46.5 | 11.10 | 21.15 | 10.05 | 508.93 |
| | 1 | 21.1 | 21.1 | 21.3 | 21.4 | 79.3 | 21.1 | 21.1 | 48.9 | 46.6 | 11.05 | 21.20 | 10.15 | 848.21 |
| | 1 | 21.1 | 21.1 | 21.3 | 21.6 | 79.3 | 21.1 | 21.1 | 48.6 | 46.6 | 11.05 | 21.20 | 10.15 | 1187.49 |
| 70 | 1 | 21.0 | 21.1 | 21.3 | 21.4 | 79.1 | 21.0 | 21.0 | 48.0 | 46.2 | 11.00 | 21.20 | 10.20 | 1017.85 |
| | 1 | 21.1 | 21.0 | 21.2 | 21.3 | 79.1 | 21.1 | 21.1 | 48.2 | 46.4 | 11.05 | 21.10 | 10.05 | 678.57 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.3 | 79.2 | 21.1 | 21.1 | 48.2 | 46.4 | 11.05 | 21.25 | 10.20 | 848.21 |
| 60 | 1 | 21.1 | 21.1 | 21.2 | 21.4 | 79.2 | 21.1 | 21.1 | 47.8 | 45.9 | 11.05 | 21.15 | 10.10 | 678.57 |
| | 1 | 21.1 | 21.1 | 21.2 | 21.3 | 79.1 | 21.0 | 21.0 | 47.8 | 45.9 | 11.05 | 21.15 | 10.10 | 508.93 |
| | 1 | 21.1 | 21.1 | 21.3 | 21.4 | 79.1 | 21.1 | 21.1 | 47.8 | 46.0 | 11.05 | 21.20 | 10.15 | 848.21 |
| 50 | 1 | 21.1 | 21.1 | 21.3 | 21.4 | 79.2 | 21.1 | 21.1 | 47.7 | 45.9 | 11.05 | 21.20 | 10.15 | 848.21 |
| | 1 | 21.1 | 21.1 | 21.3 | 21.2 | 79.2 | 21.0 | 21.0 | 47.7 | 45.9 | 11.05 | 21.20 | 10.15 | 508.93 |
| | 1 | 21.1 | 21.1 | 21.3 | 21.3 | 79.2 | 21.1 | 21.1 | 47.7 | 45.9 | 11.05 | 21.20 | 10.15 | 678.57 |
| 40 | 1 | 21.1 | 21.1 | 21.1 | 21.3 | 79.3 | 21.0 | 21.0 | 47.3 | 45.8 | 11.05 | 21.10 | 10.05 | 339.28 |
| | 1 | 21.1 | 21.1 | 21.1 | 21.3 | 79.3 | 21.0 | 21.0 | 47.3 | 45.8 | 11.05 | 21.10 | 10.05 | 339.28 |
| | 1 | 21.1 | 21.1 | 21.1 | 21.3 | 79.3 | 21.1 | 21.1 | 47.5 | 45.8 | 11.05 | 21.10 | 10.05 | 339.28 |
| 30 | 1 | 21.1 | 21.1 | 21.1 | 21.1 | 79.1 | 21.0 | 21.0 | 47.0 | 45.6 | 11.05 | 21.10 | 10.05 | 0.00 |
| | 1 | 21.1 | 21.1 | 21.2 | 21.2 | 79.2 | 20.9 | 20.9 | 47.2 | 45.6 | 11.05 | 21.15 | 10.10 | 339.28 |
| | 1 | 21.1 | 21.1 | 21.1 | 21.2 | 79.1 | 20.9 | 20.9 | 47.5 | 45.7 | 11.05 | 21.10 | 10.05 | 169.64 |
| 20 | 1 | 21.1 | 21.0 | 21.2 | 21.1 | 79.4 | 21.0 | 21.0 | 45.5 | 44.4 | 11.05 | 21.10 | 10.05 | 339.28 |
| | 1 | 21.1 | 21.1 | 21.1 | 21.3 | 79.3 | 20.9 | 20.9 | 45.6 | 44.2 | 11.05 | 21.10 | 10.05 | 339.28 |
| | 1 | 21.1 | 21.1 | 21.1 | 21.3 | 79.3 | 20.9 | 20.9 | 45.6 | 44.3 | 11.05 | 21.10 | 10.05 | 339.28 |
| 10 | 1 | 21.0 | 21.0 | 21.1 | 21.1 | 79.1 | 20.9 | 20.9 | 45.0 | 44.0 | 11.00 | 21.05 | 10.05 | 339.28 |
| | 1 | 21.1 | 21.0 | 21.1 | 21.1 | 79.2 | 20.9 | 20.9 | 45.0 | 44.0 | 11.05 | 21.05 | 10.00 | 169.64 |
| | 1 | 21.0 | 21.0 | 21.1 | 21.1 | 79.1 | 20.9 | 20.9 | 45.0 | 44.0 | 11.00 | 21.05 | 10.05 | 339.28 |
| 0 | 1 | 21.1 | 21.1 | 21.1 | 21.1 | 79.0 | 21.0 | 21.0 | 44.9 | 43.9 | 11.05 | 21.10 | 10.05 | 0.00 |
| | 1 | 21.1 | 21.1 | 21.1 | 21.1 | 79.2 | 21.0 | 21.0 | 44.9 | 43.9 | 11.05 | 21.10 | 10.05 | 0.00 |
| | 1 | 21.1 | 21.1 | 21.1 | 21.1 | 79.1 | 21.0 | 21.0 | 44.8 | 43.8 | 11.05 | 21.10 | 10.05 | 0.00 |
| -10 | 1 | 21.3 | 21.4 | 21.5 | 21.6 | 79.4 | 21.2 | 21.2 | 44.6 | 43.4 | 11.15 | 21.45 | 10.30 | 678.57 |
| | 1 | 21.1 | 21.2 | 21.5 | 21.5 | 79.3 | 21.1 | 21.1 | 44.6 | 43.7 | 11.05 | 21.35 | 10.30 | 1187.49 |
| | 1 | 21.1 | 21.2 | 21.5 | 21.6 | 79.3 | 21.2 | 21.2 | 44.5 | 43.5 | 11.05 | 21.35 | 10.30 | 1357.14 |
| -30 | 1 | 21.1 | 21.1 | 21.2 | 21.4 | 79.2 | 21.2 | 21.2 | 44.4 | 43.2 | 11.05 | 21.15 | 10.10 | 678.57 |
| | 1 | 21.0 | 21.1 | 21.4 | 21.4 | 79.2 | 21.2 | 21.2 | 44.5 | 43.4 | 11.00 | 21.25 | 10.25 | 1187.49 |
| | 1 | 21.1 | 21.2 | 21.4 | 21.4 | 79.2 | 21.2 | 21.2 | 44.5 | 43.3 | 11.05 | 21.30 | 10.25 | 848.21 |
| -50 | 1 | 21.0 | 21.1 | 21.3 | 21.4 | 79.2 | 21.2 | 21.2 | 44.4 | 43.1 | 11.00 | 21.20 | 10.20 | 1017.85 |
| | 1 | 20.9 | 21.0 | 21.2 | 21.4 | 79.3 | 21.1 | 21.1 | 44.3 | 43.3 | 10.95 | 21.10 | 10.15 | 1187.49 |
| | 1 | 20.9 | 21.1 | 21.2 | 21.4 | 79.2 | 21.0 | 21.0 | 44.3 | 43.3 | 10.95 | 21.15 | 10.20 | 1017.85 |
| -70 | 1 | 21.1 | 21.1 | 21.1 | 21.2 | 79.4 | 20.9 | 20.9 | 44.3 | 43.3 | 11.05 | 21.10 | 10.05 | 169.64 |
| | 1 | 21.1 | 21.1 | 21.2 | 21.2 | 79.4 | 21.0 | 21.0 | 44.2 | 43.1 | 11.05 | 21.15 | 10.10 | 339.28 |
| | 1 | 20.9 | 21.0 | 21.1 | 21.3 | 79.4 | 21.0 | 21.0 | 44.3 | 43.1 | 10.95 | 21.05 | 10.10 | 848.21 |
| -90 | 1 | 20.9 | 20.9 | 21.2 | 21.2 | 79.4 | 20.8 | 20.8 | 44.5 | 43.4 | 10.95 | 21.05 | 10.10 | 1017.85 |
| | 1 | 20.9 | 21.0 | 21.1 | 21.2 | 79.4 | 20.8 | 20.8 | 44.3 | 43.3 | 10.95 | 21.05 | 10.10 | 678.57 |
| | 1 | 20.9 | 21.0 | 21.1 | 21.2 | 79.4 | 20.8 | 20.8 | 44.3 | 43.4 | 10.95 | 21.05 | 10.10 | 678.57 |

ตาราง ก-7 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 0.66 mm. Li 15 m. Le 5 cm.

| อุณหภูมิ องศา | Q̇ (l min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δτ (°C) | q (W/m ²) |
|------------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|------------|--------------------------|
| 90 | 1 | 21.0 | 21.0 | 24.9 | 24.7 | 75.1 | 32.4 | 31.7 | 44.8 | 43.1 | 11.00 | 22.95 | 11.95 | 9100.79 |
| | 1 | 21.1 | 21.0 | 25.0 | 25.1 | 76.0 | 33.1 | 29.7 | 44.4 | 44.0 | 11.05 | 23.00 | 11.95 | 9579.78 |
| | 1 | 21.1 | 21.1 | 24.9 | 24.9 | 75.3 | 33.3 | 29.5 | 42.7 | 43.9 | 11.05 | 23.00 | 11.95 | 9100.79 |
| 80 | 1 | 20.9 | 20.8 | 24.6 | 24.7 | 76.0 | 33.7 | 30.0 | 45.3 | 45.5 | 10.95 | 22.70 | 11.75 | 9100.79 |
| | 1 | 20.9 | 20.8 | 24.7 | 24.7 | 75.5 | 33.8 | 28.7 | 46.0 | 44.4 | 10.95 | 22.75 | 11.80 | 9220.54 |
| | 1 | 20.9 | 20.9 | 24.7 | 24.9 | 76.0 | 33.1 | 30.0 | 43.5 | 45.0 | 10.95 | 22.80 | 11.85 | 9340.28 |
| 70 | 1 | 20.9 | 20.9 | 25.1 | 24.9 | 75.7 | 34.5 | 30.0 | 43.4 | 45.5 | 10.95 | 23.00 | 12.05 | 9819.27 |
| | 1 | 20.9 | 20.9 | 25.0 | 25.0 | 76.0 | 34.7 | 29.4 | 44.0 | 44.6 | 10.95 | 22.95 | 12.00 | 9819.27 |
| | 1 | 20.9 | 20.8 | 24.7 | 24.9 | 76.5 | 34.8 | 30.7 | 44.6 | 44.5 | 10.95 | 22.75 | 11.80 | 9460.03 |
| 60 | 1 | 21.0 | 20.8 | 24.8 | 24.8 | 75.9 | 33.7 | 31.1 | 44.9 | 45.2 | 11.00 | 22.80 | 11.80 | 9340.28 |
| | 1 | 20.9 | 20.8 | 24.7 | 24.8 | 75.6 | 33.7 | 31.5 | 44.0 | 44.9 | 10.95 | 22.75 | 11.80 | 9340.28 |
| | 1 | 20.9 | 20.9 | 24.8 | 24.8 | 75.7 | 33.7 | 31.4 | 45.4 | 44.0 | 10.95 | 22.85 | 11.90 | 9340.28 |
| 50 | 1 | 20.9 | 20.8 | 24.9 | 24.9 | 76.4 | 32.8 | 30.7 | 44.2 | 45.8 | 10.95 | 22.85 | 11.90 | 9699.52 |
| | 1 | 21.0 | 20.9 | 24.8 | 24.9 | 75.4 | 34.0 | 30.3 | 43.9 | 47.4 | 11.00 | 22.85 | 11.85 | 9340.28 |
| | 1 | 20.9 | 20.9 | 24.8 | 25.0 | 75.7 | 34.6 | 29.6 | 45.8 | 44.9 | 10.95 | 22.85 | 11.90 | 9579.78 |
| 40 | 1 | 21.0 | 21.0 | 25.0 | 24.9 | 76.6 | 32.1 | 30.6 | 46.7 | 46.6 | 11.00 | 23.00 | 12.00 | 9460.03 |
| | 1 | 21.0 | 20.9 | 25.0 | 25.0 | 76.0 | 33.4 | 29.9 | 48.5 | 47.9 | 11.00 | 22.95 | 11.95 | 9699.52 |
| | 1 | 21.0 | 20.9 | 24.8 | 24.7 | 76.6 | 33.6 | 28.7 | 44.9 | 47.2 | 11.00 | 22.85 | 11.85 | 9100.79 |
| 30 | 1 | 21.0 | 20.9 | 25.1 | 25.0 | 75.9 | 31.7 | 30.1 | 45.0 | 47.3 | 11.00 | 23.00 | 12.00 | 9819.27 |
| | 1 | 20.9 | 20.9 | 24.9 | 24.8 | 75.7 | 32.2 | 30.3 | 47.6 | 46.9 | 10.95 | 22.90 | 11.95 | 9460.03 |
| | 1 | 21.0 | 20.9 | 25.1 | 24.9 | 76.3 | 31.9 | 30.7 | 47.5 | 48.5 | 11.00 | 23.00 | 12.00 | 9699.52 |
| 20 | 1 | 20.7 | 20.8 | 23.8 | 24.1 | 76.0 | 29.6 | 30.2 | 52.7 | 52.0 | 10.85 | 22.30 | 11.45 | 7663.82 |
| | 1 | 20.7 | 20.7 | 23.8 | 24.0 | 74.9 | 28.7 | 29.6 | 53.7 | 52.6 | 10.85 | 22.25 | 11.40 | 7663.82 |
| | 1 | 20.7 | 20.7 | 24.0 | 24.2 | 75.1 | 28.3 | 30.5 | 50.5 | 50.7 | 10.85 | 22.35 | 11.50 | 8142.81 |
| 10 | 1 | 20.8 | 20.8 | 23.7 | 23.8 | 76.3 | 28.4 | 30.1 | 58.3 | 56.4 | 10.90 | 22.25 | 11.35 | 7065.09 |
| | 1 | 21.0 | 20.8 | 23.8 | 24.0 | 76.3 | 29.6 | 29.7 | 57.9 | 57.9 | 11.00 | 22.30 | 11.30 | 7184.83 |
| | 1 | 20.9 | 20.9 | 24.0 | 23.8 | 76.5 | 28.5 | 30.7 | 59.0 | 57.4 | 10.95 | 22.45 | 11.50 | 7184.83 |
| 0 | 1 | 20.8 | 20.8 | 23.8 | 23.8 | 76.0 | 29.3 | 29.1 | 61.0 | 60.2 | 10.90 | 22.30 | 11.40 | 7184.83 |
| | 1 | 20.9 | 20.9 | 23.6 | 23.6 | 77.0 | 29.3 | 29.9 | 61.0 | 61.0 | 10.95 | 22.25 | 11.30 | 6466.35 |
| | 1 | 21.0 | 20.8 | 23.6 | 23.4 | 76.3 | 28.6 | 28.6 | 60.7 | 59.8 | 11.00 | 22.20 | 11.20 | 6226.86 |
| -10 | 1 | 20.9 | 20.9 | 23.9 | 23.9 | 76.0 | 30.3 | 31.1 | 61.3 | 61.3 | 10.95 | 22.40 | 11.45 | 7184.83 |
| | 1 | 20.9 | 20.8 | 24.1 | 24.1 | 76.2 | 29.7 | 30.0 | 61.3 | 62.0 | 10.95 | 22.45 | 11.50 | 7783.57 |
| | 1 | 21.0 | 20.9 | 24.2 | 24.2 | 75.6 | 29.1 | 31.5 | 60.1 | 61.9 | 11.00 | 22.55 | 11.55 | 7783.57 |
| -30 | 1 | 21.0 | 20.9 | 24.0 | 24.1 | 75.1 | 28.6 | 30.7 | 50.9 | 55.3 | 11.00 | 22.45 | 11.45 | 7424.33 |
| | 1 | 20.9 | 20.9 | 23.4 | 24.0 | 75.5 | 28.7 | 28.8 | 51.6 | 53.6 | 10.95 | 22.15 | 11.20 | 6705.84 |
| | 1 | 21.0 | 20.9 | 23.9 | 23.7 | 75.8 | 30.4 | 28.2 | 52.9 | 53.2 | 11.00 | 22.40 | 11.40 | 6825.59 |
| -50 | 1 | 21.0 | 20.8 | 23.9 | 23.9 | 75.8 | 28.4 | 30.2 | 49.6 | 50.4 | 11.00 | 22.35 | 11.35 | 7184.83 |
| | 1 | 20.9 | 20.8 | 24.1 | 23.7 | 76.2 | 28.1 | 29.2 | 52.0 | 50.6 | 10.95 | 22.45 | 11.50 | 7304.58 |
| | 1 | 21.1 | 20.9 | 24.1 | 24.1 | 75.6 | 28.4 | 29.5 | 50.7 | 51.1 | 11.05 | 22.50 | 11.45 | 7424.33 |
| -70 | 1 | 21.1 | 20.9 | 23.7 | 23.7 | 76.0 | 29.9 | 29.1 | 48.5 | 48.9 | 11.05 | 22.30 | 11.25 | 6466.35 |
| | 1 | 21.1 | 20.9 | 23.7 | 23.7 | 76.3 | 30.0 | 30.1 | 50.4 | 53.2 | 11.05 | 22.30 | 11.25 | 6466.35 |
| | 1 | 21.0 | 21.0 | 23.5 | 23.6 | 76.3 | 29.4 | 30.8 | 50.4 | 49.8 | 11.00 | 22.25 | 11.25 | 6107.11 |
| -90 | 1 | 21.0 | 20.9 | 23.0 | 23.2 | 76.9 | 32.1 | 28.7 | 50.0 | 50.3 | 11.00 | 21.95 | 10.95 | 5149.13 |
| | 1 | 21.1 | 21.0 | 23.3 | 23.4 | 76.6 | 30.3 | 29.7 | 50.7 | 49.9 | 11.05 | 22.15 | 11.10 | 5508.37 |
| | 1 | 21.1 | 20.9 | 23.1 | 23.4 | 76.3 | 31.7 | 29.0 | 52.8 | 50.5 | 11.05 | 22.00 | 10.95 | 5388.62 |

ตาราง ก-8 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 0.66 mm. Lt 15 m. Le 10 cm.

| มุม องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W m ⁻²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|-----------------------------|
| 90 | 1 | 20.9 | 21.0 | 21.7 | 21.8 | 78.5 | 22.1 | 22.1 | 47.8 | 37.8 | 10.95 | 21.35 | 10.40 | 1696.42 |
| | 1 | 20.8 | 21.0 | 21.7 | 21.7 | 78.1 | 21.8 | 21.8 | 44.9 | 33.9 | 10.90 | 21.35 | 10.45 | 1696.42 |
| | 1 | 20.8 | 20.9 | 21.7 | 21.9 | 78.3 | 21.9 | 21.9 | 45.0 | 34.1 | 10.90 | 21.30 | 10.40 | 2014.50 |
| 80 | 1 | 20.9 | 20.9 | 22.3 | 22.4 | 79.1 | 25.4 | 25.4 | 42.1 | 37.5 | 10.95 | 21.60 | 10.65 | 3074.76 |
| | 1 | 20.8 | 20.9 | 22.3 | 22.3 | 79.0 | 24.9 | 24.9 | 42.0 | 38.6 | 10.90 | 21.60 | 10.70 | 3074.76 |
| | 1 | 20.8 | 20.9 | 22.1 | 22.3 | 79.0 | 24.4 | 24.4 | 40.5 | 36.8 | 10.90 | 21.50 | 10.60 | 2862.71 |
| 70 | 1 | 20.7 | 20.8 | 22.0 | 22.1 | 78.3 | 23.3 | 23.3 | 40.9 | 37.6 | 10.85 | 21.40 | 10.55 | 2756.68 |
| | 1 | 20.8 | 20.9 | 22.1 | 22.1 | 77.8 | 23.6 | 23.6 | 41.5 | 39.2 | 10.90 | 21.50 | 10.60 | 2650.65 |
| | 1 | 20.8 | 20.9 | 22.1 | 22.2 | 78.1 | 24.0 | 24.0 | 42.4 | 37.4 | 10.90 | 21.50 | 10.60 | 2756.68 |
| 60 | 1 | 20.5 | 20.8 | 22.1 | 22.1 | 77.6 | 24.2 | 24.2 | 40.2 | 40.3 | 10.75 | 21.45 | 10.70 | 3074.76 |
| | 1 | 20.7 | 20.7 | 22.1 | 22.1 | 77.6 | 24.9 | 24.9 | 41.0 | 39.3 | 10.85 | 21.40 | 10.55 | 2968.73 |
| | 1 | 20.7 | 20.8 | 22.1 | 22.2 | 77.6 | 25.0 | 25.0 | 38.7 | 40.1 | 10.85 | 21.45 | 10.60 | 2968.73 |
| 50 | 1 | 20.7 | 20.8 | 22.1 | 22.1 | 77.0 | 23.8 | 23.8 | 40.2 | 40.1 | 10.85 | 21.45 | 10.60 | 2862.71 |
| | 1 | 20.8 | 20.8 | 22.1 | 22.2 | 78.1 | 24.4 | 24.4 | 42.5 | 38.7 | 10.90 | 21.45 | 10.55 | 2862.71 |
| | 1 | 20.8 | 20.8 | 22.1 | 22.2 | 78.1 | 24.4 | 24.4 | 41.3 | 39.3 | 10.90 | 21.45 | 10.55 | 2862.71 |
| 40 | 1 | 20.8 | 20.9 | 22.2 | 22.3 | 78.0 | 23.8 | 23.8 | 39.9 | 39.2 | 10.90 | 21.55 | 10.65 | 2968.73 |
| | 1 | 20.8 | 20.9 | 22.1 | 22.3 | 78.0 | 24.0 | 24.0 | 42.7 | 38.9 | 10.90 | 21.50 | 10.60 | 2862.71 |
| | 1 | 20.9 | 20.9 | 22.2 | 22.3 | 78.1 | 24.7 | 24.7 | 42.3 | 39.5 | 10.95 | 21.55 | 10.60 | 2862.71 |
| 30 | 1 | 20.9 | 20.9 | 22.3 | 22.4 | 78.1 | 24.7 | 24.7 | 41.5 | 38.0 | 10.95 | 21.60 | 10.65 | 3074.76 |
| | 1 | 20.8 | 20.9 | 22.4 | 22.3 | 78.8 | 24.2 | 24.2 | 40.7 | 38.9 | 10.90 | 21.65 | 10.75 | 3180.79 |
| | 1 | 20.8 | 20.9 | 22.2 | 22.4 | 77.7 | 24.6 | 24.6 | 40.8 | 38.2 | 10.90 | 21.55 | 10.65 | 3074.76 |
| 20 | 1 | 21.0 | 20.7 | 22.3 | 22.2 | 77.5 | 22.4 | 22.4 | 42.8 | 39.4 | 11.00 | 21.50 | 10.50 | 2968.73 |
| | 1 | 21.0 | 20.8 | 22.4 | 22.5 | 77.9 | 22.6 | 22.6 | 44.5 | 41.2 | 11.00 | 21.60 | 10.60 | 3286.81 |
| | 1 | 21.1 | 20.9 | 22.4 | 22.3 | 77.8 | 22.7 | 22.7 | 44.0 | 41.0 | 11.05 | 21.65 | 10.60 | 2862.71 |
| 10 | 1 | 21.0 | 21.1 | 22.2 | 22.1 | 78.4 | 21.6 | 21.6 | 46.7 | 41.8 | 11.00 | 21.65 | 10.65 | 2332.58 |
| | 1 | 21.1 | 20.9 | 22.1 | 22.1 | 78.4 | 21.5 | 21.5 | 48.2 | 40.1 | 11.05 | 21.50 | 10.45 | 2332.58 |
| | 1 | 21.1 | 20.8 | 22.1 | 22.1 | 78.1 | 21.7 | 21.7 | 45.0 | 39.9 | 11.05 | 21.45 | 10.40 | 2438.60 |
| 0 | 1 | 21.0 | 20.8 | 21.8 | 21.8 | 78.8 | 21.6 | 21.6 | 54.6 | 47.5 | 11.00 | 21.30 | 10.30 | 1908.47 |
| | 1 | 20.8 | 20.9 | 21.9 | 21.9 | 78.8 | 21.4 | 21.4 | 55.1 | 47.8 | 10.90 | 21.40 | 10.50 | 2226.55 |
| | 1 | 21.1 | 20.8 | 21.9 | 21.9 | 78.8 | 21.3 | 21.3 | 56.2 | 49.9 | 11.05 | 21.35 | 10.30 | 2014.50 |
| -10 | 1 | 20.8 | 20.9 | 22.1 | 22.2 | 78.5 | 21.7 | 21.7 | 43.7 | 42.1 | 10.90 | 21.50 | 10.60 | 2756.68 |
| | 1 | 20.9 | 20.9 | 22.1 | 22.1 | 78.4 | 21.5 | 21.5 | 43.7 | 41.0 | 10.95 | 21.50 | 10.55 | 2544.63 |
| | 1 | 20.9 | 20.9 | 22.1 | 22.1 | 78.2 | 21.4 | 21.4 | 46.5 | 40.1 | 10.95 | 21.50 | 10.55 | 2544.63 |
| -30 | 1 | 20.8 | 20.9 | 22.1 | 22.1 | 78.1 | 21.8 | 21.8 | 41.5 | 39.2 | 10.90 | 21.50 | 10.60 | 2650.65 |
| | 1 | 20.9 | 20.9 | 22.0 | 21.9 | 78.5 | 21.5 | 21.5 | 43.9 | 40.5 | 10.95 | 21.45 | 10.50 | 2226.55 |
| | 1 | 20.7 | 20.9 | 22.1 | 22.0 | 78.4 | 21.8 | 21.8 | 44.0 | 37.0 | 10.85 | 21.50 | 10.65 | 2650.65 |
| -50 | 1 | 20.8 | 21.0 | 22.0 | 22.0 | 78.2 | 21.7 | 21.7 | 42.1 | 40.3 | 10.90 | 21.50 | 10.60 | 2332.58 |
| | 1 | 20.8 | 20.9 | 21.9 | 22.0 | 78.5 | 22.0 | 22.0 | 41.4 | 37.9 | 10.90 | 21.40 | 10.50 | 2332.58 |
| | 1 | 20.8 | 20.9 | 22.0 | 22.0 | 78.8 | 21.8 | 21.8 | 40.3 | 37.9 | 10.90 | 21.45 | 10.55 | 2438.60 |
| -70 | 1 | 20.8 | 20.9 | 21.8 | 21.7 | 78.5 | 22.4 | 22.4 | 44.3 | 36.7 | 10.90 | 21.35 | 10.45 | 1908.47 |
| | 1 | 20.8 | 20.9 | 21.9 | 21.9 | 78.7 | 22.1 | 22.1 | 44.2 | 38.9 | 10.90 | 21.40 | 10.50 | 2226.55 |
| | 1 | 20.8 | 20.9 | 21.8 | 21.8 | 78.7 | 22.4 | 22.4 | 41.4 | 36.8 | 10.90 | 21.35 | 10.45 | 2014.50 |
| -90 | 1 | 20.8 | 21.0 | 21.8 | 21.9 | 78.8 | 21.6 | 21.6 | 41.7 | 39.1 | 10.90 | 21.40 | 10.50 | 2014.50 |
| | 1 | 20.9 | 21.0 | 21.7 | 21.8 | 78.7 | 21.7 | 21.7 | 42.7 | 38.6 | 10.95 | 21.35 | 10.40 | 1696.42 |
| | 1 | 21.0 | 21.0 | 21.9 | 21.8 | 78.6 | 22.0 | 22.0 | 39.7 | 38.0 | 11.00 | 21.45 | 10.45 | 1802.45 |

ตาราง ก-9 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 0.66 mm. Lt 15 m. Le 15 cm.

| อุณหภูมิ องศา | Q̇ (l/min) | Ti,1 (°C) | Ti,2 (°C) | To,1 (°C) | To,2 (°C) | Tevap (°C) | Tc,1 (°C) | Tc,2 (°C) | Ta,1 (°C) | Ta,2 (°C) | Ti,ave (°C) | To,ave (°C) | Δ T (°C) | q (W/m ²) |
|------------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 21.2 | 21.1 | 21.4 | 21.4 | 79.1 | 21.4 | 21.4 | 47.6 | 52.3 | 11.10 | 21.25 | 10.15 | 530.13 |
| | 1 | 21.1 | 21.2 | 21.5 | 21.5 | 79.3 | 21.5 | 21.5 | 39.9 | 51.6 | 11.05 | 21.35 | 10.30 | 742.18 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.4 | 79.1 | 21.4 | 21.4 | 34.4 | 53.7 | 11.05 | 21.25 | 10.20 | 636.16 |
| 80 | 1 | 21.2 | 21.1 | 21.6 | 21.6 | 79.3 | 21.5 | 21.5 | 52.3 | 56.5 | 11.10 | 21.35 | 10.25 | 954.24 |
| | 1 | 21.2 | 21.2 | 21.6 | 21.5 | 79.1 | 21.4 | 21.4 | 53.6 | 55.1 | 11.10 | 21.40 | 10.30 | 742.18 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.5 | 79.2 | 21.5 | 21.5 | 52.4 | 53.4 | 11.05 | 21.45 | 10.40 | 1166.29 |
| 70 | 1 | 21.4 | 21.3 | 21.8 | 21.7 | 79.3 | 21.5 | 21.5 | 40.0 | 52.7 | 11.20 | 21.55 | 10.35 | 848.21 |
| | 1 | 21.3 | 21.2 | 21.7 | 21.7 | 79.4 | 21.7 | 21.7 | 42.1 | 51.5 | 11.15 | 21.45 | 10.30 | 954.24 |
| | 1 | 21.3 | 21.3 | 21.8 | 21.7 | 79.4 | 21.5 | 21.5 | 44.6 | 47.9 | 11.15 | 21.55 | 10.40 | 954.24 |
| 60 | 1 | 21.2 | 21.3 | 21.7 | 21.7 | 79.4 | 21.6 | 21.6 | 37.2 | 49.3 | 11.10 | 21.50 | 10.40 | 954.24 |
| | 1 | 21.2 | 21.3 | 21.7 | 21.7 | 79.4 | 21.5 | 21.5 | 39.4 | 53.3 | 11.10 | 21.50 | 10.40 | 954.24 |
| | 1 | 21.2 | 21.3 | 21.7 | 21.7 | 79.4 | 21.6 | 21.6 | 51.1 | 52.7 | 11.10 | 21.50 | 10.40 | 954.24 |
| 50 | 1 | 21.3 | 21.2 | 21.6 | 21.5 | 79.4 | 21.4 | 21.4 | 53.2 | 56.2 | 11.15 | 21.40 | 10.25 | 636.16 |
| | 1 | 21.3 | 21.3 | 21.7 | 21.6 | 79.4 | 21.4 | 21.4 | 53.6 | 56.7 | 11.15 | 21.50 | 10.35 | 742.18 |
| | 1 | 21.2 | 21.2 | 21.6 | 21.5 | 79.4 | 21.5 | 21.5 | 53.6 | 56.8 | 11.10 | 21.40 | 10.30 | 742.18 |
| 40 | 1 | 21.2 | 21.2 | 21.6 | 21.5 | 79.2 | 21.4 | 21.4 | 38.1 | 50.4 | 11.10 | 21.40 | 10.30 | 742.18 |
| | 1 | 21.2 | 21.2 | 21.7 | 21.7 | 79.4 | 21.5 | 21.5 | 46.2 | 51.8 | 11.10 | 21.47 | 10.37 | 1028.45 |
| | 1 | 21.2 | 21.1 | 21.6 | 21.5 | 79.4 | 21.4 | 21.4 | 50.5 | 55.3 | 11.10 | 21.35 | 10.25 | 848.21 |
| 30 | 1 | 21.3 | 21.2 | 21.5 | 21.5 | 79.2 | 21.3 | 21.3 | 53.6 | 56.4 | 11.15 | 21.35 | 10.20 | 530.13 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.4 | 79.3 | 21.4 | 21.4 | 53.6 | 56.5 | 11.05 | 21.25 | 10.20 | 636.16 |
| | 1 | 21.1 | 21.1 | 21.5 | 21.4 | 79.4 | 21.4 | 21.4 | 53.6 | 56.4 | 11.05 | 21.30 | 10.25 | 742.18 |
| 20 | 1 | 21.2 | 21.1 | 21.5 | 21.4 | 79.4 | 21.4 | 21.4 | 53.5 | 56.4 | 11.10 | 21.30 | 10.20 | 636.16 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.4 | 79.2 | 21.3 | 21.3 | 53.4 | 56.3 | 11.05 | 21.25 | 10.20 | 636.16 |
| | 1 | 21.2 | 21.1 | 21.4 | 21.6 | 79.3 | 21.3 | 21.3 | 53.6 | 56.4 | 11.10 | 21.25 | 10.15 | 742.18 |
| 10 | 1 | 20.9 | 21.1 | 21.6 | 21.5 | 79.4 | 21.4 | 21.4 | 52.9 | 55.7 | 10.95 | 21.35 | 10.40 | 1166.29 |
| | 1 | 21.1 | 21.1 | 21.6 | 21.4 | 79.3 | 21.3 | 21.3 | 52.7 | 55.6 | 11.05 | 21.35 | 10.30 | 848.21 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.4 | 79.4 | 21.3 | 21.3 | 52.7 | 55.5 | 11.05 | 21.25 | 10.20 | 636.16 |
| 0 | 1 | 21.1 | 21.0 | 21.4 | 21.3 | 79.3 | 21.2 | 21.2 | 53.6 | 56.1 | 11.05 | 21.20 | 10.15 | 636.16 |
| | 1 | 21.0 | 20.9 | 21.3 | 21.2 | 79.4 | 21.1 | 21.1 | 53.8 | 56.2 | 11.00 | 21.10 | 10.10 | 636.16 |
| | 1 | 21.1 | 20.9 | 21.2 | 21.2 | 79.2 | 21.1 | 21.1 | 53.8 | 56.2 | 11.05 | 21.05 | 10.00 | 424.10 |
| -10 | 1 | 21.1 | 21.0 | 21.3 | 21.3 | 79.1 | 21.3 | 21.3 | 46.9 | 53.7 | 11.05 | 21.15 | 10.10 | 530.13 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.4 | 79.1 | 21.3 | 21.3 | 38.9 | 53.3 | 11.05 | 21.25 | 10.20 | 636.16 |
| | 1 | 21.2 | 21.1 | 21.4 | 21.4 | 79.3 | 21.3 | 21.3 | 48.9 | 54.9 | 11.10 | 21.25 | 10.15 | 530.13 |
| -30 | 1 | 21.1 | 20.9 | 21.2 | 21.2 | 79.1 | 21.1 | 21.1 | 51.1 | 53.4 | 11.05 | 21.05 | 10.00 | 424.10 |
| | 1 | 21.1 | 20.9 | 21.3 | 21.1 | 79.5 | 21.1 | 21.1 | 51.1 | 53.4 | 11.05 | 21.10 | 10.05 | 424.10 |
| | 1 | 21.1 | 20.9 | 21.2 | 21.2 | 78.9 | 21.1 | 21.1 | 51.1 | 53.4 | 11.05 | 21.05 | 10.00 | 424.10 |
| -50 | 1 | 21.1 | 20.9 | 21.2 | 21.2 | 79.2 | 21.1 | 21.1 | 50.2 | 52.2 | 11.05 | 21.05 | 10.00 | 424.10 |
| | 1 | 21.0 | 21.0 | 21.2 | 21.2 | 79.2 | 21.1 | 21.1 | 50.1 | 52.1 | 11.00 | 21.10 | 10.10 | 424.10 |
| | 1 | 21.1 | 21.0 | 21.3 | 21.2 | 79.3 | 21.1 | 21.1 | 50.1 | 52.3 | 11.05 | 21.15 | 10.10 | 424.10 |
| -70 | 1 | 21.1 | 20.9 | 21.2 | 21.1 | 79.3 | 21.1 | 21.1 | 49.5 | 51.5 | 11.05 | 21.05 | 10.00 | 318.08 |
| | 1 | 21.1 | 21.0 | 21.2 | 21.2 | 79.3 | 21.1 | 21.1 | 49.6 | 51.5 | 11.05 | 21.10 | 10.05 | 318.08 |
| | 1 | 21.1 | 21.2 | 21.2 | 21.2 | 79.3 | 21.1 | 21.1 | 49.4 | 51.4 | 11.05 | 21.20 | 10.15 | 106.03 |
| -90 | 1 | 21.1 | 21.0 | 21.2 | 21.2 | 79.3 | 21.1 | 21.1 | 48.5 | 50.8 | 11.05 | 21.10 | 10.05 | 318.08 |
| | 1 | 21.1 | 21.0 | 21.2 | 21.1 | 79.3 | 21.1 | 21.1 | 48.5 | 50.7 | 11.05 | 21.10 | 10.05 | 212.05 |
| | 1 | 21.1 | 20.9 | 21.1 | 21.1 | 79.3 | 21.1 | 21.1 | 48.5 | 50.7 | 11.05 | 21.00 | 9.95 | 212.05 |

ตาราง ก-10 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 1.06 mm. Lt 5 m. Lc 5 cm.

| มุม องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|----------------------------|
| 90 | 1 | 21.1 | 21.3 | 24.3 | 24.0 | 75.4 | 48.2 | 46.3 | 57.8 | 43.4 | 11.05 | 22.80 | 11.75 | 18444.92 |
| | 1 | 21.2 | 21.2 | 24.2 | 24.4 | 75.6 | 48.7 | 46.9 | 57.6 | 43.3 | 11.10 | 22.70 | 11.60 | 19382.80 |
| | 1 | 21.1 | 21.4 | 23.9 | 24.5 | 75.7 | 49.1 | 47.1 | 57.2 | 44.6 | 11.05 | 22.65 | 11.60 | 18444.92 |
| 80 | 1 | 21.2 | 21.2 | 24.4 | 23.7 | 76.5 | 47.6 | 44.4 | 55.5 | 45.1 | 11.10 | 22.80 | 11.70 | 17819.67 |
| | 1 | 21.1 | 21.1 | 24.2 | 23.7 | 76.5 | 47.5 | 44.2 | 55.6 | 45.6 | 11.05 | 22.65 | 11.60 | 17819.67 |
| | 1 | 21.3 | 21.2 | 24.1 | 24.2 | 76.5 | 48.2 | 45.0 | 55.8 | 45.9 | 11.15 | 22.65 | 11.50 | 18132.30 |
| 70 | 1 | 21.4 | 21.2 | 24.3 | 24.3 | 76.3 | 49.1 | 44.0 | 56.7 | 44.6 | 11.20 | 22.75 | 11.55 | 18757.55 |
| | 1 | 21.2 | 21.2 | 24.1 | 23.9 | 76.2 | 49.5 | 44.6 | 57.3 | 45.0 | 11.10 | 22.65 | 11.55 | 17507.04 |
| | 1 | 21.2 | 21.2 | 24.1 | 24.3 | 76.2 | 49.4 | 44.0 | 57.8 | 44.3 | 11.10 | 22.65 | 11.55 | 18757.55 |
| 60 | 1 | 21.2 | 21.2 | 24.3 | 24.4 | 76.5 | 49.5 | 44.6 | 58.5 | 43.5 | 11.10 | 22.75 | 11.65 | 19695.42 |
| | 1 | 21.2 | 21.3 | 24.5 | 24.4 | 76.3 | 49.9 | 44.5 | 58.1 | 44.0 | 11.10 | 22.90 | 11.80 | 20008.05 |
| | 1 | 21.2 | 21.2 | 24.5 | 24.4 | 76.7 | 50.1 | 44.4 | 58.4 | 44.0 | 11.10 | 22.85 | 11.75 | 20320.68 |
| 50 | 1 | 21.3 | 21.2 | 24.1 | 23.8 | 76.9 | 50.1 | 44.9 | 59.6 | 45.0 | 11.15 | 22.65 | 11.50 | 16881.79 |
| | 1 | 21.3 | 21.3 | 24.1 | 24.0 | 77.0 | 49.7 | 45.1 | 58.7 | 45.0 | 11.15 | 22.70 | 11.55 | 17194.42 |
| | 1 | 21.4 | 21.3 | 24.1 | 24.1 | 76.9 | 49.9 | 44.5 | 58.5 | 45.3 | 11.20 | 22.70 | 11.50 | 17194.42 |
| 40 | 1 | 21.3 | 21.3 | 24.2 | 23.8 | 77.1 | 50.4 | 44.7 | 59.2 | 46.3 | 11.15 | 22.75 | 11.60 | 16881.79 |
| | 1 | 21.5 | 21.4 | 24.0 | 23.9 | 77.3 | 50.2 | 44.5 | 58.8 | 46.3 | 11.25 | 22.70 | 11.45 | 15631.29 |
| | 1 | 21.4 | 21.4 | 24.0 | 24.0 | 77.2 | 50.4 | 44.7 | 58.5 | 45.4 | 11.20 | 22.70 | 11.50 | 16256.54 |
| 30 | 1 | 21.4 | 21.2 | 23.7 | 23.7 | 77.4 | 49.9 | 43.4 | 58.2 | 45.5 | 11.20 | 22.45 | 11.25 | 15006.04 |
| | 1 | 21.4 | 21.3 | 23.7 | 23.8 | 77.6 | 49.9 | 43.7 | 58.1 | 45.7 | 11.20 | 22.50 | 11.30 | 15006.04 |
| | 1 | 21.4 | 21.3 | 23.7 | 23.7 | 77.5 | 50.0 | 43.3 | 57.7 | 45.8 | 11.20 | 22.50 | 11.30 | 14693.41 |
| 20 | 1 | 21.4 | 21.3 | 23.6 | 23.6 | 77.7 | 48.3 | 41.3 | 55.3 | 45.3 | 11.20 | 22.45 | 11.25 | 14068.16 |
| | 1 | 21.4 | 21.2 | 23.6 | 23.7 | 78.0 | 48.3 | 41.8 | 58.4 | 43.8 | 11.20 | 22.40 | 11.20 | 14693.41 |
| | 1 | 21.3 | 21.3 | 23.7 | 23.7 | 78.0 | 48.3 | 41.1 | 56.4 | 43.7 | 11.15 | 22.50 | 11.35 | 15006.04 |
| 10 | 1 | 21.4 | 21.4 | 23.1 | 23.1 | 78.5 | 47.8 | 42.1 | 56.2 | 46.0 | 11.20 | 22.25 | 11.05 | 10629.28 |
| | 1 | 21.4 | 21.3 | 22.9 | 22.9 | 78.5 | 47.9 | 42.2 | 56.7 | 46.6 | 11.20 | 22.10 | 10.90 | 9691.40 |
| | 1 | 21.4 | 21.3 | 23.1 | 23.2 | 78.6 | 48.0 | 42.6 | 55.9 | 46.5 | 11.20 | 22.20 | 11.00 | 11254.53 |
| 0 | 1 | 21.3 | 21.4 | 22.7 | 22.3 | 78.2 | 46.1 | 45.0 | 62.2 | 47.9 | 11.15 | 22.05 | 10.90 | 7190.39 |
| | 1 | 21.4 | 21.3 | 22.6 | 22.7 | 79.3 | 46.2 | 45.4 | 62.6 | 47.5 | 11.20 | 21.95 | 10.75 | 8128.27 |
| | 1 | 21.4 | 21.4 | 22.6 | 22.6 | 79.2 | 46.1 | 45.7 | 62.5 | 47.9 | 11.20 | 22.00 | 10.80 | 7503.02 |
| -10 | 1 | 21.4 | 21.4 | 22.4 | 21.5 | 79.7 | 32.3 | 32.4 | 58.9 | 57.9 | 11.20 | 21.90 | 10.70 | 3438.88 |
| | 1 | 21.4 | 21.4 | 22.0 | 21.7 | 79.7 | 32.3 | 32.5 | 59.1 | 57.9 | 11.20 | 21.70 | 10.50 | 2813.63 |
| | 1 | 21.4 | 21.4 | 22.0 | 21.6 | 79.7 | 32.1 | 32.4 | 58.8 | 58.0 | 11.20 | 21.70 | 10.50 | 2501.01 |
| -30 | 1 | 21.3 | 21.3 | 21.6 | 21.7 | 79.7 | 32.3 | 37.0 | 62.3 | 61.4 | 11.15 | 21.45 | 10.30 | 2188.38 |
| | 1 | 21.3 | 21.3 | 22.0 | 21.9 | 79.6 | 32.7 | 37.6 | 62.5 | 61.7 | 11.15 | 21.65 | 10.50 | 4064.14 |
| | 1 | 21.4 | 21.4 | 21.9 | 21.7 | 79.5 | 32.9 | 37.9 | 62.7 | 61.8 | 11.20 | 21.65 | 10.45 | 2501.01 |
| -50 | 1 | 21.3 | 21.3 | 21.7 | 21.7 | 79.7 | 29.2 | 38.5 | 62.4 | 61.9 | 11.15 | 21.50 | 10.35 | 2501.01 |
| | 1 | 21.4 | 21.3 | 21.7 | 21.5 | 79.7 | 29.7 | 38.7 | 62.4 | 61.8 | 11.20 | 21.50 | 10.30 | 1563.13 |
| | 1 | 21.3 | 21.3 | 21.7 | 21.6 | 79.7 | 29.4 | 38.8 | 62.5 | 61.8 | 11.15 | 21.50 | 10.35 | 2188.38 |
| -70 | 1 | 21.4 | 21.3 | 21.6 | 21.6 | 79.8 | 28.2 | 39.4 | 62.4 | 61.9 | 11.20 | 21.45 | 10.25 | 1563.13 |
| | 1 | 21.4 | 21.3 | 21.6 | 21.6 | 79.5 | 28.4 | 39.7 | 62.5 | 62.0 | 11.20 | 21.45 | 10.25 | 1563.13 |
| | 1 | 21.4 | 21.4 | 21.7 | 21.7 | 79.6 | 28.4 | 40.0 | 62.7 | 62.2 | 11.20 | 21.55 | 10.35 | 1875.75 |
| -90 | 1 | 21.3 | 21.4 | 21.7 | 21.7 | 79.6 | 25.1 | 29.1 | 61.0 | 60.1 | 11.15 | 21.55 | 10.40 | 2188.38 |
| | 1 | 21.3 | 21.5 | 21.7 | 21.6 | 79.6 | 25.1 | 29.0 | 60.8 | 60.1 | 11.15 | 21.60 | 10.45 | 1563.13 |
| | 1 | 21.5 | 21.3 | 21.7 | 21.7 | 79.5 | 25.1 | 29.0 | 60.7 | 59.9 | 11.25 | 21.50 | 10.25 | 1875.75 |

ตาราง ก-11 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 1.06 mm. Lt 5 m. Le 10 cm.

| อุณหภูมิ | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti,ave (°C) | To,ave (°C) | ΔT (°C) | q (W/m ²) |
|----------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|----------------------------|
| 90 | 1 | 21.1 | 21.1 | 23.1 | 23.1 | 74.3 | 41.1 | 38.6 | 56.1 | 34.1 | 11.05 | 22.10 | 11.05 | 12505.03 |
| | 1 | 21.1 | 21.0 | 23.1 | 22.9 | 74.5 | 41.1 | 39.2 | 57.5 | 34.3 | 11.05 | 22.05 | 11.00 | 12192.41 |
| | 1 | 21.2 | 21.1 | 23.2 | 23.1 | 74.4 | 41.2 | 39.3 | 57.6 | 35.1 | 11.10 | 22.15 | 11.05 | 12505.03 |
| 80 | 1 | 21.1 | 21.3 | 23.3 | 23.1 | 74.5 | 40.7 | 38.3 | 57.6 | 35.1 | 11.05 | 22.30 | 11.25 | 12505.03 |
| | 1 | 21.2 | 21.1 | 23.3 | 23.2 | 74.5 | 40.0 | 37.8 | 56.2 | 34.5 | 11.10 | 22.20 | 11.10 | 13130.28 |
| | 1 | 21.2 | 21.1 | 23.2 | 23.2 | 74.5 | 39.9 | 37.5 | 56.1 | 34.6 | 11.10 | 22.15 | 11.05 | 12817.66 |
| 70 | 1 | 21.2 | 21.1 | 23.4 | 23.1 | 75.1 | 39.4 | 37.9 | 55.7 | 34.8 | 11.10 | 22.25 | 11.15 | 13130.28 |
| | 1 | 21.2 | 21.1 | 23.4 | 23.0 | 74.8 | 39.4 | 38.3 | 55.3 | 34.6 | 11.10 | 22.25 | 11.15 | 12817.66 |
| | 1 | 21.1 | 21.1 | 23.4 | 23.0 | 75.0 | 39.1 | 38.0 | 55.5 | 34.8 | 11.05 | 22.25 | 11.20 | 13130.28 |
| 60 | 1 | 21.3 | 21.3 | 23.3 | 23.1 | 75.4 | 37.6 | 37.8 | 55.8 | 34.5 | 11.15 | 22.30 | 11.15 | 11879.78 |
| | 1 | 21.3 | 21.2 | 23.3 | 23.1 | 75.4 | 38.6 | 38.1 | 55.2 | 34.8 | 11.15 | 22.25 | 11.10 | 12192.41 |
| | 1 | 21.3 | 21.3 | 23.2 | 23.1 | 75.6 | 37.6 | 37.7 | 55.5 | 34.6 | 11.15 | 22.25 | 11.10 | 11567.15 |
| 50 | 1 | 21.3 | 21.2 | 23.1 | 22.9 | 76.1 | 34.6 | 36.2 | 54.1 | 33.8 | 11.15 | 22.15 | 11.00 | 10941.90 |
| | 1 | 21.3 | 21.2 | 23.2 | 22.7 | 76.2 | 34.5 | 35.9 | 54.4 | 33.7 | 11.15 | 22.20 | 11.05 | 10629.28 |
| | 1 | 21.2 | 21.1 | 23.0 | 22.7 | 76.0 | 35.0 | 36.0 | 54.9 | 33.5 | 11.10 | 22.05 | 10.95 | 10629.28 |
| 40 | 1 | 21.3 | 21.2 | 23.1 | 22.7 | 76.6 | 33.1 | 34.4 | 53.9 | 33.3 | 11.15 | 22.15 | 11.00 | 10316.65 |
| | 1 | 21.3 | 21.2 | 23.1 | 22.6 | 76.5 | 33.2 | 34.8 | 53.7 | 33.3 | 11.15 | 22.15 | 11.00 | 10004.02 |
| | 1 | 21.3 | 21.3 | 23.0 | 22.7 | 76.3 | 34.8 | 35.4 | 52.9 | 33.5 | 11.15 | 22.15 | 11.00 | 9691.40 |
| 30 | 1 | 21.2 | 21.2 | 22.7 | 22.7 | 77.0 | 30.4 | 32.1 | 51.3 | 33.4 | 11.10 | 21.95 | 10.85 | 9378.77 |
| | 1 | 21.4 | 21.2 | 22.9 | 22.5 | 78.0 | 26.1 | 26.8 | 61.0 | 33.6 | 11.20 | 22.05 | 10.85 | 8753.52 |
| | 1 | 21.4 | 21.2 | 22.7 | 22.6 | 77.8 | 25.7 | 27.1 | 58.9 | 33.4 | 11.20 | 21.95 | 10.75 | 8440.90 |
| 20 | 1 | 21.4 | 21.4 | 22.7 | 22.5 | 78.0 | 25.7 | 26.2 | 58.4 | 33.7 | 11.20 | 22.05 | 10.85 | 7503.02 |
| | 1 | 21.4 | 21.3 | 22.7 | 22.3 | 78.1 | 25.1 | 26.1 | 57.9 | 33.6 | 11.20 | 22.00 | 10.80 | 7190.39 |
| | 1 | 21.2 | 21.1 | 22.7 | 22.3 | 77.7 | 26.1 | 27.7 | 52.8 | 33.8 | 11.10 | 21.90 | 10.80 | 8440.90 |
| 10 | 1 | 21.2 | 21.4 | 22.4 | 22.0 | 78.6 | 22.6 | 22.7 | 57.6 | 34.4 | 11.10 | 21.90 | 10.80 | 5627.26 |
| | 1 | 21.4 | 21.4 | 22.2 | 21.9 | 78.6 | 22.7 | 22.9 | 57.6 | 34.4 | 11.20 | 21.80 | 10.60 | 4064.14 |
| | 1 | 21.4 | 21.2 | 22.3 | 21.9 | 78.7 | 22.8 | 22.9 | 57.4 | 34.3 | 11.20 | 21.75 | 10.55 | 5002.01 |
| 0 | 1 | 21.2 | 21.1 | 21.5 | 21.2 | 79.4 | 21.1 | 21.1 | 53.6 | 54.4 | 11.10 | 21.30 | 10.20 | 1250.50 |
| | 1 | 21.3 | 21.1 | 21.5 | 21.2 | 79.4 | 21.1 | 21.1 | 53.6 | 54.3 | 11.15 | 21.30 | 10.15 | 937.88 |
| | 1 | 21.3 | 21.2 | 21.6 | 21.3 | 79.4 | 21.1 | 21.1 | 53.6 | 54.3 | 11.15 | 21.40 | 10.25 | 1250.50 |
| -10 | 1 | 21.4 | 21.2 | 21.3 | 21.3 | 79.4 | 21.3 | 21.3 | 55.3 | 55.9 | 11.20 | 21.25 | 10.05 | 0.00 |
| | 1 | 21.5 | 21.2 | 21.4 | 21.4 | 79.6 | 21.4 | 21.4 | 55.6 | 56.1 | 11.25 | 21.30 | 10.05 | 312.63 |
| | 1 | 21.4 | 21.1 | 21.3 | 21.3 | 79.4 | 21.4 | 21.4 | 55.9 | 56.4 | 11.20 | 21.20 | 10.00 | 312.63 |
| -30 | 1 | 21.3 | 21.1 | 21.3 | 21.2 | 79.5 | 23.1 | 23.9 | 57.0 | 57.6 | 11.15 | 21.20 | 10.05 | 312.63 |
| | 1 | 21.3 | 21.1 | 21.2 | 21.2 | 79.4 | 23.3 | 24.1 | 57.2 | 57.8 | 11.15 | 21.15 | 10.00 | 0.00 |
| | 1 | 21.3 | 21.1 | 21.2 | 21.2 | 79.4 | 23.4 | 24.4 | 57.3 | 57.9 | 11.15 | 21.15 | 10.00 | 0.00 |
| -50 | 1 | 21.3 | 21.2 | 21.3 | 21.3 | 79.4 | 25.6 | 26.1 | 57.6 | 58.2 | 11.15 | 21.25 | 10.10 | 312.63 |
| | 1 | 21.2 | 21.1 | 21.2 | 21.3 | 79.4 | 25.7 | 26.3 | 57.8 | 58.4 | 11.10 | 21.15 | 10.05 | 625.25 |
| | 1 | 21.2 | 21.1 | 21.2 | 21.2 | 79.4 | 25.7 | 26.4 | 57.9 | 58.5 | 11.10 | 21.15 | 10.05 | 312.63 |
| -70 | 1 | 21.2 | 21.1 | 21.1 | 21.2 | 79.3 | 26.7 | 27.3 | 57.9 | 58.5 | 11.10 | 21.10 | 10.00 | 0.00 |
| | 1 | 21.1 | 21.1 | 21.3 | 21.2 | 79.4 | 27.1 | 27.6 | 58.1 | 58.8 | 11.05 | 21.20 | 10.15 | 937.88 |
| | 1 | 21.3 | 21.1 | 21.2 | 21.3 | 79.6 | 27.2 | 27.7 | 58.0 | 58.7 | 11.15 | 21.15 | 10.00 | 312.63 |
| -90 | 1 | 21.2 | 21.2 | 21.3 | 21.2 | 79.4 | 28.0 | 29.4 | 57.8 | 58.4 | 11.10 | 21.25 | 10.15 | 312.63 |
| | 1 | 21.2 | 21.1 | 21.2 | 21.4 | 79.3 | 28.2 | 29.8 | 58.2 | 58.6 | 11.10 | 21.15 | 10.05 | 937.88 |
| | 1 | 21.2 | 21.1 | 21.2 | 21.2 | 79.4 | 28.5 | 30.1 | 57.6 | 58.2 | 11.10 | 21.15 | 10.05 | 312.63 |

ตาราง ก-12 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 1.06 mm. Lt 5 m. Le 15 cm.

| อุณหภูมิ | \dot{Q} (l min) | Ti,1 (°C) | Ti,2 (°C) | To,1 (°C) | To,2 (°C) | Tevap (°C) | Tc,1 (°C) | Tc,2 (°C) | Ta,1 (°C) | Ta,2 (°C) | Ti,ave (°C) | To,ave (°C) | ΔT (°C) | q (W/m ²) |
|----------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|----------------------------|
| 90 | 1 | 21.1 | 21.0 | 21.7 | 21.6 | 78.2 | 21.7 | 21.7 | 51.7 | 56.2 | 11.05 | 21.35 | 10.30 | 3501.41 |
| | 1 | 21.1 | 21.1 | 21.7 | 21.7 | 78.3 | 21.4 | 21.4 | 51.7 | 56.3 | 11.05 | 21.40 | 10.35 | 3501.41 |
| | 1 | 21.1 | 21.1 | 21.7 | 21.6 | 78.2 | 21.6 | 21.6 | 51.9 | 56.3 | 11.05 | 21.40 | 10.35 | 3209.62 |
| 80 | 1 | 21.2 | 21.2 | 21.9 | 21.8 | 78.4 | 21.7 | 21.7 | 52.3 | 56.6 | 11.10 | 21.55 | 10.45 | 3793.19 |
| | 1 | 21.2 | 21.1 | 21.9 | 21.8 | 78.3 | 21.7 | 21.7 | 52.3 | 56.6 | 11.10 | 21.50 | 10.40 | 4084.98 |
| | 1 | 21.2 | 21.1 | 21.8 | 21.8 | 78.3 | 21.7 | 21.7 | 52.3 | 56.7 | 11.10 | 21.45 | 10.35 | 3793.19 |
| 70 | 1 | 21.1 | 21.1 | 21.9 | 21.8 | 78.4 | 21.6 | 21.6 | 53.2 | 56.2 | 11.05 | 21.50 | 10.45 | 4376.76 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.7 | 78.3 | 21.6 | 21.6 | 53.3 | 56.4 | 11.05 | 21.45 | 10.40 | 3793.19 |
| | 1 | 21.1 | 21.2 | 21.8 | 21.7 | 78.3 | 21.7 | 21.7 | 53.2 | 56.2 | 11.05 | 21.50 | 10.45 | 3501.41 |
| 60 | 1 | 21.1 | 21.1 | 21.8 | 21.8 | 78.4 | 21.6 | 21.6 | 54.0 | 57.0 | 11.05 | 21.45 | 10.40 | 4084.98 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.7 | 78.3 | 21.6 | 21.6 | 54.2 | 57.0 | 11.05 | 21.45 | 10.40 | 3793.19 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.8 | 78.4 | 21.6 | 21.6 | 54.2 | 57.1 | 11.05 | 21.45 | 10.40 | 4084.98 |
| 50 | 1 | 21.1 | 21.1 | 21.8 | 21.7 | 78.3 | 21.6 | 21.6 | 55.3 | 58.7 | 11.05 | 21.45 | 10.40 | 3793.19 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.7 | 78.3 | 21.6 | 21.6 | 55.5 | 58.8 | 11.05 | 21.45 | 10.40 | 3793.19 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.7 | 78.2 | 21.6 | 21.6 | 55.5 | 58.8 | 11.05 | 21.45 | 10.40 | 3793.19 |
| 40 | 1 | 21.1 | 21.1 | 21.9 | 21.8 | 78.4 | 21.6 | 21.6 | 57.0 | 61.0 | 11.05 | 21.50 | 10.45 | 4376.76 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.8 | 78.3 | 21.6 | 21.6 | 57.1 | 61.0 | 11.05 | 21.45 | 10.40 | 4084.98 |
| | 1 | 21.2 | 21.1 | 21.9 | 21.8 | 78.2 | 21.7 | 21.7 | 57.3 | 61.0 | 11.10 | 21.50 | 10.40 | 4084.98 |
| 30 | 1 | 21.1 | 21.1 | 21.8 | 21.8 | 78.4 | 21.6 | 21.6 | 59.3 | 63.8 | 11.05 | 21.45 | 10.40 | 4084.98 |
| | 1 | 21.2 | 21.2 | 21.8 | 21.7 | 78.4 | 21.7 | 21.7 | 59.6 | 63.9 | 11.10 | 21.50 | 10.40 | 3209.62 |
| | 1 | 21.1 | 21.1 | 21.7 | 21.7 | 79.3 | 21.7 | 21.7 | 59.6 | 64.0 | 11.05 | 21.40 | 10.35 | 3501.41 |
| 20 | 1 | 21.2 | 21.1 | 21.4 | 21.3 | 79.3 | 21.2 | 21.2 | 64.1 | 68.7 | 11.10 | 21.25 | 10.15 | 1167.14 |
| | 1 | 21.2 | 21.1 | 21.3 | 21.3 | 79.3 | 21.1 | 21.1 | 64.3 | 68.8 | 11.10 | 21.20 | 10.10 | 875.35 |
| | 1 | 21.2 | 21.1 | 21.4 | 21.4 | 79.4 | 21.2 | 21.2 | 64.4 | 68.9 | 11.10 | 21.25 | 10.15 | 1458.92 |
| 10 | 1 | 21.2 | 21.1 | 21.4 | 21.3 | 79.2 | 21.1 | 21.1 | 59.5 | 63.9 | 11.10 | 21.25 | 10.15 | 1167.14 |
| | 1 | 21.1 | 21.1 | 21.3 | 21.4 | 79.2 | 21.1 | 21.1 | 59.4 | 63.7 | 11.05 | 21.20 | 10.15 | 1458.92 |
| | 1 | 21.2 | 21.1 | 21.4 | 21.4 | 79.3 | 21.2 | 21.2 | 59.4 | 63.7 | 11.10 | 21.25 | 10.15 | 1458.92 |
| 0 | 1 | 21.1 | 21.1 | 21.4 | 21.2 | 79.3 | 21.1 | 21.1 | 52.3 | 56.7 | 11.05 | 21.25 | 10.20 | 1167.14 |
| | 1 | 21.1 | 21.1 | 21.3 | 21.3 | 79.3 | 21.0 | 21.0 | 52.0 | 56.6 | 11.05 | 21.20 | 10.15 | 1167.14 |
| | 1 | 21.1 | 21.2 | 21.4 | 21.2 | 79.2 | 21.0 | 21.0 | 52.0 | 56.4 | 11.05 | 21.30 | 10.25 | 875.35 |
| -10 | 1 | 21.1 | 21.1 | 21.3 | 21.4 | 79.3 | 21.1 | 21.1 | 52.4 | 50.4 | 11.05 | 21.20 | 10.15 | 1458.92 |
| | 1 | 21.2 | 21.2 | 21.3 | 21.2 | 79.2 | 21.1 | 21.1 | 52.5 | 56.7 | 11.10 | 21.25 | 10.15 | 291.78 |
| | 1 | 21.3 | 21.2 | 21.3 | 21.3 | 79.3 | 21.1 | 21.1 | 52.7 | 56.8 | 11.15 | 21.25 | 10.10 | 291.78 |
| -30 | 1 | 21.2 | 21.1 | 21.4 | 21.5 | 79.3 | 21.2 | 21.2 | 52.9 | 56.9 | 11.10 | 21.25 | 10.15 | 1750.70 |
| | 1 | 21.2 | 21.1 | 21.5 | 21.4 | 79.4 | 21.2 | 21.2 | 52.9 | 57.0 | 11.10 | 21.30 | 10.20 | 1750.70 |
| | 1 | 21.2 | 21.1 | 21.4 | 21.4 | 79.3 | 21.3 | 21.3 | 53.0 | 57.0 | 11.10 | 21.25 | 10.15 | 1458.92 |
| -50 | 1 | 21.2 | 21.1 | 21.4 | 21.4 | 79.3 | 21.4 | 21.4 | 53.0 | 57.0 | 11.10 | 21.25 | 10.15 | 1458.92 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.3 | 79.3 | 21.4 | 21.4 | 53.0 | 57.0 | 11.05 | 21.25 | 10.20 | 1458.92 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.4 | 79.1 | 21.4 | 21.4 | 53.1 | 57.0 | 11.05 | 21.25 | 10.20 | 1750.70 |
| -70 | 1 | 21.1 | 21.1 | 21.1 | 21.2 | 79.3 | 21.5 | 21.5 | 53.1 | 57.1 | 11.05 | 21.10 | 10.05 | 291.78 |
| | 1 | 21.1 | 21.1 | 21.2 | 21.2 | 79.4 | 21.5 | 21.5 | 53.1 | 57.1 | 11.05 | 21.15 | 10.10 | 583.57 |
| | 1 | 21.1 | 21.1 | 21.1 | 21.3 | 79.2 | 21.4 | 21.4 | 53.0 | 57.1 | 11.05 | 21.10 | 10.05 | 583.57 |
| -90 | 1 | 21.1 | 21.1 | 21.1 | 21.3 | 79.3 | 21.4 | 21.4 | 53.0 | 57.0 | 11.05 | 21.10 | 10.05 | 583.57 |
| | 1 | 21.1 | 21.1 | 21.2 | 21.2 | 79.4 | 21.4 | 21.4 | 53.0 | 57.0 | 11.05 | 21.15 | 10.10 | 583.57 |
| | 1 | 21.1 | 21.1 | 21.1 | 21.3 | 79.4 | 21.4 | 21.4 | 53.0 | 57.0 | 11.05 | 21.10 | 10.05 | 583.57 |

ตาราง ก-13 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร HP62 Di 1.06 mm. Lt 10 m. Le 5 cm.

| อุณหภูมิ องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|------------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|----------------------------|
| 90 | 1 | 21.1 | 21.1 | 26.2 | 26.4 | 73.3 | 39.2 | 39.0 | 55.8 | 53.6 | 11.05 | 23.65 | 12.60 | 15695.97 |
| | 1 | 21.4 | 21.1 | 26.1 | 26.7 | 73.6 | 39.9 | 37.6 | 57.0 | 54.0 | 11.20 | 23.60 | 12.40 | 15545.05 |
| | 1 | 21.1 | 21.2 | 26.1 | 26.7 | 73.9 | 39.9 | 38.5 | 58.1 | 56.1 | 11.05 | 23.65 | 12.60 | 15846.89 |
| 80 | 1 | 21.2 | 21.1 | 26.6 | 27.2 | 74.1 | 39.5 | 37.9 | 56.4 | 55.5 | 11.10 | 23.85 | 12.75 | 17356.12 |
| | 1 | 21.1 | 21.1 | 26.2 | 26.7 | 73.2 | 37.9 | 38.5 | 55.5 | 54.3 | 11.05 | 23.65 | 12.60 | 16148.74 |
| | 1 | 21.1 | 21.1 | 26.4 | 27.1 | 73.4 | 38.4 | 38.3 | 57.7 | 55.7 | 11.05 | 23.75 | 12.70 | 17054.28 |
| 70 | 1 | 21.1 | 21.2 | 26.5 | 27.1 | 73.4 | 37.2 | 39.0 | 56.9 | 54.9 | 11.05 | 23.85 | 12.80 | 17054.28 |
| | 1 | 21.1 | 21.1 | 26.3 | 26.8 | 72.9 | 37.8 | 38.1 | 56.2 | 54.2 | 11.05 | 23.70 | 12.65 | 16450.58 |
| | 1 | 21.2 | 21.1 | 26.4 | 27.0 | 73.7 | 38.5 | 37.9 | 55.2 | 55.0 | 11.10 | 23.75 | 12.65 | 16752.43 |
| 60 | 1 | 21.1 | 21.1 | 26.4 | 26.7 | 72.8 | 37.1 | 37.9 | 55.2 | 53.3 | 11.05 | 23.75 | 12.70 | 16450.58 |
| | 1 | 21.1 | 21.1 | 26.7 | 26.7 | 73.3 | 37.3 | 37.9 | 57.6 | 52.1 | 11.05 | 23.90 | 12.85 | 16903.35 |
| | 1 | 21.1 | 21.1 | 26.5 | 26.9 | 72.9 | 36.7 | 37.9 | 55.3 | 53.9 | 11.05 | 23.80 | 12.75 | 16903.35 |
| 50 | 1 | 21.2 | 21.1 | 26.5 | 26.6 | 73.9 | 34.5 | 35.7 | 52.9 | 53.7 | 11.10 | 23.80 | 12.70 | 16299.66 |
| | 1 | 21.1 | 21.2 | 26.4 | 26.4 | 72.9 | 36.3 | 36.6 | 54.9 | 56.0 | 11.05 | 23.80 | 12.75 | 15846.89 |
| | 1 | 21.2 | 21.1 | 26.4 | 26.3 | 73.6 | 35.7 | 35.7 | 54.0 | 54.7 | 11.10 | 23.75 | 12.65 | 15695.97 |
| 40 | 1 | 21.1 | 21.0 | 26.2 | 26.4 | 73.6 | 35.4 | 36.0 | 56.0 | 53.9 | 11.05 | 23.60 | 12.55 | 15846.89 |
| | 1 | 21.2 | 21.1 | 26.3 | 26.4 | 73.2 | 35.5 | 36.4 | 58.2 | 52.5 | 11.10 | 23.70 | 12.60 | 15695.97 |
| | 1 | 21.2 | 21.1 | 26.3 | 26.4 | 73.9 | 34.4 | 35.1 | 54.4 | 53.0 | 11.10 | 23.70 | 12.60 | 15695.97 |
| 30 | 1 | 21.2 | 21.1 | 25.7 | 25.7 | 74.5 | 33.7 | 32.4 | 53.3 | 51.7 | 11.10 | 23.40 | 12.30 | 13733.97 |
| | 1 | 21.1 | 21.2 | 25.5 | 25.7 | 75.7 | 31.7 | 31.6 | 51.9 | 55.8 | 11.05 | 23.35 | 12.30 | 13432.13 |
| | 1 | 21.1 | 21.1 | 25.4 | 25.7 | 75.4 | 32.3 | 32.1 | 53.7 | 57.5 | 11.05 | 23.25 | 12.20 | 13432.13 |
| 20 | 1 | 21.3 | 21.1 | 25.3 | 25.4 | 76.2 | 28.1 | 28.8 | 53.4 | 59.1 | 11.15 | 23.20 | 12.05 | 12526.59 |
| | 1 | 21.1 | 21.1 | 25.1 | 25.2 | 75.3 | 29.1 | 28.4 | 53.0 | 58.4 | 11.05 | 23.10 | 12.05 | 12224.75 |
| | 1 | 21.4 | 21.1 | 25.2 | 25.5 | 75.7 | 30.7 | 31.6 | 54.1 | 59.8 | 11.20 | 23.15 | 11.95 | 12375.67 |
| 10 | 1 | 21.2 | 21.2 | 25.1 | 25.2 | 77.9 | 23.7 | 25.2 | 47.8 | 62.4 | 11.10 | 23.15 | 12.05 | 11922.90 |
| | 1 | 21.3 | 21.4 | 24.7 | 25.0 | 77.9 | 23.7 | 25.4 | 47.9 | 62.4 | 11.15 | 23.05 | 11.90 | 10564.60 |
| | 1 | 21.1 | 21.2 | 24.9 | 25.4 | 77.9 | 23.8 | 25.6 | 47.9 | 62.3 | 11.05 | 23.05 | 12.00 | 12073.82 |
| 0 | 1 | 21.2 | 21.2 | 23.4 | 23.6 | 79.4 | 21.7 | 22.9 | 54.9 | 54.0 | 11.10 | 22.30 | 11.20 | 6942.45 |
| | 1 | 21.2 | 21.2 | 23.6 | 23.7 | 79.4 | 21.6 | 22.9 | 54.9 | 53.9 | 11.10 | 22.40 | 11.30 | 7395.22 |
| | 1 | 21.2 | 21.2 | 23.3 | 23.7 | 79.4 | 21.6 | 22.8 | 54.9 | 53.9 | 11.10 | 22.25 | 11.15 | 6942.45 |
| -10 | 1 | 21.3 | 21.3 | 22.4 | 22.5 | 79.4 | 21.4 | 23.4 | 55.6 | 53.2 | 11.15 | 21.85 | 10.70 | 3471.22 |
| | 1 | 21.2 | 21.2 | 22.4 | 22.4 | 79.4 | 21.4 | 23.4 | 55.5 | 53.1 | 11.10 | 21.80 | 10.70 | 3622.15 |
| | 1 | 21.2 | 21.2 | 22.7 | 22.4 | 79.4 | 21.5 | 23.4 | 55.6 | 53.3 | 11.10 | 21.95 | 10.85 | 4074.92 |
| -30 | 1 | 21.4 | 21.3 | 22.4 | 22.3 | 79.4 | 21.6 | 22.3 | 56.0 | 53.1 | 11.20 | 21.85 | 10.65 | 3018.46 |
| | 1 | 21.3 | 21.3 | 22.4 | 22.4 | 79.4 | 21.6 | 22.3 | 56.0 | 53.1 | 11.15 | 21.85 | 10.70 | 3320.30 |
| | 1 | 21.3 | 21.3 | 22.4 | 22.2 | 79.4 | 21.6 | 22.3 | 56.0 | 53.1 | 11.15 | 21.85 | 10.70 | 3018.46 |
| -50 | 1 | 21.3 | 21.3 | 22.4 | 22.2 | 79.4 | 21.6 | 22.1 | 55.4 | 52.2 | 11.15 | 21.85 | 10.70 | 3018.46 |
| | 1 | 21.2 | 21.3 | 22.3 | 22.2 | 79.4 | 21.6 | 22.0 | 55.4 | 52.2 | 11.10 | 21.80 | 10.70 | 3018.46 |
| | 1 | 21.2 | 21.2 | 22.1 | 22.3 | 79.4 | 21.6 | 22.1 | 55.5 | 52.3 | 11.10 | 21.65 | 10.55 | 3018.46 |
| -70 | 1 | 21.5 | 21.4 | 22.4 | 22.4 | 79.4 | 21.7 | 22.1 | 54.9 | 51.7 | 11.25 | 21.90 | 10.65 | 2867.53 |
| | 1 | 21.3 | 21.4 | 22.1 | 22.2 | 79.4 | 21.7 | 22.1 | 55.0 | 51.7 | 11.15 | 21.75 | 10.60 | 2414.76 |
| | 1 | 21.4 | 21.5 | 22.3 | 22.3 | 79.4 | 21.6 | 22.1 | 55.1 | 51.9 | 11.20 | 21.90 | 10.70 | 2565.69 |
| -90 | 1 | 21.3 | 21.4 | 22.3 | 22.3 | 79.4 | 21.5 | 22.2 | 54.1 | 50.2 | 11.15 | 21.85 | 10.70 | 2867.53 |
| | 1 | 21.3 | 21.3 | 22.4 | 22.4 | 79.4 | 21.6 | 22.2 | 54.0 | 50.0 | 11.15 | 21.85 | 10.70 | 3320.30 |
| | 1 | 21.2 | 21.3 | 22.7 | 22.3 | 79.4 | 21.5 | 22.2 | 54.5 | 50.8 | 11.10 | 22.00 | 10.90 | 3773.07 |

ตาราง ก-14 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร HP62 Di 1.06 mm. Lt 10 m. Le 10 cm.

| อุณหภูมิ องศา | Q̇ (l min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δ T (°C) | q (W/m ²) |
|------------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 21.8 | 21.8 | 25.3 | 25.4 | 76.6 | 27.4 | 27.4 | 74.1 | 36.9 | 11.40 | 23.55 | 12.15 | 10715.52 |
| | 1 | 21.9 | 21.7 | 25.4 | 25.4 | 76.3 | 27.1 | 27.1 | 73.9 | 37.0 | 11.45 | 23.55 | 12.10 | 10866.44 |
| | 1 | 21.9 | 21.8 | 25.4 | 25.4 | 76.8 | 27.0 | 27.0 | 73.7 | 36.9 | 11.45 | 23.60 | 12.15 | 10715.52 |
| 80 | 1 | 21.9 | 21.8 | 25.2 | 25.2 | 76.9 | 27.7 | 27.7 | 73.8 | 37.3 | 11.45 | 23.50 | 12.05 | 10111.83 |
| | 1 | 22.0 | 21.7 | 25.1 | 25.3 | 76.6 | 27.6 | 27.6 | 73.8 | 37.1 | 11.50 | 23.40 | 11.90 | 10111.83 |
| | 1 | 21.8 | 21.7 | 25.1 | 25.1 | 76.7 | 27.2 | 27.2 | 73.8 | 37.1 | 11.40 | 23.40 | 12.00 | 10111.83 |
| 70 | 1 | 21.8 | 21.7 | 25.2 | 25.1 | 75.2 | 28.4 | 28.4 | 73.8 | 37.4 | 11.40 | 23.45 | 12.05 | 10262.75 |
| | 1 | 21.8 | 21.7 | 25.2 | 25.2 | 76.9 | 27.8 | 27.8 | 74.1 | 37.3 | 11.40 | 23.45 | 12.05 | 10413.67 |
| | 1 | 22.0 | 21.7 | 25.2 | 25.2 | 76.4 | 28.6 | 28.6 | 73.5 | 36.7 | 11.50 | 23.45 | 11.95 | 10111.83 |
| 60 | 1 | 21.7 | 21.5 | 25.6 | 25.6 | 76.6 | 29.4 | 29.4 | 73.3 | 37.7 | 11.35 | 23.55 | 12.20 | 12073.82 |
| | 1 | 21.7 | 21.4 | 25.3 | 25.3 | 76.6 | 29.8 | 29.8 | 73.6 | 36.7 | 11.35 | 23.35 | 12.00 | 11319.21 |
| | 1 | 21.7 | 21.4 | 25.2 | 25.4 | 76.8 | 27.0 | 27.0 | 67.9 | 33.2 | 11.35 | 23.30 | 11.95 | 11319.21 |
| 50 | 1 | 21.7 | 21.4 | 24.7 | 24.6 | 77.2 | 25.7 | 25.7 | 73.7 | 36.7 | 11.35 | 23.05 | 11.70 | 9357.21 |
| | 1 | 21.6 | 21.4 | 24.4 | 24.5 | 76.9 | 25.8 | 25.8 | 73.5 | 36.7 | 11.30 | 22.90 | 11.60 | 8904.44 |
| | 1 | 21.6 | 21.4 | 24.5 | 24.4 | 77.1 | 26.0 | 26.0 | 73.7 | 36.3 | 11.30 | 22.95 | 11.65 | 8904.44 |
| 40 | 1 | 21.5 | 21.4 | 24.5 | 24.6 | 77.4 | 26.1 | 26.1 | 73.3 | 36.0 | 11.25 | 22.95 | 11.70 | 9357.21 |
| | 1 | 21.7 | 21.6 | 24.4 | 24.8 | 77.2 | 25.7 | 25.7 | 73.3 | 36.3 | 11.35 | 23.00 | 11.65 | 8904.44 |
| | 1 | 21.7 | 21.6 | 24.7 | 24.7 | 77.3 | 25.7 | 25.7 | 73.7 | 36.0 | 11.35 | 23.15 | 11.80 | 9206.29 |
| 30 | 1 | 21.6 | 21.4 | 23.8 | 23.9 | 78.1 | 23.9 | 23.9 | 73.6 | 36.3 | 11.30 | 22.60 | 11.30 | 7093.37 |
| | 1 | 21.5 | 21.4 | 23.8 | 24.0 | 77.8 | 23.7 | 23.7 | 73.6 | 36.4 | 11.25 | 22.60 | 11.35 | 7395.22 |
| | 1 | 21.6 | 21.4 | 23.9 | 23.8 | 77.8 | 23.9 | 23.9 | 73.6 | 36.1 | 11.30 | 22.65 | 11.35 | 7093.37 |
| 20 | 1 | 21.6 | 21.5 | 24.0 | 23.8 | 78.3 | 23.3 | 23.3 | 73.2 | 36.6 | 11.30 | 22.75 | 11.45 | 7093.37 |
| | 1 | 21.6 | 21.5 | 23.7 | 23.7 | 78.2 | 23.1 | 23.1 | 73.1 | 36.8 | 11.30 | 22.62 | 11.32 | 6444.40 |
| | 1 | 21.5 | 21.4 | 23.7 | 23.7 | 78.1 | 23.3 | 23.3 | 73.4 | 36.0 | 11.25 | 22.55 | 11.30 | 6791.53 |
| 10 | 1 | 21.6 | 21.5 | 22.8 | 22.9 | 78.4 | 23.1 | 23.1 | 72.9 | 36.8 | 11.30 | 22.15 | 10.85 | 3923.99 |
| | 1 | 21.5 | 21.4 | 22.6 | 22.6 | 78.3 | 23.0 | 23.0 | 72.9 | 36.8 | 11.25 | 22.00 | 10.75 | 3471.22 |
| | 1 | 21.5 | 21.4 | 22.7 | 22.7 | 78.4 | 23.2 | 23.2 | 73.1 | 36.9 | 11.25 | 22.05 | 10.80 | 3773.07 |
| 0 | 1 | 21.6 | 21.5 | 21.7 | 21.7 | 79.4 | 21.4 | 21.4 | 53.6 | 52.4 | 11.30 | 21.60 | 10.30 | 452.77 |
| | 1 | 21.6 | 21.5 | 21.6 | 21.7 | 79.4 | 21.2 | 21.2 | 53.4 | 52.3 | 11.30 | 21.55 | 10.25 | 301.85 |
| | 1 | 21.6 | 21.5 | 21.7 | 21.7 | 79.4 | 21.3 | 21.4 | 53.4 | 52.6 | 11.30 | 21.60 | 10.30 | 452.77 |
| -10 | 1 | 21.5 | 21.5 | 22.1 | 21.9 | 79.5 | 21.5 | 21.5 | 52.1 | 52.0 | 11.25 | 21.80 | 10.55 | 1509.23 |
| | 1 | 21.4 | 21.4 | 21.9 | 21.9 | 79.4 | 21.9 | 21.9 | 52.1 | 52.0 | 11.20 | 21.65 | 10.45 | 1509.23 |
| | 1 | 21.5 | 21.4 | 21.8 | 21.8 | 79.4 | 21.9 | 22.7 | 52.1 | 51.8 | 11.25 | 21.60 | 10.35 | 1056.46 |
| -30 | 1 | 21.4 | 21.3 | 21.7 | 21.7 | 79.4 | 21.4 | 21.4 | 52.2 | 52.0 | 11.20 | 21.50 | 10.30 | 1056.46 |
| | 1 | 21.4 | 21.3 | 21.6 | 21.6 | 78.8 | 21.7 | 21.7 | 52.2 | 52.0 | 11.20 | 21.45 | 10.25 | 754.61 |
| | 1 | 21.4 | 21.3 | 21.5 | 21.7 | 79.4 | 21.3 | 21.3 | 52.2 | 52.0 | 11.20 | 21.40 | 10.20 | 754.61 |
| -50 | 1 | 21.5 | 21.3 | 21.7 | 21.7 | 79.7 | 21.4 | 21.4 | 52.3 | 52.0 | 11.25 | 21.50 | 10.25 | 905.54 |
| | 1 | 21.5 | 21.4 | 21.7 | 21.7 | 79.5 | 21.4 | 21.4 | 52.2 | 52.1 | 11.25 | 21.55 | 10.30 | 754.61 |
| | 1 | 21.4 | 21.4 | 21.7 | 21.6 | 79.5 | 21.4 | 21.4 | 52.4 | 52.0 | 11.20 | 21.55 | 10.35 | 754.61 |
| -70 | 1 | 21.5 | 21.2 | 21.7 | 21.6 | 79.5 | 21.4 | 21.4 | 51.7 | 52.4 | 11.25 | 21.45 | 10.20 | 905.54 |
| | 1 | 21.5 | 21.2 | 21.7 | 21.7 | 79.6 | 21.4 | 21.4 | 51.9 | 52.6 | 11.25 | 21.45 | 10.20 | 1056.46 |
| | 1 | 21.5 | 21.2 | 21.6 | 21.6 | 79.5 | 21.4 | 21.4 | 51.9 | 52.6 | 11.25 | 21.40 | 10.15 | 754.61 |
| -90 | 1 | 21.5 | 21.2 | 21.7 | 21.7 | 79.5 | 21.4 | 21.4 | 51.8 | 52.7 | 11.25 | 21.45 | 10.20 | 1056.46 |
| | 1 | 21.4 | 21.3 | 21.6 | 21.7 | 79.4 | 21.3 | 21.3 | 52.0 | 52.6 | 11.20 | 21.45 | 10.25 | 905.54 |
| | 1 | 21.5 | 21.2 | 21.6 | 21.7 | 79.5 | 21.4 | 21.4 | 51.9 | 52.6 | 11.25 | 21.40 | 10.15 | 905.54 |

ตาราง ก-15 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 1.06 mm. Lt 10 m. Le 15 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δ T (°C) | q (W m ⁻²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|---------------------------|
| 90 | 1 | 21.0 | 20.9 | 24.8 | 25.0 | 74.1 | 30.0 | 36.0 | 66.4 | 29.7 | 11.00 | 22.85 | 11.85 | 11525.47 |
| | 1 | 21.0 | 21.0 | 24.9 | 24.8 | 74.1 | 30.1 | 36.2 | 66.4 | 29.6 | 11.00 | 22.95 | 11.95 | 11233.69 |
| | 1 | 21.0 | 21.0 | 24.9 | 24.9 | 74.1 | 30.4 | 35.7 | 66.4 | 29.7 | 11.00 | 22.95 | 11.95 | 11379.58 |
| 80 | 1 | 21.0 | 20.9 | 24.7 | 24.8 | 74.2 | 31.7 | 35.2 | 67.9 | 29.1 | 11.00 | 22.80 | 11.80 | 11087.79 |
| | 1 | 21.1 | 21.0 | 24.8 | 24.7 | 74.2 | 31.9 | 34.9 | 67.7 | 29.3 | 11.05 | 22.90 | 11.85 | 10796.01 |
| | 1 | 21.0 | 21.0 | 24.8 | 24.7 | 74.3 | 31.7 | 35.3 | 67.8 | 29.4 | 11.00 | 22.90 | 11.90 | 10941.90 |
| 70 | 1 | 21.0 | 20.9 | 24.6 | 24.5 | 74.2 | 31.7 | 34.6 | 67.7 | 31.1 | 11.00 | 22.75 | 11.75 | 10504.23 |
| | 1 | 21.0 | 21.0 | 24.6 | 24.5 | 74.3 | 32.0 | 35.2 | 67.8 | 30.4 | 11.00 | 22.80 | 11.80 | 10358.33 |
| | 1 | 21.0 | 20.9 | 24.4 | 24.4 | 74.3 | 30.8 | 34.8 | 69.4 | 29.4 | 11.00 | 22.65 | 11.65 | 10066.55 |
| 60 | 1 | 21.0 | 21.0 | 24.5 | 24.5 | 74.2 | 30.5 | 34.2 | 68.1 | 31.6 | 11.00 | 22.75 | 11.75 | 10212.44 |
| | 1 | 21.1 | 21.0 | 24.5 | 24.5 | 74.0 | 32.2 | 35.5 | 68.6 | 32.4 | 11.05 | 22.75 | 11.70 | 10066.55 |
| | 1 | 21.0 | 21.0 | 24.7 | 24.6 | 74.0 | 31.0 | 34.4 | 67.6 | 32.6 | 11.00 | 22.85 | 11.85 | 10650.12 |
| 50 | 1 | 21.1 | 21.0 | 24.4 | 24.4 | 74.4 | 30.2 | 32.9 | 70.2 | 31.1 | 11.05 | 22.70 | 11.65 | 9774.77 |
| | 1 | 21.0 | 21.0 | 24.4 | 24.3 | 74.5 | 29.9 | 33.1 | 70.5 | 31.4 | 11.00 | 22.70 | 11.70 | 9774.77 |
| | 1 | 21.0 | 20.9 | 24.3 | 24.3 | 74.4 | 30.1 | 33.2 | 70.0 | 32.1 | 11.00 | 22.60 | 11.60 | 9774.77 |
| 40 | 1 | 20.9 | 21.0 | 23.7 | 23.7 | 75.2 | 26.2 | 29.4 | 71.7 | 32.7 | 10.95 | 22.35 | 11.40 | 8024.06 |
| | 1 | 21.1 | 21.1 | 23.7 | 23.7 | 75.4 | 26.2 | 29.4 | 72.0 | 33.1 | 11.05 | 22.40 | 11.35 | 7586.39 |
| | 1 | 21.0 | 21.0 | 23.7 | 23.7 | 75.6 | 26.3 | 29.2 | 72.0 | 32.7 | 11.00 | 22.35 | 11.35 | 7878.17 |
| 30 | 1 | 21.1 | 21.0 | 23.1 | 23.1 | 76.4 | 24.0 | 25.9 | 72.5 | 33.3 | 11.05 | 22.05 | 11.00 | 5981.57 |
| | 1 | 21.2 | 21.1 | 23.1 | 22.9 | 76.6 | 24.1 | 25.8 | 72.4 | 32.7 | 11.10 | 22.10 | 11.00 | 5398.01 |
| | 1 | 21.0 | 21.0 | 23.0 | 23.0 | 76.3 | 23.8 | 25.9 | 72.6 | 32.6 | 11.00 | 22.00 | 11.00 | 5835.68 |
| 20 | 1 | 21.1 | 21.1 | 22.4 | 22.4 | 77.7 | 22.3 | 23.4 | 72.6 | 33.2 | 11.05 | 21.75 | 10.70 | 3793.19 |
| | 1 | 21.1 | 21.1 | 22.4 | 22.4 | 77.5 | 22.2 | 23.1 | 72.6 | 33.1 | 11.05 | 21.75 | 10.70 | 3793.19 |
| | 1 | 21.1 | 21.0 | 22.4 | 22.4 | 77.7 | 22.2 | 23.3 | 72.8 | 33.7 | 11.05 | 21.70 | 10.65 | 3939.08 |
| 10 | 1 | 21.1 | 21.1 | 22.2 | 22.4 | 77.6 | 22.3 | 23.1 | 72.7 | 33.4 | 11.05 | 21.65 | 10.60 | 3501.41 |
| | 1 | 21.2 | 21.0 | 22.3 | 22.1 | 77.7 | 22.1 | 23.3 | 72.5 | 33.3 | 11.10 | 21.65 | 10.55 | 3209.62 |
| | 1 | 21.1 | 21.1 | 22.1 | 22.2 | 77.8 | 22.5 | 22.9 | 71.9 | 33.5 | 11.05 | 21.60 | 10.55 | 3063.73 |
| 0 | 1 | 21.1 | 21.1 | 21.5 | 21.4 | 79.4 | 21.3 | 21.6 | 47.5 | 48.3 | 11.05 | 21.30 | 10.25 | 1021.24 |
| | 1 | 21.1 | 21.1 | 21.6 | 21.5 | 79.4 | 21.6 | 21.5 | 47.5 | 48.2 | 11.05 | 21.35 | 10.30 | 1313.03 |
| | 1 | 21.1 | 21.1 | 21.5 | 21.5 | 79.4 | 21.5 | 21.5 | 47.5 | 48.2 | 11.05 | 21.30 | 10.25 | 1167.14 |
| -10 | 1 | 21.1 | 21.0 | 21.4 | 21.5 | 79.2 | 21.1 | 21.0 | 48.8 | 49.0 | 11.05 | 21.20 | 10.15 | 1167.14 |
| | 1 | 21.1 | 21.0 | 21.3 | 21.4 | 79.2 | 21.1 | 20.9 | 49.0 | 48.9 | 11.05 | 21.15 | 10.10 | 875.35 |
| | 1 | 21.1 | 20.9 | 21.3 | 21.2 | 79.2 | 21.1 | 20.9 | 48.9 | 48.9 | 11.05 | 21.10 | 10.05 | 729.46 |
| -30 | 1 | 21.1 | 21.0 | 21.3 | 21.3 | 79.4 | 21.1 | 21.1 | 49.1 | 48.9 | 11.05 | 21.15 | 10.10 | 729.46 |
| | 1 | 21.1 | 21.0 | 21.2 | 21.4 | 79.4 | 21.1 | 21.0 | 49.0 | 49.1 | 11.05 | 21.10 | 10.05 | 729.46 |
| | 1 | 21.0 | 21.0 | 21.3 | 21.4 | 79.3 | 21.2 | 21.0 | 48.9 | 49.3 | 11.00 | 21.15 | 10.15 | 1021.24 |
| -50 | 1 | 21.0 | 21.0 | 21.4 | 21.4 | 79.3 | 21.1 | 21.1 | 48.8 | 49.1 | 11.00 | 21.20 | 10.20 | 1167.14 |
| | 1 | 21.0 | 21.1 | 21.5 | 21.3 | 79.4 | 21.2 | 21.0 | 48.7 | 49.1 | 11.00 | 21.30 | 10.30 | 1021.24 |
| | 1 | 21.0 | 21.1 | 21.4 | 21.3 | 79.3 | 21.2 | 20.9 | 48.8 | 49.1 | 11.00 | 21.25 | 10.25 | 875.35 |
| -70 | 1 | 21.0 | 21.0 | 21.4 | 21.5 | 79.2 | 21.1 | 21.1 | 48.3 | 48.7 | 11.00 | 21.20 | 10.20 | 1313.03 |
| | 1 | 21.1 | 21.0 | 21.4 | 21.4 | 79.1 | 21.1 | 21.0 | 48.4 | 48.8 | 11.05 | 21.20 | 10.15 | 1021.24 |
| | 1 | 21.0 | 21.0 | 21.3 | 21.4 | 79.1 | 21.1 | 21.0 | 48.8 | 48.8 | 11.00 | 21.15 | 10.15 | 1021.24 |
| -90 | 1 | 21.1 | 21.1 | 21.3 | 21.4 | 79.2 | 21.3 | 21.1 | 48.5 | 48.5 | 11.05 | 21.20 | 10.15 | 729.46 |
| | 1 | 21.1 | 21.1 | 21.3 | 21.4 | 79.1 | 21.2 | 21.1 | 48.5 | 48.1 | 11.05 | 21.20 | 10.15 | 729.46 |
| | 1 | 21.1 | 21.1 | 21.3 | 21.3 | 79.1 | 21.2 | 21.1 | 48.5 | 48.1 | 11.05 | 21.20 | 10.15 | 583.57 |

ตาราง ก-16 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
 ที่ใช้สาร HP62 Di 1.06 mm. Lt 15 m. Le 5 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δτ (°C) | q (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|------------|--------------------------|
| 90 | 1 | 21.4 | 21.5 | 28.8 | 28.7 | 72.0 | 35.1 | 36.0 | 55.4 | 54.5 | 11.20 | 25.15 | 13.95 | 14860.63 |
| | 1 | 21.5 | 21.4 | 28.1 | 27.9 | 73.2 | 36.3 | 36.0 | 56.7 | 54.4 | 11.25 | 24.75 | 13.50 | 13333.85 |
| | 1 | 21.5 | 21.5 | 28.0 | 28.0 | 72.1 | 36.0 | 33.4 | 54.3 | 58.2 | 11.25 | 24.75 | 13.50 | 13232.07 |
| 80 | 1 | 21.4 | 21.4 | 28.4 | 28.4 | 71.8 | 34.0 | 36.1 | 55.2 | 58.4 | 11.20 | 24.90 | 13.70 | 14249.92 |
| | 1 | 21.4 | 21.4 | 28.3 | 28.3 | 71.7 | 33.7 | 37.7 | 59.3 | 56.1 | 11.20 | 24.85 | 13.65 | 14046.35 |
| | 1 | 21.5 | 21.5 | 28.5 | 28.6 | 73.0 | 34.4 | 37.1 | 57.1 | 57.8 | 11.25 | 25.00 | 13.75 | 14351.70 |
| 70 | 1 | 21.5 | 21.4 | 29.0 | 28.9 | 74.3 | 38.2 | 39.8 | 56.7 | 58.5 | 11.25 | 25.20 | 13.95 | 15267.77 |
| | 1 | 21.5 | 21.4 | 29.1 | 29.0 | 73.9 | 37.3 | 38.5 | 57.7 | 54.5 | 11.25 | 25.25 | 14.00 | 15471.34 |
| | 1 | 21.7 | 21.4 | 28.7 | 28.6 | 74.5 | 36.3 | 36.3 | 56.8 | 57.7 | 11.35 | 25.05 | 13.70 | 14453.49 |
| 60 | 1 | 21.4 | 21.3 | 27.6 | 27.7 | 73.6 | 34.6 | 37.9 | 55.8 | 53.8 | 11.20 | 24.45 | 13.25 | 12824.93 |
| | 1 | 21.4 | 21.4 | 27.6 | 27.8 | 73.4 | 34.0 | 37.1 | 55.2 | 56.1 | 11.20 | 24.50 | 13.30 | 12824.93 |
| | 1 | 21.6 | 21.4 | 28.1 | 27.7 | 72.9 | 36.0 | 37.9 | 56.5 | 56.7 | 11.30 | 24.75 | 13.45 | 13028.50 |
| 50 | 1 | 21.4 | 21.4 | 27.3 | 27.1 | 74.9 | 34.6 | 35.0 | 54.1 | 55.8 | 11.20 | 24.35 | 13.15 | 11807.08 |
| | 1 | 21.4 | 21.4 | 26.9 | 27.0 | 74.3 | 33.4 | 34.4 | 55.1 | 57.3 | 11.20 | 24.15 | 12.95 | 11298.15 |
| | 1 | 21.4 | 21.4 | 27.1 | 27.2 | 74.0 | 34.2 | 35.7 | 55.4 | 60.6 | 11.20 | 24.25 | 13.05 | 11705.29 |
| 40 | 1 | 21.5 | 21.5 | 26.6 | 27.1 | 74.3 | 33.1 | 34.7 | 56.2 | 57.6 | 11.25 | 24.05 | 12.80 | 10891.01 |
| | 1 | 21.5 | 21.6 | 27.1 | 27.1 | 75.0 | 33.3 | 34.5 | 54.9 | 57.7 | 11.25 | 24.35 | 13.10 | 11298.15 |
| | 1 | 21.6 | 21.4 | 27.1 | 27.3 | 74.6 | 34.1 | 35.1 | 54.6 | 58.2 | 11.30 | 24.25 | 12.95 | 11603.51 |
| 30 | 1 | 21.4 | 21.5 | 25.9 | 25.9 | 77.3 | 28.4 | 30.1 | 56.0 | 57.9 | 11.20 | 23.70 | 12.50 | 9058.88 |
| | 1 | 21.6 | 21.6 | 25.9 | 25.5 | 77.2 | 30.5 | 29.1 | 58.3 | 57.5 | 11.30 | 23.75 | 12.45 | 8346.38 |
| | 1 | 21.5 | 21.4 | 25.8 | 25.9 | 76.1 | 29.1 | 28.4 | 55.4 | 56.1 | 11.25 | 23.60 | 12.35 | 8957.09 |
| 20 | 1 | 21.4 | 21.4 | 25.0 | 25.1 | 77.5 | 27.6 | 29.1 | 57.9 | 58.4 | 11.20 | 23.20 | 12.00 | 7430.32 |
| | 1 | 21.4 | 21.4 | 25.4 | 25.1 | 77.2 | 28.3 | 26.7 | 56.9 | 57.2 | 11.20 | 23.40 | 12.20 | 7837.46 |
| | 1 | 21.5 | 21.4 | 24.9 | 25.3 | 78.0 | 29.1 | 27.2 | 57.9 | 58.7 | 11.25 | 23.15 | 11.90 | 7430.32 |
| 10 | 1 | 21.5 | 21.4 | 24.5 | 24.2 | 78.4 | 27.6 | 25.7 | 59.2 | 57.5 | 11.25 | 22.95 | 11.70 | 5903.54 |
| | 1 | 21.6 | 21.5 | 25.0 | 24.2 | 78.4 | 26.9 | 24.7 | 57.1 | 58.5 | 11.30 | 23.25 | 11.95 | 6208.89 |
| | 1 | 21.5 | 21.5 | 24.4 | 24.1 | 78.7 | 26.0 | 24.1 | 55.8 | 58.3 | 11.25 | 22.95 | 11.70 | 5598.18 |
| 0 | 1 | 21.4 | 21.4 | 23.7 | 23.0 | 79.5 | 26.3 | 22.0 | 56.4 | 56.6 | 11.20 | 22.55 | 11.35 | 3969.62 |
| | 1 | 21.4 | 21.5 | 23.3 | 23.4 | 79.4 | 26.5 | 22.0 | 56.3 | 56.6 | 11.20 | 22.40 | 11.20 | 3867.84 |
| | 1 | 21.5 | 21.5 | 23.1 | 23.3 | 79.4 | 26.9 | 22.1 | 56.4 | 56.6 | 11.25 | 22.30 | 11.05 | 3460.69 |
| -10 | 1 | 21.5 | 21.5 | 23.1 | 23.1 | 79.3 | 25.7 | 21.9 | 53.8 | 54.9 | 11.25 | 22.30 | 11.05 | 3257.12 |
| | 1 | 21.6 | 21.4 | 23.3 | 23.3 | 79.3 | 25.3 | 21.7 | 53.6 | 54.9 | 11.30 | 22.35 | 11.05 | 3664.26 |
| | 1 | 21.4 | 21.4 | 23.1 | 23.1 | 79.3 | 25.2 | 21.7 | 53.6 | 54.9 | 11.20 | 22.25 | 11.05 | 3460.69 |
| -30 | 1 | 21.4 | 21.4 | 23.0 | 22.8 | 79.4 | 23.0 | 21.7 | 53.9 | 54.6 | 11.20 | 22.20 | 11.00 | 3053.55 |
| | 1 | 21.3 | 21.6 | 22.7 | 22.7 | 79.4 | 23.1 | 21.7 | 53.9 | 54.6 | 11.15 | 22.15 | 11.00 | 2544.63 |
| | 1 | 21.4 | 21.4 | 22.8 | 22.8 | 79.4 | 23.1 | 21.7 | 53.9 | 54.7 | 11.20 | 22.10 | 10.90 | 2849.98 |
| -50 | 1 | 21.5 | 21.4 | 22.6 | 22.5 | 79.4 | 23.5 | 22.1 | 56.9 | 54.5 | 11.25 | 22.00 | 10.75 | 2239.27 |
| | 1 | 21.4 | 21.5 | 22.7 | 22.7 | 79.4 | 23.6 | 22.1 | 57.1 | 57.7 | 11.20 | 22.10 | 10.90 | 2544.63 |
| | 1 | 21.5 | 21.5 | 22.7 | 22.7 | 79.4 | 23.8 | 22.1 | 57.3 | 57.9 | 11.25 | 22.10 | 10.85 | 2442.84 |
| -70 | 1 | 21.5 | 21.4 | 22.4 | 22.4 | 79.4 | 24.3 | 24.6 | 60.5 | 61.0 | 11.25 | 21.90 | 10.65 | 1933.92 |
| | 1 | 21.6 | 21.5 | 22.6 | 22.5 | 79.4 | 24.4 | 24.9 | 60.7 | 61.0 | 11.30 | 22.05 | 10.75 | 2035.70 |
| | 1 | 21.6 | 21.4 | 22.6 | 22.6 | 79.4 | 24.7 | 25.3 | 60.7 | 61.1 | 11.30 | 22.00 | 10.70 | 2239.27 |
| -90 | 1 | 21.5 | 21.4 | 22.3 | 22.5 | 79.4 | 24.1 | 29.4 | 61.8 | 62.1 | 11.25 | 21.85 | 10.60 | 1933.92 |
| | 1 | 21.6 | 21.5 | 22.5 | 22.5 | 79.2 | 24.3 | 30.0 | 61.9 | 62.2 | 11.30 | 22.00 | 10.70 | 1933.92 |
| | 1 | 21.4 | 21.4 | 22.5 | 22.5 | 79.4 | 24.2 | 29.9 | 61.9 | 62.2 | 11.20 | 21.95 | 10.75 | 2239.27 |

ตาราง ก-17 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร HP62 Di 1.06 mm. Lt 15 m. Le 10 cm.

| มุม องศา | \dot{Q} (l min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti,ave (°C) | To,ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|--------------------------|
| 90 | 1 | 21.4 | 21.1 | 26.2 | 26.2 | 77.1 | 36.1 | 34.9 | 42.7 | 58.7 | 11.20 | 23.65 | 12.45 | 9027.07 |
| | 1 | 21.4 | 21.1 | 26.1 | 26.4 | 76.8 | 36.0 | 34.4 | 43.0 | 59.6 | 11.20 | 23.60 | 12.40 | 9118.25 |
| | 1 | 21.4 | 21.1 | 26.3 | 26.0 | 76.9 | 36.1 | 34.3 | 43.6 | 58.2 | 11.20 | 23.70 | 12.50 | 8935.89 |
| 80 | 1 | 21.6 | 21.1 | 26.4 | 26.2 | 73.7 | 35.4 | 34.7 | 42.3 | 59.8 | 11.30 | 23.75 | 12.45 | 9027.07 |
| | 1 | 21.6 | 21.1 | 26.1 | 26.2 | 73.9 | 34.8 | 34.4 | 43.1 | 57.9 | 11.30 | 23.60 | 12.30 | 8753.52 |
| | 1 | 21.7 | 21.1 | 26.4 | 26.2 | 72.0 | 35.0 | 34.8 | 43.4 | 58.3 | 11.35 | 23.75 | 12.40 | 8935.89 |
| 70 | 1 | 21.6 | 21.2 | 26.1 | 26.1 | 73.0 | 34.1 | 34.3 | 44.3 | 58.4 | 11.30 | 23.65 | 12.35 | 8571.16 |
| | 1 | 21.7 | 21.2 | 25.8 | 25.9 | 74.4 | 34.8 | 34.5 | 44.2 | 58.7 | 11.35 | 23.50 | 12.15 | 8024.06 |
| | 1 | 21.6 | 21.3 | 26.0 | 26.0 | 73.5 | 34.5 | 34.9 | 43.3 | 60.0 | 11.30 | 23.65 | 12.35 | 8297.61 |
| 60 | 1 | 21.6 | 21.3 | 25.7 | 26.1 | 76.1 | 32.7 | 33.4 | 41.5 | 58.8 | 11.30 | 23.50 | 12.20 | 8115.24 |
| | 1 | 21.6 | 21.3 | 25.8 | 26.1 | 76.6 | 34.0 | 32.9 | 42.4 | 59.9 | 11.30 | 23.55 | 12.25 | 8206.43 |
| | 1 | 21.6 | 21.2 | 25.8 | 25.9 | 76.9 | 33.3 | 33.2 | 42.3 | 60.1 | 11.30 | 23.50 | 12.20 | 8115.24 |
| 50 | 1 | 21.6 | 21.2 | 25.8 | 25.4 | 77.2 | 32.5 | 32.0 | 42.1 | 58.6 | 11.30 | 23.50 | 12.20 | 7659.33 |
| | 1 | 21.7 | 21.4 | 25.7 | 25.6 | 76.7 | 32.3 | 32.4 | 43.1 | 58.7 | 11.35 | 23.55 | 12.20 | 7476.97 |
| | 1 | 21.7 | 21.6 | 25.9 | 25.6 | 76.6 | 31.4 | 31.7 | 42.9 | 59.8 | 11.35 | 23.75 | 12.40 | 7476.97 |
| 40 | 1 | 21.7 | 21.4 | 25.2 | 25.2 | 76.2 | 30.1 | 30.9 | 42.9 | 59.1 | 11.35 | 23.30 | 11.95 | 6656.32 |
| | 1 | 21.4 | 21.4 | 25.4 | 25.1 | 76.2 | 30.1 | 31.1 | 43.9 | 59.6 | 11.20 | 23.40 | 12.20 | 7021.05 |
| | 1 | 21.7 | 21.4 | 25.4 | 25.5 | 76.9 | 30.2 | 30.7 | 42.6 | 61.8 | 11.35 | 23.40 | 12.05 | 7112.24 |
| 30 | 1 | 21.6 | 21.4 | 24.9 | 24.8 | 76.6 | 27.4 | 29.6 | 42.5 | 59.5 | 11.30 | 23.15 | 11.85 | 6109.23 |
| | 1 | 21.5 | 21.4 | 24.7 | 24.6 | 76.6 | 27.3 | 28.7 | 42.9 | 57.8 | 11.25 | 23.05 | 11.80 | 5835.68 |
| | 1 | 21.4 | 21.3 | 24.7 | 24.5 | 76.9 | 26.5 | 28.6 | 43.7 | 60.3 | 11.20 | 23.00 | 11.80 | 5926.86 |
| 20 | 1 | 21.5 | 21.4 | 24.1 | 24.5 | 78.0 | 24.9 | 27.7 | 44.1 | 60.4 | 11.25 | 22.75 | 11.50 | 5197.40 |
| | 1 | 21.6 | 21.4 | 24.1 | 24.1 | 78.1 | 24.7 | 27.3 | 43.7 | 59.1 | 11.30 | 22.75 | 11.45 | 4741.49 |
| | 1 | 21.4 | 21.4 | 23.9 | 24.4 | 78.2 | 24.7 | 27.4 | 44.7 | 58.9 | 11.20 | 22.65 | 11.45 | 5015.04 |
| 10 | 1 | 21.4 | 21.3 | 23.2 | 22.3 | 79.0 | 22.8 | 25.1 | 43.1 | 61.2 | 11.20 | 22.25 | 11.05 | 2553.11 |
| | 1 | 21.4 | 21.4 | 23.1 | 23.2 | 79.1 | 22.6 | 24.9 | 43.6 | 62.9 | 11.20 | 22.25 | 11.05 | 3191.39 |
| | 1 | 21.4 | 21.2 | 22.4 | 23.2 | 79.1 | 22.7 | 24.7 | 42.7 | 62.2 | 11.20 | 21.80 | 10.60 | 2735.48 |
| 0 | 1 | 21.2 | 21.3 | 21.7 | 22.1 | 79.3 | 21.4 | 24.3 | 56.8 | 57.3 | 11.10 | 21.50 | 10.40 | 1185.37 |
| | 1 | 21.2 | 21.3 | 22.3 | 22.1 | 79.2 | 21.5 | 24.6 | 56.5 | 57.7 | 11.10 | 21.80 | 10.70 | 1732.47 |
| | 1 | 21.2 | 21.2 | 21.9 | 21.8 | 79.2 | 21.4 | 24.7 | 56.6 | 57.9 | 11.10 | 21.55 | 10.45 | 1185.37 |
| -10 | 1 | 21.5 | 21.5 | 22.2 | 22.2 | 79.4 | 21.4 | 21.6 | 55.8 | 56.0 | 11.25 | 21.85 | 10.60 | 1276.56 |
| | 1 | 21.3 | 21.4 | 22.1 | 22.1 | 79.2 | 21.4 | 21.7 | 55.8 | 56.0 | 11.15 | 21.75 | 10.60 | 1367.74 |
| | 1 | 21.3 | 21.4 | 22.0 | 21.8 | 79.3 | 21.1 | 21.4 | 55.7 | 55.8 | 11.15 | 21.70 | 10.55 | 1003.01 |
| -30 | 1 | 21.3 | 21.4 | 21.7 | 21.7 | 79.3 | 21.4 | 21.4 | 55.1 | 55.3 | 11.15 | 21.55 | 10.40 | 638.28 |
| | 1 | 21.2 | 21.4 | 21.7 | 21.7 | 79.3 | 21.4 | 21.4 | 55.1 | 55.4 | 11.10 | 21.55 | 10.45 | 729.46 |
| | 1 | 21.4 | 21.5 | 21.8 | 21.8 | 79.3 | 21.4 | 21.4 | 55.0 | 55.4 | 11.20 | 21.65 | 10.45 | 638.28 |
| -50 | 1 | 21.2 | 21.2 | 21.7 | 21.8 | 79.4 | 21.4 | 21.4 | 54.4 | 54.8 | 11.10 | 21.45 | 10.35 | 1003.01 |
| | 1 | 21.3 | 21.1 | 21.7 | 21.8 | 79.4 | 21.4 | 21.4 | 54.5 | 55.1 | 11.15 | 21.40 | 10.25 | 1003.01 |
| | 1 | 21.4 | 21.2 | 21.8 | 22.0 | 79.3 | 21.4 | 21.4 | 54.5 | 54.9 | 11.20 | 21.50 | 10.30 | 1094.19 |
| -70 | 1 | 21.4 | 21.3 | 21.7 | 21.7 | 79.3 | 21.4 | 21.4 | 54.4 | 54.7 | 11.20 | 21.50 | 10.30 | 638.28 |
| | 1 | 21.3 | 21.2 | 21.7 | 21.8 | 79.4 | 21.4 | 21.4 | 54.4 | 54.4 | 11.15 | 21.45 | 10.30 | 911.83 |
| | 1 | 21.3 | 21.2 | 21.7 | 21.7 | 79.4 | 21.4 | 21.4 | 54.4 | 54.6 | 11.15 | 21.45 | 10.30 | 820.64 |
| -90 | 1 | 21.4 | 21.1 | 21.9 | 21.7 | 79.3 | 21.4 | 21.4 | 53.9 | 54.3 | 11.20 | 21.50 | 10.30 | 1003.01 |
| | 1 | 21.3 | 21.1 | 21.9 | 21.8 | 79.3 | 21.4 | 21.4 | 53.8 | 54.3 | 11.15 | 21.50 | 10.35 | 1185.37 |
| | 1 | 21.2 | 21.2 | 21.8 | 21.9 | 79.4 | 21.4 | 21.4 | 54.1 | 54.3 | 11.10 | 21.50 | 10.40 | 1185.37 |

ตาราง ก-18 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร HP62 Di 1.06 mm. Lt 15 m. Le 15 cm.

| มุม องศา | Q (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|--------------------------|
| 90 | 1 | 21.3 | 21.4 | 25.5 | 25.7 | 76.1 | 29.7 | 32.3 | 36.1 | 74.6 | 11.15 | 23.45 | 12.30 | 7750.51 |
| | 1 | 21.4 | 21.4 | 25.6 | 25.8 | 76.2 | 29.4 | 32.8 | 36.6 | 74.5 | 11.20 | 23.50 | 12.30 | 7841.70 |
| | 1 | 21.6 | 21.4 | 25.6 | 25.7 | 76.2 | 30.1 | 32.8 | 37.2 | 74.5 | 11.30 | 23.50 | 12.20 | 7568.15 |
| 80 | 1 | 21.4 | 21.4 | 25.3 | 25.2 | 76.1 | 31.7 | 32.5 | 36.9 | 74.2 | 11.20 | 23.35 | 12.15 | 7021.05 |
| | 1 | 21.3 | 21.3 | 25.3 | 25.4 | 76.3 | 31.9 | 32.5 | 36.8 | 74.2 | 11.15 | 23.30 | 12.15 | 7385.78 |
| | 1 | 21.5 | 21.4 | 25.3 | 25.4 | 76.3 | 31.7 | 32.5 | 37.1 | 74.2 | 11.25 | 23.35 | 12.10 | 7112.24 |
| 70 | 1 | 21.4 | 21.5 | 25.6 | 25.5 | 76.4 | 31.7 | 31.9 | 36.0 | 74.1 | 11.20 | 23.55 | 12.35 | 7476.97 |
| | 1 | 21.3 | 21.4 | 25.6 | 25.6 | 76.1 | 32.0 | 32.4 | 35.9 | 74.0 | 11.15 | 23.50 | 12.35 | 7750.51 |
| | 1 | 21.4 | 21.4 | 25.5 | 25.5 | 76.3 | 30.8 | 32.6 | 36.7 | 74.5 | 11.20 | 23.45 | 12.25 | 7476.97 |
| 60 | 1 | 21.4 | 21.4 | 25.5 | 25.6 | 76.7 | 30.5 | 31.7 | 36.7 | 74.6 | 11.20 | 23.45 | 12.25 | 7568.15 |
| | 1 | 21.4 | 21.3 | 25.6 | 25.6 | 76.5 | 31.8 | 31.5 | 37.3 | 74.6 | 11.20 | 23.45 | 12.25 | 7750.51 |
| | 1 | 21.4 | 21.4 | 25.6 | 25.7 | 76.5 | 31.5 | 31.6 | 35.9 | 74.9 | 11.20 | 23.50 | 12.30 | 7750.51 |
| 50 | 1 | 21.3 | 21.6 | 25.7 | 25.7 | 76.5 | 30.2 | 31.4 | 35.1 | 74.9 | 11.15 | 23.65 | 12.50 | 7750.51 |
| | 1 | 21.3 | 21.3 | 25.5 | 25.6 | 76.3 | 29.9 | 31.4 | 35.1 | 75.0 | 11.15 | 23.40 | 12.25 | 7750.51 |
| | 1 | 21.4 | 21.3 | 25.5 | 25.7 | 76.5 | 30.1 | 31.4 | 34.8 | 75.5 | 11.20 | 23.40 | 12.20 | 7750.51 |
| 40 | 1 | 21.3 | 21.4 | 25.1 | 25.1 | 76.6 | 30.2 | 30.9 | 35.1 | 75.3 | 11.15 | 23.25 | 12.10 | 6838.69 |
| | 1 | 21.4 | 21.4 | 25.3 | 25.3 | 76.0 | 30.1 | 31.2 | 35.1 | 75.4 | 11.20 | 23.35 | 12.15 | 7112.24 |
| | 1 | 21.4 | 21.3 | 25.4 | 25.4 | 76.2 | 30.1 | 30.9 | 35.1 | 75.4 | 11.20 | 23.35 | 12.15 | 7385.78 |
| 30 | 1 | 21.2 | 21.5 | 25.2 | 25.3 | 76.4 | 30.2 | 30.1 | 34.9 | 76.8 | 11.10 | 23.35 | 12.25 | 7112.24 |
| | 1 | 21.5 | 21.4 | 25.4 | 25.5 | 76.3 | 30.1 | 30.0 | 34.8 | 76.1 | 11.25 | 23.40 | 12.15 | 7294.60 |
| | 1 | 21.3 | 21.4 | 25.5 | 25.5 | 76.6 | 30.5 | 30.0 | 35.0 | 76.9 | 11.15 | 23.45 | 12.30 | 7568.15 |
| 20 | 1 | 21.4 | 21.4 | 24.9 | 24.9 | 76.6 | 29.9 | 30.0 | 34.9 | 76.9 | 11.20 | 23.15 | 11.95 | 6382.78 |
| | 1 | 21.2 | 21.1 | 25.2 | 25.2 | 76.4 | 30.0 | 30.0 | 34.8 | 76.6 | 11.10 | 23.15 | 12.05 | 7385.78 |
| | 1 | 21.3 | 21.4 | 25.4 | 25.4 | 76.4 | 30.4 | 29.8 | 34.7 | 76.6 | 11.15 | 23.40 | 12.25 | 7385.78 |
| 10 | 1 | 21.4 | 21.5 | 25.4 | 25.2 | 76.9 | 29.8 | 29.7 | 34.7 | 77.3 | 11.20 | 23.45 | 12.25 | 7021.05 |
| | 1 | 21.5 | 21.5 | 25.1 | 25.2 | 76.8 | 29.7 | 29.4 | 34.7 | 77.3 | 11.25 | 23.30 | 12.05 | 6656.32 |
| | 1 | 21.4 | 21.4 | 25.1 | 25.1 | 76.9 | 29.7 | 29.4 | 34.7 | 77.3 | 11.20 | 23.25 | 12.05 | 6747.51 |
| 0 | 1 | 21.5 | 21.3 | 21.4 | 21.6 | 78.4 | 22.1 | 21.9 | 56.6 | 52.1 | 11.25 | 21.35 | 10.10 | 182.37 |
| | 1 | 21.3 | 21.2 | 21.5 | 21.6 | 78.5 | 22.7 | 21.6 | 56.7 | 52.6 | 11.15 | 21.35 | 10.20 | 547.10 |
| | 1 | 21.2 | 21.4 | 21.7 | 21.5 | 78.5 | 22.3 | 21.9 | 56.2 | 52.8 | 11.10 | 21.55 | 10.45 | 547.10 |
| -10 | 1 | 21.4 | 21.2 | 21.7 | 21.7 | 79.2 | 21.2 | 21.2 | 58.5 | 57.4 | 11.20 | 21.45 | 10.25 | 729.46 |
| | 1 | 21.4 | 21.2 | 21.7 | 21.7 | 79.2 | 21.2 | 21.2 | 58.5 | 57.4 | 11.20 | 21.45 | 10.25 | 729.46 |
| | 1 | 21.3 | 21.2 | 21.6 | 21.7 | 79.2 | 21.2 | 21.2 | 58.5 | 57.3 | 11.15 | 21.42 | 10.27 | 702.11 |
| -30 | 1 | 21.3 | 21.3 | 21.6 | 21.8 | 79.4 | 21.1 | 21.1 | 58.3 | 57.5 | 11.15 | 21.45 | 10.30 | 729.46 |
| | 1 | 21.2 | 21.2 | 21.8 | 21.7 | 79.4 | 21.1 | 21.1 | 58.3 | 57.6 | 11.10 | 21.52 | 10.42 | 975.65 |
| | 1 | 21.3 | 21.3 | 21.8 | 21.7 | 79.3 | 21.1 | 21.1 | 58.3 | 57.6 | 11.15 | 21.55 | 10.40 | 820.64 |
| -50 | 1 | 21.1 | 21.2 | 21.7 | 21.6 | 79.3 | 21.1 | 21.1 | 58.6 | 58.0 | 11.05 | 21.45 | 10.40 | 911.83 |
| | 1 | 21.2 | 21.1 | 21.6 | 21.7 | 79.4 | 21.0 | 21.0 | 58.8 | 58.2 | 11.10 | 21.35 | 10.25 | 911.83 |
| | 1 | 21.3 | 21.4 | 21.6 | 21.6 | 79.3 | 21.1 | 21.1 | 58.6 | 58.2 | 11.15 | 21.50 | 10.35 | 455.91 |
| -70 | 1 | 21.1 | 21.1 | 21.5 | 21.6 | 79.2 | 21.1 | 21.1 | 60.4 | 59.8 | 11.05 | 21.30 | 10.25 | 820.64 |
| | 1 | 21.3 | 21.3 | 21.5 | 21.6 | 79.1 | 21.1 | 21.1 | 60.2 | 59.0 | 11.15 | 21.40 | 10.25 | 455.91 |
| | 1 | 21.3 | 21.3 | 21.7 | 21.4 | 79.1 | 21.1 | 21.1 | 60.2 | 59.9 | 11.15 | 21.50 | 10.35 | 455.91 |
| -90 | 1 | 21.4 | 21.1 | 21.6 | 21.7 | 79.2 | 21.0 | 21.0 | 62.4 | 61.6 | 11.20 | 21.35 | 10.15 | 729.46 |
| | 1 | 21.2 | 21.2 | 21.8 | 21.4 | 79.1 | 21.2 | 21.2 | 62.3 | 61.7 | 11.10 | 21.50 | 10.40 | 729.46 |
| | 1 | 21.2 | 21.1 | 21.8 | 21.4 | 79.1 | 21.0 | 21.0 | 62.4 | 61.7 | 11.10 | 21.45 | 10.35 | 820.64 |

ตาราง ก-19 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร HP62 Di 2.03 mm. Lt 5 m. Le 5 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti,ave (°C) | To,ave (°C) | Δ T (°C) | q (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 21.1 | 21.2 | 25.8 | 25.7 | 67.3 | 35.7 | 43.2 | 62.8 | 52.1 | 11.05 | 23.50 | 12.45 | 20649.33 |
| | 1 | 21.0 | 21.1 | 25.7 | 26.0 | 67.1 | 36.0 | 42.8 | 62.5 | 51.9 | 11.00 | 23.40 | 12.40 | 21547.13 |
| | 1 | 21.1 | 21.1 | 26.1 | 26.1 | 67.1 | 36.2 | 43.4 | 62.8 | 52.0 | 11.05 | 23.60 | 12.55 | 22444.93 |
| 80 | 1 | 21.1 | 21.1 | 26.1 | 26.1 | 67.1 | 36.3 | 42.4 | 62.8 | 52.1 | 11.05 | 23.60 | 12.55 | 22444.93 |
| | 1 | 21.1 | 21.0 | 25.9 | 25.9 | 67.1 | 35.9 | 42.2 | 62.7 | 52.2 | 11.05 | 23.45 | 12.40 | 21771.58 |
| | 1 | 21.0 | 21.0 | 26.0 | 26.0 | 67.4 | 35.8 | 42.8 | 63.0 | 52.2 | 11.00 | 23.50 | 12.50 | 22444.93 |
| 70 | 1 | 21.1 | 21.1 | 25.7 | 25.8 | 67.3 | 35.6 | 43.4 | 63.1 | 52.3 | 11.05 | 23.40 | 12.35 | 20873.78 |
| | 1 | 21.1 | 21.1 | 25.7 | 25.7 | 67.1 | 35.7 | 43.1 | 62.8 | 51.8 | 11.05 | 23.40 | 12.35 | 20649.33 |
| | 1 | 21.0 | 21.1 | 25.7 | 25.8 | 67.1 | 35.2 | 42.9 | 62.8 | 52.0 | 11.00 | 23.40 | 12.40 | 21098.23 |
| 60 | 1 | 21.1 | 21.1 | 26.0 | 25.8 | 67.4 | 35.1 | 43.3 | 63.3 | 52.0 | 11.05 | 23.55 | 12.50 | 21547.13 |
| | 1 | 21.1 | 21.1 | 26.0 | 26.1 | 67.4 | 35.3 | 43.4 | 62.9 | 51.5 | 11.05 | 23.55 | 12.50 | 22220.48 |
| | 1 | 21.1 | 21.1 | 25.9 | 25.8 | 67.2 | 35.1 | 42.7 | 62.9 | 51.4 | 11.05 | 23.50 | 12.45 | 21322.68 |
| 50 | 1 | 21.1 | 21.2 | 26.0 | 25.8 | 67.7 | 35.4 | 43.4 | 63.3 | 51.6 | 11.05 | 23.60 | 12.55 | 21322.68 |
| | 1 | 21.2 | 21.1 | 25.8 | 25.9 | 67.7 | 35.7 | 43.5 | 63.3 | 51.5 | 11.10 | 23.45 | 12.35 | 21098.23 |
| | 1 | 21.1 | 21.3 | 26.1 | 25.8 | 67.7 | 35.7 | 43.2 | 63.4 | 51.5 | 11.05 | 23.70 | 12.65 | 21322.68 |
| 40 | 1 | 21.1 | 21.1 | 25.3 | 25.4 | 68.0 | 35.3 | 43.1 | 63.3 | 50.6 | 11.05 | 23.20 | 12.15 | 19078.19 |
| | 1 | 21.1 | 21.1 | 25.4 | 25.5 | 68.0 | 36.0 | 43.2 | 63.5 | 50.9 | 11.05 | 23.25 | 12.20 | 19527.09 |
| | 1 | 21.1 | 21.1 | 25.3 | 25.5 | 68.1 | 35.5 | 43.2 | 63.4 | 50.9 | 11.05 | 23.20 | 12.15 | 19302.64 |
| 30 | 1 | 21.2 | 21.1 | 25.4 | 25.6 | 68.9 | 36.3 | 42.8 | 64.0 | 50.9 | 11.10 | 23.25 | 12.15 | 19527.09 |
| | 1 | 21.2 | 21.2 | 25.6 | 25.4 | 68.9 | 36.3 | 42.7 | 64.2 | 50.5 | 11.10 | 23.40 | 12.30 | 19302.64 |
| | 1 | 21.1 | 21.2 | 25.3 | 25.6 | 69.0 | 36.3 | 42.8 | 64.0 | 50.5 | 11.05 | 23.25 | 12.20 | 19302.64 |
| 20 | 1 | 21.2 | 21.2 | 25.6 | 25.6 | 69.8 | 35.7 | 42.2 | 65.0 | 50.4 | 11.10 | 23.40 | 12.30 | 19751.54 |
| | 1 | 21.2 | 21.2 | 25.3 | 25.3 | 69.6 | 35.3 | 42.1 | 64.8 | 50.1 | 11.10 | 23.25 | 12.15 | 18404.84 |
| | 1 | 21.3 | 21.2 | 25.4 | 25.4 | 69.8 | 35.4 | 42.4 | 65.0 | 50.1 | 11.15 | 23.30 | 12.15 | 18629.29 |
| 10 | 1 | 21.2 | 21.2 | 24.6 | 24.6 | 75.9 | 32.0 | 39.3 | 66.6 | 49.7 | 11.10 | 22.90 | 11.80 | 15262.55 |
| | 1 | 21.2 | 21.1 | 24.6 | 24.6 | 76.0 | 31.4 | 38.9 | 66.5 | 49.6 | 11.10 | 22.85 | 11.75 | 15487.00 |
| | 1 | 21.2 | 21.1 | 24.4 | 24.6 | 75.8 | 31.1 | 38.9 | 66.5 | 49.5 | 11.10 | 22.75 | 11.65 | 15038.10 |
| 0 | 1 | 21.2 | 21.2 | 22.1 | 21.9 | 79.1 | 22.0 | 22.3 | 61.1 | 60.1 | 11.10 | 21.65 | 10.55 | 3591.19 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.8 | 79.1 | 21.8 | 22.3 | 61.0 | 60.2 | 11.05 | 21.45 | 10.40 | 3142.29 |
| | 1 | 21.3 | 21.2 | 21.7 | 22.1 | 79.1 | 22.0 | 22.4 | 61.1 | 60.2 | 11.15 | 21.45 | 10.30 | 2917.84 |
| -10 | 1 | 21.3 | 21.2 | 21.7 | 21.9 | 79.4 | 21.9 | 22.1 | 55.5 | 52.7 | 11.15 | 21.45 | 10.30 | 2468.94 |
| | 1 | 21.2 | 21.3 | 21.7 | 21.9 | 79.4 | 22.0 | 22.1 | 55.5 | 52.5 | 11.10 | 21.50 | 10.40 | 2468.94 |
| | 1 | 21.3 | 21.2 | 21.9 | 22.0 | 79.3 | 22.1 | 22.3 | 55.6 | 52.5 | 11.15 | 21.55 | 10.40 | 3142.29 |
| -30 | 1 | 21.2 | 21.2 | 21.8 | 21.7 | 79.4 | 24.2 | 25.6 | 59.7 | 56.9 | 11.10 | 21.50 | 10.40 | 2468.94 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.8 | 79.3 | 24.4 | 25.8 | 60.0 | 57.2 | 11.05 | 21.45 | 10.40 | 3142.29 |
| | 1 | 21.3 | 21.2 | 21.9 | 21.5 | 79.4 | 25.3 | 26.7 | 60.1 | 57.4 | 11.15 | 21.55 | 10.40 | 2020.04 |
| -50 | 1 | 21.1 | 21.3 | 21.6 | 21.4 | 79.2 | 27.6 | 31.4 | 61.6 | 59.0 | 11.05 | 21.45 | 10.40 | 1346.70 |
| | 1 | 21.2 | 21.4 | 21.7 | 21.8 | 79.4 | 28.7 | 32.7 | 61.9 | 59.4 | 11.10 | 21.55 | 10.45 | 2020.04 |
| | 1 | 21.2 | 21.3 | 21.7 | 21.8 | 79.5 | 29.0 | 32.4 | 61.9 | 59.6 | 11.10 | 21.50 | 10.40 | 2244.49 |
| -70 | 1 | 21.2 | 21.4 | 21.5 | 21.7 | 79.4 | 29.6 | 34.5 | 62.2 | 59.8 | 11.10 | 21.45 | 10.35 | 1346.70 |
| | 1 | 21.3 | 21.3 | 21.5 | 21.8 | 79.5 | 30.8 | 36.0 | 62.4 | 60.2 | 11.15 | 21.40 | 10.25 | 1571.14 |
| | 1 | 21.4 | 21.4 | 21.8 | 21.5 | 79.4 | 31.1 | 36.8 | 62.8 | 61.0 | 11.20 | 21.60 | 10.40 | 1122.25 |
| -90 | 1 | 21.4 | 21.4 | 21.7 | 21.7 | 79.4 | 34.1 | 44.5 | 67.1 | 65.8 | 11.20 | 21.55 | 10.35 | 1346.70 |
| | 1 | 21.3 | 21.4 | 21.8 | 21.6 | 79.4 | 34.3 | 44.7 | 67.1 | 65.8 | 11.15 | 21.60 | 10.45 | 1571.14 |
| | 1 | 21.3 | 21.3 | 21.7 | 22.1 | 79.5 | 34.7 | 44.9 | 67.2 | 65.9 | 11.15 | 21.50 | 10.35 | 2693.39 |

ตาราง ก-20 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร HP62 Di 2.03 mm. Lt 5 m. Le 10 cm.

| มุม องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|----------------------------|
| 90 | 1 | 21.4 | 21.4 | 25.7 | 25.8 | 66.5 | 29.2 | 48.2 | 66.1 | 57.8 | 11.20 | 23.55 | 12.35 | 18132.30 |
| | 1 | 21.4 | 21.4 | 26.2 | 25.9 | 66.6 | 29.2 | 48.7 | 66.2 | 58.5 | 11.20 | 23.80 | 12.60 | 19382.80 |
| | 1 | 21.5 | 21.4 | 25.9 | 26.1 | 66.5 | 29.4 | 48.6 | 66.4 | 58.5 | 11.25 | 23.65 | 12.40 | 18965.96 |
| 80 | 1 | 21.4 | 21.4 | 25.6 | 25.7 | 65.3 | 28.7 | 48.3 | 64.1 | 57.7 | 11.20 | 23.50 | 12.30 | 17715.46 |
| | 1 | 21.4 | 21.4 | 25.5 | 25.8 | 65.9 | 29.1 | 48.8 | 65.3 | 58.7 | 11.20 | 23.45 | 12.25 | 17715.46 |
| | 1 | 21.5 | 21.4 | 25.8 | 26.0 | 65.9 | 29.1 | 48.6 | 65.4 | 58.7 | 11.25 | 23.60 | 12.35 | 18549.13 |
| 70 | 1 | 21.4 | 21.4 | 25.6 | 25.7 | 64.7 | 28.7 | 47.7 | 61.4 | 57.8 | 11.20 | 23.50 | 12.30 | 17715.46 |
| | 1 | 21.3 | 21.4 | 26.0 | 26.0 | 64.4 | 28.6 | 48.0 | 61.5 | 58.2 | 11.15 | 23.70 | 12.55 | 19382.80 |
| | 1 | 21.5 | 21.3 | 25.9 | 26.0 | 64.6 | 29.1 | 48.2 | 61.4 | 57.9 | 11.25 | 23.60 | 12.35 | 18965.96 |
| 60 | 1 | 21.4 | 21.4 | 25.7 | 25.7 | 64.2 | 28.4 | 47.8 | 60.7 | 58.0 | 11.20 | 23.55 | 12.35 | 17923.88 |
| | 1 | 21.4 | 21.4 | 26.0 | 25.7 | 64.7 | 28.5 | 47.9 | 59.9 | 57.6 | 11.20 | 23.70 | 12.50 | 18549.13 |
| | 1 | 21.4 | 21.4 | 25.8 | 25.9 | 64.6 | 28.5 | 47.9 | 59.9 | 57.6 | 11.20 | 23.60 | 12.40 | 18549.13 |
| 50 | 1 | 21.4 | 21.3 | 25.0 | 25.4 | 64.1 | 27.9 | 46.9 | 59.8 | 56.3 | 11.20 | 23.15 | 11.95 | 16048.12 |
| | 1 | 21.4 | 21.4 | 24.9 | 25.1 | 62.8 | 27.8 | 46.0 | 59.4 | 57.4 | 11.20 | 23.15 | 11.95 | 15006.04 |
| | 1 | 21.4 | 21.3 | 25.1 | 25.2 | 64.2 | 28.0 | 46.9 | 59.8 | 58.1 | 11.20 | 23.20 | 12.00 | 15839.71 |
| 40 | 1 | 21.4 | 21.3 | 25.2 | 25.1 | 63.3 | 27.1 | 44.7 | 57.9 | 55.2 | 11.20 | 23.25 | 12.05 | 15839.71 |
| | 1 | 21.4 | 21.4 | 24.9 | 24.9 | 62.0 | 26.9 | 44.6 | 57.9 | 54.4 | 11.20 | 23.15 | 11.95 | 14589.20 |
| | 1 | 21.4 | 21.4 | 25.3 | 24.8 | 63.8 | 26.7 | 44.1 | 57.6 | 54.9 | 11.20 | 23.35 | 12.15 | 15214.45 |
| 30 | 1 | 21.3 | 21.3 | 25.4 | 24.9 | 62.8 | 27.0 | 45.3 | 59.1 | 53.9 | 11.15 | 23.35 | 12.20 | 16048.12 |
| | 1 | 21.2 | 21.2 | 25.0 | 24.8 | 63.8 | 27.1 | 45.5 | 59.2 | 54.6 | 11.10 | 23.10 | 12.00 | 15422.87 |
| | 1 | 21.3 | 21.3 | 25.2 | 25.3 | 63.4 | 27.1 | 45.3 | 59.3 | 54.4 | 11.15 | 23.25 | 12.10 | 16464.96 |
| 20 | 1 | 21.4 | 21.4 | 25.1 | 24.9 | 64.4 | 27.0 | 45.3 | 60.1 | 54.2 | 11.20 | 23.25 | 12.05 | 15006.04 |
| | 1 | 21.4 | 21.3 | 25.1 | 25.1 | 64.2 | 27.1 | 45.5 | 60.1 | 52.7 | 11.20 | 23.20 | 12.00 | 15631.29 |
| | 1 | 21.3 | 21.3 | 25.4 | 25.4 | 64.2 | 27.1 | 45.4 | 60.1 | 52.6 | 11.15 | 23.35 | 12.20 | 17090.21 |
| 10 | 1 | 21.3 | 21.4 | 24.9 | 24.9 | 65.6 | 25.3 | 47.0 | 61.4 | 49.4 | 11.15 | 23.15 | 12.00 | 14797.62 |
| | 1 | 21.3 | 21.4 | 25.2 | 25.2 | 65.6 | 25.4 | 47.3 | 61.4 | 49.3 | 11.15 | 23.30 | 12.15 | 16048.12 |
| | 1 | 21.3 | 21.3 | 25.0 | 24.9 | 65.6 | 25.4 | 47.1 | 61.3 | 49.3 | 11.15 | 23.15 | 12.00 | 15214.45 |
| 0 | 1 | 21.1 | 21.1 | 21.5 | 21.5 | 79.7 | 21.3 | 21.8 | 61.0 | 60.0 | 11.05 | 21.30 | 10.25 | 1667.34 |
| | 1 | 21.1 | 21.2 | 21.5 | 21.7 | 79.7 | 21.2 | 21.7 | 61.1 | 60.0 | 11.05 | 21.35 | 10.30 | 1875.75 |
| | 1 | 21.1 | 21.2 | 21.4 | 21.6 | 79.7 | 21.2 | 21.6 | 61.2 | 59.9 | 11.05 | 21.30 | 10.25 | 1458.92 |
| -10 | 1 | 21.4 | 21.4 | 21.7 | 21.9 | 79.6 | 21.8 | 21.6 | 57.0 | 55.2 | 11.20 | 21.55 | 10.35 | 1667.34 |
| | 1 | 21.4 | 21.4 | 21.7 | 21.8 | 79.8 | 21.6 | 21.5 | 57.0 | 52.7 | 11.20 | 21.55 | 10.35 | 1458.92 |
| | 1 | 21.5 | 21.4 | 21.7 | 21.7 | 79.7 | 21.6 | 21.5 | 57.0 | 52.7 | 11.25 | 21.55 | 10.30 | 1042.09 |
| -30 | 1 | 21.3 | 21.2 | 21.4 | 21.4 | 79.6 | 21.4 | 21.3 | 57.0 | 52.7 | 11.15 | 21.30 | 10.15 | 625.25 |
| | 1 | 21.3 | 21.3 | 21.5 | 21.4 | 79.6 | 21.4 | 21.3 | 57.0 | 52.7 | 11.15 | 21.40 | 10.25 | 625.25 |
| | 1 | 21.3 | 21.2 | 21.4 | 21.4 | 79.6 | 21.4 | 21.3 | 57.0 | 52.7 | 11.15 | 21.30 | 10.15 | 625.25 |
| -50 | 1 | 21.4 | 21.4 | 21.4 | 21.4 | 79.7 | 21.4 | 21.3 | 57.0 | 52.7 | 11.20 | 21.40 | 10.20 | 0.00 |
| | 1 | 21.4 | 21.4 | 21.4 | 21.4 | 79.7 | 21.4 | 21.4 | 57.3 | 52.8 | 11.20 | 21.40 | 10.20 | 0.00 |
| | 1 | 21.4 | 21.4 | 21.5 | 21.6 | 79.7 | 21.3 | 21.4 | 57.3 | 52.9 | 11.20 | 21.45 | 10.25 | 625.25 |
| -70 | 1 | 21.4 | 21.4 | 21.5 | 21.5 | 79.7 | 21.4 | 21.4 | 57.0 | 52.7 | 11.20 | 21.45 | 10.25 | 416.83 |
| | 1 | 21.4 | 21.4 | 21.5 | 21.5 | 79.4 | 21.4 | 21.4 | 57.1 | 52.7 | 11.20 | 21.45 | 10.25 | 416.83 |
| | 1 | 21.6 | 21.4 | 21.5 | 21.5 | 79.7 | 21.4 | 21.4 | 57.1 | 52.7 | 11.30 | 21.45 | 10.15 | 0.00 |
| -90 | 1 | 21.4 | 21.4 | 21.6 | 21.6 | 79.7 | 21.4 | 21.4 | 57.0 | 52.7 | 11.20 | 21.50 | 10.30 | 833.67 |
| | 1 | 21.3 | 21.3 | 21.5 | 21.5 | 79.6 | 21.4 | 21.4 | 57.0 | 52.7 | 11.15 | 21.40 | 10.25 | 833.67 |
| | 1 | 21.4 | 21.4 | 21.5 | 21.6 | 79.6 | 21.4 | 21.4 | 57.0 | 52.7 | 11.20 | 21.45 | 10.25 | 625.25 |

ตาราง ก-21 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ไส้สาร HP62 Di 2.03 mm. Lt 5 m. Le 15 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | η (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|------------|--------------------------|
| 90 | 1 | 21.6 | 21.6 | 26.0 | 25.9 | 67.5 | 34.1 | 34.1 | 61.5 | 41.7 | 11.30 | 23.80 | 12.50 | 16923.48 |
| | 1 | 21.4 | 21.5 | 25.7 | 25.9 | 67.4 | 32.7 | 32.7 | 61.4 | 41.7 | 11.20 | 23.60 | 12.40 | 16923.48 |
| | 1 | 21.5 | 21.4 | 25.7 | 26.1 | 67.4 | 32.4 | 32.4 | 61.3 | 41.7 | 11.25 | 23.55 | 12.30 | 17312.52 |
| 80 | 1 | 21.5 | 21.4 | 25.4 | 25.3 | 67.7 | 35.3 | 35.3 | 62.2 | 42.7 | 11.25 | 23.40 | 12.15 | 15172.77 |
| | 1 | 21.5 | 21.4 | 25.4 | 25.5 | 67.9 | 33.5 | 33.5 | 62.2 | 42.4 | 11.25 | 23.40 | 12.15 | 15561.82 |
| | 1 | 21.4 | 21.4 | 25.4 | 25.4 | 67.8 | 34.1 | 34.1 | 62.2 | 42.6 | 11.20 | 23.40 | 12.20 | 15561.82 |
| 70 | 1 | 21.4 | 21.4 | 25.4 | 25.4 | 68.3 | 36.7 | 36.7 | 63.0 | 42.5 | 11.20 | 23.40 | 12.20 | 15561.82 |
| | 1 | 21.5 | 21.3 | 25.3 | 25.3 | 68.2 | 36.2 | 36.2 | 62.9 | 42.2 | 11.25 | 23.30 | 12.05 | 15172.77 |
| | 1 | 21.4 | 21.3 | 25.3 | 25.2 | 68.2 | 35.0 | 35.0 | 63.1 | 42.4 | 11.20 | 23.30 | 12.10 | 15172.77 |
| 60 | 1 | 21.4 | 21.4 | 24.9 | 25.0 | 68.8 | 33.9 | 33.9 | 63.8 | 42.1 | 11.20 | 23.15 | 11.95 | 13811.11 |
| | 1 | 21.4 | 21.3 | 25.0 | 25.1 | 68.9 | 35.9 | 35.9 | 64.0 | 42.2 | 11.20 | 23.15 | 11.95 | 14394.68 |
| | 1 | 21.7 | 21.4 | 25.1 | 25.1 | 68.9 | 35.4 | 35.4 | 63.9 | 42.4 | 11.35 | 23.25 | 11.90 | 13811.11 |
| 50 | 1 | 21.4 | 21.4 | 25.0 | 24.8 | 69.8 | 34.8 | 34.8 | 65.2 | 42.1 | 11.20 | 23.20 | 12.00 | 13616.59 |
| | 1 | 21.6 | 21.4 | 24.9 | 24.9 | 69.7 | 36.3 | 36.3 | 65.2 | 42.2 | 11.30 | 23.15 | 11.85 | 13227.54 |
| | 1 | 21.5 | 21.4 | 24.8 | 24.9 | 69.7 | 36.5 | 36.5 | 65.2 | 42.2 | 11.25 | 23.10 | 11.85 | 13227.54 |
| 40 | 1 | 21.5 | 21.4 | 24.7 | 24.7 | 70.7 | 34.5 | 34.5 | 66.4 | 41.7 | 11.25 | 23.05 | 11.80 | 12643.98 |
| | 1 | 21.5 | 21.4 | 24.7 | 24.7 | 70.7 | 35.3 | 35.3 | 66.4 | 41.8 | 11.25 | 23.05 | 11.80 | 12643.98 |
| | 1 | 21.4 | 21.3 | 24.7 | 24.7 | 70.6 | 36.2 | 36.2 | 66.4 | 41.8 | 11.20 | 23.00 | 11.80 | 13033.02 |
| 30 | 1 | 21.5 | 21.4 | 24.5 | 24.6 | 71.8 | 37.0 | 37.0 | 67.8 | 41.5 | 11.25 | 22.95 | 11.70 | 12060.41 |
| | 1 | 21.4 | 21.5 | 24.4 | 24.6 | 71.8 | 35.6 | 35.6 | 67.7 | 41.2 | 11.20 | 22.95 | 11.75 | 11865.89 |
| | 1 | 21.7 | 21.4 | 24.4 | 24.4 | 71.7 | 34.1 | 34.1 | 67.7 | 41.1 | 11.35 | 22.90 | 11.55 | 11087.79 |
| 20 | 1 | 21.6 | 21.7 | 24.2 | 24.1 | 75.7 | 35.9 | 35.9 | 72.3 | 39.8 | 11.30 | 22.95 | 11.65 | 9726.14 |
| | 1 | 21.5 | 21.4 | 24.2 | 24.1 | 75.7 | 36.5 | 36.5 | 72.3 | 39.9 | 11.25 | 22.80 | 11.55 | 10504.23 |
| | 1 | 21.6 | 21.8 | 24.2 | 24.2 | 75.8 | 35.2 | 35.2 | 72.3 | 39.9 | 11.30 | 23.00 | 11.70 | 9726.14 |
| 10 | 1 | 21.4 | 21.6 | 23.4 | 23.5 | 76.7 | 33.0 | 33.0 | 74.5 | 34.9 | 11.20 | 22.50 | 11.30 | 7586.39 |
| | 1 | 21.5 | 21.4 | 23.2 | 23.3 | 76.6 | 33.9 | 33.9 | 74.4 | 34.8 | 11.25 | 22.30 | 11.05 | 7002.82 |
| | 1 | 21.5 | 21.4 | 23.4 | 23.4 | 76.7 | 33.4 | 33.4 | 74.4 | 34.9 | 11.25 | 22.40 | 11.15 | 7586.39 |
| 0 | 1 | 21.6 | 21.3 | 22.1 | 22.4 | 79.7 | 23.3 | 23.3 | 57.3 | 57.0 | 11.30 | 21.70 | 10.40 | 3112.36 |
| | 1 | 21.7 | 21.6 | 22.4 | 22.5 | 79.7 | 23.5 | 23.5 | 57.4 | 57.0 | 11.35 | 22.00 | 10.65 | 3112.36 |
| | 1 | 21.6 | 21.7 | 22.4 | 22.5 | 79.7 | 23.5 | 23.5 | 57.7 | 56.9 | 11.30 | 22.05 | 10.75 | 3112.36 |
| -10 | 1 | 21.6 | 21.5 | 21.7 | 22.5 | 79.7 | 21.7 | 21.7 | 51.7 | 54.6 | 11.30 | 21.60 | 10.30 | 2139.75 |
| | 1 | 21.6 | 21.5 | 21.7 | 22.6 | 79.7 | 21.7 | 21.7 | 51.7 | 54.6 | 11.30 | 21.60 | 10.30 | 2334.27 |
| | 1 | 21.5 | 21.4 | 21.6 | 22.4 | 79.7 | 21.6 | 21.6 | 51.6 | 54.4 | 11.25 | 21.50 | 10.25 | 2139.75 |
| -30 | 1 | 21.5 | 21.5 | 21.4 | 22.4 | 79.7 | 21.6 | 21.6 | 50.8 | 53.8 | 11.25 | 21.45 | 10.20 | 1556.18 |
| | 1 | 21.5 | 21.5 | 21.7 | 22.4 | 79.7 | 21.5 | 21.5 | 50.8 | 53.8 | 11.25 | 21.60 | 10.35 | 2139.75 |
| | 1 | 21.6 | 21.5 | 21.7 | 22.4 | 79.7 | 21.5 | 21.5 | 50.8 | 53.8 | 11.30 | 21.60 | 10.30 | 1945.23 |
| -50 | 1 | 21.4 | 21.5 | 21.7 | 22.4 | 79.7 | 21.5 | 21.5 | 50.6 | 54.0 | 11.20 | 21.60 | 10.40 | 2334.27 |
| | 1 | 21.4 | 21.4 | 21.7 | 22.4 | 79.7 | 21.5 | 21.5 | 50.6 | 54.0 | 11.20 | 21.55 | 10.35 | 2528.80 |
| | 1 | 21.4 | 21.4 | 21.7 | 22.4 | 79.7 | 21.5 | 21.5 | 50.7 | 53.9 | 11.20 | 21.55 | 10.35 | 2528.80 |
| -70 | 1 | 21.4 | 21.4 | 21.7 | 22.2 | 79.7 | 21.5 | 21.5 | 50.8 | 53.6 | 11.20 | 21.55 | 10.35 | 2139.75 |
| | 1 | 21.5 | 21.5 | 21.6 | 22.1 | 79.7 | 21.5 | 21.5 | 50.7 | 53.6 | 11.25 | 21.55 | 10.30 | 1361.66 |
| | 1 | 21.4 | 21.5 | 21.7 | 22.2 | 79.7 | 21.5 | 21.5 | 50.7 | 53.6 | 11.20 | 21.60 | 10.40 | 1945.23 |
| -90 | 1 | 21.5 | 21.4 | 21.7 | 22.1 | 79.7 | 21.5 | 21.5 | 50.6 | 53.3 | 11.25 | 21.55 | 10.30 | 1750.70 |
| | 1 | 21.4 | 21.5 | 21.6 | 22.0 | 79.7 | 21.4 | 21.4 | 50.6 | 53.3 | 11.20 | 21.55 | 10.35 | 1361.66 |
| | 1 | 21.4 | 21.4 | 21.6 | 22.0 | 79.7 | 21.5 | 21.5 | 50.6 | 53.3 | 11.20 | 21.50 | 10.30 | 1556.18 |

ตาราง ก-22 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 2.03 mm. Lt 10 m. Le 5 cm.

| อุณหภูมิ องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W.m ²) |
|------------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|----------------------------|
| 90 | 1 | 21.1 | 20.9 | 35.1 | 36.0 | 66.5 | 60.6 | 54.3 | 59.1 | 66.5 | 11.05 | 28.00 | 16.95 | 30324.70 |
| | 1 | 21.1 | 21.0 | 34.7 | 35.7 | 66.8 | 60.5 | 54.9 | 60.0 | 67.0 | 11.05 | 27.85 | 16.80 | 29491.03 |
| | 1 | 21.1 | 21.0 | 35.8 | 35.9 | 66.9 | 60.7 | 54.4 | 60.5 | 67.0 | 11.05 | 28.40 | 17.35 | 30845.74 |
| 80 | 1 | 21.0 | 21.0 | 34.8 | 34.3 | 66.7 | 59.8 | 52.2 | 59.3 | 66.5 | 11.00 | 27.90 | 16.90 | 28240.53 |
| | 1 | 21.1 | 21.1 | 34.4 | 34.9 | 66.2 | 60.7 | 52.5 | 59.3 | 66.5 | 11.05 | 27.75 | 16.70 | 28240.53 |
| | 1 | 21.1 | 21.1 | 34.8 | 34.4 | 66.5 | 60.5 | 52.4 | 59.5 | 66.5 | 11.05 | 27.95 | 16.90 | 28136.32 |
| 70 | 1 | 21.1 | 21.0 | 33.5 | 33.9 | 66.9 | 60.1 | 52.0 | 59.5 | 66.1 | 11.05 | 27.25 | 16.20 | 26364.77 |
| | 1 | 21.0 | 21.0 | 33.9 | 33.9 | 66.5 | 60.7 | 51.7 | 59.6 | 66.3 | 11.00 | 27.45 | 16.45 | 26885.82 |
| | 1 | 21.0 | 21.1 | 34.4 | 34.0 | 66.8 | 60.4 | 52.7 | 59.1 | 66.4 | 11.00 | 27.75 | 16.75 | 27406.86 |
| 60 | 1 | 21.0 | 20.9 | 33.7 | 33.5 | 66.2 | 58.8 | 51.2 | 58.7 | 65.9 | 11.00 | 27.30 | 16.30 | 26364.77 |
| | 1 | 21.1 | 21.1 | 33.9 | 34.4 | 66.2 | 59.2 | 51.6 | 58.7 | 65.6 | 11.05 | 27.50 | 16.45 | 27198.44 |
| | 1 | 21.0 | 21.0 | 34.1 | 33.7 | 66.4 | 59.1 | 51.1 | 58.9 | 66.0 | 11.00 | 27.55 | 16.55 | 26885.82 |
| 50 | 1 | 21.1 | 21.0 | 33.6 | 33.9 | 66.5 | 59.0 | 50.7 | 58.7 | 65.9 | 11.05 | 27.30 | 16.25 | 26468.98 |
| | 1 | 21.1 | 21.0 | 33.9 | 34.1 | 66.5 | 58.5 | 51.0 | 59.2 | 66.2 | 11.05 | 27.45 | 16.40 | 26990.03 |
| | 1 | 21.1 | 21.1 | 34.2 | 34.1 | 66.5 | 59.0 | 51.1 | 58.1 | 66.2 | 11.05 | 27.65 | 16.60 | 27198.44 |
| 40 | 1 | 21.1 | 21.2 | 33.7 | 34.1 | 66.8 | 56.7 | 50.1 | 57.8 | 66.0 | 11.05 | 27.45 | 16.40 | 26573.19 |
| | 1 | 21.1 | 21.1 | 34.0 | 34.2 | 66.8 | 57.5 | 49.8 | 58.5 | 66.3 | 11.05 | 27.55 | 16.50 | 27094.23 |
| | 1 | 21.1 | 21.1 | 34.1 | 33.7 | 66.6 | 56.6 | 49.8 | 58.8 | 66.2 | 11.05 | 27.60 | 16.55 | 26677.40 |
| 30 | 1 | 21.1 | 21.0 | 33.3 | 33.2 | 66.6 | 55.4 | 47.6 | 58.1 | 65.9 | 11.05 | 27.15 | 16.10 | 25426.90 |
| | 1 | 21.1 | 21.0 | 32.4 | 33.0 | 66.4 | 55.2 | 47.2 | 57.9 | 66.2 | 11.05 | 26.70 | 15.65 | 24280.60 |
| | 1 | 21.0 | 21.0 | 32.9 | 32.8 | 66.7 | 54.8 | 47.2 | 58.2 | 65.9 | 11.00 | 26.95 | 15.95 | 24697.44 |
| 20 | 1 | 21.1 | 21.1 | 31.6 | 31.5 | 64.9 | 48.6 | 42.3 | 53.0 | 63.6 | 11.05 | 26.35 | 15.30 | 21779.60 |
| | 1 | 21.1 | 20.9 | 30.8 | 31.1 | 64.5 | 46.6 | 42.1 | 53.3 | 63.5 | 11.05 | 25.85 | 14.80 | 20737.51 |
| | 1 | 21.1 | 21.0 | 31.2 | 31.0 | 65.6 | 48.7 | 41.5 | 54.1 | 63.0 | 11.05 | 26.10 | 15.05 | 20945.93 |
| 10 | 1 | 21.1 | 21.1 | 29.4 | 29.7 | 65.2 | 42.4 | 37.3 | 57.2 | 62.7 | 11.05 | 25.25 | 14.20 | 17611.25 |
| | 1 | 21.1 | 21.1 | 29.4 | 29.4 | 65.4 | 40.7 | 38.6 | 53.6 | 63.7 | 11.05 | 25.25 | 14.20 | 17298.63 |
| | 1 | 21.1 | 21.1 | 29.1 | 29.4 | 65.0 | 38.4 | 36.1 | 54.8 | 63.5 | 11.05 | 25.10 | 14.05 | 16986.00 |
| 0 | 1 | 21.1 | 21.0 | 24.1 | 24.1 | 78.7 | 23.7 | 22.5 | 64.1 | 61.6 | 11.05 | 22.55 | 11.50 | 6356.72 |
| | 1 | 21.0 | 20.9 | 24.0 | 24.4 | 78.5 | 23.6 | 22.5 | 64.1 | 61.6 | 11.00 | 22.45 | 11.45 | 6773.56 |
| | 1 | 21.1 | 21.0 | 24.2 | 24.3 | 78.6 | 23.7 | 22.5 | 64.2 | 61.7 | 11.05 | 22.60 | 11.55 | 6669.35 |
| -10 | 1 | 21.7 | 20.9 | 22.4 | 22.2 | 79.1 | 21.5 | 24.5 | 58.5 | 57.4 | 11.35 | 21.65 | 10.30 | 2084.17 |
| | 1 | 21.7 | 20.9 | 23.1 | 22.3 | 79.3 | 21.4 | 24.7 | 58.5 | 57.4 | 11.35 | 22.00 | 10.65 | 2917.84 |
| | 1 | 21.6 | 20.9 | 22.4 | 22.5 | 79.2 | 21.5 | 24.7 | 58.5 | 57.3 | 11.30 | 21.65 | 10.35 | 2501.01 |
| -30 | 1 | 21.6 | 20.9 | 22.4 | 22.3 | 79.3 | 21.6 | 23.3 | 58.3 | 57.5 | 11.30 | 21.65 | 10.35 | 2292.59 |
| | 1 | 21.7 | 20.9 | 21.9 | 22.4 | 79.2 | 21.6 | 23.4 | 58.3 | 57.6 | 11.35 | 21.40 | 10.05 | 1771.55 |
| | 1 | 21.5 | 21.0 | 22.6 | 22.6 | 79.2 | 21.6 | 23.5 | 58.3 | 57.6 | 11.25 | 21.80 | 10.55 | 2813.63 |
| -50 | 1 | 21.5 | 20.9 | 22.4 | 22.4 | 79.3 | 21.6 | 22.7 | 58.6 | 58.0 | 11.25 | 21.65 | 10.40 | 2501.01 |
| | 1 | 21.6 | 21.0 | 22.3 | 22.4 | 79.4 | 21.7 | 22.7 | 58.8 | 58.2 | 11.30 | 21.65 | 10.35 | 2188.38 |
| | 1 | 21.7 | 21.0 | 22.4 | 22.5 | 79.4 | 21.7 | 22.8 | 58.6 | 58.2 | 11.35 | 21.70 | 10.35 | 2292.59 |
| -70 | 1 | 21.5 | 21.0 | 22.2 | 22.4 | 79.4 | 21.7 | 22.7 | 60.4 | 59.8 | 11.25 | 21.60 | 10.35 | 2188.38 |
| | 1 | 21.4 | 21.0 | 22.1 | 22.4 | 79.3 | 21.7 | 22.8 | 60.4 | 59.7 | 11.20 | 21.55 | 10.35 | 2188.38 |
| | 1 | 21.5 | 21.1 | 22.4 | 22.3 | 79.3 | 21.8 | 22.8 | 60.4 | 59.9 | 11.25 | 21.75 | 10.50 | 2188.38 |
| -90 | 1 | 21.4 | 20.9 | 22.1 | 22.4 | 79.3 | 21.7 | 22.7 | 62.3 | 61.6 | 11.20 | 21.50 | 10.30 | 2292.59 |
| | 1 | 21.4 | 20.9 | 22.0 | 22.1 | 79.3 | 21.7 | 22.7 | 62.3 | 61.7 | 11.20 | 21.45 | 10.25 | 1875.75 |
| | 1 | 21.4 | 21.0 | 22.0 | 22.4 | 79.4 | 21.7 | 22.7 | 62.4 | 61.7 | 11.20 | 21.50 | 10.30 | 2084.17 |

ตาราง ก-23 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 2.03 mm, Lt 10 m, Le 10 cm.

| มุม องศา | Q̇ (l/min) | Ti,1 (°C) | Ti,2 (°C) | To,1 (°C) | To,2 (°C) | Tevap (°C) | Tc,1 (°C) | Tc,2 (°C) | Ta,1 (°C) | Ta,2 (°C) | Ti,ave (°C) | To,ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|------------|--------------------------|
| 90 | 1 | 21.2 | 21.2 | 34.0 | 33.9 | 68.3 | 52.4 | 53.7 | 66.3 | 44.1 | 11.10 | 27.60 | 16.50 | 23251.54 |
| | 1 | 21.1 | 21.2 | 33.4 | 34.5 | 68.2 | 52.3 | 53.4 | 66.4 | 44.5 | 11.05 | 27.30 | 16.25 | 23342.72 |
| | 1 | 21.1 | 21.3 | 35.3 | 35.4 | 68.6 | 52.7 | 53.9 | 66.4 | 45.1 | 11.05 | 28.30 | 17.25 | 25804.65 |
| 80 | 1 | 21.2 | 21.4 | 34.4 | 33.9 | 68.6 | 51.5 | 54.2 | 65.9 | 44.8 | 11.10 | 27.90 | 16.80 | 23433.91 |
| | 1 | 21.2 | 21.1 | 34.1 | 33.1 | 68.5 | 51.8 | 54.3 | 64.9 | 44.3 | 11.10 | 27.60 | 16.50 | 22704.45 |
| | 1 | 21.1 | 21.2 | 34.1 | 34.2 | 68.7 | 51.7 | 54.3 | 65.6 | 44.8 | 11.05 | 27.65 | 16.60 | 23707.46 |
| 70 | 1 | 21.3 | 21.3 | 33.8 | 34.4 | 68.6 | 49.8 | 53.9 | 65.9 | 44.8 | 11.15 | 27.55 | 16.40 | 23342.72 |
| | 1 | 21.4 | 21.4 | 33.8 | 33.4 | 68.3 | 50.0 | 54.4 | 64.6 | 45.8 | 11.20 | 27.60 | 16.40 | 22248.53 |
| | 1 | 21.3 | 21.3 | 33.2 | 34.3 | 68.3 | 50.3 | 54.0 | 64.4 | 44.3 | 11.15 | 27.25 | 16.10 | 22704.45 |
| 60 | 1 | 21.2 | 21.2 | 33.2 | 32.4 | 68.6 | 46.9 | 52.7 | 67.4 | 43.6 | 11.10 | 27.20 | 16.10 | 21154.34 |
| | 1 | 21.1 | 21.1 | 33.4 | 33.6 | 68.6 | 46.6 | 52.7 | 67.8 | 43.9 | 11.05 | 27.25 | 16.20 | 22613.26 |
| | 1 | 21.2 | 21.2 | 34.1 | 33.6 | 68.5 | 46.9 | 53.0 | 67.5 | 44.2 | 11.10 | 27.65 | 16.55 | 23069.18 |
| 50 | 1 | 21.3 | 21.2 | 33.5 | 33.4 | 68.9 | 44.7 | 49.3 | 69.2 | 42.9 | 11.15 | 27.35 | 16.20 | 22248.53 |
| | 1 | 21.2 | 21.1 | 32.9 | 33.5 | 69.0 | 44.5 | 48.2 | 68.6 | 42.7 | 11.10 | 27.00 | 15.90 | 21974.99 |
| | 1 | 21.2 | 21.1 | 32.3 | 33.7 | 68.9 | 44.7 | 48.1 | 68.5 | 42.1 | 11.10 | 26.70 | 15.60 | 21610.26 |
| 40 | 1 | 21.2 | 21.2 | 32.4 | 32.3 | 69.8 | 41.8 | 42.8 | 69.8 | 43.6 | 11.10 | 26.80 | 15.70 | 20333.70 |
| | 1 | 21.2 | 21.3 | 32.0 | 32.4 | 69.9 | 41.8 | 43.3 | 70.3 | 43.0 | 11.10 | 26.65 | 15.55 | 19968.97 |
| | 1 | 21.2 | 21.3 | 31.3 | 32.1 | 69.5 | 41.8 | 43.1 | 70.0 | 43.9 | 11.10 | 26.30 | 15.20 | 19057.15 |
| 30 | 1 | 21.1 | 21.1 | 31.4 | 31.1 | 70.5 | 38.3 | 40.3 | 72.2 | 45.3 | 11.05 | 26.25 | 15.20 | 18510.05 |
| | 1 | 21.2 | 21.1 | 31.5 | 31.3 | 70.6 | 38.5 | 40.5 | 72.1 | 44.7 | 11.10 | 26.30 | 15.20 | 18692.42 |
| | 1 | 21.2 | 21.1 | 31.4 | 31.4 | 70.2 | 38.3 | 40.4 | 72.1 | 45.0 | 11.10 | 26.25 | 15.15 | 18692.42 |
| 20 | 1 | 21.2 | 21.4 | 29.3 | 30.7 | 70.8 | 37.6 | 40.1 | 73.5 | 48.4 | 11.10 | 25.35 | 14.25 | 15865.76 |
| | 1 | 21.2 | 21.1 | 30.0 | 30.6 | 70.6 | 37.3 | 39.1 | 73.6 | 48.5 | 11.10 | 25.55 | 14.45 | 16686.40 |
| | 1 | 21.2 | 21.1 | 29.5 | 30.4 | 71.1 | 36.9 | 40.3 | 73.0 | 47.7 | 11.10 | 25.30 | 14.20 | 16048.12 |
| 10 | 1 | 21.2 | 21.2 | 28.0 | 29.4 | 71.7 | 34.6 | 37.4 | 74.9 | 48.9 | 11.10 | 24.60 | 13.50 | 13677.38 |
| | 1 | 21.4 | 21.1 | 28.5 | 28.4 | 71.4 | 34.6 | 37.1 | 74.2 | 48.8 | 11.20 | 24.80 | 13.60 | 13130.28 |
| | 1 | 21.3 | 21.2 | 29.3 | 28.6 | 71.7 | 34.6 | 37.2 | 74.2 | 48.8 | 11.15 | 25.25 | 14.10 | 14042.11 |
| 0 | 1 | 21.3 | 21.1 | 21.7 | 21.8 | 79.2 | 22.4 | 21.6 | 72.3 | 67.3 | 11.15 | 21.40 | 10.25 | 1003.01 |
| | 1 | 21.3 | 21.2 | 21.7 | 21.9 | 79.2 | 22.4 | 21.7 | 71.7 | 67.2 | 11.15 | 21.45 | 10.30 | 1003.01 |
| | 1 | 21.4 | 21.3 | 21.7 | 21.8 | 79.2 | 22.5 | 21.7 | 71.1 | 67.1 | 11.20 | 21.50 | 10.30 | 729.46 |
| -10 | 1 | 21.4 | 21.4 | 21.7 | 21.5 | 79.1 | 21.2 | 21.3 | 68.0 | 53.7 | 11.20 | 21.55 | 10.35 | 364.73 |
| | 1 | 21.4 | 21.4 | 21.7 | 21.5 | 79.1 | 21.2 | 21.3 | 67.9 | 53.7 | 11.20 | 21.55 | 10.35 | 364.73 |
| | 1 | 21.4 | 21.4 | 21.7 | 21.5 | 79.2 | 21.2 | 21.3 | 68.0 | 53.6 | 11.20 | 21.55 | 10.35 | 364.73 |
| -30 | 1 | 21.3 | 21.2 | 21.6 | 21.4 | 79.1 | 21.1 | 21.2 | 69.4 | 53.0 | 11.15 | 21.40 | 10.25 | 455.91 |
| | 1 | 21.3 | 21.2 | 21.6 | 21.5 | 79.2 | 21.1 | 21.2 | 69.4 | 53.1 | 11.15 | 21.40 | 10.25 | 547.10 |
| | 1 | 21.3 | 21.3 | 21.6 | 21.4 | 79.2 | 21.1 | 21.2 | 69.5 | 53.0 | 11.15 | 21.45 | 10.30 | 364.73 |
| -50 | 1 | 21.4 | 21.4 | 21.7 | 21.4 | 79.0 | 21.1 | 21.2 | 68.0 | 53.7 | 11.20 | 21.55 | 10.35 | 273.55 |
| | 1 | 21.3 | 21.4 | 21.7 | 21.4 | 78.7 | 21.0 | 21.1 | 67.7 | 53.5 | 11.15 | 21.55 | 10.40 | 364.73 |
| | 1 | 21.3 | 21.3 | 21.7 | 21.4 | 79.0 | 21.1 | 21.1 | 67.9 | 53.6 | 11.15 | 21.50 | 10.35 | 455.91 |
| -70 | 1 | 21.4 | 21.4 | 21.7 | 21.5 | 79.2 | 21.1 | 21.1 | 67.6 | 54.9 | 11.20 | 21.55 | 10.35 | 364.73 |
| | 1 | 21.4 | 21.4 | 21.7 | 21.5 | 79.1 | 21.1 | 21.3 | 67.4 | 54.9 | 11.20 | 21.55 | 10.35 | 364.73 |
| | 1 | 21.4 | 21.4 | 21.7 | 21.5 | 79.1 | 21.1 | 21.2 | 67.4 | 54.9 | 11.20 | 21.55 | 10.35 | 364.73 |
| -90 | 1 | 21.3 | 21.4 | 21.5 | 21.4 | 79.1 | 21.0 | 21.1 | 67.7 | 55.4 | 11.15 | 21.45 | 10.30 | 182.37 |
| | 1 | 21.2 | 21.3 | 21.5 | 21.4 | 79.1 | 20.9 | 21.1 | 67.7 | 55.3 | 11.10 | 21.40 | 10.30 | 364.73 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.4 | 79.2 | 21.0 | 21.1 | 67.7 | 55.2 | 11.05 | 21.25 | 10.20 | 547.10 |

ตาราง ก-24 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ไส้สาร HP62 Di 2.03 mm. Lt 10 m. Le 15 cm.

| อุณหภูมิ องศา | Q̇ (l min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δτ (°C) | q (W m ²) |
|------------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|------------|--------------------------|
| 90 | 1 | 21.4 | 21.4 | 33.0 | 33.7 | 68.0 | 31.9 | 55.5 | 50.5 | 68.2 | 11.20 | 27.20 | 16.00 | 21132.24 |
| | 1 | 21.8 | 21.4 | 33.2 | 34.4 | 67.9 | 32.2 | 55.2 | 51.4 | 68.0 | 11.40 | 27.30 | 15.90 | 21574.34 |
| | 1 | 21.4 | 22.3 | 32.7 | 34.1 | 67.7 | 31.9 | 55.0 | 50.5 | 67.9 | 11.20 | 27.50 | 16.30 | 20424.88 |
| 80 | 1 | 21.4 | 22.4 | 33.5 | 34.6 | 67.8 | 31.7 | 54.3 | 50.5 | 68.1 | 11.20 | 27.95 | 16.75 | 21485.92 |
| | 1 | 21.6 | 22.2 | 32.7 | 33.4 | 67.7 | 31.7 | 55.1 | 50.0 | 67.7 | 11.30 | 27.45 | 16.15 | 19717.53 |
| | 1 | 21.4 | 21.5 | 31.7 | 32.3 | 67.6 | 31.4 | 54.5 | 49.7 | 68.0 | 11.20 | 26.60 | 15.40 | 18656.50 |
| 70 | 1 | 21.4 | 21.5 | 32.6 | 32.8 | 67.7 | 31.7 | 54.7 | 50.1 | 67.9 | 11.20 | 27.05 | 15.85 | 19894.37 |
| | 1 | 21.7 | 22.4 | 32.7 | 33.6 | 67.4 | 31.7 | 54.6 | 49.6 | 68.2 | 11.35 | 27.55 | 16.20 | 19629.11 |
| | 1 | 22.1 | 21.9 | 32.7 | 32.7 | 67.7 | 31.9 | 55.8 | 50.1 | 68.0 | 11.55 | 27.30 | 15.75 | 18921.75 |
| 60 | 1 | 21.8 | 21.8 | 32.7 | 32.3 | 68.0 | 31.7 | 54.9 | 49.3 | 67.7 | 11.40 | 27.25 | 15.85 | 18921.75 |
| | 1 | 21.8 | 21.7 | 32.2 | 32.1 | 67.5 | 31.6 | 54.4 | 49.1 | 68.1 | 11.40 | 26.95 | 15.55 | 18391.24 |
| | 1 | 21.5 | 21.7 | 32.6 | 33.0 | 67.7 | 31.4 | 53.5 | 48.7 | 68.2 | 11.25 | 27.15 | 15.90 | 19805.95 |
| 50 | 1 | 22.1 | 22.1 | 33.2 | 33.3 | 68.2 | 31.4 | 52.3 | 48.2 | 68.2 | 11.55 | 27.65 | 16.10 | 19717.53 |
| | 1 | 21.9 | 22.1 | 32.7 | 33.2 | 67.4 | 31.4 | 52.5 | 48.1 | 68.3 | 11.45 | 27.40 | 15.95 | 19363.85 |
| | 1 | 22.0 | 21.5 | 32.9 | 32.5 | 67.9 | 31.4 | 53.5 | 48.6 | 68.0 | 11.50 | 27.20 | 15.70 | 19363.85 |
| 40 | 1 | 21.5 | 22.0 | 32.3 | 31.5 | 68.6 | 30.3 | 52.3 | 48.3 | 68.1 | 11.25 | 27.15 | 15.90 | 17949.14 |
| | 1 | 21.5 | 22.0 | 32.2 | 31.2 | 68.6 | 29.9 | 51.5 | 47.3 | 68.0 | 11.25 | 27.10 | 15.85 | 17595.46 |
| | 1 | 21.7 | 21.4 | 31.3 | 31.6 | 68.6 | 30.1 | 52.0 | 47.9 | 68.0 | 11.35 | 26.35 | 15.00 | 17507.04 |
| 30 | 1 | 21.9 | 21.6 | 29.4 | 29.8 | 69.6 | 36.7 | 50.5 | 46.0 | 68.0 | 11.45 | 25.50 | 14.05 | 13881.85 |
| | 1 | 22.1 | 21.7 | 30.4 | 29.6 | 69.5 | 36.0 | 51.1 | 45.9 | 68.9 | 11.55 | 26.05 | 14.50 | 14323.94 |
| | 1 | 21.8 | 21.5 | 29.8 | 29.9 | 69.6 | 36.3 | 51.0 | 45.9 | 68.8 | 11.40 | 25.65 | 14.25 | 14500.78 |
| 20 | 1 | 21.9 | 21.7 | 29.1 | 30.1 | 69.8 | 35.0 | 49.1 | 46.8 | 67.4 | 11.45 | 25.40 | 13.95 | 13793.43 |
| | 1 | 21.9 | 21.7 | 29.0 | 29.1 | 69.9 | 35.1 | 49.7 | 45.2 | 67.3 | 11.45 | 25.35 | 13.90 | 12820.81 |
| | 1 | 21.8 | 21.7 | 28.4 | 29.4 | 69.6 | 34.8 | 49.4 | 43.5 | 67.6 | 11.40 | 25.05 | 13.65 | 12643.98 |
| 10 | 1 | 22.1 | 21.6 | 29.2 | 29.7 | 72.5 | 38.1 | 45.8 | 40.3 | 68.1 | 11.55 | 25.40 | 13.85 | 13439.75 |
| | 1 | 21.9 | 21.7 | 28.2 | 29.2 | 72.3 | 37.8 | 45.9 | 40.5 | 68.3 | 11.45 | 24.95 | 13.50 | 12201.88 |
| | 1 | 22.0 | 21.5 | 29.1 | 29.1 | 72.5 | 37.7 | 45.9 | 39.9 | 68.3 | 11.50 | 25.30 | 13.80 | 12997.65 |
| 0 | 1 | 21.7 | 21.7 | 21.8 | 22.0 | 79.5 | 21.6 | 21.6 | 41.6 | 45.5 | 11.35 | 21.75 | 10.40 | 353.68 |
| | 1 | 21.7 | 21.7 | 21.8 | 21.9 | 79.5 | 21.6 | 21.7 | 41.6 | 45.3 | 11.35 | 21.75 | 10.40 | 265.26 |
| | 1 | 21.7 | 21.7 | 21.9 | 22.0 | 79.7 | 21.6 | 21.6 | 41.5 | 45.3 | 11.35 | 21.80 | 10.45 | 442.10 |
| -10 | 1 | 21.7 | 21.7 | 22.1 | 22.1 | 79.3 | 21.8 | 21.7 | 41.1 | 41.5 | 11.35 | 21.90 | 10.55 | 707.36 |
| | 1 | 21.8 | 21.7 | 21.9 | 22.1 | 79.5 | 21.8 | 21.7 | 41.0 | 41.8 | 11.40 | 21.80 | 10.40 | 442.10 |
| | 1 | 21.8 | 21.7 | 22.0 | 22.0 | 79.3 | 21.7 | 22.0 | 41.0 | 41.7 | 11.40 | 21.85 | 10.45 | 442.10 |
| -30 | 1 | 21.7 | 21.7 | 22.0 | 22.1 | 79.4 | 21.8 | 21.7 | 41.2 | 41.4 | 11.35 | 21.85 | 10.50 | 618.94 |
| | 1 | 21.8 | 21.7 | 21.9 | 22.1 | 79.4 | 21.8 | 21.3 | 41.2 | 41.3 | 11.40 | 21.80 | 10.40 | 442.10 |
| | 1 | 21.8 | 21.7 | 22.0 | 22.1 | 79.3 | 21.8 | 21.4 | 41.1 | 41.4 | 11.40 | 21.85 | 10.45 | 530.52 |
| -50 | 1 | 21.7 | 21.9 | 21.9 | 22.1 | 79.3 | 21.8 | 21.7 | 41.1 | 41.5 | 11.35 | 21.90 | 10.55 | 353.68 |
| | 1 | 21.7 | 21.7 | 21.9 | 22.1 | 79.4 | 21.8 | 21.6 | 41.1 | 41.5 | 11.35 | 21.80 | 10.45 | 530.52 |
| | 1 | 21.7 | 21.7 | 21.8 | 22.1 | 79.4 | 21.9 | 21.7 | 41.1 | 41.4 | 11.35 | 21.75 | 10.40 | 442.10 |
| -70 | 1 | 21.8 | 21.8 | 21.8 | 21.9 | 79.4 | 21.9 | 21.8 | 41.5 | 41.7 | 11.40 | 21.80 | 10.40 | 88.42 |
| | 1 | 21.7 | 21.7 | 21.7 | 22.0 | 79.6 | 21.8 | 21.7 | 41.5 | 41.7 | 11.35 | 21.70 | 10.35 | 265.26 |
| | 1 | 21.8 | 21.7 | 21.8 | 22.1 | 79.6 | 21.8 | 21.7 | 41.1 | 41.6 | 11.40 | 21.75 | 10.35 | 353.68 |
| -90 | 1 | 21.8 | 21.7 | 21.9 | 21.9 | 79.4 | 21.8 | 21.7 | 41.8 | 41.7 | 11.40 | 21.80 | 10.40 | 265.26 |
| | 1 | 21.7 | 21.7 | 21.8 | 21.8 | 79.4 | 22.2 | 21.7 | 41.8 | 41.7 | 11.35 | 21.75 | 10.40 | 176.84 |
| | 1 | 21.7 | 21.7 | 21.8 | 21.8 | 79.2 | 21.7 | 21.7 | 41.9 | 41.7 | 11.35 | 21.75 | 10.40 | 176.84 |

ตาราง ก-25 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร HP62 Di 2.03 mm. Lt 15 m. Lc 5 cm.

| อุณหภูมิ | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | η (W/m ²) |
|----------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|-------------------------------|
| 90 | 1 | 21.4 | 21.3 | 36.4 | 36.1 | 63.2 | 50.1 | 33.4 | 59.5 | 56.3 | 11.20 | 28.85 | 17.65 | 19761.74 |
| | 1 | 21.4 | 21.4 | 36.3 | 35.8 | 64.2 | 47.0 | 33.6 | 60.1 | 56.3 | 11.20 | 28.85 | 17.65 | 19430.17 |
| | 1 | 21.4 | 21.4 | 36.3 | 36.1 | 63.1 | 50.6 | 33.6 | 59.5 | 57.8 | 11.20 | 28.85 | 17.65 | 19629.11 |
| 80 | 1 | 21.3 | 21.3 | 36.4 | 36.7 | 63.0 | 46.2 | 30.9 | 58.3 | 56.1 | 11.15 | 28.85 | 17.70 | 20225.94 |
| | 1 | 21.3 | 21.2 | 36.0 | 36.9 | 63.8 | 48.2 | 31.1 | 57.5 | 56.7 | 11.15 | 28.60 | 17.45 | 20159.63 |
| | 1 | 21.3 | 21.3 | 36.7 | 36.3 | 62.7 | 46.9 | 31.5 | 57.9 | 54.4 | 11.15 | 29.00 | 17.85 | 20159.63 |
| 70 | 1 | 21.4 | 21.4 | 37.0 | 36.9 | 63.4 | 47.8 | 32.7 | 60.2 | 56.7 | 11.20 | 29.20 | 18.00 | 20623.83 |
| | 1 | 21.4 | 21.3 | 37.8 | 36.3 | 63.5 | 48.5 | 31.9 | 59.5 | 55.5 | 11.20 | 29.55 | 18.35 | 20822.77 |
| | 1 | 21.4 | 21.4 | 37.2 | 36.4 | 64.1 | 46.9 | 31.3 | 56.6 | 57.7 | 11.20 | 29.30 | 18.10 | 20424.88 |
| 60 | 1 | 21.3 | 21.2 | 37.1 | 36.4 | 63.5 | 44.3 | 31.1 | 57.3 | 59.1 | 11.15 | 29.15 | 18.00 | 20557.51 |
| | 1 | 21.3 | 21.2 | 37.6 | 37.1 | 64.8 | 47.1 | 30.7 | 59.6 | 56.9 | 11.15 | 29.40 | 18.25 | 21353.29 |
| | 1 | 21.4 | 21.3 | 37.4 | 35.8 | 63.1 | 47.1 | 31.4 | 57.4 | 56.4 | 11.20 | 29.35 | 18.15 | 20225.94 |
| 50 | 1 | 21.4 | 21.3 | 37.0 | 36.5 | 64.4 | 41.9 | 31.1 | 58.7 | 57.8 | 11.20 | 29.15 | 17.95 | 20424.88 |
| | 1 | 21.4 | 21.3 | 37.1 | 36.5 | 65.3 | 45.9 | 30.7 | 59.7 | 56.8 | 11.20 | 29.20 | 18.00 | 20491.20 |
| | 1 | 21.3 | 21.2 | 37.4 | 36.4 | 65.4 | 46.7 | 31.4 | 59.2 | 57.5 | 11.15 | 29.30 | 18.15 | 20756.46 |
| 40 | 1 | 21.4 | 21.2 | 36.9 | 36.3 | 69.2 | 49.8 | 31.1 | 58.8 | 55.8 | 11.20 | 29.05 | 17.85 | 20292.26 |
| | 1 | 21.4 | 21.2 | 36.8 | 36.1 | 69.0 | 47.2 | 31.6 | 59.5 | 55.9 | 11.20 | 29.00 | 17.80 | 20093.31 |
| | 1 | 21.4 | 21.3 | 37.0 | 36.0 | 69.3 | 46.6 | 31.5 | 57.0 | 55.8 | 11.20 | 29.15 | 17.95 | 20093.31 |
| 30 | 1 | 21.3 | 21.2 | 36.1 | 36.2 | 73.2 | 43.1 | 30.4 | 58.3 | 59.7 | 11.15 | 28.65 | 17.50 | 19761.74 |
| | 1 | 21.2 | 21.2 | 36.0 | 35.4 | 69.1 | 43.6 | 30.8 | 57.8 | 57.3 | 11.10 | 28.60 | 17.50 | 19231.22 |
| | 1 | 21.3 | 21.1 | 35.6 | 35.5 | 70.8 | 46.9 | 30.2 | 56.4 | 57.9 | 11.15 | 28.35 | 17.20 | 19032.28 |
| 20 | 1 | 21.4 | 21.3 | 34.1 | 34.1 | 72.1 | 40.4 | 29.4 | 58.0 | 59.5 | 11.20 | 27.70 | 16.50 | 16910.21 |
| | 1 | 21.4 | 21.2 | 34.1 | 35.0 | 70.2 | 42.4 | 30.4 | 58.8 | 55.5 | 11.20 | 27.65 | 16.45 | 17573.36 |
| | 1 | 21.4 | 21.3 | 34.8 | 34.5 | 69.9 | 40.6 | 30.8 | 59.8 | 50.4 | 11.20 | 28.05 | 16.85 | 17639.67 |
| 10 | 1 | 21.2 | 21.2 | 33.1 | 33.4 | 72.6 | 36.5 | 27.9 | 61.6 | 52.8 | 11.10 | 27.15 | 16.05 | 15981.81 |
| | 1 | 21.3 | 21.2 | 33.0 | 33.1 | 72.3 | 38.9 | 27.7 | 61.0 | 50.6 | 11.15 | 27.10 | 15.95 | 15650.24 |
| | 1 | 21.1 | 21.2 | 33.2 | 33.1 | 72.3 | 37.1 | 28.3 | 54.4 | 60.5 | 11.05 | 27.20 | 16.15 | 15915.49 |
| 0 | 1 | 21.3 | 21.2 | 27.1 | 26.7 | 75.7 | 24.2 | 24.0 | 59.8 | 59.3 | 11.15 | 24.15 | 13.00 | 7493.55 |
| | 1 | 21.2 | 21.1 | 27.0 | 27.1 | 75.8 | 24.3 | 23.7 | 59.6 | 59.2 | 11.10 | 24.05 | 12.95 | 7825.12 |
| | 1 | 21.2 | 21.1 | 27.3 | 26.7 | 75.9 | 24.4 | 23.9 | 59.5 | 59.2 | 11.10 | 24.20 | 13.10 | 7758.80 |
| -10 | 1 | 21.2 | 21.2 | 24.2 | 24.1 | 79.2 | 22.7 | 22.3 | 52.4 | 49.6 | 11.10 | 22.70 | 11.60 | 3912.56 |
| | 1 | 21.1 | 21.1 | 24.1 | 23.9 | 79.3 | 22.6 | 22.2 | 52.3 | 49.6 | 11.05 | 22.60 | 11.55 | 3846.24 |
| | 1 | 21.1 | 21.1 | 24.0 | 24.0 | 79.2 | 22.6 | 22.1 | 52.2 | 49.6 | 11.05 | 22.55 | 11.50 | 3846.24 |
| -30 | 1 | 21.3 | 21.3 | 23.4 | 23.4 | 79.4 | 22.3 | 21.9 | 52.3 | 49.0 | 11.15 | 22.35 | 11.20 | 2785.21 |
| | 1 | 21.4 | 21.3 | 23.3 | 23.4 | 79.4 | 22.4 | 21.8 | 52.1 | 48.8 | 11.20 | 22.30 | 11.10 | 2652.58 |
| | 1 | 21.3 | 21.2 | 23.4 | 23.4 | 79.5 | 22.4 | 21.8 | 52.0 | 48.7 | 11.15 | 22.30 | 11.15 | 2851.53 |
| -50 | 1 | 21.4 | 21.1 | 22.8 | 22.8 | 79.3 | 22.1 | 21.8 | 55.7 | 53.0 | 11.20 | 21.95 | 10.75 | 2055.75 |
| | 1 | 21.3 | 21.2 | 22.9 | 22.9 | 79.3 | 22.3 | 21.8 | 55.7 | 53.1 | 11.15 | 22.05 | 10.90 | 2188.38 |
| | 1 | 21.4 | 21.2 | 22.9 | 23.1 | 79.3 | 22.0 | 21.8 | 55.8 | 53.1 | 11.20 | 22.05 | 10.85 | 2254.70 |
| -70 | 1 | 21.4 | 21.2 | 22.5 | 22.4 | 79.3 | 23.2 | 22.1 | 60.4 | 58.0 | 11.20 | 21.85 | 10.65 | 1525.23 |
| | 1 | 21.4 | 21.2 | 22.4 | 22.7 | 79.4 | 23.3 | 22.4 | 60.7 | 57.9 | 11.20 | 21.80 | 10.60 | 1657.86 |
| | 1 | 21.3 | 21.1 | 22.5 | 22.7 | 79.3 | 23.4 | 22.1 | 60.5 | 57.8 | 11.15 | 21.80 | 10.65 | 1856.81 |
| -90 | 1 | 21.4 | 21.1 | 21.7 | 22.8 | 79.3 | 27.1 | 22.8 | 62.5 | 60.4 | 11.20 | 21.40 | 10.20 | 1326.29 |
| | 1 | 21.4 | 21.1 | 21.7 | 22.8 | 79.2 | 27.2 | 23.0 | 62.5 | 60.4 | 11.20 | 21.40 | 10.20 | 1326.29 |
| | 1 | 21.4 | 21.1 | 21.7 | 23.0 | 79.2 | 27.1 | 22.7 | 62.5 | 60.2 | 11.20 | 21.40 | 10.20 | 1458.92 |

ตาราง ก-26 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ไส้สาร HP62 Di 2.03 mm. Lt 15 m. Le 10 cm.

| อุณหภูมิ องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δ T (°C) | q (W m ²) |
|------------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 21.4 | 21.2 | 36.0 | 36.2 | 69.0 | 40.3 | 53.5 | 48.9 | 66.9 | 11.20 | 28.60 | 17.40 | 18775.67 |
| | 1 | 21.4 | 21.3 | 36.5 | 36.0 | 68.5 | 40.2 | 54.5 | 48.8 | 66.8 | 11.20 | 28.90 | 17.70 | 18902.53 |
| | 1 | 21.4 | 21.3 | 36.7 | 36.0 | 69.0 | 40.6 | 55.5 | 49.9 | 67.3 | 11.20 | 29.00 | 17.80 | 19029.40 |
| 80 | 1 | 21.4 | 21.1 | 36.3 | 37.2 | 68.9 | 41.7 | 54.2 | 49.6 | 67.2 | 11.20 | 28.70 | 17.50 | 19663.71 |
| | 1 | 21.3 | 21.1 | 35.7 | 36.7 | 68.6 | 41.4 | 53.0 | 49.4 | 67.2 | 11.15 | 28.40 | 17.25 | 19029.40 |
| | 1 | 21.3 | 21.2 | 36.8 | 36.2 | 68.8 | 41.1 | 53.5 | 48.2 | 66.8 | 11.15 | 29.00 | 17.85 | 19346.55 |
| 70 | 1 | 21.0 | 21.1 | 35.7 | 36.0 | 68.1 | 40.2 | 55.2 | 50.1 | 67.1 | 11.00 | 28.40 | 17.40 | 18775.67 |
| | 1 | 21.1 | 21.1 | 37.3 | 35.4 | 68.1 | 39.9 | 53.6 | 50.1 | 66.9 | 11.05 | 29.20 | 18.15 | 19346.55 |
| | 1 | 21.0 | 21.1 | 37.1 | 36.8 | 68.4 | 39.9 | 53.9 | 49.5 | 66.4 | 11.00 | 29.10 | 18.10 | 20171.16 |
| 60 | 1 | 21.2 | 21.1 | 35.4 | 36.2 | 68.8 | 38.5 | 53.8 | 48.8 | 67.1 | 11.10 | 28.25 | 17.15 | 18585.38 |
| | 1 | 21.2 | 21.1 | 36.9 | 36.0 | 68.7 | 38.2 | 53.1 | 49.8 | 67.1 | 11.10 | 29.00 | 17.90 | 19409.98 |
| | 1 | 21.1 | 21.1 | 34.6 | 36.4 | 68.6 | 37.7 | 53.2 | 50.5 | 67.1 | 11.05 | 27.85 | 16.80 | 18268.22 |
| 50 | 1 | 21.1 | 21.1 | 34.9 | 35.7 | 67.7 | 35.4 | 51.7 | 50.1 | 66.5 | 11.05 | 28.00 | 16.95 | 18014.49 |
| | 1 | 21.1 | 21.1 | 34.7 | 35.0 | 68.9 | 35.6 | 52.7 | 50.1 | 66.6 | 11.05 | 27.90 | 16.85 | 17443.61 |
| | 1 | 21.1 | 21.1 | 36.1 | 34.6 | 68.8 | 35.7 | 52.2 | 51.0 | 66.7 | 11.05 | 28.60 | 17.55 | 18077.93 |
| 40 | 1 | 21.1 | 21.0 | 35.0 | 34.4 | 68.8 | 34.3 | 53.1 | 50.2 | 67.4 | 11.05 | 28.00 | 16.95 | 17316.75 |
| | 1 | 21.1 | 21.1 | 34.5 | 35.1 | 68.5 | 34.4 | 51.7 | 48.7 | 67.4 | 11.05 | 27.80 | 16.75 | 17380.18 |
| | 1 | 21.2 | 21.0 | 34.5 | 34.6 | 69.0 | 34.3 | 50.5 | 49.0 | 67.0 | 11.10 | 27.75 | 16.65 | 17063.02 |
| 30 | 1 | 21.1 | 21.0 | 34.4 | 33.7 | 69.9 | 33.2 | 51.6 | 46.8 | 67.7 | 11.05 | 27.70 | 16.65 | 16492.14 |
| | 1 | 21.2 | 21.1 | 34.2 | 34.6 | 67.9 | 33.1 | 53.9 | 50.1 | 67.8 | 11.10 | 27.65 | 16.55 | 16809.30 |
| | 1 | 21.2 | 21.1 | 33.4 | 34.2 | 69.6 | 33.2 | 52.3 | 48.2 | 67.4 | 11.10 | 27.25 | 16.15 | 16048.12 |
| 20 | 1 | 21.2 | 21.1 | 34.6 | 33.5 | 69.7 | 31.7 | 51.1 | 47.3 | 67.7 | 11.10 | 27.85 | 16.75 | 16365.28 |
| | 1 | 21.2 | 21.1 | 32.7 | 33.4 | 69.5 | 31.9 | 51.1 | 47.6 | 67.6 | 11.10 | 26.90 | 15.80 | 15096.65 |
| | 1 | 21.2 | 21.1 | 32.9 | 33.3 | 69.3 | 31.7 | 50.9 | 46.9 | 67.7 | 11.10 | 27.00 | 15.90 | 15160.08 |
| 10 | 1 | 21.3 | 21.1 | 31.7 | 30.7 | 70.2 | 28.8 | 50.8 | 46.1 | 68.2 | 11.15 | 26.40 | 15.25 | 12686.26 |
| | 1 | 21.3 | 21.1 | 31.1 | 31.4 | 70.5 | 28.8 | 51.1 | 46.6 | 68.2 | 11.15 | 26.10 | 14.95 | 12749.69 |
| | 1 | 21.2 | 21.1 | 30.5 | 31.2 | 70.2 | 28.9 | 51.4 | 47.1 | 68.0 | 11.10 | 25.80 | 14.70 | 12305.68 |
| 0 | 1 | 21.2 | 21.1 | 22.1 | 22.1 | 79.1 | 21.4 | 21.9 | 61.0 | 50.0 | 11.10 | 21.60 | 10.50 | 1205.20 |
| | 1 | 21.2 | 21.0 | 22.0 | 22.4 | 79.1 | 21.5 | 22.0 | 61.0 | 49.9 | 11.10 | 21.50 | 10.40 | 1395.49 |
| | 1 | 21.1 | 21.1 | 22.1 | 22.6 | 79.2 | 21.5 | 22.0 | 61.2 | 49.8 | 11.05 | 21.60 | 10.55 | 1585.78 |
| -10 | 1 | 21.1 | 21.1 | 21.7 | 21.7 | 79.1 | 21.0 | 21.1 | 50.2 | 50.7 | 11.05 | 21.40 | 10.35 | 761.18 |
| | 1 | 21.1 | 21.0 | 21.4 | 21.4 | 79.1 | 20.9 | 21.1 | 50.2 | 50.5 | 11.05 | 21.20 | 10.15 | 444.02 |
| | 1 | 21.1 | 21.0 | 21.5 | 21.6 | 79.1 | 20.9 | 21.1 | 50.3 | 50.5 | 11.05 | 21.25 | 10.20 | 634.31 |
| -30 | 1 | 21.1 | 21.1 | 21.7 | 21.6 | 79.1 | 21.1 | 21.1 | 50.2 | 49.6 | 11.05 | 21.40 | 10.35 | 697.74 |
| | 1 | 21.2 | 21.1 | 21.5 | 21.7 | 79.3 | 21.0 | 21.2 | 50.2 | 49.7 | 11.10 | 21.30 | 10.20 | 570.88 |
| | 1 | 21.2 | 21.0 | 21.6 | 21.7 | 79.2 | 21.0 | 21.2 | 50.3 | 49.7 | 11.10 | 21.30 | 10.20 | 697.74 |
| -50 | 1 | 21.3 | 21.1 | 21.7 | 21.7 | 79.3 | 21.1 | 21.4 | 50.1 | 49.1 | 11.15 | 21.40 | 10.25 | 634.31 |
| | 1 | 21.3 | 21.1 | 21.7 | 21.7 | 79.1 | 21.1 | 21.3 | 50.1 | 49.1 | 11.15 | 21.40 | 10.25 | 634.31 |
| | 1 | 21.3 | 21.1 | 21.7 | 21.7 | 79.2 | 21.1 | 21.4 | 50.1 | 49.1 | 11.15 | 21.40 | 10.25 | 634.31 |
| -70 | 1 | 21.3 | 21.2 | 21.8 | 21.8 | 79.2 | 21.1 | 21.4 | 50.9 | 49.7 | 11.15 | 21.50 | 10.35 | 697.74 |
| | 1 | 21.2 | 21.1 | 21.8 | 21.9 | 79.2 | 21.1 | 21.4 | 50.7 | 49.8 | 11.10 | 21.45 | 10.35 | 888.04 |
| | 1 | 21.1 | 21.1 | 21.6 | 21.7 | 79.1 | 21.1 | 21.4 | 50.7 | 49.5 | 11.05 | 21.35 | 10.30 | 697.74 |
| -90 | 1 | 21.1 | 21.0 | 21.5 | 21.6 | 79.2 | 21.0 | 21.1 | 51.1 | 49.9 | 11.05 | 21.25 | 10.20 | 634.31 |
| | 1 | 21.3 | 21.1 | 21.5 | 21.5 | 79.1 | 20.7 | 21.1 | 51.2 | 50.0 | 11.15 | 21.30 | 10.15 | 380.59 |
| | 1 | 21.1 | 21.0 | 21.5 | 21.5 | 79.1 | 21.0 | 21.2 | 51.4 | 50.1 | 11.05 | 21.25 | 10.20 | 570.88 |

ตาราง ก-27 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร HP62 Di 2.03 mm. Lt 15 m. Le 15 cm.

| มุม องศา | Q (l min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | η (W m ²) |
|-------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|-------------------------------|
| 90 | 1 | 21.3 | 21.2 | 33.9 | 33.8 | 74.2 | 56.9 | 37.4 | 51.8 | 68.4 | 11.15 | 27.55 | 16.40 | 15318.66 |
| | 1 | 21.3 | 21.2 | 34.2 | 33.8 | 74.7 | 56.2 | 37.3 | 51.7 | 68.3 | 11.15 | 27.70 | 16.55 | 15501.03 |
| | 1 | 21.1 | 21.1 | 33.7 | 33.6 | 73.6 | 56.1 | 37.1 | 51.4 | 68.4 | 11.05 | 27.40 | 16.35 | 15257.87 |
| 80 | 1 | 21.2 | 21.2 | 34.4 | 34.4 | 75.4 | 55.8 | 37.3 | 52.8 | 68.1 | 11.10 | 27.80 | 16.70 | 16048.12 |
| | 1 | 21.1 | 21.1 | 34.2 | 34.1 | 74.4 | 56.1 | 37.0 | 52.4 | 68.3 | 11.05 | 27.65 | 16.60 | 15865.76 |
| | 1 | 21.1 | 21.1 | 34.1 | 34.1 | 74.8 | 56.1 | 37.2 | 52.6 | 68.3 | 11.05 | 27.60 | 16.55 | 15804.97 |
| 70 | 1 | 21.2 | 21.1 | 33.2 | 33.3 | 75.1 | 54.4 | 36.4 | 51.7 | 68.3 | 11.10 | 27.15 | 16.05 | 14710.78 |
| | 1 | 21.1 | 21.1 | 33.3 | 33.3 | 73.2 | 54.6 | 36.4 | 51.1 | 68.1 | 11.05 | 27.20 | 16.15 | 14832.36 |
| | 1 | 21.1 | 21.1 | 33.4 | 33.6 | 74.4 | 54.7 | 36.6 | 51.6 | 68.1 | 11.05 | 27.25 | 16.20 | 15075.51 |
| 60 | 1 | 21.2 | 21.1 | 33.3 | 33.4 | 73.8 | 54.3 | 36.3 | 47.5 | 67.7 | 11.10 | 27.20 | 16.10 | 14832.36 |
| | 1 | 21.2 | 21.1 | 32.7 | 33.4 | 73.6 | 54.0 | 36.2 | 47.5 | 67.8 | 11.10 | 26.90 | 15.80 | 14467.63 |
| | 1 | 21.2 | 21.1 | 33.3 | 33.4 | 74.0 | 54.2 | 36.3 | 47.5 | 67.8 | 11.10 | 27.20 | 16.10 | 14832.36 |
| 50 | 1 | 21.1 | 21.0 | 33.6 | 33.7 | 74.5 | 54.0 | 36.5 | 46.9 | 68.0 | 11.05 | 27.30 | 16.25 | 15318.66 |
| | 1 | 21.1 | 21.0 | 33.7 | 33.7 | 74.8 | 53.6 | 36.5 | 46.9 | 68.2 | 11.05 | 27.35 | 16.30 | 15379.45 |
| | 1 | 21.0 | 21.0 | 33.5 | 33.4 | 74.2 | 53.9 | 36.1 | 46.8 | 67.9 | 11.00 | 27.25 | 16.25 | 15136.30 |
| 40 | 1 | 21.1 | 21.0 | 32.7 | 32.7 | 74.2 | 52.5 | 35.4 | 45.7 | 68.1 | 11.05 | 26.85 | 15.80 | 14163.68 |
| | 1 | 21.1 | 21.0 | 33.0 | 32.8 | 73.7 | 52.5 | 35.4 | 45.9 | 68.0 | 11.05 | 27.00 | 15.95 | 14406.84 |
| | 1 | 21.0 | 21.0 | 32.8 | 33.0 | 74.5 | 52.4 | 35.4 | 45.9 | 67.7 | 11.00 | 26.90 | 15.90 | 14467.63 |
| 30 | 1 | 21.1 | 21.1 | 32.2 | 32.5 | 73.8 | 52.0 | 34.1 | 44.7 | 68.0 | 11.05 | 26.65 | 15.60 | 13677.38 |
| | 1 | 21.2 | 21.1 | 32.4 | 32.4 | 74.2 | 52.3 | 33.9 | 44.7 | 68.0 | 11.10 | 26.75 | 15.65 | 13677.38 |
| | 1 | 21.1 | 21.1 | 32.2 | 32.4 | 74.5 | 51.6 | 34.0 | 44.7 | 67.9 | 11.05 | 26.65 | 15.60 | 13616.59 |
| 20 | 1 | 21.1 | 21.1 | 31.1 | 31.1 | 74.1 | 50.6 | 32.8 | 44.3 | 67.8 | 11.05 | 26.10 | 15.05 | 12157.67 |
| | 1 | 21.0 | 21.1 | 31.2 | 31.2 | 74.5 | 49.8 | 32.8 | 44.3 | 67.9 | 11.00 | 26.15 | 15.15 | 12340.03 |
| | 1 | 21.1 | 21.1 | 31.3 | 31.3 | 74.0 | 50.1 | 32.8 | 44.3 | 67.7 | 11.05 | 26.20 | 15.15 | 12400.82 |
| 10 | 1 | 21.0 | 21.1 | 28.7 | 28.9 | 75.8 | 42.5 | 29.5 | 37.0 | 68.6 | 11.00 | 24.90 | 13.90 | 9422.19 |
| | 1 | 21.0 | 21.1 | 28.8 | 28.9 | 76.4 | 42.4 | 29.4 | 37.1 | 68.5 | 11.00 | 24.95 | 13.95 | 9482.98 |
| | 1 | 21.1 | 21.1 | 28.9 | 28.8 | 75.9 | 42.4 | 29.4 | 37.1 | 68.6 | 11.05 | 25.00 | 13.95 | 9422.19 |
| 0 | 1 | 21.1 | 21.1 | 21.5 | 21.6 | 79.4 | 21.3 | 21.6 | 47.5 | 48.3 | 11.05 | 21.30 | 10.25 | 547.10 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.5 | 79.4 | 21.2 | 21.6 | 47.5 | 48.2 | 11.05 | 21.25 | 10.20 | 425.52 |
| | 1 | 21.1 | 21.1 | 21.5 | 21.5 | 79.4 | 21.3 | 21.5 | 47.5 | 48.2 | 11.05 | 21.30 | 10.25 | 486.31 |
| -10 | 1 | 21.1 | 21.0 | 21.4 | 21.6 | 79.2 | 21.1 | 21.0 | 50.3 | 50.4 | 11.05 | 21.20 | 10.15 | 547.10 |
| | 1 | 21.1 | 21.0 | 21.3 | 21.4 | 79.2 | 21.1 | 20.9 | 50.4 | 50.6 | 11.05 | 21.15 | 10.10 | 364.73 |
| | 1 | 21.1 | 20.9 | 21.3 | 21.4 | 79.2 | 21.1 | 20.9 | 50.3 | 50.4 | 11.05 | 21.10 | 10.05 | 425.52 |
| -30 | 1 | 21.1 | 21.0 | 21.3 | 21.5 | 79.4 | 21.1 | 21.0 | 49.1 | 49.3 | 11.05 | 21.15 | 10.10 | 425.52 |
| | 1 | 21.1 | 21.0 | 21.2 | 21.4 | 79.4 | 21.1 | 21.0 | 49.0 | 49.3 | 11.05 | 21.10 | 10.05 | 303.94 |
| | 1 | 21.0 | 21.0 | 21.3 | 21.4 | 79.3 | 21.2 | 21.0 | 48.9 | 49.3 | 11.00 | 21.15 | 10.15 | 425.52 |
| -50 | 1 | 21.0 | 21.0 | 21.1 | 21.4 | 79.3 | 21.1 | 21.0 | 48.8 | 49.1 | 11.00 | 21.05 | 10.05 | 303.94 |
| | 1 | 21.0 | 21.0 | 21.3 | 21.5 | 79.4 | 21.2 | 21.1 | 48.7 | 49.1 | 11.00 | 21.15 | 10.15 | 486.31 |
| | 1 | 21.0 | 21.0 | 21.3 | 21.4 | 79.3 | 21.2 | 21.1 | 48.8 | 49.1 | 11.00 | 21.15 | 10.15 | 425.52 |
| -70 | 1 | 21.0 | 21.0 | 21.3 | 21.3 | 79.2 | 21.1 | 21.0 | 48.3 | 48.7 | 11.00 | 21.15 | 10.15 | 364.73 |
| | 1 | 21.1 | 21.0 | 21.3 | 21.3 | 79.1 | 21.1 | 21.0 | 48.4 | 48.8 | 11.05 | 21.15 | 10.10 | 303.94 |
| | 1 | 21.0 | 21.0 | 21.3 | 21.3 | 79.1 | 21.1 | 21.0 | 48.4 | 48.8 | 11.00 | 21.15 | 10.15 | 364.73 |
| -90 | 1 | 21.1 | 21.1 | 21.4 | 21.4 | 79.2 | 21.3 | 21.1 | 48.0 | 48.5 | 11.05 | 21.25 | 10.20 | 364.73 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.4 | 79.1 | 21.3 | 21.1 | 48.1 | 48.5 | 11.05 | 21.25 | 10.20 | 364.73 |
| | 1 | 21.1 | 21.1 | 21.4 | 21.4 | 79.1 | 21.3 | 21.1 | 48.1 | 48.5 | 11.05 | 21.25 | 10.20 | 364.73 |

ตาราง ก-28 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 0.66 mm. Lt 5 m. Le 5 cm.

| มุม องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | $\Delta \tau$ (°C) | q (W/m ²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-----------------------|----------------------------|
| 90 | 1 | 21.0 | 20.9 | 21.5 | 21.5 | 78.0 | 22.2 | 22.2 | 39.4 | 38.9 | 11.00 | 21.20 | 10.20 | 4306.29 |
| | 1 | 21.0 | 20.9 | 21.5 | 21.5 | 78.0 | 22.9 | 22.9 | 38.9 | 36.8 | 11.00 | 21.20 | 10.20 | 4306.29 |
| | 1 | 21.0 | 20.9 | 21.5 | 21.5 | 77.9 | 22.6 | 22.6 | 38.3 | 37.0 | 11.00 | 21.20 | 10.20 | 4306.29 |
| 80 | 1 | 20.9 | 20.9 | 21.6 | 21.6 | 78.4 | 22.7 | 22.7 | 38.3 | 37.0 | 10.95 | 21.25 | 10.30 | 5480.74 |
| | 1 | 21.0 | 20.9 | 21.4 | 21.6 | 78.2 | 22.3 | 22.3 | 39.4 | 38.9 | 11.00 | 21.15 | 10.15 | 4306.29 |
| | 1 | 21.0 | 20.9 | 21.6 | 21.6 | 78.3 | 22.9 | 22.9 | 42.8 | 41.1 | 11.00 | 21.25 | 10.25 | 5089.26 |
| 70 | 1 | 20.9 | 20.8 | 21.5 | 21.4 | 78.4 | 22.5 | 22.5 | 38.0 | 37.6 | 10.95 | 21.15 | 10.20 | 4697.78 |
| | 1 | 21.0 | 20.9 | 21.6 | 21.5 | 78.5 | 22.8 | 22.8 | 42.1 | 40.2 | 11.00 | 21.25 | 10.25 | 4697.78 |
| | 1 | 20.9 | 21.0 | 21.4 | 21.6 | 77.7 | 22.8 | 22.8 | 44.6 | 40.8 | 10.95 | 21.20 | 10.25 | 4306.29 |
| 60 | 1 | 21.0 | 21.0 | 21.6 | 21.4 | 78.5 | 22.4 | 22.4 | 37.4 | 38.4 | 11.00 | 21.30 | 10.30 | 3914.81 |
| | 1 | 21.0 | 20.9 | 21.3 | 21.5 | 77.9 | 22.7 | 22.7 | 42.7 | 39.2 | 11.00 | 21.10 | 10.10 | 3523.33 |
| | 1 | 21.0 | 21.0 | 21.6 | 21.6 | 78.8 | 21.9 | 21.9 | 45.6 | 45.3 | 11.00 | 21.30 | 10.30 | 4697.78 |
| 50 | 1 | 21.0 | 21.0 | 21.7 | 21.7 | 77.9 | 22.7 | 22.7 | 45.7 | 41.8 | 11.00 | 21.35 | 10.35 | 5480.74 |
| | 1 | 20.9 | 20.9 | 21.5 | 21.8 | 78.1 | 22.9 | 22.9 | 41.6 | 38.6 | 10.95 | 21.20 | 10.25 | 5872.22 |
| | 1 | 21.1 | 21.1 | 21.7 | 21.9 | 78.1 | 22.7 | 22.7 | 38.4 | 38.3 | 11.05 | 21.40 | 10.35 | 5480.74 |
| 40 | 1 | 21.0 | 21.0 | 21.7 | 21.7 | 78.5 | 22.8 | 22.8 | 38.6 | 37.6 | 11.00 | 21.35 | 10.35 | 5480.74 |
| | 1 | 20.9 | 21.0 | 21.7 | 21.7 | 78.1 | 22.7 | 22.7 | 38.9 | 39.4 | 10.95 | 21.35 | 10.40 | 5872.22 |
| | 1 | 21.0 | 21.1 | 21.9 | 21.7 | 78.0 | 22.7 | 22.7 | 38.1 | 38.2 | 11.00 | 21.50 | 10.50 | 5872.22 |
| 30 | 1 | 21.0 | 21.0 | 21.7 | 21.7 | 78.1 | 22.7 | 22.7 | 39.7 | 38.3 | 11.00 | 21.35 | 10.35 | 5480.74 |
| | 1 | 21.0 | 21.1 | 21.6 | 21.7 | 78.1 | 22.7 | 22.7 | 40.6 | 38.5 | 11.00 | 21.35 | 10.35 | 4697.78 |
| | 1 | 21.0 | 21.0 | 21.7 | 21.7 | 78.7 | 21.8 | 21.8 | 44.7 | 44.2 | 11.00 | 21.35 | 10.35 | 5480.74 |
| 20 | 1 | 20.8 | 21.0 | 21.6 | 21.7 | 78.0 | 22.6 | 22.6 | 38.0 | 37.0 | 10.90 | 21.30 | 10.40 | 5872.22 |
| | 1 | 20.8 | 21.0 | 21.6 | 21.7 | 77.8 | 22.5 | 22.5 | 38.3 | 37.0 | 10.90 | 21.30 | 10.40 | 5872.22 |
| | 1 | 20.9 | 21.1 | 21.7 | 21.7 | 77.8 | 22.5 | 22.5 | 37.7 | 38.0 | 10.95 | 21.40 | 10.45 | 5480.74 |
| 10 | 1 | 20.9 | 21.0 | 21.7 | 21.7 | 77.8 | 24.2 | 24.2 | 40.2 | 37.5 | 10.95 | 21.37 | 10.42 | 5989.66 |
| | 1 | 21.0 | 21.0 | 21.7 | 21.7 | 77.8 | 24.0 | 24.0 | 38.9 | 36.5 | 11.00 | 21.35 | 10.35 | 5480.74 |
| | 1 | 20.8 | 21.0 | 21.7 | 21.7 | 78.2 | 24.1 | 24.1 | 37.5 | 36.4 | 10.90 | 21.35 | 10.45 | 6263.70 |
| 0 | 1 | 20.8 | 20.9 | 21.6 | 21.8 | 77.9 | 23.3 | 23.3 | 37.9 | 35.6 | 10.90 | 21.25 | 10.35 | 6655.18 |
| | 1 | 20.8 | 20.9 | 21.6 | 21.7 | 77.5 | 23.4 | 23.4 | 38.9 | 37.0 | 10.90 | 21.25 | 10.35 | 6263.70 |
| | 1 | 20.7 | 20.9 | 21.6 | 21.7 | 78.0 | 23.5 | 23.5 | 38.9 | 37.1 | 10.85 | 21.25 | 10.40 | 6655.18 |
| -10 | 1 | 20.8 | 20.8 | 21.5 | 21.5 | 77.7 | 23.0 | 23.0 | 38.4 | 37.9 | 10.90 | 21.15 | 10.25 | 5480.74 |
| | 1 | 20.9 | 20.9 | 21.5 | 21.6 | 77.8 | 23.1 | 23.1 | 38.1 | 36.4 | 10.95 | 21.20 | 10.25 | 5089.26 |
| | 1 | 20.8 | 20.8 | 21.5 | 21.5 | 77.9 | 23.1 | 23.1 | 38.7 | 37.9 | 10.90 | 21.15 | 10.25 | 5480.74 |
| -30 | 1 | 20.8 | 20.8 | 21.6 | 21.7 | 78.0 | 23.2 | 23.2 | 39.7 | 38.6 | 10.90 | 21.20 | 10.30 | 6655.18 |
| | 1 | 21.0 | 20.9 | 21.7 | 21.7 | 78.1 | 23.2 | 23.2 | 39.1 | 39.0 | 11.00 | 21.30 | 10.30 | 5872.22 |
| | 1 | 20.9 | 20.9 | 21.7 | 21.7 | 78.0 | 23.2 | 23.2 | 39.8 | 39.2 | 10.95 | 21.30 | 10.35 | 6263.70 |
| -50 | 1 | 20.8 | 20.8 | 21.5 | 21.7 | 77.9 | 23.3 | 23.3 | 40.0 | 39.7 | 10.90 | 21.15 | 10.25 | 6263.70 |
| | 1 | 20.8 | 20.8 | 21.5 | 21.7 | 77.9 | 23.2 | 23.2 | 41.8 | 39.0 | 10.90 | 21.15 | 10.25 | 6263.70 |
| | 1 | 20.8 | 20.9 | 21.6 | 21.8 | 78.0 | 23.3 | 23.3 | 40.5 | 38.6 | 10.90 | 21.25 | 10.35 | 6655.18 |
| -70 | 1 | 20.9 | 20.8 | 21.4 | 21.7 | 77.9 | 23.3 | 23.3 | 41.4 | 39.4 | 10.95 | 21.10 | 10.15 | 5480.74 |
| | 1 | 20.7 | 20.9 | 21.5 | 21.7 | 78.1 | 23.4 | 23.4 | 41.1 | 39.6 | 10.85 | 21.20 | 10.35 | 6263.70 |
| | 1 | 20.8 | 20.8 | 21.4 | 21.7 | 77.8 | 23.3 | 23.3 | 40.6 | 39.3 | 10.90 | 21.10 | 10.20 | 5872.22 |
| -90 | 1 | 20.8 | 20.6 | 21.3 | 21.7 | 77.8 | 23.3 | 23.3 | 42.0 | 39.6 | 10.90 | 20.95 | 10.05 | 6263.70 |
| | 1 | 20.7 | 20.8 | 21.0 | 21.8 | 77.9 | 23.3 | 23.3 | 42.4 | 40.6 | 10.85 | 20.90 | 10.05 | 5089.26 |
| | 1 | 20.8 | 20.8 | 21.3 | 21.7 | 77.9 | 23.3 | 23.3 | 41.4 | 40.6 | 10.90 | 21.05 | 10.15 | 5480.74 |

ตาราง ก-29 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร MP39 Di 0.66 mm. Lt 5 m. Le 10 cm.

| มุม องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W m ²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|--------------------------|
| 90 | 1 | 20.9 | 20.8 | 21.1 | 21.2 | 78.7 | 21.6 | 21.6 | 50.6 | 34.8 | 10.95 | 20.95 | 10.00 | 2181.11 |
| | 1 | 20.8 | 20.8 | 21.1 | 21.1 | 78.7 | 21.6 | 21.6 | 51.1 | 36.1 | 10.90 | 20.95 | 10.05 | 2181.11 |
| | 1 | 20.9 | 20.7 | 21.1 | 21.1 | 78.7 | 21.4 | 21.4 | 51.9 | 34.7 | 10.95 | 20.90 | 9.95 | 2181.11 |
| 80 | 1 | 21.0 | 20.8 | 21.2 | 21.2 | 78.7 | 21.5 | 21.5 | 54.7 | 35.1 | 11.00 | 21.00 | 10.00 | 2181.11 |
| | 1 | 21.0 | 20.8 | 21.2 | 21.2 | 78.8 | 21.4 | 21.4 | 49.8 | 34.2 | 11.00 | 21.00 | 10.00 | 2181.11 |
| | 1 | 20.9 | 20.8 | 21.1 | 21.2 | 78.8 | 21.4 | 21.4 | 51.7 | 35.1 | 10.95 | 20.95 | 10.00 | 2181.11 |
| 70 | 1 | 20.8 | 20.7 | 21.1 | 21.1 | 78.5 | 21.3 | 21.3 | 53.4 | 34.8 | 10.90 | 20.90 | 10.00 | 2544.63 |
| | 1 | 20.8 | 20.8 | 21.1 | 21.2 | 78.8 | 21.3 | 21.3 | 49.2 | 36.0 | 10.90 | 20.95 | 10.05 | 2544.63 |
| | 1 | 20.8 | 20.7 | 21.1 | 21.1 | 78.6 | 21.2 | 21.2 | 50.4 | 34.9 | 10.90 | 20.90 | 10.00 | 2544.63 |
| 60 | 1 | 20.9 | 20.8 | 21.2 | 21.2 | 78.8 | 21.4 | 21.4 | 53.9 | 37.3 | 10.95 | 21.00 | 10.05 | 2544.63 |
| | 1 | 20.9 | 20.9 | 21.2 | 21.2 | 78.7 | 21.3 | 21.3 | 51.8 | 35.5 | 10.95 | 21.05 | 10.10 | 2181.11 |
| | 1 | 20.9 | 20.8 | 21.2 | 21.2 | 78.8 | 21.4 | 21.4 | 52.0 | 36.9 | 10.95 | 21.00 | 10.05 | 2544.63 |
| 50 | 1 | 20.9 | 20.7 | 21.1 | 21.2 | 78.8 | 21.2 | 21.2 | 50.7 | 35.1 | 10.95 | 20.90 | 9.95 | 2544.63 |
| | 1 | 21.0 | 20.9 | 21.3 | 21.2 | 78.9 | 21.2 | 21.2 | 50.0 | 36.3 | 11.00 | 21.10 | 10.10 | 2181.11 |
| | 1 | 20.9 | 20.8 | 21.2 | 21.2 | 78.8 | 21.1 | 21.1 | 48.5 | 35.3 | 10.95 | 21.00 | 10.05 | 2544.63 |
| 40 | 1 | 20.9 | 20.8 | 21.2 | 21.2 | 78.9 | 21.1 | 21.1 | 49.7 | 36.8 | 10.95 | 21.00 | 10.05 | 2544.63 |
| | 1 | 21.0 | 20.8 | 21.1 | 21.1 | 78.8 | 21.1 | 21.1 | 50.5 | 36.3 | 11.00 | 20.95 | 9.95 | 1454.07 |
| | 1 | 21.1 | 20.8 | 21.1 | 21.1 | 78.7 | 21.1 | 21.2 | 48.0 | 38.6 | 11.05 | 20.95 | 9.90 | 1090.56 |
| 30 | 1 | 20.9 | 20.9 | 21.1 | 21.2 | 78.9 | 21.2 | 21.1 | 51.4 | 42.6 | 10.95 | 21.00 | 10.05 | 1817.59 |
| | 1 | 20.9 | 20.9 | 21.1 | 21.2 | 78.9 | 21.1 | 21.1 | 50.4 | 43.7 | 10.95 | 21.00 | 10.05 | 1817.59 |
| | 1 | 20.9 | 20.8 | 21.1 | 21.2 | 78.9 | 21.1 | 21.1 | 50.4 | 43.1 | 10.95 | 20.95 | 10.00 | 2181.11 |
| 20 | 1 | 20.8 | 20.8 | 21.0 | 21.0 | 78.8 | 21.1 | 21.0 | 49.2 | 48.0 | 10.90 | 20.90 | 10.00 | 1454.07 |
| | 1 | 20.8 | 20.7 | 21.0 | 21.1 | 79.0 | 21.0 | 21.1 | 47.5 | 46.6 | 10.90 | 20.85 | 9.95 | 2181.11 |
| | 1 | 21.0 | 20.8 | 21.0 | 21.3 | 78.8 | 21.1 | 21.0 | 48.3 | 46.2 | 11.00 | 20.90 | 9.90 | 1817.59 |
| 10 | 1 | 20.8 | 20.9 | 21.1 | 21.1 | 79.1 | 21.0 | 21.0 | 55.2 | 53.3 | 10.90 | 21.00 | 10.10 | 1817.59 |
| | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.1 | 21.0 | 21.0 | 55.1 | 54.5 | 11.00 | 21.00 | 10.00 | 1090.56 |
| | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.1 | 21.0 | 21.0 | 55.0 | 54.4 | 11.00 | 21.00 | 10.00 | 1090.56 |
| 0 | 1 | 21.0 | 21.0 | 21.1 | 21.1 | 79.1 | 21.0 | 21.0 | 55.2 | 54.9 | 11.00 | 21.05 | 10.05 | 727.04 |
| | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.1 | 21.0 | 21.0 | 55.2 | 54.7 | 11.00 | 21.00 | 10.00 | 1090.56 |
| | 1 | 20.9 | 20.8 | 21.0 | 21.0 | 79.1 | 21.0 | 21.0 | 55.1 | 54.6 | 10.95 | 20.90 | 9.95 | 1090.56 |
| -10 | 1 | 20.8 | 20.8 | 21.1 | 21.1 | 79.0 | 21.4 | 21.4 | 54.3 | 54.2 | 10.90 | 20.95 | 10.05 | 2181.11 |
| | 1 | 21.0 | 20.8 | 21.1 | 21.1 | 79.2 | 21.3 | 21.3 | 54.4 | 54.3 | 11.00 | 20.95 | 9.95 | 1454.07 |
| | 1 | 21.0 | 20.8 | 21.1 | 21.1 | 79.1 | 21.3 | 21.3 | 54.5 | 54.3 | 11.00 | 20.95 | 9.95 | 1454.07 |
| -30 | 1 | 21.0 | 20.8 | 21.0 | 21.1 | 79.0 | 21.1 | 21.1 | 54.6 | 54.4 | 11.00 | 20.90 | 9.90 | 1090.56 |
| | 1 | 21.0 | 20.7 | 21.1 | 21.1 | 79.0 | 21.1 | 21.1 | 54.6 | 54.3 | 11.00 | 20.90 | 9.90 | 1817.59 |
| | 1 | 21.1 | 20.9 | 21.1 | 21.1 | 79.1 | 21.1 | 21.1 | 54.3 | 54.4 | 11.05 | 21.00 | 9.95 | 727.04 |
| -50 | 1 | 21.0 | 20.8 | 21.0 | 21.0 | 79.0 | 21.1 | 21.1 | 54.4 | 54.3 | 11.00 | 20.90 | 9.90 | 727.04 |
| | 1 | 20.8 | 20.8 | 20.9 | 21.0 | 79.0 | 21.1 | 21.1 | 54.3 | 54.2 | 10.90 | 20.85 | 9.95 | 1090.56 |
| | 1 | 21.0 | 20.7 | 20.9 | 21.0 | 78.9 | 21.0 | 21.0 | 54.2 | 54.2 | 11.00 | 20.80 | 9.80 | 727.04 |
| -70 | 1 | 21.1 | 20.8 | 21.0 | 21.0 | 79.1 | 21.0 | 21.0 | 54.3 | 54.3 | 11.05 | 20.90 | 9.85 | 363.52 |
| | 1 | 21.0 | 20.8 | 21.0 | 20.9 | 79.1 | 21.0 | 21.0 | 54.3 | 54.3 | 11.00 | 20.90 | 9.90 | 363.52 |
| | 1 | 21.0 | 20.8 | 21.0 | 21.0 | 79.1 | 21.0 | 21.0 | 54.5 | 54.3 | 11.00 | 20.90 | 9.90 | 727.04 |
| -90 | 1 | 20.9 | 20.7 | 20.9 | 21.0 | 79.0 | 21.0 | 21.0 | 54.8 | 54.4 | 10.95 | 20.80 | 9.85 | 1090.56 |
| | 1 | 20.9 | 20.8 | 20.9 | 20.8 | 79.0 | 21.0 | 21.0 | 54.5 | 54.2 | 10.95 | 20.85 | 9.90 | 0.00 |
| | 1 | 20.8 | 20.7 | 20.9 | 21.0 | 79.1 | 21.1 | 21.1 | 54.7 | 54.3 | 10.90 | 20.80 | 9.90 | 1454.07 |

ตาราง ก-30 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร MP39 Di 0.66 mm. Lt 5 m. Le 15 cm.

| อุณหภูมิ องศา | Q (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δ T (°C) | q (W/m ²) |
|------------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 20.8 | 20.7 | 21.1 | 21.1 | 77.1 | 21.0 | 21.0 | 45.8 | 45.4 | 10.90 | 20.90 | 10.00 | 2374.99 |
| | 1 | 20.7 | 20.8 | 21.1 | 21.1 | 77.1 | 21.0 | 21.1 | 43.1 | 44.7 | 10.85 | 20.95 | 10.10 | 2374.99 |
| | 1 | 20.8 | 20.7 | 21.2 | 21.0 | 77.1 | 21.0 | 21.0 | 43.1 | 44.3 | 10.90 | 20.95 | 10.05 | 2374.99 |
| 80 | 1 | 20.7 | 20.7 | 21.1 | 21.1 | 77.0 | 21.1 | 21.1 | 45.4 | 46.2 | 10.85 | 20.90 | 10.05 | 2714.27 |
| | 1 | 20.7 | 20.7 | 21.0 | 21.0 | 77.0 | 21.3 | 21.3 | 46.1 | 46.7 | 10.85 | 20.85 | 10.00 | 2035.70 |
| | 1 | 20.8 | 20.8 | 21.2 | 21.2 | 77.1 | 21.2 | 21.2 | 46.6 | 47.2 | 10.90 | 21.00 | 10.10 | 2714.27 |
| 70 | 1 | 20.8 | 20.8 | 21.1 | 21.1 | 77.1 | 21.1 | 21.1 | 45.3 | 46.0 | 10.90 | 20.95 | 10.05 | 2035.70 |
| | 1 | 20.8 | 20.8 | 21.1 | 21.1 | 77.1 | 21.1 | 21.1 | 46.3 | 46.7 | 10.90 | 20.95 | 10.05 | 2035.70 |
| | 1 | 20.8 | 20.8 | 21.0 | 21.1 | 77.1 | 21.1 | 21.1 | 46.7 | 46.8 | 10.90 | 20.90 | 10.00 | 1696.42 |
| 60 | 1 | 20.8 | 20.8 | 21.1 | 21.0 | 77.3 | 21.1 | 21.1 | 46.6 | 47.5 | 10.90 | 20.95 | 10.05 | 1696.42 |
| | 1 | 20.8 | 20.7 | 21.0 | 21.0 | 77.2 | 21.2 | 21.2 | 46.6 | 47.3 | 10.90 | 20.85 | 9.95 | 1696.42 |
| | 1 | 20.9 | 20.9 | 21.2 | 21.3 | 77.3 | 21.2 | 21.2 | 46.7 | 47.5 | 10.95 | 21.05 | 10.10 | 2374.99 |
| 50 | 1 | 20.8 | 20.8 | 21.1 | 21.2 | 77.6 | 21.2 | 21.2 | 45.6 | 46.3 | 10.90 | 20.95 | 10.05 | 2374.99 |
| | 1 | 20.8 | 20.7 | 21.1 | 21.2 | 77.6 | 21.2 | 21.2 | 45.7 | 46.6 | 10.90 | 20.90 | 10.00 | 2714.27 |
| | 1 | 20.8 | 20.7 | 21.2 | 21.2 | 77.6 | 21.2 | 21.2 | 46.1 | 46.9 | 10.90 | 20.95 | 10.05 | 3053.55 |
| 40 | 1 | 20.8 | 20.7 | 21.1 | 21.1 | 77.9 | 21.2 | 21.2 | 46.1 | 47.1 | 10.90 | 20.90 | 10.00 | 2374.99 |
| | 1 | 20.8 | 20.8 | 21.1 | 21.1 | 78.0 | 21.1 | 21.1 | 46.1 | 47.2 | 10.90 | 20.95 | 10.05 | 2035.70 |
| | 1 | 20.8 | 20.7 | 21.1 | 21.1 | 77.9 | 21.1 | 21.1 | 45.8 | 47.2 | 10.90 | 20.90 | 10.00 | 2374.99 |
| 30 | 1 | 20.7 | 20.7 | 21.2 | 21.2 | 78.2 | 21.2 | 21.2 | 45.0 | 45.9 | 10.85 | 20.95 | 10.10 | 3392.84 |
| | 1 | 20.8 | 20.7 | 21.2 | 21.2 | 78.2 | 21.2 | 21.2 | 45.0 | 46.3 | 10.90 | 20.95 | 10.05 | 3053.55 |
| | 1 | 20.8 | 20.8 | 21.2 | 21.1 | 78.2 | 21.3 | 21.3 | 45.3 | 45.8 | 10.90 | 21.00 | 10.10 | 2374.99 |
| 20 | 1 | 20.7 | 20.7 | 20.8 | 20.8 | 78.9 | 20.8 | 20.8 | 45.1 | 45.9 | 10.85 | 20.75 | 9.90 | 678.57 |
| | 1 | 20.8 | 20.7 | 20.8 | 21.0 | 79.1 | 20.8 | 20.8 | 44.3 | 45.1 | 10.90 | 20.75 | 9.85 | 1017.85 |
| | 1 | 20.8 | 20.7 | 20.8 | 20.8 | 79.0 | 20.8 | 20.8 | 43.9 | 44.9 | 10.90 | 20.75 | 9.85 | 339.28 |
| 10 | 1 | 20.8 | 20.7 | 20.8 | 20.8 | 79.0 | 20.7 | 20.7 | 43.8 | 44.7 | 10.90 | 20.75 | 9.85 | 339.28 |
| | 1 | 20.7 | 20.7 | 20.8 | 20.8 | 79.0 | 20.8 | 20.8 | 43.7 | 44.7 | 10.85 | 20.75 | 9.90 | 678.57 |
| | 1 | 20.9 | 20.7 | 21.0 | 20.9 | 79.1 | 21.0 | 21.0 | 43.7 | 44.4 | 10.95 | 20.85 | 9.90 | 1017.85 |
| 0 | 1 | 20.8 | 20.9 | 20.9 | 21.0 | 79.1 | 21.0 | 21.0 | 43.1 | 43.7 | 10.90 | 20.90 | 10.00 | 678.57 |
| | 1 | 21.0 | 20.8 | 21.0 | 21.0 | 79.1 | 20.9 | 20.9 | 43.0 | 43.7 | 11.00 | 20.90 | 9.90 | 678.57 |
| | 1 | 20.9 | 20.9 | 21.0 | 21.0 | 79.1 | 21.0 | 21.0 | 43.1 | 44.1 | 10.95 | 20.95 | 10.00 | 678.57 |
| -10 | 1 | 21.0 | 20.9 | 21.1 | 21.0 | 79.1 | 21.1 | 21.1 | 43.0 | 42.9 | 11.00 | 21.00 | 10.00 | 678.57 |
| | 1 | 21.0 | 20.8 | 21.0 | 21.0 | 79.1 | 21.1 | 21.1 | 43.0 | 43.1 | 11.00 | 20.90 | 9.90 | 678.57 |
| | 1 | 21.0 | 20.8 | 21.0 | 21.0 | 79.1 | 21.0 | 21.0 | 42.1 | 42.1 | 11.00 | 20.90 | 9.90 | 678.57 |
| -30 | 1 | 21.0 | 20.8 | 21.0 | 20.9 | 79.1 | 20.9 | 20.9 | 41.2 | 42.1 | 11.00 | 20.90 | 9.90 | 339.28 |
| | 1 | 21.0 | 20.8 | 21.0 | 20.9 | 79.0 | 21.0 | 21.0 | 37.2 | 43.8 | 11.00 | 20.90 | 9.90 | 339.28 |
| | 1 | 20.9 | 20.8 | 20.9 | 21.1 | 79.1 | 21.0 | 21.0 | 41.5 | 43.6 | 10.95 | 20.85 | 9.90 | 1017.85 |
| -50 | 1 | 21.0 | 21.0 | 21.0 | 21.0 | 79.1 | 20.9 | 20.9 | 42.5 | 43.4 | 11.00 | 21.00 | 10.00 | 0.00 |
| | 1 | 20.9 | 21.0 | 21.1 | 21.0 | 79.0 | 20.9 | 20.9 | 43.5 | 44.1 | 10.95 | 21.05 | 10.10 | 678.57 |
| | 1 | 21.0 | 20.8 | 21.1 | 21.0 | 79.1 | 20.8 | 20.8 | 42.8 | 43.5 | 11.00 | 20.95 | 9.95 | 1017.85 |
| -70 | 1 | 21.0 | 21.0 | 21.0 | 21.1 | 79.0 | 21.0 | 21.0 | 42.8 | 43.6 | 11.00 | 21.00 | 10.00 | 339.28 |
| | 1 | 20.9 | 20.9 | 21.0 | 21.0 | 79.1 | 20.9 | 20.9 | 43.1 | 43.9 | 10.95 | 20.95 | 10.00 | 678.57 |
| | 1 | 21.0 | 21.0 | 21.0 | 21.0 | 79.1 | 20.9 | 20.9 | 43.3 | 43.5 | 11.00 | 21.00 | 10.00 | 0.00 |
| -90 | 1 | 21.0 | 21.0 | 21.0 | 21.1 | 79.1 | 20.9 | 20.9 | 43.2 | 44.1 | 11.00 | 21.00 | 10.00 | 339.28 |
| | 1 | 21.0 | 20.9 | 21.0 | 21.0 | 79.1 | 20.9 | 20.9 | 43.5 | 44.3 | 11.00 | 20.95 | 9.95 | 339.28 |
| | 1 | 21.0 | 21.0 | 21.0 | 21.0 | 79.2 | 21.0 | 21.0 | 43.5 | 44.4 | 11.00 | 21.00 | 10.00 | 0.00 |

ตาราง ก-31 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร MP39 Di 0.66 mm. Lt 10 m. Le 5 cm.

| มุม องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti,ave (°C) | To,ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|--------------------------|
| 90 | 1 | 21.1 | 21.0 | 23.7 | 23.7 | 76.0 | 31.9 | 31.9 | 45.9 | 47.6 | 11.05 | 22.35 | 11.30 | 9633.24 |
| | 1 | 21.1 | 21.1 | 23.8 | 23.8 | 76.4 | 30.7 | 30.7 | 46.3 | 48.7 | 11.05 | 22.45 | 11.40 | 9815.00 |
| | 1 | 21.1 | 21.1 | 24.0 | 24.0 | 76.3 | 30.0 | 30.0 | 46.1 | 49.1 | 11.05 | 22.55 | 11.50 | 10542.03 |
| 80 | 1 | 21.1 | 21.1 | 23.7 | 23.7 | 76.4 | 29.8 | 29.8 | 45.4 | 49.4 | 11.05 | 22.40 | 11.35 | 9451.48 |
| | 1 | 21.1 | 21.0 | 23.5 | 23.5 | 76.7 | 29.1 | 29.1 | 45.3 | 48.5 | 11.05 | 22.25 | 11.20 | 8906.20 |
| | 1 | 21.1 | 21.0 | 23.4 | 23.4 | 76.8 | 30.2 | 30.2 | 44.0 | 50.3 | 11.05 | 22.20 | 11.15 | 8542.68 |
| 70 | 1 | 21.1 | 20.9 | 23.4 | 23.4 | 76.8 | 31.4 | 31.4 | 48.5 | 49.9 | 11.05 | 22.15 | 11.10 | 8724.44 |
| | 1 | 21.1 | 21.0 | 23.3 | 23.4 | 77.2 | 31.9 | 31.9 | 45.6 | 51.7 | 11.05 | 22.15 | 11.10 | 8360.92 |
| | 1 | 21.1 | 20.9 | 23.5 | 23.4 | 77.3 | 32.3 | 32.3 | 45.3 | 48.5 | 11.05 | 22.20 | 11.15 | 8906.20 |
| 60 | 1 | 21.1 | 21.1 | 23.6 | 23.5 | 77.4 | 32.2 | 32.2 | 45.5 | 50.0 | 11.05 | 22.35 | 11.30 | 8906.20 |
| | 1 | 21.1 | 21.0 | 23.6 | 23.5 | 77.5 | 31.7 | 31.7 | 46.5 | 48.8 | 11.05 | 22.30 | 11.25 | 9087.96 |
| | 1 | 21.3 | 21.1 | 23.6 | 23.6 | 77.3 | 31.1 | 31.1 | 46.6 | 47.8 | 11.15 | 22.35 | 11.20 | 8724.44 |
| 50 | 1 | 21.2 | 21.0 | 23.4 | 23.7 | 77.3 | 32.8 | 32.8 | 47.0 | 49.2 | 11.10 | 22.20 | 11.10 | 8906.20 |
| | 1 | 21.1 | 21.2 | 23.6 | 23.6 | 77.5 | 33.7 | 33.7 | 46.6 | 49.1 | 11.05 | 22.40 | 11.35 | 8906.20 |
| | 1 | 21.1 | 21.0 | 23.5 | 23.5 | 76.9 | 33.7 | 33.7 | 46.0 | 49.8 | 11.05 | 22.25 | 11.20 | 8906.20 |
| 40 | 1 | 21.2 | 21.1 | 23.2 | 23.1 | 77.4 | 32.6 | 32.6 | 48.9 | 48.3 | 11.10 | 22.15 | 11.05 | 7270.37 |
| | 1 | 21.1 | 21.0 | 22.8 | 23.0 | 77.4 | 30.1 | 30.1 | 48.8 | 46.9 | 11.05 | 21.90 | 10.85 | 6725.09 |
| | 1 | 21.1 | 21.1 | 22.8 | 22.7 | 78.9 | 28.4 | 28.4 | 49.8 | 50.6 | 11.05 | 21.95 | 10.90 | 5998.05 |
| 30 | 1 | 21.1 | 21.1 | 22.5 | 22.3 | 79.2 | 22.0 | 22.0 | 47.1 | 48.5 | 11.05 | 21.80 | 10.75 | 4725.74 |
| | 1 | 21.2 | 21.1 | 22.4 | 22.4 | 78.5 | 24.7 | 24.7 | 53.9 | 54.2 | 11.10 | 21.75 | 10.65 | 4543.98 |
| | 1 | 21.1 | 21.1 | 22.4 | 22.3 | 78.8 | 24.4 | 24.4 | 53.9 | 56.0 | 11.05 | 21.75 | 10.70 | 4543.98 |
| 20 | 1 | 21.2 | 21.1 | 22.1 | 22.1 | 79.2 | 21.4 | 21.4 | 55.5 | 56.4 | 11.10 | 21.60 | 10.50 | 3453.42 |
| | 1 | 21.1 | 21.0 | 22.0 | 21.9 | 79.0 | 21.2 | 21.2 | 55.5 | 56.2 | 11.05 | 21.50 | 10.45 | 3271.67 |
| | 1 | 21.0 | 21.0 | 21.8 | 22.0 | 79.1 | 21.2 | 21.2 | 55.5 | 56.5 | 11.00 | 21.40 | 10.40 | 3271.67 |
| 10 | 1 | 21.1 | 21.0 | 22.1 | 22.1 | 79.1 | 21.7 | 21.7 | 56.4 | 57.0 | 11.05 | 21.55 | 10.50 | 3816.94 |
| | 1 | 21.1 | 21.0 | 21.9 | 21.9 | 79.1 | 21.2 | 21.2 | 56.4 | 57.1 | 11.05 | 21.45 | 10.40 | 3089.91 |
| | 1 | 21.1 | 21.0 | 21.9 | 21.9 | 79.1 | 21.2 | 21.2 | 56.4 | 57.0 | 11.05 | 21.45 | 10.40 | 3089.91 |
| 0 | 1 | 21.2 | 21.1 | 22.1 | 21.9 | 79.2 | 21.9 | 21.9 | 57.0 | 58.1 | 11.10 | 21.60 | 10.50 | 3089.91 |
| | 1 | 21.1 | 21.1 | 22.0 | 21.9 | 79.1 | 21.9 | 21.9 | 57.1 | 58.1 | 11.05 | 21.55 | 10.50 | 3089.91 |
| | 1 | 21.2 | 21.0 | 21.8 | 21.9 | 79.1 | 21.9 | 21.9 | 57.2 | 58.0 | 11.10 | 21.40 | 10.30 | 2726.39 |
| -10 | 1 | 21.1 | 21.0 | 22.1 | 22.1 | 79.1 | 23.0 | 23.0 | 58.1 | 53.6 | 11.05 | 21.55 | 10.50 | 3816.94 |
| | 1 | 21.1 | 21.1 | 21.9 | 22.0 | 79.2 | 22.1 | 22.1 | 57.4 | 55.4 | 11.05 | 21.50 | 10.45 | 3089.91 |
| | 1 | 21.1 | 21.0 | 21.9 | 22.0 | 79.1 | 22.7 | 22.7 | 58.5 | 59.1 | 11.05 | 21.45 | 10.40 | 3271.67 |
| -30 | 1 | 21.1 | 20.9 | 21.7 | 21.7 | 79.1 | 22.1 | 22.1 | 58.9 | 59.6 | 11.05 | 21.30 | 10.25 | 2544.63 |
| | 1 | 21.1 | 20.9 | 21.7 | 21.8 | 79.1 | 22.1 | 22.1 | 58.9 | 59.8 | 11.05 | 21.30 | 10.25 | 2726.39 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.8 | 79.2 | 22.1 | 22.1 | 58.9 | 59.6 | 11.05 | 21.45 | 10.40 | 2544.63 |
| -50 | 1 | 21.1 | 21.0 | 21.6 | 22.0 | 79.1 | 22.2 | 22.2 | 59.1 | 59.9 | 11.05 | 21.30 | 10.25 | 2726.39 |
| | 1 | 21.1 | 21.3 | 21.7 | 21.8 | 79.2 | 22.3 | 22.3 | 59.2 | 60.0 | 11.05 | 21.50 | 10.45 | 1999.35 |
| | 1 | 21.1 | 21.0 | 21.7 | 21.7 | 79.1 | 22.3 | 22.3 | 59.2 | 60.0 | 11.05 | 21.35 | 10.30 | 2362.87 |
| -70 | 1 | 21.0 | 21.0 | 21.5 | 21.6 | 79.1 | 22.2 | 22.2 | 59.7 | 60.4 | 11.00 | 21.25 | 10.25 | 1999.35 |
| | 1 | 21.1 | 21.0 | 21.6 | 21.6 | 79.1 | 22.3 | 22.3 | 59.8 | 60.6 | 11.05 | 21.30 | 10.25 | 1999.35 |
| | 1 | 21.1 | 21.0 | 21.7 | 21.7 | 79.1 | 22.4 | 22.4 | 59.9 | 60.7 | 11.05 | 21.35 | 10.30 | 2362.87 |
| -90 | 1 | 21.2 | 21.0 | 21.7 | 22.1 | 79.1 | 22.9 | 22.9 | 59.9 | 60.6 | 11.10 | 21.35 | 10.25 | 2908.15 |
| | 1 | 21.2 | 21.0 | 21.6 | 21.7 | 79.1 | 22.5 | 22.5 | 59.9 | 60.5 | 11.10 | 21.30 | 10.20 | 1999.35 |
| | 1 | 21.2 | 21.0 | 21.7 | 21.9 | 79.1 | 22.5 | 22.5 | 59.9 | 60.7 | 11.10 | 21.35 | 10.25 | 2544.63 |

ตาราง ก-32 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 0.66 mm. Lt 10 m. Le 10 cm.

| มุม องศา | Q (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δ T (°C) | q (W/m ²) |
|-------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 21.1 | 21.1 | 21.9 | 22.0 | 78.3 | 21.6 | 21.6 | 54.5 | 53.8 | 11.05 | 21.50 | 10.45 | 2703.67 |
| | 1 | 21.1 | 21.1 | 21.9 | 22.0 | 78.3 | 21.5 | 21.5 | 55.9 | 55.0 | 11.05 | 21.50 | 10.45 | 2703.67 |
| | 1 | 21.2 | 20.9 | 21.7 | 21.9 | 78.1 | 21.7 | 21.7 | 56.1 | 54.8 | 11.10 | 21.30 | 10.20 | 2385.59 |
| 80 | 1 | 21.0 | 21.0 | 21.7 | 21.8 | 78.3 | 21.5 | 21.5 | 56.8 | 57.0 | 11.00 | 21.35 | 10.35 | 2385.59 |
| | 1 | 21.0 | 21.1 | 21.7 | 21.9 | 78.3 | 21.5 | 21.5 | 56.7 | 56.6 | 11.00 | 21.40 | 10.40 | 2385.59 |
| | 1 | 21.1 | 21.0 | 21.7 | 21.9 | 78.2 | 21.5 | 21.5 | 57.0 | 57.3 | 11.05 | 21.35 | 10.30 | 2385.59 |
| 70 | 1 | 21.1 | 21.0 | 21.8 | 21.9 | 78.2 | 21.5 | 21.5 | 57.0 | 56.9 | 11.05 | 21.40 | 10.35 | 2544.63 |
| | 1 | 21.2 | 20.9 | 21.8 | 21.9 | 78.3 | 21.5 | 21.5 | 56.9 | 57.2 | 11.10 | 21.35 | 10.25 | 2544.63 |
| | 1 | 21.1 | 21.0 | 21.9 | 21.9 | 78.3 | 21.6 | 21.6 | 57.0 | 56.9 | 11.05 | 21.45 | 10.40 | 2703.67 |
| 60 | 1 | 21.3 | 21.0 | 22.0 | 21.9 | 78.5 | 21.3 | 21.3 | 56.6 | 56.7 | 11.15 | 21.50 | 10.35 | 2544.63 |
| | 1 | 21.2 | 21.0 | 22.0 | 21.9 | 78.4 | 21.3 | 21.3 | 56.3 | 56.7 | 11.10 | 21.50 | 10.40 | 2703.67 |
| | 1 | 21.3 | 21.1 | 22.0 | 21.8 | 78.4 | 21.5 | 21.5 | 56.5 | 56.7 | 11.15 | 21.55 | 10.40 | 2226.55 |
| 50 | 1 | 21.2 | 21.3 | 22.0 | 21.9 | 78.5 | 21.6 | 21.6 | 56.2 | 55.9 | 11.10 | 21.65 | 10.55 | 2226.55 |
| | 1 | 21.1 | 21.1 | 21.9 | 21.9 | 78.5 | 21.6 | 21.6 | 56.4 | 56.1 | 11.05 | 21.50 | 10.45 | 2544.63 |
| | 1 | 21.2 | 21.2 | 22.0 | 21.8 | 78.6 | 21.6 | 21.6 | 56.4 | 56.2 | 11.10 | 21.60 | 10.50 | 2226.55 |
| 40 | 1 | 21.0 | 21.2 | 22.0 | 21.9 | 78.6 | 21.6 | 21.6 | 56.4 | 56.0 | 11.00 | 21.60 | 10.60 | 2703.67 |
| | 1 | 21.0 | 21.0 | 21.9 | 22.0 | 78.7 | 21.5 | 21.5 | 56.4 | 56.0 | 11.00 | 21.45 | 10.45 | 3021.75 |
| | 1 | 21.0 | 21.2 | 21.9 | 21.9 | 78.5 | 21.6 | 21.6 | 56.5 | 55.9 | 11.00 | 21.55 | 10.55 | 2544.63 |
| 30 | 1 | 21.2 | 21.0 | 21.9 | 21.9 | 78.6 | 21.4 | 21.4 | 56.3 | 56.0 | 11.10 | 21.45 | 10.35 | 2544.63 |
| | 1 | 21.0 | 21.0 | 21.9 | 21.8 | 78.8 | 21.5 | 21.5 | 56.7 | 56.4 | 11.00 | 21.45 | 10.45 | 2703.67 |
| | 1 | 21.1 | 21.1 | 22.0 | 22.0 | 78.7 | 21.6 | 21.6 | 56.4 | 56.1 | 11.05 | 21.55 | 10.50 | 2862.71 |
| 20 | 1 | 21.1 | 21.3 | 22.0 | 22.1 | 78.7 | 21.5 | 21.5 | 56.7 | 56.4 | 11.05 | 21.65 | 10.60 | 2703.67 |
| | 1 | 21.1 | 21.1 | 22.2 | 22.0 | 78.7 | 21.6 | 21.6 | 56.5 | 56.2 | 11.05 | 21.65 | 10.60 | 3180.79 |
| | 1 | 21.1 | 21.2 | 22.0 | 22.1 | 78.8 | 21.6 | 21.6 | 56.6 | 56.3 | 11.05 | 21.60 | 10.55 | 2862.71 |
| 10 | 1 | 21.1 | 21.1 | 22.1 | 22.2 | 78.7 | 21.7 | 21.7 | 56.8 | 56.6 | 11.05 | 21.60 | 10.55 | 3339.82 |
| | 1 | 21.1 | 21.1 | 22.1 | 22.2 | 78.8 | 21.5 | 21.5 | 56.9 | 56.7 | 11.05 | 21.60 | 10.55 | 3339.82 |
| | 1 | 21.1 | 21.1 | 22.1 | 22.3 | 78.8 | 21.5 | 21.5 | 56.8 | 56.7 | 11.05 | 21.60 | 10.55 | 3498.86 |
| 0 | 1 | 21.1 | 21.1 | 22.2 | 22.3 | 78.9 | 21.5 | 21.5 | 57.4 | 57.3 | 11.05 | 21.65 | 10.60 | 3657.90 |
| | 1 | 21.1 | 21.1 | 22.1 | 22.4 | 78.9 | 21.5 | 21.5 | 57.6 | 57.5 | 11.05 | 21.60 | 10.55 | 3657.90 |
| | 1 | 21.1 | 21.1 | 22.3 | 22.3 | 78.8 | 21.4 | 21.4 | 57.7 | 57.6 | 11.05 | 21.70 | 10.65 | 3816.94 |
| -10 | 1 | 21.0 | 21.1 | 21.9 | 22.0 | 78.9 | 21.5 | 21.5 | 58.4 | 58.5 | 11.00 | 21.50 | 10.50 | 2862.71 |
| | 1 | 21.0 | 21.0 | 22.0 | 22.1 | 79.0 | 21.6 | 21.6 | 58.8 | 58.8 | 11.00 | 21.50 | 10.50 | 3339.82 |
| | 1 | 21.1 | 21.1 | 22.0 | 21.9 | 79.0 | 21.6 | 21.6 | 58.9 | 59.0 | 11.05 | 21.55 | 10.50 | 2703.67 |
| -30 | 1 | 21.1 | 21.1 | 21.8 | 21.9 | 79.1 | 21.6 | 21.6 | 59.0 | 60.3 | 11.05 | 21.45 | 10.40 | 2385.59 |
| | 1 | 21.1 | 21.2 | 22.1 | 21.8 | 79.1 | 21.5 | 21.5 | 60.3 | 60.5 | 11.05 | 21.65 | 10.60 | 2544.63 |
| | 1 | 21.1 | 21.1 | 21.9 | 21.8 | 79.1 | 21.4 | 21.4 | 60.4 | 60.6 | 11.05 | 21.50 | 10.45 | 2385.59 |
| -50 | 1 | 21.0 | 21.1 | 21.5 | 21.7 | 79.1 | 21.4 | 21.4 | 60.5 | 60.7 | 11.00 | 21.30 | 10.30 | 1749.43 |
| | 1 | 21.1 | 21.1 | 21.7 | 21.8 | 79.2 | 21.4 | 21.4 | 60.6 | 60.7 | 11.05 | 21.40 | 10.35 | 2067.51 |
| | 1 | 20.9 | 21.0 | 21.6 | 21.6 | 79.1 | 21.0 | 21.0 | 60.5 | 60.7 | 10.95 | 21.30 | 10.35 | 2067.51 |
| -70 | 1 | 21.1 | 21.0 | 21.4 | 21.5 | 79.2 | 21.4 | 21.4 | 59.2 | 59.2 | 11.05 | 21.20 | 10.15 | 1272.31 |
| | 1 | 20.9 | 21.0 | 21.4 | 21.5 | 79.1 | 21.4 | 21.4 | 59.3 | 59.2 | 10.95 | 21.20 | 10.25 | 1590.39 |
| | 1 | 21.0 | 21.0 | 21.5 | 21.4 | 79.2 | 21.4 | 21.4 | 59.4 | 59.3 | 11.00 | 21.25 | 10.25 | 1431.35 |
| -90 | 1 | 20.8 | 20.9 | 21.2 | 21.5 | 79.1 | 21.3 | 21.3 | 59.0 | 58.8 | 10.90 | 21.05 | 10.15 | 1590.39 |
| | 1 | 20.9 | 20.9 | 21.2 | 21.4 | 79.1 | 21.3 | 21.3 | 58.9 | 58.8 | 10.95 | 21.05 | 10.10 | 1272.31 |
| | 1 | 20.9 | 20.9 | 21.3 | 21.3 | 79.1 | 21.3 | 21.3 | 59.0 | 58.8 | 10.95 | 21.10 | 10.15 | 1272.31 |

ตาราง ก-33 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 0.66 mm. Lt 10 m. Le 15 cm.

| อุณหภูมิ องศา | Q (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δ T (°C) | q (W/m ²) |
|------------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 20.9 | 20.9 | 21.1 | 21.1 | 78.9 | 20.9 | 20.9 | 47.0 | 47.7 | 10.95 | 21.00 | 10.05 | 678.57 |
| | 1 | 20.9 | 20.7 | 21.1 | 21.1 | 78.9 | 20.9 | 20.9 | 47.3 | 48.0 | 10.95 | 20.90 | 9.95 | 1017.85 |
| | 1 | 20.9 | 20.8 | 21.1 | 21.0 | 78.9 | 21.0 | 21.0 | 47.5 | 48.4 | 10.95 | 20.95 | 10.00 | 678.57 |
| 80 | 1 | 21.0 | 21.0 | 21.1 | 21.1 | 79.0 | 20.9 | 20.9 | 48.5 | 48.5 | 11.00 | 21.05 | 10.05 | 339.28 |
| | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.0 | 20.8 | 20.8 | 48.4 | 48.5 | 11.00 | 21.00 | 10.00 | 508.93 |
| | 1 | 20.9 | 20.7 | 21.1 | 21.1 | 78.9 | 20.8 | 20.8 | 48.2 | 48.4 | 10.95 | 20.90 | 9.95 | 1017.85 |
| 70 | 1 | 20.9 | 20.9 | 21.1 | 21.1 | 78.9 | 20.9 | 20.9 | 48.2 | 48.0 | 10.95 | 21.00 | 10.05 | 678.57 |
| | 1 | 20.9 | 20.8 | 21.1 | 21.0 | 78.9 | 20.8 | 20.8 | 48.5 | 48.2 | 10.95 | 20.95 | 10.00 | 678.57 |
| | 1 | 20.9 | 20.8 | 21.0 | 21.1 | 78.9 | 20.8 | 20.8 | 48.7 | 48.3 | 10.95 | 20.90 | 9.95 | 678.57 |
| 60 | 1 | 21.0 | 20.8 | 21.1 | 21.1 | 79.0 | 20.8 | 20.8 | 48.8 | 48.7 | 11.00 | 20.95 | 9.95 | 678.57 |
| | 1 | 21.0 | 20.8 | 21.1 | 21.1 | 79.0 | 20.9 | 20.9 | 48.8 | 48.7 | 11.00 | 20.95 | 9.95 | 678.57 |
| | 1 | 20.9 | 20.9 | 21.1 | 21.1 | 79.0 | 20.8 | 20.8 | 48.8 | 48.8 | 10.95 | 21.00 | 10.05 | 678.57 |
| 50 | 1 | 20.9 | 20.8 | 21.1 | 21.0 | 79.0 | 20.8 | 20.8 | 49.1 | 49.0 | 10.95 | 20.95 | 10.00 | 678.57 |
| | 1 | 20.9 | 20.9 | 21.1 | 21.0 | 79.0 | 20.8 | 20.8 | 48.9 | 48.8 | 10.95 | 21.00 | 10.05 | 508.93 |
| | 1 | 21.0 | 20.8 | 21.1 | 21.0 | 79.0 | 20.8 | 20.8 | 48.8 | 48.8 | 11.00 | 20.95 | 9.95 | 508.93 |
| 40 | 1 | 20.9 | 20.9 | 21.1 | 21.1 | 79.0 | 20.8 | 20.8 | 48.8 | 48.5 | 10.95 | 21.00 | 10.05 | 678.57 |
| | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 78.3 | 20.9 | 20.9 | 48.6 | 48.5 | 11.00 | 21.00 | 10.00 | 508.93 |
| | 1 | 21.0 | 21.0 | 21.1 | 21.1 | 79.0 | 20.8 | 20.8 | 48.7 | 48.5 | 11.00 | 21.05 | 10.05 | 339.28 |
| 30 | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.1 | 20.9 | 20.9 | 48.7 | 47.9 | 11.00 | 21.00 | 10.00 | 508.93 |
| | 1 | 21.0 | 20.9 | 21.2 | 21.1 | 79.1 | 20.9 | 20.9 | 48.7 | 48.1 | 11.00 | 21.05 | 10.05 | 678.57 |
| | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.0 | 20.9 | 20.9 | 48.8 | 48.3 | 11.00 | 21.00 | 10.00 | 508.93 |
| 20 | 1 | 21.0 | 20.9 | 21.1 | 21.2 | 79.0 | 20.9 | 20.9 | 48.2 | 47.5 | 11.00 | 21.00 | 10.00 | 678.57 |
| | 1 | 21.0 | 21.0 | 21.1 | 21.1 | 79.1 | 20.9 | 20.9 | 48.1 | 47.5 | 11.00 | 21.05 | 10.05 | 339.28 |
| | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.0 | 20.9 | 20.9 | 48.0 | 47.4 | 11.00 | 21.00 | 10.00 | 508.93 |
| 10 | 1 | 20.9 | 20.8 | 21.1 | 21.1 | 79.0 | 20.8 | 20.8 | 47.0 | 46.6 | 10.95 | 20.95 | 10.00 | 848.21 |
| | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.0 | 20.9 | 20.9 | 46.9 | 46.5 | 11.00 | 21.00 | 10.00 | 508.93 |
| | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.1 | 20.9 | 20.9 | 47.0 | 46.6 | 11.00 | 21.00 | 10.00 | 508.93 |
| 0 | 1 | 20.9 | 20.8 | 20.9 | 21.1 | 79.1 | 20.9 | 20.9 | 46.2 | 45.9 | 10.95 | 20.85 | 9.90 | 508.93 |
| | 1 | 21.0 | 20.9 | 21.0 | 21.1 | 78.9 | 20.9 | 20.9 | 46.2 | 45.8 | 11.00 | 20.95 | 9.95 | 339.28 |
| | 1 | 21.0 | 20.9 | 21.0 | 21.1 | 78.8 | 20.9 | 20.9 | 46.1 | 45.8 | 11.00 | 20.95 | 9.95 | 339.28 |
| -10 | 1 | 20.9 | 20.8 | 20.9 | 21.1 | 78.9 | 20.9 | 20.9 | 46.5 | 46.2 | 10.95 | 20.85 | 9.90 | 508.93 |
| | 1 | 20.8 | 20.8 | 20.9 | 21.1 | 78.9 | 20.9 | 20.9 | 46.7 | 46.3 | 10.90 | 20.85 | 9.95 | 678.57 |
| | 1 | 21.0 | 20.9 | 21.0 | 21.1 | 78.9 | 20.9 | 20.9 | 47.0 | 46.6 | 11.00 | 20.95 | 9.95 | 339.28 |
| -30 | 1 | 21.1 | 20.9 | 21.2 | 21.2 | 79.0 | 21.0 | 21.0 | 45.1 | 44.8 | 11.05 | 21.05 | 10.00 | 678.57 |
| | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.0 | 20.9 | 20.9 | 45.1 | 44.8 | 11.00 | 21.00 | 10.00 | 508.93 |
| | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.0 | 20.9 | 20.9 | 45.3 | 44.9 | 11.00 | 21.00 | 10.00 | 508.93 |
| -50 | 1 | 21.0 | 21.0 | 21.1 | 21.1 | 79.1 | 20.9 | 20.9 | 44.7 | 44.3 | 11.00 | 21.05 | 10.05 | 339.28 |
| | 1 | 20.9 | 20.8 | 21.1 | 21.1 | 79.0 | 20.9 | 20.9 | 44.8 | 44.3 | 10.95 | 20.95 | 10.00 | 848.21 |
| | 1 | 20.9 | 20.8 | 21.1 | 21.1 | 79.0 | 20.9 | 20.9 | 44.9 | 44.3 | 10.95 | 20.95 | 10.00 | 848.21 |
| -70 | 1 | 20.9 | 20.9 | 21.0 | 21.1 | 79.0 | 20.9 | 20.9 | 44.7 | 44.2 | 10.95 | 20.95 | 10.00 | 508.93 |
| | 1 | 20.9 | 20.9 | 21.0 | 21.0 | 79.1 | 20.9 | 20.9 | 44.9 | 44.2 | 10.95 | 20.95 | 10.00 | 339.28 |
| | 1 | 20.9 | 20.8 | 21.0 | 21.0 | 79.1 | 20.8 | 20.8 | 44.7 | 44.2 | 10.95 | 20.90 | 9.95 | 508.93 |
| -90 | 1 | 20.9 | 20.8 | 21.0 | 21.0 | 79.1 | 20.8 | 20.8 | 44.5 | 44.0 | 10.95 | 20.90 | 9.95 | 508.93 |
| | 1 | 20.9 | 20.8 | 21.0 | 21.0 | 79.1 | 20.9 | 20.9 | 44.2 | 43.8 | 10.95 | 20.90 | 9.95 | 508.93 |
| | 1 | 20.9 | 20.8 | 21.0 | 21.0 | 79.1 | 20.9 | 20.9 | 44.0 | 43.7 | 10.95 | 20.90 | 9.95 | 508.93 |

ตาราง ก-34 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 0.66 mm. Lt 15 m. Le 5 cm.

| มุม องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|----------------------------|
| 90 | 1 | 20.9 | 20.9 | 25.5 | 25.3 | 77.1 | 32.1 | 30.1 | 57.6 | 55.5 | 10.95 | 23.20 | 12.25 | 10777.25 |
| | 1 | 21.0 | 21.0 | 25.4 | 25.3 | 77.0 | 32.4 | 31.6 | 57.8 | 55.6 | 11.00 | 23.20 | 12.20 | 10418.01 |
| | 1 | 21.0 | 21.0 | 25.7 | 25.5 | 76.9 | 33.6 | 32.4 | 58.0 | 55.8 | 11.00 | 23.35 | 12.35 | 11016.74 |
| 80 | 1 | 21.0 | 21.0 | 25.3 | 25.2 | 76.7 | 33.8 | 30.6 | 57.9 | 56.1 | 11.00 | 23.15 | 12.15 | 10178.51 |
| | 1 | 20.8 | 21.0 | 25.3 | 25.4 | 76.8 | 33.1 | 31.0 | 58.0 | 56.1 | 10.90 | 23.15 | 12.25 | 10657.50 |
| | 1 | 20.9 | 21.0 | 25.3 | 25.4 | 77.0 | 33.4 | 31.7 | 58.1 | 56.2 | 10.95 | 23.15 | 12.20 | 10537.76 |
| 70 | 1 | 21.0 | 21.1 | 25.6 | 25.5 | 77.4 | 33.1 | 29.9 | 55.9 | 55.9 | 11.00 | 23.35 | 12.35 | 10777.25 |
| | 1 | 21.0 | 21.0 | 25.6 | 25.6 | 77.8 | 32.0 | 30.1 | 57.6 | 55.6 | 11.00 | 23.30 | 12.30 | 11016.74 |
| | 1 | 21.0 | 21.0 | 25.5 | 25.5 | 77.8 | 32.3 | 30.3 | 57.9 | 55.9 | 11.00 | 23.25 | 12.25 | 10777.25 |
| 60 | 1 | 20.9 | 21.0 | 25.5 | 25.6 | 78.2 | 30.1 | 31.7 | 57.1 | 56.0 | 10.95 | 23.25 | 12.30 | 11016.74 |
| | 1 | 20.9 | 21.0 | 25.6 | 25.6 | 78.1 | 30.5 | 31.8 | 56.9 | 55.0 | 10.95 | 23.30 | 12.35 | 11136.49 |
| | 1 | 21.0 | 21.0 | 25.6 | 25.6 | 78.1 | 31.0 | 32.1 | 56.9 | 55.2 | 11.00 | 23.30 | 12.30 | 11016.74 |
| 50 | 1 | 21.0 | 21.0 | 25.5 | 25.7 | 78.0 | 31.7 | 32.5 | 57.7 | 55.8 | 11.00 | 23.25 | 12.25 | 11016.74 |
| | 1 | 21.0 | 20.9 | 25.5 | 25.2 | 78.0 | 31.7 | 31.7 | 57.9 | 56.1 | 11.00 | 23.20 | 12.20 | 10537.76 |
| | 1 | 21.0 | 20.9 | 25.3 | 25.6 | 77.9 | 32.0 | 31.2 | 57.7 | 56.1 | 11.00 | 23.10 | 12.10 | 10777.25 |
| 40 | 1 | 21.0 | 21.0 | 25.4 | 25.4 | 77.6 | 31.7 | 30.6 | 58.1 | 56.3 | 11.00 | 23.20 | 12.20 | 10537.76 |
| | 1 | 21.1 | 21.0 | 25.4 | 25.3 | 77.6 | 31.5 | 30.5 | 58.2 | 56.4 | 11.05 | 23.20 | 12.15 | 10298.26 |
| | 1 | 21.0 | 21.0 | 25.3 | 25.3 | 76.9 | 30.9 | 30.7 | 58.1 | 56.3 | 11.00 | 23.15 | 12.15 | 10298.26 |
| 30 | 1 | 21.0 | 21.1 | 25.3 | 25.2 | 77.3 | 29.7 | 31.1 | 58.4 | 56.6 | 11.00 | 23.20 | 12.20 | 10058.77 |
| | 1 | 20.9 | 21.0 | 25.2 | 25.2 | 77.1 | 30.1 | 30.9 | 57.9 | 56.7 | 10.95 | 23.10 | 12.15 | 10178.51 |
| | 1 | 20.9 | 21.0 | 25.3 | 25.3 | 77.3 | 30.1 | 30.0 | 58.4 | 56.6 | 10.95 | 23.15 | 12.20 | 10418.01 |
| 20 | 1 | 21.0 | 21.0 | 25.0 | 25.3 | 77.9 | 29.7 | 30.0 | 58.3 | 56.6 | 11.00 | 23.00 | 12.00 | 9939.02 |
| | 1 | 21.0 | 21.0 | 25.1 | 25.1 | 77.9 | 29.3 | 30.7 | 58.4 | 56.6 | 11.00 | 23.05 | 12.05 | 9819.27 |
| | 1 | 21.0 | 20.9 | 25.1 | 25.1 | 77.7 | 29.5 | 29.1 | 58.5 | 56.7 | 11.00 | 23.00 | 12.00 | 9939.02 |
| 10 | 1 | 20.8 | 21.0 | 25.0 | 24.9 | 77.9 | 30.0 | 29.5 | 59.1 | 57.4 | 10.90 | 23.00 | 12.10 | 9699.52 |
| | 1 | 20.9 | 21.0 | 24.9 | 24.9 | 77.0 | 29.4 | 29.5 | 59.1 | 57.4 | 10.95 | 22.95 | 12.00 | 9460.03 |
| | 1 | 20.9 | 20.9 | 25.1 | 24.8 | 77.0 | 29.7 | 30.2 | 59.7 | 57.5 | 10.95 | 23.00 | 12.05 | 9699.52 |
| 0 | 1 | 21.0 | 21.0 | 24.8 | 24.7 | 77.5 | 28.9 | 29.7 | 60.7 | 58.8 | 11.00 | 22.90 | 11.90 | 8981.04 |
| | 1 | 21.0 | 21.0 | 24.9 | 24.7 | 77.8 | 28.9 | 29.5 | 60.8 | 58.9 | 11.00 | 22.95 | 11.95 | 9100.79 |
| | 1 | 21.0 | 20.9 | 24.7 | 24.7 | 77.7 | 29.1 | 28.9 | 60.9 | 59.2 | 11.00 | 22.80 | 11.80 | 8981.04 |
| -10 | 1 | 21.0 | 21.0 | 24.3 | 24.3 | 78.0 | 29.2 | 29.9 | 62.2 | 60.7 | 11.00 | 22.65 | 11.65 | 7903.32 |
| | 1 | 20.9 | 20.9 | 24.4 | 24.4 | 77.8 | 29.7 | 27.0 | 62.3 | 60.8 | 10.95 | 22.65 | 11.70 | 8382.31 |
| | 1 | 21.0 | 20.9 | 24.5 | 24.4 | 78.0 | 29.5 | 27.1 | 62.2 | 61.3 | 11.00 | 22.70 | 11.70 | 8382.31 |
| -30 | 1 | 21.0 | 21.1 | 24.4 | 24.7 | 78.0 | 28.7 | 23.6 | 63.8 | 62.5 | 11.00 | 22.75 | 11.75 | 8382.31 |
| | 1 | 21.1 | 21.1 | 24.7 | 24.7 | 77.9 | 29.1 | 23.7 | 64.0 | 62.6 | 11.05 | 22.90 | 11.85 | 8621.80 |
| | 1 | 21.1 | 20.9 | 24.7 | 24.7 | 77.9 | 28.7 | 24.0 | 64.1 | 62.7 | 11.05 | 22.80 | 11.75 | 8861.29 |
| -50 | 1 | 21.2 | 21.2 | 24.1 | 23.8 | 77.5 | 31.2 | 24.9 | 64.2 | 62.7 | 11.10 | 22.65 | 11.55 | 6586.10 |
| | 1 | 21.1 | 21.1 | 23.9 | 23.9 | 77.9 | 31.6 | 25.1 | 64.1 | 62.7 | 11.05 | 22.50 | 11.45 | 6705.84 |
| | 1 | 21.1 | 21.1 | 24.0 | 23.9 | 77.4 | 31.4 | 25.2 | 64.1 | 62.6 | 11.05 | 22.55 | 11.50 | 6825.59 |
| -70 | 1 | 21.3 | 21.3 | 23.5 | 23.7 | 77.7 | 31.1 | 27.4 | 62.9 | 61.1 | 11.15 | 22.42 | 11.27 | 5472.45 |
| | 1 | 21.0 | 21.4 | 23.7 | 23.5 | 77.9 | 31.0 | 27.9 | 63.1 | 61.6 | 11.00 | 22.55 | 11.55 | 5747.87 |
| | 1 | 21.1 | 21.2 | 23.8 | 23.7 | 77.9 | 29.8 | 28.9 | 63.4 | 61.4 | 11.05 | 22.50 | 11.45 | 6226.86 |
| -90 | 1 | 20.9 | 20.9 | 23.6 | 23.5 | 77.4 | 29.6 | 33.0 | 62.5 | 60.6 | 10.95 | 22.25 | 11.30 | 6346.60 |
| | 1 | 21.0 | 21.2 | 23.9 | 23.7 | 78.0 | 29.1 | 32.0 | 62.5 | 60.7 | 11.00 | 22.55 | 11.55 | 6466.35 |
| | 1 | 21.0 | 21.1 | 23.6 | 23.6 | 77.5 | 28.8 | 32.0 | 62.5 | 60.7 | 11.00 | 22.35 | 11.35 | 6107.11 |

ตาราง ก-35 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร MP39 Di 0.66 mm. Lt 15 m. Le 10 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δ T (°C) | q (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 21.0 | 21.0 | 22.5 | 22.6 | 77.2 | 24.3 | 24.3 | 51.2 | 49.8 | 11.00 | 21.75 | 10.75 | 3286.81 |
| | 1 | 21.0 | 21.0 | 22.5 | 22.7 | 76.4 | 24.4 | 24.4 | 49.2 | 49.5 | 11.00 | 21.75 | 10.75 | 3392.84 |
| | 1 | 20.7 | 20.9 | 22.4 | 22.7 | 77.5 | 23.6 | 23.6 | 51.1 | 51.1 | 10.85 | 21.65 | 10.80 | 3710.92 |
| 80 | 1 | 20.9 | 20.9 | 22.4 | 22.7 | 77.8 | 24.3 | 24.3 | 51.7 | 48.9 | 10.95 | 21.65 | 10.70 | 3498.86 |
| | 1 | 21.0 | 20.9 | 22.4 | 22.5 | 77.6 | 23.8 | 23.8 | 51.3 | 47.3 | 11.00 | 21.65 | 10.65 | 3180.79 |
| | 1 | 21.0 | 21.0 | 22.4 | 22.4 | 78.0 | 23.7 | 23.7 | 53.4 | 51.2 | 11.00 | 21.70 | 10.70 | 2968.73 |
| 70 | 1 | 21.0 | 20.8 | 22.3 | 22.5 | 77.8 | 23.9 | 23.9 | 53.0 | 49.9 | 11.00 | 21.55 | 10.55 | 3180.79 |
| | 1 | 21.0 | 20.9 | 22.4 | 22.5 | 77.8 | 23.9 | 23.9 | 54.4 | 49.9 | 11.00 | 21.65 | 10.65 | 3180.79 |
| | 1 | 21.0 | 21.1 | 22.3 | 22.6 | 78.4 | 23.7 | 23.7 | 49.5 | 51.8 | 11.00 | 21.70 | 10.70 | 2968.73 |
| 60 | 1 | 20.9 | 20.9 | 22.3 | 22.4 | 78.2 | 23.5 | 23.5 | 49.8 | 48.9 | 10.95 | 21.60 | 10.65 | 3074.76 |
| | 1 | 20.9 | 20.8 | 22.4 | 22.4 | 78.0 | 22.8 | 22.8 | 53.4 | 48.1 | 10.95 | 21.60 | 10.65 | 3286.81 |
| | 1 | 20.9 | 20.9 | 22.3 | 22.3 | 78.1 | 23.4 | 23.4 | 53.6 | 47.5 | 10.95 | 21.60 | 10.65 | 2968.73 |
| 50 | 1 | 21.0 | 20.9 | 22.2 | 22.3 | 78.4 | 23.1 | 23.1 | 45.9 | 53.7 | 11.00 | 21.55 | 10.55 | 2756.68 |
| | 1 | 21.0 | 21.0 | 22.2 | 22.4 | 78.4 | 23.2 | 23.2 | 47.6 | 53.6 | 11.00 | 21.60 | 10.60 | 2756.68 |
| | 1 | 21.0 | 20.9 | 22.2 | 22.4 | 78.5 | 23.8 | 23.8 | 46.9 | 53.6 | 11.00 | 21.55 | 10.55 | 2862.71 |
| 40 | 1 | 21.0 | 20.9 | 22.3 | 22.4 | 77.4 | 23.5 | 23.5 | 50.5 | 47.5 | 11.00 | 21.60 | 10.60 | 2968.73 |
| | 1 | 20.9 | 20.9 | 22.4 | 22.3 | 78.5 | 23.6 | 23.6 | 48.6 | 50.9 | 10.95 | 21.65 | 10.70 | 3074.76 |
| | 1 | 21.0 | 20.9 | 22.3 | 22.4 | 78.5 | 23.7 | 23.7 | 48.4 | 51.1 | 11.00 | 21.60 | 10.60 | 2968.73 |
| 30 | 1 | 20.9 | 20.9 | 22.3 | 22.6 | 78.8 | 23.8 | 23.8 | 52.8 | 49.5 | 10.95 | 21.60 | 10.65 | 3286.81 |
| | 1 | 20.9 | 20.9 | 22.3 | 22.3 | 78.5 | 23.7 | 23.7 | 51.7 | 50.1 | 10.95 | 21.60 | 10.65 | 2968.73 |
| | 1 | 20.9 | 20.9 | 22.2 | 22.4 | 78.6 | 23.1 | 23.1 | 52.3 | 51.1 | 10.95 | 21.55 | 10.60 | 2968.73 |
| 20 | 1 | 20.8 | 20.9 | 22.4 | 22.8 | 78.8 | 23.7 | 23.7 | 48.9 | 53.2 | 10.90 | 21.65 | 10.75 | 3710.92 |
| | 1 | 20.8 | 21.0 | 22.6 | 22.8 | 79.1 | 22.2 | 22.2 | 52.0 | 53.6 | 10.90 | 21.80 | 10.90 | 3816.94 |
| | 1 | 20.8 | 21.0 | 22.4 | 22.4 | 78.9 | 23.3 | 23.3 | 48.9 | 46.1 | 10.90 | 21.70 | 10.80 | 3180.79 |
| 10 | 1 | 20.8 | 20.9 | 22.1 | 22.2 | 78.8 | 21.4 | 21.4 | 54.3 | 53.0 | 10.90 | 21.50 | 10.60 | 2756.68 |
| | 1 | 20.7 | 20.9 | 21.9 | 22.1 | 78.8 | 21.5 | 21.5 | 50.2 | 51.0 | 10.85 | 21.40 | 10.55 | 2544.63 |
| | 1 | 20.9 | 20.9 | 22.0 | 22.0 | 78.9 | 21.2 | 21.2 | 54.9 | 55.6 | 10.95 | 21.45 | 10.50 | 2332.58 |
| 0 | 1 | 20.9 | 20.9 | 22.1 | 22.1 | 78.8 | 21.3 | 21.3 | 55.0 | 55.8 | 10.95 | 21.50 | 10.55 | 2544.63 |
| | 1 | 20.8 | 20.9 | 22.0 | 22.4 | 78.8 | 21.4 | 21.4 | 51.2 | 55.5 | 10.90 | 21.45 | 10.55 | 2862.71 |
| | 1 | 21.0 | 20.8 | 22.1 | 22.4 | 78.8 | 21.2 | 21.2 | 48.8 | 55.5 | 11.00 | 21.45 | 10.45 | 2862.71 |
| -10 | 1 | 20.8 | 20.9 | 22.3 | 22.4 | 77.4 | 21.4 | 21.4 | 50.3 | 51.1 | 10.90 | 21.60 | 10.70 | 3180.79 |
| | 1 | 20.9 | 20.8 | 22.4 | 22.3 | 77.4 | 21.4 | 21.4 | 52.5 | 50.4 | 10.95 | 21.60 | 10.65 | 3180.79 |
| | 1 | 20.9 | 20.8 | 22.1 | 22.2 | 78.0 | 21.3 | 21.3 | 54.3 | 52.8 | 10.95 | 21.45 | 10.50 | 2756.68 |
| -30 | 1 | 21.1 | 21.0 | 21.7 | 21.8 | 78.3 | 21.4 | 21.4 | 53.6 | 54.2 | 11.05 | 21.35 | 10.30 | 1484.37 |
| | 1 | 21.0 | 20.9 | 21.7 | 21.8 | 78.1 | 21.3 | 21.3 | 53.0 | 52.1 | 11.00 | 21.30 | 10.30 | 1696.42 |
| | 1 | 20.9 | 21.0 | 21.7 | 21.8 | 78.3 | 21.4 | 21.4 | 54.0 | 54.1 | 10.95 | 21.35 | 10.40 | 1696.42 |
| -50 | 1 | 21.0 | 20.8 | 22.1 | 22.1 | 78.1 | 21.6 | 21.6 | 51.8 | 47.7 | 11.00 | 21.45 | 10.45 | 2544.63 |
| | 1 | 21.0 | 20.9 | 21.9 | 22.0 | 78.9 | 21.3 | 21.3 | 53.0 | 49.6 | 11.00 | 21.40 | 10.40 | 2120.52 |
| | 1 | 21.0 | 20.9 | 21.7 | 21.8 | 77.5 | 21.4 | 21.4 | 54.0 | 47.7 | 11.00 | 21.30 | 10.30 | 1696.42 |
| -70 | 1 | 21.1 | 21.0 | 21.7 | 21.7 | 77.8 | 21.7 | 21.7 | 53.9 | 52.9 | 11.05 | 21.35 | 10.30 | 1378.34 |
| | 1 | 21.1 | 21.0 | 21.7 | 21.7 | 78.8 | 21.3 | 21.3 | 54.1 | 50.4 | 11.05 | 21.35 | 10.30 | 1378.34 |
| | 1 | 21.0 | 21.0 | 21.7 | 21.7 | 78.2 | 21.7 | 21.7 | 53.7 | 53.2 | 11.00 | 21.35 | 10.35 | 1484.37 |
| -90 | 1 | 20.9 | 20.9 | 21.9 | 22.0 | 77.3 | 21.8 | 21.8 | 51.2 | 50.4 | 10.95 | 21.40 | 10.45 | 2226.55 |
| | 1 | 21.0 | 21.1 | 21.9 | 22.4 | 77.6 | 21.6 | 21.6 | 53.2 | 52.5 | 11.00 | 21.50 | 10.50 | 2332.58 |
| | 1 | 21.1 | 21.1 | 21.9 | 22.1 | 79.0 | 21.2 | 21.2 | 53.8 | 53.1 | 11.05 | 21.50 | 10.45 | 1908.47 |

ตาราง ก-36 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 0.66 mm. Lt 15 m. Lc 15 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δ T (°C) | q (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | l | 20.8 | 20.7 | 21.2 | 21.1 | 79.1 | 21.1 | 21.1 | 52.2 | 49.5 | 10.90 | 20.95 | 10.05 | 848.21 |
| | l | 20.7 | 20.7 | 21.1 | 21.2 | 79.2 | 21.0 | 21.0 | 52.4 | 50.2 | 10.85 | 20.90 | 10.05 | 954.24 |
| | i | 20.8 | 20.8 | 21.1 | 21.1 | 79.2 | 21.1 | 21.1 | 52.0 | 49.9 | 10.90 | 20.95 | 10.05 | 636.16 |
| 80 | l | 20.8 | 20.8 | 21.4 | 21.4 | 79.2 | 21.1 | 21.1 | 50.4 | 48.7 | 10.90 | 21.10 | 10.20 | 1272.31 |
| | l | 20.8 | 20.8 | 21.5 | 21.4 | 79.1 | 21.1 | 21.1 | 50.1 | 48.4 | 10.90 | 21.15 | 10.25 | 1378.34 |
| | l | 20.8 | 20.8 | 21.5 | 21.3 | 79.1 | 21.1 | 21.1 | 51.4 | 48.8 | 10.90 | 21.15 | 10.25 | 1272.31 |
| 70 | l | 20.7 | 20.8 | 21.4 | 21.4 | 79.1 | 21.2 | 21.2 | 54.4 | 51.4 | 10.85 | 21.10 | 10.25 | 1378.34 |
| | l | 20.8 | 20.8 | 21.4 | 21.5 | 79.1 | 21.3 | 21.3 | 54.5 | 51.7 | 10.90 | 21.10 | 10.20 | 1378.34 |
| | l | 20.8 | 20.8 | 21.4 | 21.4 | 79.1 | 21.2 | 21.2 | 54.9 | 52.5 | 10.90 | 21.10 | 10.20 | 1272.31 |
| 60 | l | 20.8 | 20.7 | 21.3 | 21.4 | 79.1 | 21.2 | 21.2 | 53.7 | 53.3 | 10.90 | 21.00 | 10.10 | 1272.31 |
| | l | 20.8 | 20.8 | 21.4 | 21.5 | 79.2 | 21.2 | 21.2 | 55.6 | 54.3 | 10.90 | 21.10 | 10.20 | 1378.34 |
| | l | 20.8 | 20.8 | 21.4 | 21.5 | 79.2 | 21.3 | 21.3 | 55.9 | 54.9 | 10.90 | 21.10 | 10.20 | 1378.34 |
| 50 | l | 20.9 | 20.8 | 21.4 | 21.4 | 79.1 | 21.3 | 21.3 | 56.4 | 55.8 | 10.95 | 21.10 | 10.15 | 1166.29 |
| | l | 20.9 | 20.8 | 21.4 | 21.5 | 79.1 | 21.3 | 21.3 | 55.8 | 55.0 | 10.95 | 21.10 | 10.15 | 1272.31 |
| | l | 20.9 | 20.8 | 21.4 | 21.4 | 79.2 | 21.4 | 21.4 | 55.4 | 54.4 | 10.95 | 21.10 | 10.15 | 1166.29 |
| 40 | l | 20.8 | 20.8 | 21.4 | 21.4 | 79.1 | 21.2 | 21.2 | 56.1 | 55.8 | 10.90 | 21.10 | 10.20 | 1272.31 |
| | l | 20.9 | 20.8 | 21.4 | 21.4 | 79.1 | 21.2 | 21.2 | 56.2 | 55.9 | 10.95 | 21.10 | 10.15 | 1166.29 |
| | l | 20.8 | 20.8 | 21.4 | 21.4 | 79.1 | 21.2 | 21.2 | 56.1 | 55.9 | 10.90 | 21.10 | 10.20 | 1272.31 |
| 30 | l | 20.9 | 20.8 | 21.4 | 21.3 | 79.1 | 21.1 | 21.1 | 56.3 | 55.9 | 10.95 | 21.10 | 10.15 | 1060.26 |
| | l | 20.9 | 20.8 | 21.3 | 21.3 | 79.2 | 21.2 | 21.2 | 56.3 | 55.8 | 10.95 | 21.05 | 10.10 | 954.24 |
| | l | 20.8 | 20.8 | 21.3 | 21.4 | 79.1 | 21.1 | 21.1 | 56.3 | 55.8 | 10.90 | 21.05 | 10.15 | 1166.29 |
| 20 | l | 20.7 | 20.7 | 21.3 | 21.3 | 79.1 | 21.0 | 21.0 | 56.1 | 55.7 | 10.85 | 21.00 | 10.15 | 1272.31 |
| | l | 20.8 | 20.8 | 21.3 | 21.3 | 79.1 | 21.0 | 21.0 | 56.1 | 55.7 | 10.90 | 21.05 | 10.15 | 1060.26 |
| | l | 20.8 | 20.7 | 21.2 | 21.3 | 79.2 | 21.0 | 21.0 | 56.3 | 55.8 | 10.90 | 20.95 | 10.05 | 1060.26 |
| 10 | l | 20.9 | 20.9 | 21.4 | 21.3 | 79.2 | 21.1 | 21.1 | 55.5 | 55.1 | 10.95 | 21.15 | 10.20 | 954.24 |
| | l | 20.9 | 20.9 | 21.4 | 21.3 | 79.2 | 21.0 | 21.0 | 55.4 | 55.1 | 10.95 | 21.15 | 10.20 | 954.24 |
| | l | 20.9 | 20.8 | 21.4 | 21.4 | 79.1 | 21.0 | 21.0 | 55.5 | 55.1 | 10.95 | 21.10 | 10.15 | 1166.29 |
| 0 | l | 20.9 | 20.8 | 21.3 | 21.2 | 79.1 | 21.0 | 21.0 | 55.4 | 55.1 | 10.95 | 21.05 | 10.10 | 848.21 |
| | l | 20.8 | 20.8 | 21.2 | 21.2 | 79.1 | 21.0 | 21.0 | 55.5 | 55.3 | 10.90 | 21.00 | 10.10 | 848.21 |
| | l | 20.9 | 20.8 | 21.3 | 21.3 | 79.1 | 21.0 | 21.0 | 55.8 | 55.5 | 10.95 | 21.05 | 10.10 | 954.24 |
| -10 | l | 20.7 | 20.9 | 21.2 | 21.3 | 79.1 | 21.0 | 21.0 | 54.0 | 53.4 | 10.85 | 21.05 | 10.20 | 954.24 |
| | l | 20.9 | 20.8 | 21.3 | 21.3 | 79.1 | 21.1 | 21.1 | 53.9 | 53.3 | 10.95 | 21.05 | 10.10 | 954.24 |
| | l | 20.9 | 20.9 | 21.3 | 21.4 | 79.1 | 20.9 | 20.9 | 54.0 | 53.5 | 10.95 | 21.10 | 10.15 | 954.24 |
| -30 | l | 20.9 | 20.9 | 21.1 | 21.1 | 79.4 | 20.9 | 20.9 | 52.7 | 52.9 | 10.95 | 21.00 | 10.05 | 424.10 |
| | l | 20.9 | 20.9 | 21.1 | 21.1 | 79.1 | 20.9 | 20.9 | 52.5 | 52.7 | 10.95 | 21.00 | 10.05 | 424.10 |
| | l | 20.9 | 20.9 | 21.2 | 21.1 | 79.1 | 20.9 | 20.9 | 52.5 | 52.6 | 10.95 | 21.05 | 10.10 | 530.13 |
| -50 | l | 21.0 | 21.0 | 21.2 | 21.2 | 79.2 | 21.1 | 21.1 | 51.7 | 51.8 | 11.00 | 21.10 | 10.10 | 424.10 |
| | l | 21.0 | 21.0 | 21.1 | 21.1 | 79.2 | 21.0 | 21.0 | 51.9 | 52.1 | 11.00 | 21.05 | 10.05 | 212.05 |
| | l | 21.0 | 21.0 | 21.1 | 21.2 | 79.2 | 21.0 | 21.0 | 52.0 | 52.0 | 11.00 | 21.05 | 10.05 | 318.08 |
| -70 | l | 21.0 | 21.0 | 21.1 | 21.1 | 79.1 | 21.0 | 21.0 | 51.0 | 51.1 | 11.00 | 21.05 | 10.05 | 212.05 |
| | l | 20.9 | 20.9 | 21.0 | 21.1 | 79.1 | 21.2 | 21.2 | 51.1 | 51.4 | 10.95 | 20.95 | 10.00 | 318.08 |
| | l | 21.0 | 21.0 | 21.1 | 21.1 | 79.2 | 21.1 | 21.1 | 51.2 | 51.3 | 11.00 | 21.05 | 10.05 | 212.05 |
| -90 | l | 20.9 | 20.9 | 21.0 | 21.0 | 79.2 | 21.0 | 21.0 | 50.7 | 50.7 | 10.95 | 20.95 | 10.00 | 212.05 |
| | l | 20.9 | 20.9 | 21.0 | 21.0 | 79.2 | 20.8 | 20.8 | 50.6 | 50.6 | 10.95 | 20.95 | 10.00 | 212.05 |
| | l | 20.9 | 21.0 | 21.0 | 21.0 | 79.1 | 21.0 | 21.0 | 50.5 | 50.5 | 10.95 | 21.00 | 10.05 | 106.03 |

ตาราง ก-37 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 1.06 mm. Lt 5 m. Lc 5 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|------------|--------------------------|
| 90 | 1 | 21.4 | 21.2 | 24.9 | 24.7 | 76.3 | 51.8 | 48.7 | 69.6 | 51.2 | 11.20 | 23.05 | 11.85 | 21883.80 |
| | 1 | 21.3 | 21.1 | 24.6 | 24.4 | 75.8 | 51.3 | 48.4 | 69.9 | 51.7 | 11.15 | 22.85 | 11.70 | 20633.30 |
| | 1 | 21.3 | 21.1 | 24.9 | 24.5 | 76.7 | 51.6 | 48.1 | 69.6 | 51.2 | 11.15 | 23.00 | 11.85 | 21883.80 |
| 80 | 1 | 21.3 | 21.2 | 24.8 | 24.7 | 76.5 | 52.3 | 48.5 | 69.5 | 52.2 | 11.15 | 23.00 | 11.85 | 21883.80 |
| | 1 | 21.3 | 21.1 | 24.8 | 24.4 | 76.0 | 52.5 | 48.7 | 70.1 | 51.7 | 11.15 | 22.95 | 11.80 | 21258.55 |
| | 1 | 21.3 | 21.1 | 24.7 | 24.6 | 76.6 | 52.1 | 48.5 | 69.9 | 51.4 | 11.15 | 22.90 | 11.75 | 21571.18 |
| 70 | 1 | 21.4 | 21.2 | 24.7 | 24.7 | 76.1 | 52.7 | 49.3 | 69.9 | 51.9 | 11.20 | 22.95 | 11.75 | 21258.55 |
| | 1 | 21.3 | 21.2 | 24.8 | 24.4 | 76.1 | 52.8 | 48.8 | 70.1 | 53.0 | 11.15 | 23.00 | 11.85 | 20945.93 |
| | 1 | 21.3 | 21.2 | 24.8 | 24.4 | 76.4 | 53.0 | 49.9 | 70.0 | 51.7 | 11.15 | 23.00 | 11.85 | 20945.93 |
| 60 | 1 | 21.4 | 21.2 | 24.8 | 24.4 | 76.2 | 53.9 | 50.5 | 70.5 | 52.9 | 11.20 | 23.00 | 11.80 | 20633.30 |
| | 1 | 21.4 | 21.2 | 24.8 | 24.5 | 76.3 | 54.1 | 50.6 | 70.5 | 51.8 | 11.20 | 23.00 | 11.80 | 20945.93 |
| | 1 | 21.4 | 21.1 | 24.7 | 24.8 | 76.0 | 53.9 | 50.5 | 70.5 | 52.4 | 11.20 | 22.90 | 11.70 | 21883.80 |
| 50 | 1 | 21.3 | 21.2 | 24.7 | 23.7 | 76.0 | 55.3 | 52.5 | 70.7 | 50.8 | 11.15 | 22.95 | 11.80 | 18444.92 |
| | 1 | 21.3 | 21.1 | 24.3 | 24.1 | 76.0 | 55.0 | 52.3 | 70.7 | 50.8 | 11.15 | 22.70 | 11.55 | 18757.55 |
| | 1 | 21.3 | 21.2 | 24.8 | 24.1 | 76.0 | 55.1 | 52.7 | 70.6 | 51.0 | 11.15 | 23.00 | 11.85 | 20008.05 |
| 40 | 1 | 21.4 | 21.1 | 24.4 | 23.8 | 76.3 | 57.4 | 56.0 | 71.1 | 51.3 | 11.20 | 22.75 | 11.55 | 17819.67 |
| | 1 | 21.3 | 21.1 | 24.6 | 24.6 | 76.0 | 56.9 | 55.9 | 71.1 | 51.4 | 11.15 | 22.85 | 11.70 | 21258.55 |
| | 1 | 21.3 | 21.1 | 24.6 | 24.3 | 76.2 | 56.9 | 56.0 | 71.0 | 51.2 | 11.15 | 22.85 | 11.70 | 20320.68 |
| 30 | 1 | 21.3 | 21.1 | 24.4 | 23.6 | 76.4 | 60.9 | 56.7 | 71.3 | 51.7 | 11.15 | 22.75 | 11.60 | 17507.04 |
| | 1 | 21.3 | 21.1 | 24.5 | 24.5 | 76.3 | 61.1 | 56.7 | 71.4 | 51.8 | 11.15 | 22.80 | 11.65 | 20633.30 |
| | 1 | 21.3 | 21.1 | 24.5 | 23.9 | 76.6 | 61.1 | 57.0 | 71.3 | 51.6 | 11.15 | 22.80 | 11.65 | 18757.55 |
| 20 | 1 | 21.2 | 21.1 | 23.8 | 23.4 | 76.6 | 61.4 | 55.4 | 71.6 | 53.7 | 11.10 | 22.45 | 11.35 | 15318.66 |
| | 1 | 21.3 | 21.1 | 24.2 | 24.0 | 76.4 | 60.5 | 53.9 | 71.5 | 53.3 | 11.15 | 22.65 | 11.50 | 18132.30 |
| | 1 | 21.3 | 21.1 | 24.1 | 23.4 | 76.4 | 59.8 | 52.7 | 71.6 | 52.5 | 11.15 | 22.60 | 11.45 | 15943.91 |
| 10 | 1 | 21.3 | 21.1 | 23.2 | 23.3 | 77.0 | 46.0 | 44.4 | 64.1 | 62.3 | 11.15 | 22.15 | 11.00 | 12817.66 |
| | 1 | 21.3 | 21.1 | 23.1 | 23.2 | 77.4 | 46.5 | 44.6 | 64.1 | 61.9 | 11.15 | 22.10 | 10.95 | 12192.41 |
| | 1 | 21.3 | 21.1 | 23.1 | 22.9 | 77.5 | 45.8 | 44.1 | 65.0 | 61.8 | 11.15 | 22.10 | 10.95 | 11254.53 |
| 0 | 1 | 21.3 | 21.2 | 22.9 | 22.9 | 78.4 | 48.7 | 48.4 | 65.7 | 63.3 | 11.15 | 22.05 | 10.90 | 10316.65 |
| | 1 | 21.2 | 21.1 | 22.7 | 22.7 | 78.9 | 48.1 | 48.9 | 65.7 | 61.7 | 11.10 | 21.90 | 10.80 | 9691.40 |
| | 1 | 21.3 | 21.2 | 23.4 | 22.8 | 79.2 | 47.2 | 49.5 | 65.3 | 63.1 | 11.15 | 22.30 | 11.15 | 11567.15 |
| -10 | 1 | 21.3 | 21.1 | 22.2 | 21.5 | 79.5 | 32.8 | 31.1 | 58.2 | 59.2 | 11.15 | 21.65 | 10.50 | 4064.14 |
| | 1 | 21.3 | 21.2 | 21.8 | 21.7 | 79.5 | 32.9 | 31.2 | 58.2 | 59.2 | 11.15 | 21.50 | 10.35 | 3126.26 |
| | 1 | 21.3 | 21.1 | 21.8 | 21.8 | 79.6 | 33.1 | 31.1 | 58.2 | 59.2 | 11.15 | 21.45 | 10.30 | 3751.51 |
| -30 | 1 | 21.2 | 21.1 | 21.6 | 21.4 | 79.5 | 30.1 | 29.8 | 59.9 | 60.7 | 11.10 | 21.35 | 10.25 | 2188.38 |
| | 1 | 21.3 | 21.1 | 21.7 | 21.4 | 79.4 | 30.4 | 30.2 | 60.1 | 61.0 | 11.15 | 21.40 | 10.25 | 2188.38 |
| | 1 | 21.2 | 21.3 | 21.7 | 21.6 | 79.5 | 30.8 | 30.6 | 60.3 | 61.1 | 11.10 | 21.50 | 10.40 | 2501.01 |
| -50 | 1 | 21.4 | 21.3 | 21.5 | 21.5 | 79.5 | 28.7 | 29.8 | 60.1 | 60.7 | 11.20 | 21.40 | 10.20 | 937.88 |
| | 1 | 21.4 | 21.1 | 21.4 | 21.5 | 79.4 | 28.7 | 29.7 | 60.1 | 60.6 | 11.20 | 21.25 | 10.05 | 1250.50 |
| | 1 | 21.4 | 21.1 | 21.7 | 21.5 | 79.5 | 28.7 | 29.8 | 60.1 | 60.7 | 11.20 | 21.40 | 10.20 | 2188.38 |
| -70 | 1 | 21.4 | 21.1 | 21.6 | 21.5 | 79.6 | 26.4 | 28.7 | 59.2 | 59.8 | 11.20 | 21.35 | 10.15 | 1875.75 |
| | 1 | 21.4 | 21.1 | 21.4 | 21.4 | 79.5 | 26.3 | 28.7 | 59.1 | 59.7 | 11.20 | 21.25 | 10.05 | 937.88 |
| | 1 | 21.4 | 21.3 | 21.7 | 21.4 | 79.4 | 26.4 | 28.7 | 58.9 | 59.6 | 11.20 | 21.50 | 10.30 | 1250.50 |
| -90 | 1 | 21.4 | 21.3 | 21.4 | 21.3 | 79.5 | 24.2 | 24.3 | 58.1 | 59.0 | 11.20 | 21.35 | 10.15 | 0.00 |
| | 1 | 21.4 | 21.4 | 21.5 | 21.4 | 79.4 | 24.1 | 24.1 | 58.0 | 58.8 | 11.20 | 21.45 | 10.25 | 312.63 |
| | 1 | 21.4 | 21.4 | 21.4 | 21.4 | 79.3 | 24.4 | 24.1 | 58.1 | 58.9 | 11.20 | 21.40 | 10.20 | 0.00 |

ตาราง ก-38 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 1.06 mm. Lt 5 m. Le 10 cm.

| มุม องศา | Q̇ (l/min) | Ti,1 (°C) | Ti,2 (°C) | To,1 (°C) | To,2 (°C) | Tevap (°C) | Tc,1 (°C) | Tc,2 (°C) | Ta,1 (°C) | Ta,2 (°C) | Ti,ave (°C) | To,ave (°C) | Δ T (°C) | q (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 21.1 | 21.1 | 22.2 | 22.1 | 77.5 | 27.4 | 28.7 | 34.3 | 40.2 | 11.05 | 21.65 | 10.60 | 6565.14 |
| | 1 | 21.1 | 21.1 | 22.3 | 22.2 | 78.1 | 28.6 | 30.1 | 34.9 | 40.2 | 11.05 | 21.70 | 10.65 | 7190.39 |
| | 1 | 21.1 | 21.1 | 22.2 | 22.2 | 77.4 | 28.7 | 29.4 | 34.1 | 41.9 | 11.05 | 21.65 | 10.60 | 6877.77 |
| 80 | 1 | 21.2 | 21.4 | 22.7 | 22.7 | 76.0 | 30.5 | 31.6 | 38.1 | 42.6 | 11.10 | 22.05 | 10.95 | 8753.52 |
| | 1 | 21.1 | 21.2 | 22.5 | 22.5 | 75.4 | 30.8 | 32.4 | 38.6 | 43.2 | 11.05 | 21.85 | 10.80 | 8440.90 |
| | 1 | 21.4 | 21.1 | 22.7 | 22.6 | 75.4 | 31.1 | 32.6 | 39.3 | 43.1 | 11.20 | 21.90 | 10.70 | 8753.52 |
| 70 | 1 | 21.2 | 21.2 | 22.7 | 22.5 | 75.7 | 31.9 | 32.1 | 39.1 | 45.3 | 11.10 | 21.95 | 10.85 | 8753.52 |
| | 1 | 21.3 | 21.3 | 22.7 | 22.7 | 76.1 | 31.6 | 32.2 | 39.2 | 43.2 | 11.15 | 22.00 | 10.85 | 8753.52 |
| | 1 | 21.1 | 21.2 | 22.5 | 22.6 | 76.3 | 31.5 | 32.1 | 39.3 | 43.7 | 11.05 | 21.85 | 10.80 | 8753.52 |
| 60 | 1 | 21.4 | 21.3 | 22.5 | 22.6 | 75.1 | 30.8 | 31.6 | 38.1 | 41.8 | 11.20 | 21.90 | 10.70 | 7503.02 |
| | 1 | 21.2 | 21.3 | 22.5 | 22.5 | 74.8 | 31.8 | 31.5 | 38.4 | 41.8 | 11.10 | 21.90 | 10.80 | 7815.64 |
| | 1 | 21.4 | 21.2 | 22.6 | 22.5 | 74.7 | 31.7 | 31.4 | 38.7 | 41.5 | 11.20 | 21.90 | 10.70 | 7815.64 |
| 50 | 1 | 21.4 | 21.2 | 22.5 | 22.4 | 76.6 | 30.7 | 30.4 | 37.9 | 43.1 | 11.20 | 21.85 | 10.65 | 7190.39 |
| | 1 | 21.3 | 21.4 | 22.4 | 22.5 | 77.1 | 30.9 | 30.4 | 37.6 | 42.5 | 11.15 | 21.90 | 10.75 | 6877.77 |
| | 1 | 21.4 | 21.4 | 22.4 | 22.6 | 76.8 | 30.6 | 31.1 | 37.0 | 43.9 | 11.20 | 21.90 | 10.70 | 6877.77 |
| 40 | 1 | 21.3 | 21.2 | 22.3 | 22.3 | 77.5 | 30.5 | 30.5 | 36.9 | 43.2 | 11.15 | 21.75 | 10.60 | 6565.14 |
| | 1 | 21.3 | 21.1 | 22.4 | 22.4 | 77.2 | 30.3 | 30.4 | 37.7 | 42.3 | 11.15 | 21.75 | 10.60 | 7503.02 |
| | 1 | 21.2 | 21.3 | 22.4 | 22.4 | 77.3 | 30.4 | 30.7 | 36.4 | 43.7 | 11.10 | 21.85 | 10.75 | 7190.39 |
| 30 | 1 | 21.4 | 21.3 | 22.2 | 22.2 | 78.1 | 28.8 | 29.1 | 35.5 | 45.9 | 11.20 | 21.75 | 10.55 | 5314.64 |
| | 1 | 21.2 | 21.2 | 22.2 | 22.3 | 78.0 | 29.5 | 29.3 | 35.4 | 44.7 | 11.10 | 21.70 | 10.60 | 6565.14 |
| | 1 | 21.3 | 21.3 | 22.4 | 22.2 | 78.1 | 29.4 | 29.1 | 36.1 | 45.6 | 11.15 | 21.85 | 10.70 | 6252.52 |
| 20 | 1 | 21.3 | 21.4 | 21.7 | 21.7 | 78.7 | 23.4 | 24.1 | 49.0 | 32.5 | 11.15 | 21.55 | 10.40 | 2188.38 |
| | 1 | 21.2 | 21.1 | 21.7 | 21.8 | 78.9 | 24.9 | 24.9 | 50.9 | 32.6 | 11.10 | 21.40 | 10.30 | 3751.51 |
| | 1 | 21.4 | 21.2 | 21.7 | 21.7 | 78.9 | 24.7 | 24.2 | 49.5 | 33.2 | 11.20 | 21.45 | 10.25 | 2501.01 |
| 10 | 1 | 21.3 | 21.1 | 21.7 | 21.7 | 79.3 | 23.3 | 23.5 | 47.4 | 34.1 | 11.15 | 21.40 | 10.25 | 3126.26 |
| | 1 | 21.3 | 21.2 | 21.6 | 21.7 | 79.4 | 22.8 | 23.4 | 47.6 | 34.2 | 11.15 | 21.40 | 10.25 | 2501.01 |
| | 1 | 21.3 | 21.2 | 21.6 | 21.7 | 79.1 | 22.9 | 23.7 | 49.6 | 32.7 | 11.15 | 21.40 | 10.25 | 2501.01 |
| 0 | 1 | 21.4 | 21.2 | 21.6 | 21.7 | 79.2 | 22.2 | 22.7 | 42.0 | 43.1 | 11.20 | 21.40 | 10.20 | 2188.38 |
| | 1 | 21.2 | 21.3 | 21.5 | 21.5 | 79.2 | 22.4 | 23.4 | 44.8 | 41.8 | 11.10 | 21.40 | 10.30 | 1563.13 |
| | 1 | 21.3 | 21.2 | 21.8 | 21.7 | 79.1 | 21.9 | 22.1 | 44.0 | 49.6 | 11.15 | 21.50 | 10.35 | 3126.26 |
| -10 | 1 | 21.2 | 21.2 | 21.3 | 21.2 | 79.6 | 21.2 | 21.1 | 53.3 | 53.9 | 11.10 | 21.25 | 10.15 | 312.63 |
| | 1 | 21.2 | 21.2 | 21.3 | 21.4 | 79.7 | 21.2 | 21.1 | 53.3 | 53.7 | 11.10 | 21.25 | 10.15 | 937.88 |
| | 1 | 21.1 | 21.2 | 21.4 | 21.2 | 79.7 | 21.2 | 21.1 | 53.3 | 53.8 | 11.05 | 21.30 | 10.25 | 937.88 |
| -30 | 1 | 21.2 | 21.3 | 21.4 | 21.3 | 79.5 | 21.1 | 21.1 | 53.3 | 53.9 | 11.10 | 21.35 | 10.25 | 625.25 |
| | 1 | 21.2 | 21.2 | 21.4 | 21.4 | 79.7 | 21.2 | 21.1 | 53.3 | 53.9 | 11.10 | 21.30 | 10.20 | 1250.50 |
| | 1 | 21.2 | 21.2 | 21.3 | 21.3 | 79.5 | 21.1 | 21.1 | 53.3 | 53.9 | 11.10 | 21.25 | 10.15 | 625.25 |
| -50 | 1 | 21.2 | 21.1 | 21.3 | 21.3 | 79.7 | 21.2 | 21.1 | 53.3 | 54.1 | 11.10 | 21.20 | 10.10 | 937.88 |
| | 1 | 21.2 | 21.2 | 21.3 | 21.3 | 79.7 | 21.1 | 21.1 | 53.4 | 54.1 | 11.10 | 21.25 | 10.15 | 625.25 |
| | 1 | 21.2 | 21.1 | 21.3 | 21.3 | 79.5 | 21.1 | 21.0 | 53.5 | 54.2 | 11.10 | 21.20 | 10.10 | 937.88 |
| -70 | 1 | 21.2 | 21.2 | 21.2 | 21.3 | 79.6 | 21.2 | 21.1 | 53.6 | 54.3 | 11.10 | 21.20 | 10.10 | 312.63 |
| | 1 | 21.3 | 21.2 | 21.3 | 21.2 | 79.6 | 21.1 | 21.1 | 53.6 | 54.3 | 11.15 | 21.25 | 10.10 | 0.00 |
| | 1 | 21.2 | 21.1 | 21.3 | 21.2 | 79.6 | 21.1 | 21.1 | 53.6 | 54.2 | 11.10 | 21.20 | 10.10 | 625.25 |
| -90 | 1 | 21.2 | 21.3 | 21.3 | 21.3 | 79.6 | 21.1 | 21.1 | 53.6 | 54.3 | 11.10 | 21.30 | 10.20 | 312.63 |
| | 1 | 21.2 | 21.2 | 21.3 | 21.3 | 79.7 | 21.1 | 21.1 | 53.7 | 54.4 | 11.10 | 21.25 | 10.15 | 625.25 |
| | 1 | 21.3 | 21.2 | 21.3 | 21.3 | 79.7 | 21.1 | 21.1 | 53.6 | 54.3 | 11.15 | 21.25 | 10.10 | 312.63 |

ตาราง ก-39 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 1.06 mm. Lt 5 m. Le 15 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti,ave (°C) | To,ave (°C) | Δ T (°C) | η (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 21.2 | 21.1 | 22.1 | 22.0 | 77.6 | 29.5 | 29.5 | 31.2 | 51.6 | 11.10 | 21.60 | 10.50 | 5252.11 |
| | 1 | 21.2 | 21.1 | 22.1 | 22.0 | 78.2 | 29.8 | 29.8 | 31.4 | 54.9 | 11.10 | 21.60 | 10.50 | 5252.11 |
| | 1 | 21.2 | 21.2 | 22.2 | 22.0 | 78.4 | 29.7 | 29.7 | 31.2 | 48.7 | 11.10 | 21.70 | 10.60 | 5252.11 |
| 80 | 1 | 21.1 | 21.1 | 22.1 | 21.9 | 77.4 | 29.5 | 29.5 | 31.8 | 47.2 | 11.05 | 21.60 | 10.55 | 5252.11 |
| | 1 | 21.3 | 21.3 | 22.1 | 22.1 | 77.8 | 29.7 | 29.7 | 31.9 | 45.8 | 11.15 | 21.70 | 10.55 | 4668.54 |
| | 1 | 21.3 | 21.2 | 22.1 | 22.1 | 78.0 | 29.8 | 29.8 | 31.7 | 42.8 | 11.15 | 21.65 | 10.50 | 4960.33 |
| 70 | 1 | 21.3 | 21.3 | 22.2 | 22.2 | 78.0 | 29.9 | 29.9 | 31.6 | 41.9 | 11.15 | 21.75 | 10.60 | 5252.11 |
| | 1 | 21.2 | 21.2 | 22.2 | 22.1 | 78.1 | 30.0 | 30.0 | 31.7 | 40.2 | 11.10 | 21.70 | 10.60 | 5543.90 |
| | 1 | 21.3 | 21.1 | 22.3 | 22.2 | 77.8 | 29.7 | 29.7 | 31.6 | 41.3 | 11.15 | 21.70 | 10.55 | 6127.47 |
| 60 | 1 | 21.2 | 21.2 | 22.1 | 22.0 | 77.8 | 29.2 | 29.2 | 31.2 | 42.1 | 11.10 | 21.65 | 10.55 | 4960.33 |
| | 1 | 21.2 | 21.2 | 21.9 | 22.0 | 78.0 | 29.3 | 29.3 | 31.5 | 42.1 | 11.10 | 21.55 | 10.45 | 4376.76 |
| | 1 | 21.2 | 21.1 | 22.2 | 22.1 | 78.0 | 29.1 | 29.1 | 31.0 | 42.4 | 11.10 | 21.65 | 10.55 | 5835.68 |
| 50 | 1 | 21.3 | 21.2 | 22.1 | 22.1 | 78.5 | 28.1 | 28.1 | 30.1 | 46.1 | 11.15 | 21.65 | 10.50 | 4960.33 |
| | 1 | 21.3 | 21.3 | 21.9 | 21.9 | 78.5 | 28.1 | 28.1 | 30.1 | 45.8 | 11.15 | 21.60 | 10.45 | 3501.41 |
| | 1 | 21.3 | 21.1 | 22.0 | 22.1 | 78.3 | 28.1 | 28.1 | 30.1 | 45.4 | 11.15 | 21.55 | 10.40 | 4960.33 |
| 40 | 1 | 21.2 | 21.1 | 21.8 | 21.8 | 78.2 | 27.4 | 27.4 | 29.2 | 46.7 | 11.10 | 21.45 | 10.35 | 3793.19 |
| | 1 | 21.2 | 21.1 | 22.0 | 22.0 | 78.5 | 27.5 | 27.5 | 29.4 | 47.3 | 11.10 | 21.55 | 10.45 | 4960.33 |
| | 1 | 21.3 | 21.2 | 22.1 | 22.0 | 78.5 | 27.5 | 27.5 | 29.2 | 47.5 | 11.15 | 21.65 | 10.50 | 4668.54 |
| 30 | 1 | 21.2 | 21.2 | 21.7 | 21.7 | 78.8 | 26.3 | 26.3 | 27.9 | 48.8 | 11.10 | 21.45 | 10.35 | 2917.84 |
| | 1 | 21.4 | 21.2 | 21.7 | 21.7 | 78.6 | 26.2 | 26.2 | 27.9 | 48.9 | 11.20 | 21.45 | 10.25 | 2334.27 |
| | 1 | 21.3 | 21.3 | 21.9 | 21.8 | 78.8 | 26.4 | 26.4 | 27.8 | 48.5 | 11.15 | 21.60 | 10.45 | 3209.62 |
| 20 | 1 | 21.3 | 21.3 | 21.7 | 21.7 | 79.0 | 25.1 | 25.1 | 26.8 | 51.3 | 11.15 | 21.50 | 10.35 | 2334.27 |
| | 1 | 21.4 | 21.2 | 21.7 | 21.7 | 78.8 | 25.1 | 25.1 | 27.2 | 51.8 | 11.20 | 21.45 | 10.25 | 2334.27 |
| | 1 | 21.4 | 21.2 | 21.8 | 21.6 | 79.1 | 25.3 | 25.3 | 27.4 | 53.0 | 11.20 | 21.50 | 10.30 | 2334.27 |
| 10 | 1 | 21.3 | 21.4 | 21.4 | 21.3 | 79.4 | 21.4 | 21.4 | 28.1 | 55.0 | 11.15 | 21.40 | 10.25 | 0.00 |
| | 1 | 21.3 | 21.2 | 21.2 | 21.4 | 79.3 | 21.3 | 21.3 | 40.0 | 48.8 | 11.15 | 21.20 | 10.05 | 291.78 |
| | 1 | 21.4 | 21.3 | 21.4 | 21.3 | 79.4 | 21.4 | 21.4 | 28.0 | 53.0 | 11.20 | 21.35 | 10.15 | 0.00 |
| 0 | 1 | 21.3 | 21.2 | 21.2 | 21.3 | 79.4 | 21.1 | 21.1 | 52.0 | 51.4 | 11.15 | 21.20 | 10.05 | 0.00 |
| | 1 | 21.2 | 21.2 | 21.3 | 21.3 | 79.2 | 21.1 | 21.1 | 52.3 | 51.7 | 11.10 | 21.25 | 10.15 | 583.57 |
| | 1 | 21.2 | 21.2 | 21.3 | 21.2 | 79.4 | 21.1 | 21.1 | 52.5 | 51.9 | 11.10 | 21.25 | 10.15 | 291.78 |
| -10 | 1 | 21.2 | 21.1 | 21.2 | 21.2 | 79.4 | 21.2 | 21.2 | 52.7 | 51.1 | 11.10 | 21.15 | 10.05 | 291.78 |
| | 1 | 21.2 | 21.1 | 21.3 | 21.2 | 79.4 | 21.1 | 21.1 | 52.6 | 51.5 | 11.10 | 21.20 | 10.10 | 583.57 |
| | 1 | 21.2 | 21.1 | 21.3 | 21.2 | 79.4 | 20.9 | 20.9 | 52.7 | 51.4 | 11.10 | 21.20 | 10.10 | 583.57 |
| -30 | 1 | 21.2 | 21.2 | 21.2 | 21.3 | 79.4 | 21.1 | 21.1 | 52.7 | 51.7 | 11.10 | 21.20 | 10.10 | 291.78 |
| | 1 | 21.3 | 21.1 | 21.2 | 21.2 | 79.5 | 21.0 | 21.0 | 52.3 | 51.7 | 11.15 | 21.15 | 10.00 | 0.00 |
| | 1 | 21.2 | 21.1 | 21.2 | 21.2 | 79.4 | 21.1 | 21.1 | 52.7 | 51.7 | 11.10 | 21.15 | 10.05 | 291.78 |
| -50 | 1 | 21.2 | 21.3 | 21.2 | 21.3 | 79.4 | 21.1 | 21.1 | 52.8 | 51.8 | 11.10 | 21.25 | 10.15 | 0.00 |
| | 1 | 21.2 | 21.2 | 21.2 | 21.2 | 79.4 | 21.1 | 21.1 | 52.7 | 51.7 | 11.10 | 21.20 | 10.10 | 0.00 |
| | 1 | 21.2 | 21.2 | 21.2 | 21.2 | 79.4 | 21.2 | 21.2 | 52.8 | 51.8 | 11.10 | 21.20 | 10.10 | 0.00 |
| -70 | 1 | 21.2 | 21.3 | 21.2 | 21.3 | 79.3 | 21.2 | 21.2 | 52.9 | 51.7 | 11.10 | 21.25 | 10.15 | 0.00 |
| | 1 | 21.3 | 21.4 | 21.4 | 21.4 | 79.4 | 21.2 | 21.2 | 52.7 | 51.7 | 11.15 | 21.40 | 10.25 | 291.78 |
| | 1 | 21.4 | 21.4 | 21.4 | 21.4 | 79.3 | 21.1 | 21.1 | 53.0 | 51.9 | 11.20 | 21.40 | 10.20 | 0.00 |
| -90 | 1 | 21.2 | 21.2 | 21.2 | 21.2 | 79.4 | 21.1 | 21.1 | 52.7 | 51.8 | 11.10 | 21.20 | 10.10 | 0.00 |
| | 1 | 21.2 | 21.1 | 21.1 | 21.2 | 79.4 | 21.2 | 21.2 | 52.8 | 51.8 | 11.10 | 21.10 | 10.00 | 0.00 |
| | 1 | 21.2 | 21.1 | 21.1 | 21.2 | 79.4 | 21.2 | 21.2 | 52.8 | 51.9 | 11.10 | 21.10 | 10.00 | 0.00 |

ตาราง ก-40 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 1.06 mm. Lt 10 m. Le 5 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|------------|--------------------------|
| 90 | 1 | 21.4 | 21.4 | 32.4 | 32.4 | 68.8 | 52.3 | 43.6 | 63.4 | 59.0 | 11.20 | 26.90 | 15.70 | 33203.01 |
| | 1 | 21.4 | 21.4 | 32.4 | 32.5 | 68.7 | 52.7 | 44.6 | 64.3 | 60.3 | 11.20 | 26.90 | 15.70 | 33353.94 |
| | 1 | 21.3 | 21.4 | 32.7 | 32.4 | 69.2 | 53.9 | 44.7 | 63.2 | 58.8 | 11.15 | 27.05 | 15.90 | 33806.71 |
| 80 | 1 | 21.3 | 21.4 | 31.6 | 31.5 | 68.5 | 52.9 | 46.1 | 62.5 | 58.5 | 11.15 | 26.50 | 15.35 | 30788.25 |
| | 1 | 21.4 | 21.4 | 31.4 | 32.2 | 68.0 | 53.3 | 45.5 | 63.3 | 59.6 | 11.20 | 26.40 | 15.20 | 31391.94 |
| | 1 | 21.4 | 21.4 | 32.4 | 31.3 | 69.1 | 53.6 | 46.0 | 62.5 | 60.4 | 11.20 | 26.90 | 15.70 | 31542.86 |
| 70 | 1 | 21.3 | 21.5 | 32.1 | 32.1 | 69.2 | 52.3 | 46.6 | 62.4 | 59.9 | 11.15 | 26.80 | 15.65 | 32297.48 |
| | 1 | 21.4 | 21.4 | 32.5 | 32.0 | 69.0 | 52.5 | 46.7 | 63.7 | 60.1 | 11.20 | 26.95 | 15.75 | 32750.25 |
| | 1 | 21.4 | 21.4 | 31.9 | 31.8 | 69.6 | 52.3 | 47.5 | 64.4 | 59.7 | 11.20 | 26.65 | 15.45 | 31542.86 |
| 60 | 1 | 21.3 | 21.3 | 31.4 | 31.8 | 68.5 | 50.1 | 46.0 | 62.7 | 61.0 | 11.15 | 26.35 | 15.20 | 31090.09 |
| | 1 | 21.4 | 21.3 | 31.7 | 31.6 | 69.0 | 49.2 | 46.4 | 63.1 | 60.2 | 11.20 | 26.50 | 15.30 | 31090.09 |
| | 1 | 21.1 | 21.2 | 31.4 | 32.1 | 68.4 | 49.8 | 45.9 | 62.8 | 60.9 | 11.05 | 26.30 | 15.25 | 31995.63 |
| 50 | 1 | 21.4 | 21.3 | 31.7 | 31.2 | 68.2 | 50.1 | 45.4 | 63.1 | 59.9 | 11.20 | 26.50 | 15.30 | 30486.40 |
| | 1 | 21.4 | 21.4 | 32.1 | 31.6 | 68.9 | 50.7 | 47.3 | 62.8 | 59.0 | 11.20 | 26.75 | 15.55 | 31542.86 |
| | 1 | 21.4 | 21.4 | 32.0 | 31.7 | 67.4 | 51.1 | 47.5 | 62.6 | 58.2 | 11.20 | 26.70 | 15.50 | 31542.86 |
| 40 | 1 | 21.4 | 21.3 | 31.7 | 31.7 | 68.1 | 49.8 | 46.9 | 61.4 | 58.5 | 11.20 | 26.50 | 15.30 | 31241.02 |
| | 1 | 21.4 | 21.4 | 31.7 | 32.1 | 68.4 | 50.1 | 48.6 | 62.0 | 58.5 | 11.20 | 26.55 | 15.35 | 31693.79 |
| | 1 | 21.4 | 21.4 | 32.1 | 31.7 | 69.1 | 50.6 | 48.2 | 61.4 | 59.3 | 11.20 | 26.75 | 15.55 | 31693.79 |
| 30 | 1 | 21.4 | 21.4 | 31.8 | 31.4 | 69.3 | 50.9 | 50.4 | 60.2 | 58.9 | 11.20 | 26.60 | 15.40 | 30788.25 |
| | 1 | 21.4 | 21.4 | 31.2 | 31.4 | 69.8 | 50.0 | 51.2 | 60.3 | 59.2 | 11.20 | 26.30 | 15.10 | 29882.71 |
| | 1 | 21.6 | 21.4 | 31.2 | 31.4 | 70.2 | 50.5 | 50.4 | 59.6 | 59.7 | 11.30 | 26.30 | 15.00 | 29580.87 |
| 20 | 1 | 21.3 | 21.3 | 31.0 | 31.2 | 69.2 | 49.5 | 51.5 | 61.0 | 59.4 | 11.15 | 26.15 | 15.00 | 29580.87 |
| | 1 | 21.3 | 21.4 | 31.1 | 31.2 | 69.8 | 49.7 | 53.0 | 60.1 | 60.1 | 11.15 | 26.25 | 15.10 | 29580.87 |
| | 1 | 21.4 | 21.4 | 31.4 | 30.7 | 70.7 | 50.1 | 52.7 | 60.4 | 59.9 | 11.20 | 26.40 | 15.20 | 29128.10 |
| 10 | 1 | 21.3 | 21.3 | 31.2 | 31.1 | 69.6 | 45.8 | 53.1 | 61.1 | 57.9 | 11.15 | 26.25 | 15.10 | 29731.79 |
| | 1 | 21.3 | 21.4 | 31.1 | 30.9 | 70.3 | 45.5 | 53.5 | 62.0 | 58.0 | 11.15 | 26.25 | 15.10 | 29128.10 |
| | 1 | 21.4 | 21.4 | 31.4 | 30.0 | 70.0 | 45.2 | 54.9 | 63.7 | 58.8 | 11.20 | 26.40 | 15.20 | 28071.64 |
| 0 | 1 | 21.3 | 21.3 | 30.9 | 30.8 | 69.4 | 44.7 | 53.9 | 64.2 | 61.2 | 11.15 | 26.10 | 14.95 | 28826.25 |
| | 1 | 21.3 | 21.3 | 30.8 | 30.1 | 69.1 | 45.3 | 53.6 | 63.4 | 60.7 | 11.15 | 26.05 | 14.90 | 27618.87 |
| | 1 | 21.4 | 21.4 | 30.4 | 30.8 | 68.9 | 45.1 | 54.1 | 63.7 | 61.3 | 11.20 | 25.90 | 14.70 | 27769.79 |
| -10 | 1 | 21.3 | 21.2 | 30.7 | 30.7 | 68.5 | 47.0 | 50.9 | 62.0 | 59.8 | 11.15 | 25.95 | 14.80 | 28524.41 |
| | 1 | 21.3 | 21.2 | 31.0 | 30.7 | 68.9 | 46.4 | 50.7 | 61.0 | 59.7 | 11.15 | 26.10 | 14.95 | 28977.18 |
| | 1 | 21.3 | 21.3 | 30.9 | 31.0 | 68.6 | 46.6 | 51.5 | 60.4 | 59.5 | 11.15 | 26.10 | 14.95 | 29128.10 |
| -30 | 1 | 21.3 | 21.2 | 31.5 | 31.4 | 69.3 | 45.0 | 47.2 | 60.9 | 59.2 | 11.15 | 26.35 | 15.20 | 30788.25 |
| | 1 | 21.3 | 21.2 | 31.1 | 31.4 | 69.5 | 45.3 | 46.3 | 60.3 | 59.4 | 11.15 | 26.15 | 15.00 | 30184.56 |
| | 1 | 21.3 | 21.2 | 31.5 | 31.2 | 69.6 | 45.3 | 45.9 | 60.4 | 59.3 | 11.15 | 26.35 | 15.20 | 30486.40 |
| -50 | 1 | 21.4 | 21.2 | 30.6 | 30.4 | 68.0 | 45.0 | 43.2 | 61.2 | 57.6 | 11.20 | 25.90 | 14.70 | 27769.79 |
| | 1 | 21.4 | 21.2 | 30.7 | 30.6 | 69.2 | 44.7 | 42.0 | 59.9 | 57.0 | 11.20 | 25.95 | 14.75 | 28222.56 |
| | 1 | 21.3 | 21.3 | 30.3 | 29.7 | 68.4 | 43.4 | 42.7 | 59.6 | 56.7 | 11.15 | 25.80 | 14.65 | 26260.57 |
| -70 | 1 | 21.2 | 21.2 | 28.2 | 29.4 | 69.0 | 44.9 | 40.4 | 61.1 | 56.2 | 11.10 | 24.70 | 13.60 | 22940.26 |
| | 1 | 21.1 | 21.3 | 27.7 | 29.9 | 68.2 | 44.5 | 40.2 | 60.7 | 57.1 | 11.05 | 24.50 | 13.45 | 22940.26 |
| | 1 | 21.2 | 21.3 | 27.9 | 29.1 | 68.8 | 44.5 | 42.5 | 61.3 | 57.0 | 11.10 | 24.60 | 13.50 | 21883.80 |
| -90 | 1 | 21.3 | 21.2 | 28.9 | 28.1 | 69.4 | 45.0 | 44.9 | 55.8 | 55.2 | 11.15 | 25.05 | 13.90 | 21883.80 |
| | 1 | 21.2 | 21.2 | 29.0 | 29.9 | 69.6 | 43.7 | 45.0 | 56.9 | 57.5 | 11.10 | 25.10 | 14.00 | 24902.26 |
| | 1 | 21.3 | 21.2 | 29.4 | 29.9 | 70.6 | 45.0 | 45.6 | 58.1 | 60.4 | 11.15 | 25.30 | 14.15 | 25355.03 |

ตาราง ก-41 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร MP39 Di 1.06 mm. Lt 10 m. Le 10 cm.

| มุม องศา | Q (l/min) | Ti,1 (°C) | Ti,2 (°C) | To,1 (°C) | To,2 (°C) | Tevap (°C) | Tc,1 (°C) | Tc,2 (°C) | Ta,1 (°C) | Ta,2 (°C) | Ti,ave (°C) | To,ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|--------------------------|
| 90 | 1 | 21.5 | 21.5 | 26.1 | 25.8 | 68.9 | 43.5 | 43.5 | 52.9 | 53.4 | 11.25 | 23.80 | 12.55 | 13432.13 |
| | 1 | 21.3 | 21.4 | 26.1 | 26.0 | 66.4 | 42.0 | 42.0 | 55.1 | 53.8 | 11.15 | 23.75 | 12.60 | 14186.74 |
| | 1 | 21.4 | 21.4 | 26.3 | 25.8 | 64.6 | 42.7 | 42.7 | 53.9 | 53.4 | 11.20 | 23.85 | 12.65 | 14035.82 |
| 80 | 1 | 21.4 | 21.4 | 25.7 | 25.5 | 64.1 | 45.9 | 45.9 | 54.5 | 54.1 | 11.20 | 23.55 | 12.35 | 12677.51 |
| | 1 | 21.4 | 21.4 | 25.4 | 25.9 | 71.4 | 39.8 | 39.8 | 53.2 | 53.0 | 11.20 | 23.40 | 12.20 | 12828.44 |
| | 1 | 21.5 | 21.4 | 25.6 | 25.7 | 68.8 | 38.1 | 38.1 | 53.3 | 52.9 | 11.25 | 23.50 | 12.25 | 12677.51 |
| 70 | 1 | 21.5 | 21.4 | 25.9 | 25.6 | 67.7 | 37.8 | 37.8 | 52.8 | 51.5 | 11.25 | 23.65 | 12.40 | 12979.36 |
| | 1 | 21.6 | 21.4 | 26.1 | 26.0 | 69.1 | 38.8 | 38.8 | 54.6 | 53.2 | 11.30 | 23.75 | 12.45 | 13733.97 |
| | 1 | 21.6 | 21.4 | 25.8 | 25.7 | 64.9 | 39.5 | 39.5 | 53.6 | 50.7 | 11.30 | 23.60 | 12.30 | 12828.44 |
| 60 | 1 | 21.5 | 21.4 | 25.6 | 25.3 | 70.5 | 43.0 | 43.0 | 53.5 | 50.8 | 11.25 | 23.50 | 12.25 | 12073.82 |
| | 1 | 21.4 | 21.4 | 25.5 | 25.7 | 71.3 | 42.8 | 42.8 | 52.8 | 49.9 | 11.20 | 23.45 | 12.25 | 12677.51 |
| | 1 | 21.5 | 21.3 | 26.0 | 25.7 | 73.6 | 35.7 | 35.7 | 53.0 | 51.6 | 11.25 | 23.65 | 12.40 | 13432.13 |
| 50 | 1 | 21.4 | 21.4 | 25.3 | 25.2 | 64.5 | 39.3 | 39.3 | 52.0 | 51.7 | 11.20 | 23.35 | 12.15 | 11621.05 |
| | 1 | 21.3 | 21.4 | 25.3 | 25.4 | 68.8 | 37.6 | 37.6 | 53.0 | 51.4 | 11.15 | 23.35 | 12.20 | 12073.82 |
| | 1 | 21.4 | 21.4 | 25.2 | 25.1 | 69.1 | 38.4 | 38.4 | 54.1 | 52.9 | 11.20 | 23.30 | 12.10 | 11319.21 |
| 40 | 1 | 21.4 | 21.4 | 25.4 | 25.1 | 68.2 | 36.9 | 36.9 | 51.9 | 49.1 | 11.20 | 23.40 | 12.20 | 11621.05 |
| | 1 | 21.4 | 21.3 | 24.9 | 25.1 | 70.2 | 34.1 | 34.1 | 52.9 | 52.3 | 11.20 | 23.10 | 11.90 | 11017.36 |
| | 1 | 21.3 | 21.4 | 25.4 | 25.5 | 71.1 | 39.5 | 39.5 | 54.6 | 54.6 | 11.15 | 23.40 | 12.25 | 12375.67 |
| 30 | 1 | 21.3 | 21.3 | 25.2 | 24.6 | 70.5 | 42.5 | 42.5 | 52.1 | 51.5 | 11.15 | 23.25 | 12.10 | 10866.44 |
| | 1 | 21.4 | 21.4 | 24.8 | 24.7 | 75.8 | 40.4 | 40.4 | 50.8 | 52.3 | 11.20 | 23.10 | 11.90 | 10111.83 |
| | 1 | 21.3 | 21.4 | 24.7 | 24.7 | 74.6 | 37.3 | 37.3 | 53.8 | 47.6 | 11.15 | 23.05 | 11.90 | 10111.83 |
| 20 | 1 | 21.4 | 21.2 | 24.4 | 24.5 | 66.7 | 36.9 | 36.9 | 51.2 | 49.0 | 11.20 | 22.80 | 11.60 | 9508.14 |
| | 1 | 21.2 | 21.4 | 24.1 | 24.2 | 76.6 | 35.2 | 35.2 | 53.0 | 48.8 | 11.10 | 22.75 | 11.65 | 8602.60 |
| | 1 | 21.3 | 21.4 | 24.2 | 24.5 | 77.3 | 31.4 | 31.4 | 51.1 | 48.2 | 11.15 | 22.80 | 11.65 | 9055.37 |
| 10 | 1 | 21.3 | 21.4 | 23.4 | 23.4 | 77.8 | 30.1 | 30.1 | 48.2 | 48.6 | 11.15 | 22.40 | 11.25 | 6187.83 |
| | 1 | 21.4 | 21.4 | 23.7 | 23.6 | 76.0 | 40.3 | 40.3 | 51.8 | 47.5 | 11.20 | 22.55 | 11.35 | 6791.53 |
| | 1 | 21.4 | 21.4 | 23.4 | 24.0 | 78.6 | 32.8 | 32.8 | 44.7 | 47.7 | 11.20 | 22.40 | 11.20 | 6942.45 |
| 0 | 1 | 21.4 | 21.4 | 22.5 | 23.1 | 77.2 | 27.4 | 27.4 | 45.0 | 48.3 | 11.20 | 21.95 | 10.75 | 4225.84 |
| | 1 | 21.4 | 21.4 | 22.4 | 22.7 | 78.8 | 23.6 | 23.6 | 48.8 | 45.0 | 11.20 | 21.90 | 10.70 | 3471.22 |
| | 1 | 21.4 | 21.4 | 22.2 | 23.2 | 78.3 | 26.8 | 26.8 | 49.4 | 48.2 | 11.20 | 21.80 | 10.60 | 3923.99 |
| -10 | 1 | 21.5 | 21.4 | 21.7 | 22.0 | 79.0 | 22.0 | 22.0 | 51.7 | 48.9 | 11.25 | 21.55 | 10.30 | 1207.38 |
| | 1 | 21.5 | 21.5 | 21.9 | 22.0 | 79.3 | 22.1 | 22.1 | 51.7 | 48.8 | 11.25 | 21.70 | 10.45 | 1358.31 |
| | 1 | 21.4 | 21.5 | 21.9 | 21.9 | 79.4 | 22.1 | 22.1 | 51.5 | 48.6 | 11.20 | 21.70 | 10.50 | 1358.31 |
| -30 | 1 | 21.4 | 21.4 | 21.8 | 21.9 | 79.2 | 21.4 | 21.4 | 52.2 | 49.5 | 11.20 | 21.60 | 10.40 | 1358.31 |
| | 1 | 21.4 | 21.4 | 21.7 | 21.7 | 79.1 | 21.6 | 21.6 | 52.4 | 49.7 | 11.20 | 21.55 | 10.35 | 905.54 |
| | 1 | 21.4 | 21.4 | 21.7 | 21.9 | 79.0 | 21.4 | 21.4 | 52.3 | 49.7 | 11.20 | 21.55 | 10.35 | 1207.38 |
| -50 | 1 | 21.5 | 21.5 | 21.9 | 22.1 | 79.1 | 21.4 | 21.4 | 52.5 | 49.9 | 11.25 | 21.70 | 10.45 | 1509.23 |
| | 1 | 21.4 | 21.4 | 21.9 | 22.1 | 79.4 | 21.4 | 21.4 | 52.3 | 49.8 | 11.20 | 21.65 | 10.45 | 1811.07 |
| | 1 | 21.4 | 21.4 | 21.8 | 22.0 | 79.6 | 21.5 | 21.5 | 52.3 | 49.7 | 11.20 | 21.60 | 10.40 | 1509.23 |
| -70 | 1 | 21.5 | 21.4 | 21.7 | 22.1 | 79.4 | 21.9 | 21.9 | 52.8 | 50.4 | 11.25 | 21.55 | 10.30 | 1358.31 |
| | 1 | 21.6 | 21.5 | 21.9 | 21.8 | 79.3 | 21.6 | 21.6 | 52.8 | 50.3 | 11.30 | 21.70 | 10.40 | 905.54 |
| | 1 | 21.5 | 21.5 | 21.6 | 21.8 | 79.4 | 21.8 | 21.8 | 52.7 | 50.1 | 11.25 | 21.55 | 10.30 | 603.69 |
| -90 | 1 | 21.5 | 21.4 | 21.7 | 21.9 | 79.3 | 21.7 | 21.7 | 53.5 | 51.3 | 11.25 | 21.55 | 10.30 | 1056.46 |
| | 1 | 21.5 | 21.5 | 21.8 | 21.7 | 79.4 | 22.0 | 22.0 | 53.7 | 51.5 | 11.25 | 21.65 | 10.40 | 754.61 |
| | 1 | 21.5 | 21.4 | 21.6 | 21.8 | 79.1 | 21.6 | 21.6 | 53.4 | 51.1 | 11.25 | 21.50 | 10.25 | 754.61 |

ตาราง ก-42 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 1.06 mm. Lt 10 m. Le 15 cm.

| มุม องศา | Q̇ (l/min) | T _{i,1} (°C) | T _{i,2} (°C) | T _{o,1} (°C) | T _{o,2} (°C) | T _{evap} (°C) | T _{c,1} (°C) | T _{c,2} (°C) | T _{a,1} (°C) | T _{a,2} (°C) | T _{i,ave} (°C) | T _{o,ave} (°C) | Δ T (°C) | q (W/m ²) |
|-------------|---------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------|----------------------------|-------------|--------------------------|
| 90 | 1 | 21.2 | 21.1 | 25.6 | 25.7 | 70.6 | 33.4 | 34.2 | 57.0 | 27.6 | 11.10 | 23.35 | 12.25 | 13130.28 |
| | 1 | 21.2 | 21.2 | 25.7 | 25.7 | 70.8 | 33.0 | 34.4 | 57.5 | 27.6 | 11.10 | 23.45 | 12.35 | 13130.28 |
| | 1 | 21.1 | 21.1 | 25.6 | 25.7 | 70.8 | 32.8 | 34.6 | 57.8 | 27.6 | 11.05 | 23.35 | 12.30 | 13276.17 |
| 80 | 1 | 21.1 | 21.1 | 25.3 | 25.2 | 69.9 | 34.0 | 34.8 | 55.2 | 29.2 | 11.05 | 23.20 | 12.15 | 12109.04 |
| | 1 | 21.1 | 21.1 | 25.3 | 25.4 | 69.9 | 34.1 | 35.2 | 55.5 | 29.2 | 11.05 | 23.20 | 12.15 | 12400.82 |
| | 1 | 21.1 | 21.1 | 25.3 | 25.4 | 69.8 | 34.1 | 35.4 | 55.4 | 29.1 | 11.05 | 23.20 | 12.15 | 12400.82 |
| 70 | 1 | 21.3 | 21.2 | 25.6 | 25.5 | 70.5 | 34.0 | 34.9 | 56.4 | 29.3 | 11.15 | 23.40 | 12.25 | 12546.71 |
| | 1 | 21.2 | 21.2 | 25.6 | 25.6 | 70.4 | 34.1 | 34.9 | 55.9 | 29.3 | 11.10 | 23.40 | 12.30 | 12838.50 |
| | 1 | 21.2 | 21.2 | 25.5 | 25.5 | 70.4 | 34.4 | 34.8 | 56.2 | 29.2 | 11.10 | 23.35 | 12.25 | 12546.71 |
| 60 | 1 | 21.2 | 21.2 | 25.5 | 25.7 | 70.5 | 33.4 | 35.4 | 56.7 | 29.2 | 11.10 | 23.35 | 12.25 | 12838.50 |
| | 1 | 21.2 | 21.2 | 25.7 | 25.7 | 70.5 | 33.3 | 35.6 | 56.7 | 29.1 | 11.10 | 23.45 | 12.35 | 13130.28 |
| | 1 | 21.2 | 21.2 | 25.7 | 25.7 | 70.7 | 33.4 | 35.4 | 56.7 | 29.1 | 11.10 | 23.45 | 12.35 | 13130.28 |
| 50 | 1 | 21.2 | 21.2 | 25.7 | 25.7 | 70.4 | 33.1 | 35.0 | 57.8 | 29.2 | 11.10 | 23.45 | 12.35 | 13130.28 |
| | 1 | 21.2 | 21.2 | 25.5 | 25.6 | 70.8 | 32.7 | 35.7 | 58.0 | 29.2 | 11.10 | 23.35 | 12.25 | 12692.61 |
| | 1 | 21.2 | 21.1 | 25.5 | 25.7 | 70.8 | 33.2 | 35.1 | 58.0 | 29.2 | 11.10 | 23.30 | 12.20 | 12984.39 |
| 40 | 1 | 21.1 | 21.2 | 25.1 | 25.1 | 70.4 | 32.4 | 35.5 | 58.5 | 29.1 | 11.05 | 23.15 | 12.10 | 11525.47 |
| | 1 | 21.2 | 21.2 | 25.3 | 25.3 | 70.8 | 32.7 | 35.7 | 58.8 | 29.1 | 11.10 | 23.25 | 12.15 | 11963.15 |
| | 1 | 21.1 | 21.2 | 25.4 | 25.4 | 70.5 | 31.7 | 33.6 | 55.4 | 29.1 | 11.05 | 23.30 | 12.25 | 12400.82 |
| 30 | 1 | 21.2 | 21.2 | 25.2 | 25.3 | 71.0 | 32.5 | 36.2 | 58.9 | 29.1 | 11.10 | 23.20 | 12.10 | 11817.25 |
| | 1 | 21.2 | 21.2 | 25.4 | 25.5 | 71.1 | 32.4 | 36.7 | 59.0 | 29.1 | 11.10 | 23.30 | 12.20 | 12400.82 |
| | 1 | 21.2 | 21.2 | 25.5 | 25.5 | 71.0 | 32.4 | 33.7 | 49.7 | 29.1 | 11.10 | 23.35 | 12.25 | 12546.71 |
| 20 | 1 | 21.2 | 21.2 | 24.9 | 24.9 | 70.5 | 31.7 | 35.7 | 58.7 | 29.2 | 11.10 | 23.05 | 11.95 | 10796.01 |
| | 1 | 21.1 | 21.2 | 25.2 | 25.2 | 70.5 | 31.7 | 35.7 | 58.9 | 29.1 | 11.05 | 23.20 | 12.15 | 11817.25 |
| | 1 | 21.2 | 21.2 | 25.4 | 25.4 | 69.0 | 30.1 | 35.1 | 57.3 | 29.1 | 11.10 | 23.30 | 12.20 | 12254.93 |
| 10 | 1 | 21.2 | 21.2 | 25.4 | 25.2 | 70.1 | 31.1 | 34.4 | 58.6 | 29.1 | 11.10 | 23.30 | 12.20 | 11963.15 |
| | 1 | 21.1 | 21.2 | 25.1 | 25.2 | 70.7 | 32.0 | 33.6 | 56.3 | 29.1 | 11.05 | 23.15 | 12.10 | 11671.36 |
| | 1 | 21.2 | 21.2 | 25.1 | 25.1 | 74.8 | 32.1 | 33.3 | 55.0 | 29.0 | 11.10 | 23.15 | 12.05 | 11379.58 |
| 0 | 1 | 21.1 | 21.1 | 21.4 | 21.3 | 79.4 | 21.1 | 21.1 | 47.0 | 46.9 | 11.05 | 21.25 | 10.20 | 729.46 |
| | 1 | 21.0 | 21.1 | 21.5 | 21.1 | 79.4 | 21.0 | 21.0 | 46.9 | 46.9 | 11.00 | 21.30 | 10.30 | 729.46 |
| | 1 | 21.0 | 21.1 | 21.4 | 21.3 | 79.3 | 21.0 | 21.1 | 47.0 | 46.8 | 11.00 | 21.25 | 10.25 | 875.35 |
| -10 | 1 | 21.1 | 21.2 | 21.5 | 21.3 | 79.3 | 21.0 | 21.1 | 47.3 | 47.2 | 11.05 | 21.35 | 10.30 | 729.46 |
| | 1 | 21.1 | 21.1 | 21.5 | 21.4 | 79.4 | 21.1 | 21.0 | 47.4 | 47.2 | 11.05 | 21.30 | 10.25 | 1021.24 |
| | 1 | 21.1 | 21.2 | 21.6 | 21.4 | 79.4 | 21.1 | 21.1 | 47.5 | 47.3 | 11.05 | 21.40 | 10.35 | 1021.24 |
| -30 | 1 | 21.1 | 21.2 | 21.5 | 21.4 | 79.3 | 21.1 | 21.1 | 47.5 | 47.4 | 11.05 | 21.35 | 10.30 | 875.35 |
| | 1 | 21.1 | 21.1 | 21.5 | 21.4 | 79.2 | 21.1 | 21.1 | 47.4 | 47.4 | 11.05 | 21.30 | 10.25 | 1021.24 |
| | 1 | 21.1 | 21.2 | 21.5 | 21.3 | 79.2 | 21.1 | 21.1 | 47.3 | 47.4 | 11.05 | 21.35 | 10.30 | 729.46 |
| -50 | 1 | 21.1 | 21.2 | 21.6 | 21.4 | 79.2 | 21.1 | 21.1 | 47.1 | 47.0 | 11.05 | 21.40 | 10.35 | 1021.24 |
| | 1 | 21.1 | 21.2 | 21.7 | 21.4 | 79.4 | 21.0 | 21.1 | 47.0 | 46.9 | 11.05 | 21.45 | 10.40 | 1167.14 |
| | 1 | 21.1 | 21.1 | 21.6 | 21.4 | 79.2 | 21.0 | 21.1 | 46.9 | 47.0 | 11.05 | 21.35 | 10.30 | 1167.14 |
| -70 | 1 | 21.3 | 21.3 | 21.7 | 21.5 | 79.3 | 21.1 | 21.1 | 47.0 | 47.0 | 11.15 | 21.50 | 10.35 | 875.35 |
| | 1 | 21.4 | 21.4 | 21.8 | 21.6 | 79.3 | 21.1 | 21.2 | 47.1 | 47.0 | 11.20 | 21.60 | 10.40 | 875.35 |
| | 1 | 21.4 | 21.3 | 21.7 | 21.5 | 79.2 | 21.1 | 21.1 | 47.1 | 47.0 | 11.20 | 21.50 | 10.30 | 729.46 |
| -90 | 1 | 21.3 | 21.4 | 21.9 | 21.7 | 79.3 | 21.2 | 21.2 | 47.6 | 47.6 | 11.15 | 21.65 | 10.50 | 1313.03 |
| | 1 | 21.2 | 21.3 | 21.9 | 21.7 | 79.4 | 21.2 | 21.2 | 47.7 | 47.8 | 11.10 | 21.60 | 10.50 | 1604.81 |
| | 1 | 21.2 | 21.2 | 21.9 | 21.7 | 79.4 | 21.1 | 21.2 | 47.9 | 47.8 | 11.10 | 21.55 | 10.45 | 1750.70 |

ตาราง ก-43 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร MP39 Di 1.06 mm. Lt 15 m. Le 5 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Tj,ave (°C) | To,ave (°C) | Δ T (°C) | q (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 21.1 | 21.0 | 33.8 | 33.7 | 71.6 | 52.0 | 47.2 | 65.0 | 67.1 | 11.05 | 27.40 | 16.35 | 25853.43 |
| | 1 | 21.0 | 21.1 | 33.7 | 33.9 | 70.1 | 52.0 | 47.2 | 64.9 | 66.5 | 11.00 | 27.40 | 16.40 | 25955.21 |
| | 1 | 21.2 | 21.1 | 33.6 | 33.8 | 71.5 | 52.3 | 48.5 | 65.6 | 67.0 | 11.10 | 27.35 | 16.25 | 25548.07 |
| 80 | 1 | 21.0 | 20.9 | 33.5 | 33.3 | 70.7 | 51.7 | 50.7 | 65.5 | 67.3 | 11.00 | 27.20 | 16.20 | 25344.50 |
| | 1 | 21.0 | 21.4 | 32.9 | 33.6 | 71.8 | 52.8 | 52.9 | 63.9 | 66.2 | 11.00 | 27.15 | 16.15 | 24530.22 |
| | 1 | 21.1 | 21.1 | 32.8 | 33.8 | 71.7 | 51.3 | 50.6 | 64.9 | 65.9 | 11.05 | 26.95 | 15.90 | 24835.57 |
| 70 | 1 | 21.1 | 21.4 | 33.2 | 34.1 | 73.7 | 52.8 | 58.2 | 64.1 | 66.8 | 11.05 | 27.30 | 16.25 | 25242.71 |
| | 1 | 21.1 | 21.1 | 34.2 | 34.4 | 73.1 | 52.8 | 57.6 | 64.7 | 66.0 | 11.05 | 27.65 | 16.60 | 26871.28 |
| | 1 | 21.2 | 21.4 | 34.2 | 34.4 | 72.9 | 50.4 | 59.2 | 65.0 | 66.0 | 11.10 | 27.80 | 16.70 | 26464.14 |
| 60 | 1 | 21.1 | 21.1 | 34.3 | 34.3 | 71.4 | 53.3 | 57.9 | 65.5 | 66.4 | 11.05 | 27.70 | 16.65 | 26871.28 |
| | 1 | 21.1 | 21.0 | 34.6 | 34.3 | 72.3 | 50.9 | 58.1 | 64.8 | 65.1 | 11.05 | 27.80 | 16.75 | 27278.42 |
| | 1 | 21.3 | 21.1 | 34.4 | 34.4 | 72.0 | 53.0 | 58.8 | 65.1 | 66.5 | 11.15 | 27.75 | 16.60 | 26871.28 |
| 50 | 1 | 21.4 | 21.1 | 34.3 | 34.7 | 73.0 | 52.7 | 60.2 | 64.4 | 65.9 | 11.20 | 27.70 | 16.50 | 26973.06 |
| | 1 | 21.4 | 21.1 | 34.8 | 34.7 | 73.7 | 53.3 | 59.4 | 64.4 | 66.5 | 11.20 | 27.95 | 16.75 | 27481.99 |
| | 1 | 21.1 | 21.1 | 33.9 | 34.7 | 72.9 | 53.0 | 59.7 | 64.6 | 66.8 | 11.05 | 27.50 | 16.45 | 26871.28 |
| 40 | 1 | 21.1 | 21.0 | 34.7 | 34.6 | 73.6 | 51.2 | 61.7 | 64.5 | 66.3 | 11.05 | 27.85 | 16.80 | 27685.56 |
| | 1 | 21.1 | 20.9 | 34.8 | 34.8 | 72.9 | 49.8 | 61.3 | 64.4 | 66.0 | 11.05 | 27.85 | 16.80 | 28092.70 |
| | 1 | 21.1 | 21.1 | 34.8 | 35.0 | 72.5 | 49.5 | 62.0 | 64.3 | 66.8 | 11.05 | 27.95 | 16.90 | 28092.70 |
| 30 | 1 | 21.1 | 21.0 | 34.1 | 35.0 | 70.9 | 47.2 | 62.6 | 62.8 | 65.9 | 11.05 | 27.55 | 16.50 | 27481.99 |
| | 1 | 21.1 | 21.1 | 35.1 | 34.8 | 71.3 | 46.9 | 62.4 | 63.0 | 66.2 | 11.05 | 28.10 | 17.05 | 28194.48 |
| | 1 | 21.0 | 21.2 | 35.0 | 34.2 | 70.3 | 48.6 | 62.5 | 64.2 | 65.8 | 11.00 | 28.10 | 17.10 | 27481.99 |
| 20 | 1 | 21.1 | 21.1 | 34.1 | 33.9 | 71.1 | 46.5 | 63.0 | 63.0 | 65.6 | 11.05 | 27.60 | 16.55 | 26260.57 |
| | 1 | 21.1 | 21.2 | 34.4 | 34.1 | 72.0 | 44.9 | 62.8 | 61.3 | 65.9 | 11.05 | 27.80 | 16.75 | 26667.71 |
| | 1 | 21.2 | 21.1 | 35.1 | 35.2 | 70.9 | 46.4 | 63.0 | 63.5 | 66.2 | 11.10 | 28.10 | 17.00 | 28499.84 |
| 10 | 1 | 21.1 | 21.1 | 34.4 | 34.5 | 71.4 | 44.1 | 64.0 | 62.8 | 65.8 | 11.05 | 27.75 | 16.70 | 27176.63 |
| | 1 | 21.2 | 21.1 | 34.6 | 34.3 | 71.5 | 42.6 | 63.9 | 62.5 | 65.6 | 11.10 | 27.85 | 16.75 | 27074.85 |
| | 1 | 21.1 | 21.1 | 34.6 | 34.1 | 71.2 | 44.2 | 64.0 | 63.4 | 65.6 | 11.05 | 27.85 | 16.80 | 26973.06 |
| 0 | 1 | 21.0 | 20.9 | 32.3 | 33.3 | 71.1 | 43.3 | 64.9 | 61.9 | 65.0 | 11.00 | 26.60 | 15.60 | 24123.08 |
| | 1 | 20.9 | 21.0 | 31.8 | 32.3 | 71.6 | 42.2 | 65.0 | 61.9 | 65.8 | 10.95 | 26.40 | 15.45 | 22596.30 |
| | 1 | 21.0 | 21.0 | 32.7 | 33.3 | 71.1 | 40.7 | 65.5 | 62.9 | 64.2 | 11.00 | 26.85 | 15.85 | 24428.43 |
| -10 | 1 | 21.1 | 21.1 | 32.9 | 32.9 | 73.2 | 48.0 | 58.8 | 62.3 | 64.3 | 11.05 | 27.00 | 15.95 | 24021.29 |
| | 1 | 21.2 | 21.2 | 33.1 | 33.3 | 72.5 | 46.4 | 58.7 | 65.8 | 62.6 | 11.10 | 27.15 | 16.05 | 24428.43 |
| | 1 | 21.2 | 21.1 | 32.6 | 33.0 | 71.3 | 48.2 | 58.4 | 64.7 | 64.1 | 11.10 | 26.85 | 15.75 | 23715.94 |
| -30 | 1 | 21.1 | 21.1 | 32.0 | 31.9 | 71.6 | 47.1 | 53.9 | 66.0 | 63.6 | 11.05 | 26.55 | 15.50 | 22087.37 |
| | 1 | 21.1 | 21.1 | 31.7 | 31.4 | 71.0 | 46.6 | 54.3 | 65.8 | 63.7 | 11.05 | 26.40 | 15.35 | 21273.09 |
| | 1 | 21.1 | 21.1 | 32.4 | 32.1 | 70.7 | 47.8 | 54.6 | 65.7 | 64.7 | 11.05 | 26.75 | 15.70 | 22698.09 |
| -50 | 1 | 21.1 | 21.1 | 30.1 | 30.4 | 71.8 | 47.6 | 53.0 | 67.6 | 67.1 | 11.05 | 25.60 | 14.55 | 18626.68 |
| | 1 | 21.1 | 21.1 | 30.4 | 30.1 | 71.5 | 44.7 | 52.9 | 67.7 | 67.5 | 11.05 | 25.75 | 14.70 | 18626.68 |
| | 1 | 21.1 | 21.1 | 30.8 | 30.8 | 71.4 | 48.2 | 52.7 | 67.4 | 67.4 | 11.05 | 25.95 | 14.90 | 19746.32 |
| -70 | 1 | 21.1 | 21.4 | 28.5 | 28.5 | 74.1 | 52.3 | 52.7 | 70.8 | 68.5 | 11.05 | 24.95 | 13.90 | 14758.85 |
| | 1 | 21.1 | 21.3 | 28.1 | 28.6 | 71.8 | 53.3 | 52.9 | 71.4 | 69.6 | 11.05 | 24.70 | 13.65 | 14555.27 |
| | 1 | 21.2 | 21.2 | 28.6 | 28.9 | 72.7 | 51.7 | 53.3 | 70.8 | 70.0 | 11.10 | 24.90 | 13.80 | 15369.56 |
| -90 | 1 | 21.2 | 21.3 | 26.5 | 26.0 | 72.8 | 56.2 | 52.3 | 69.7 | 70.8 | 11.10 | 23.90 | 12.80 | 10178.51 |
| | 1 | 21.1 | 21.3 | 26.1 | 26.4 | 72.6 | 57.3 | 53.5 | 71.0 | 71.0 | 11.05 | 23.70 | 12.65 | 10280.30 |
| | 1 | 21.4 | 21.4 | 26.7 | 27.0 | 73.0 | 57.1 | 51.4 | 70.3 | 71.8 | 11.20 | 24.05 | 12.85 | 11094.58 |

ตาราง ก-44 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 1.06 mm. Lt 15 m. Le 10 cm.

| มุม องศา | Q (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | η (W/m ²) |
|-------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|-------------------------------|
| 90 | 1 | 21.1 | 21.1 | 30.2 | 31.0 | 76.2 | 48.2 | 45.9 | 72.3 | 43.1 | 11.05 | 25.65 | 14.60 | 17324.68 |
| | 1 | 21.1 | 21.1 | 30.7 | 30.5 | 76.4 | 49.6 | 46.0 | 72.6 | 44.0 | 11.05 | 25.90 | 14.85 | 17324.68 |
| | 1 | 21.2 | 21.2 | 30.6 | 31.3 | 76.3 | 47.9 | 45.9 | 72.5 | 43.3 | 11.10 | 25.90 | 14.80 | 17780.59 |
| 80 | 1 | 21.1 | 21.1 | 30.1 | 30.6 | 76.1 | 46.4 | 44.6 | 72.8 | 42.6 | 11.05 | 25.60 | 14.55 | 16868.77 |
| | 1 | 21.1 | 21.1 | 30.1 | 30.7 | 76.3 | 47.8 | 44.6 | 72.6 | 43.8 | 11.05 | 25.60 | 14.55 | 16959.95 |
| | 1 | 21.1 | 21.0 | 30.7 | 30.6 | 76.3 | 48.4 | 45.0 | 72.6 | 42.4 | 11.05 | 25.85 | 14.80 | 17507.04 |
| 70 | 1 | 21.2 | 21.3 | 30.4 | 30.9 | 76.4 | 43.1 | 40.3 | 73.2 | 39.9 | 11.10 | 25.85 | 14.75 | 17142.31 |
| | 1 | 21.1 | 21.1 | 30.1 | 30.4 | 76.1 | 45.7 | 44.0 | 72.5 | 41.5 | 11.05 | 25.60 | 14.55 | 16686.40 |
| | 1 | 21.1 | 21.1 | 30.7 | 31.1 | 76.3 | 43.4 | 40.5 | 73.0 | 39.7 | 11.05 | 25.90 | 14.85 | 17871.77 |
| 60 | 1 | 21.3 | 21.3 | 30.2 | 29.2 | 76.7 | 40.1 | 37.5 | 73.7 | 40.7 | 11.15 | 25.75 | 14.60 | 15318.66 |
| | 1 | 21.2 | 21.2 | 29.5 | 29.6 | 76.6 | 39.7 | 37.8 | 73.6 | 39.8 | 11.10 | 25.35 | 14.25 | 15227.48 |
| | 1 | 21.2 | 21.2 | 28.8 | 29.0 | 76.5 | 39.8 | 37.9 | 73.8 | 39.5 | 11.10 | 25.00 | 13.90 | 14042.11 |
| 50 | 1 | 21.3 | 21.3 | 27.7 | 28.4 | 76.5 | 37.0 | 34.2 | 74.0 | 42.3 | 11.15 | 24.50 | 13.35 | 12309.64 |
| | 1 | 21.2 | 21.3 | 28.3 | 28.4 | 76.3 | 37.9 | 34.1 | 74.1 | 42.8 | 11.10 | 24.80 | 13.70 | 12947.92 |
| | 1 | 21.3 | 21.3 | 27.9 | 28.5 | 76.5 | 37.3 | 33.7 | 73.9 | 42.5 | 11.15 | 24.60 | 13.45 | 12583.19 |
| 40 | 1 | 21.2 | 21.2 | 26.9 | 27.1 | 76.6 | 35.2 | 31.6 | 74.3 | 44.2 | 11.10 | 24.05 | 12.95 | 10577.17 |
| | 1 | 21.1 | 21.2 | 26.8 | 27.1 | 76.6 | 35.2 | 31.2 | 74.4 | 43.5 | 11.05 | 24.00 | 12.95 | 10577.17 |
| | 1 | 21.2 | 21.3 | 27.3 | 27.5 | 76.8 | 35.6 | 31.5 | 74.6 | 43.4 | 11.10 | 24.30 | 13.20 | 11215.45 |
| 30 | 1 | 21.1 | 21.1 | 26.5 | 26.7 | 76.8 | 34.4 | 29.8 | 74.8 | 45.0 | 11.05 | 23.80 | 12.75 | 10030.08 |
| | 1 | 21.1 | 21.1 | 26.4 | 26.7 | 76.8 | 34.4 | 29.6 | 74.5 | 44.3 | 11.05 | 23.75 | 12.70 | 9938.89 |
| | 1 | 21.2 | 21.2 | 26.7 | 26.9 | 76.9 | 34.5 | 30.0 | 75.0 | 44.9 | 11.10 | 23.95 | 12.85 | 10212.44 |
| 20 | 1 | 21.1 | 21.2 | 25.3 | 25.7 | 77.3 | 30.9 | 26.5 | 74.9 | 46.3 | 11.05 | 23.25 | 12.20 | 7932.88 |
| | 1 | 21.2 | 21.1 | 25.5 | 25.7 | 77.2 | 30.8 | 26.5 | 74.5 | 45.7 | 11.10 | 23.30 | 12.20 | 8115.24 |
| | 1 | 21.1 | 21.1 | 25.4 | 25.7 | 77.2 | 31.0 | 26.5 | 75.1 | 46.3 | 11.05 | 23.25 | 12.20 | 8115.24 |
| 10 | 1 | 21.1 | 21.1 | 25.5 | 25.3 | 77.2 | 59.3 | 22.8 | 68.9 | 71.1 | 11.05 | 23.30 | 12.25 | 7841.70 |
| | 1 | 21.1 | 21.1 | 25.6 | 25.5 | 77.2 | 59.8 | 23.0 | 68.8 | 71.8 | 11.05 | 23.35 | 12.30 | 8115.24 |
| | 1 | 21.1 | 21.1 | 26.1 | 25.4 | 77.2 | 59.8 | 23.1 | 69.1 | 72.0 | 11.05 | 23.60 | 12.55 | 8479.97 |
| 0 | 1 | 21.4 | 21.3 | 25.9 | 26.1 | 77.5 | 43.8 | 23.9 | 65.7 | 68.5 | 11.20 | 23.60 | 12.40 | 8479.97 |
| | 1 | 21.3 | 21.2 | 25.2 | 25.9 | 77.3 | 42.2 | 23.7 | 65.4 | 68.2 | 11.15 | 23.20 | 12.05 | 7841.70 |
| | 1 | 21.3 | 21.3 | 25.7 | 25.7 | 77.2 | 42.8 | 24.1 | 65.9 | 68.6 | 11.15 | 23.50 | 12.35 | 8024.06 |
| -10 | 1 | 21.2 | 21.1 | 22.3 | 22.4 | 79.3 | 21.6 | 21.4 | 56.1 | 59.5 | 11.10 | 21.70 | 10.60 | 2188.38 |
| | 1 | 21.2 | 21.1 | 22.1 | 22.5 | 79.4 | 21.7 | 21.5 | 57.3 | 55.9 | 11.10 | 21.60 | 10.50 | 2097.20 |
| | 1 | 21.3 | 21.1 | 22.1 | 22.5 | 79.3 | 21.5 | 21.4 | 56.2 | 55.7 | 11.15 | 21.60 | 10.45 | 2006.02 |
| -30 | 1 | 21.2 | 21.2 | 21.7 | 22.2 | 79.4 | 21.4 | 21.4 | 55.1 | 55.1 | 11.10 | 21.45 | 10.35 | 1367.74 |
| | 1 | 21.3 | 21.3 | 21.9 | 22.1 | 79.4 | 21.4 | 21.5 | 55.1 | 55.2 | 11.15 | 21.60 | 10.45 | 1276.56 |
| | 1 | 21.3 | 21.3 | 22.0 | 22.0 | 79.4 | 21.4 | 21.5 | 55.0 | 55.0 | 11.15 | 21.65 | 10.50 | 1276.56 |
| -50 | 1 | 21.2 | 21.3 | 21.8 | 22.1 | 79.4 | 21.4 | 21.5 | 54.6 | 54.7 | 11.10 | 21.55 | 10.45 | 1276.56 |
| | 1 | 21.4 | 21.4 | 21.9 | 22.1 | 79.4 | 21.4 | 21.5 | 54.6 | 54.7 | 11.20 | 21.65 | 10.45 | 1094.19 |
| | 1 | 21.2 | 21.3 | 22.1 | 22.1 | 79.6 | 21.6 | 21.5 | 54.6 | 54.7 | 11.10 | 21.70 | 10.60 | 1550.10 |
| -70 | 1 | 21.3 | 21.4 | 21.8 | 22.1 | 79.4 | 21.4 | 21.5 | 54.5 | 54.4 | 11.15 | 21.60 | 10.45 | 1094.19 |
| | 1 | 21.2 | 21.2 | 21.7 | 22.1 | 79.6 | 21.4 | 21.5 | 54.4 | 54.3 | 11.10 | 21.45 | 10.35 | 1276.56 |
| | 1 | 21.3 | 21.3 | 21.9 | 22.1 | 79.5 | 21.5 | 21.6 | 54.6 | 54.5 | 11.15 | 21.60 | 10.45 | 1276.56 |
| -90 | 1 | 21.3 | 21.4 | 21.7 | 21.8 | 79.6 | 21.6 | 21.6 | 54.3 | 54.2 | 11.15 | 21.55 | 10.40 | 729.46 |
| | 1 | 21.3 | 21.4 | 21.8 | 21.9 | 79.6 | 21.5 | 21.6 | 54.3 | 53.9 | 11.15 | 21.60 | 10.45 | 911.83 |
| | 1 | 21.2 | 21.2 | 21.7 | 21.7 | 79.5 | 21.4 | 21.4 | 53.9 | 53.7 | 11.10 | 21.45 | 10.35 | 911.83 |

ตาราง ก-45 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร MP39 Di 1.06 mm, Lt 15 m, Le 15 cm.

| อุณหภูมิ องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|------------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|--------------------------|
| 90 | 1 | 21.1 | 21.2 | 26.3 | 26.1 | 76.7 | 35.4 | 39.2 | 75.4 | 34.1 | 11.05 | 23.75 | 12.70 | 9209.43 |
| | 1 | 21.1 | 21.1 | 26.4 | 26.7 | 74.8 | 35.3 | 39.2 | 75.3 | 34.5 | 11.05 | 23.75 | 12.70 | 9938.89 |
| | 1 | 21.1 | 21.1 | 26.5 | 26.3 | 76.8 | 35.4 | 39.5 | 75.4 | 34.4 | 11.05 | 23.80 | 12.75 | 9665.35 |
| 80 | 1 | 21.2 | 21.1 | 26.2 | 26.2 | 77.1 | 32.4 | 37.4 | 75.4 | 34.5 | 11.10 | 23.65 | 12.55 | 9209.43 |
| | 1 | 21.1 | 21.2 | 26.1 | 26.0 | 77.6 | 31.8 | 38.5 | 75.1 | 34.6 | 11.05 | 23.65 | 12.60 | 8935.89 |
| | 1 | 21.3 | 21.2 | 26.1 | 26.4 | 76.6 | 31.2 | 37.6 | 75.4 | 34.8 | 11.15 | 23.65 | 12.50 | 9118.25 |
| 70 | 1 | 21.1 | 21.1 | 25.7 | 25.5 | 77.9 | 29.3 | 33.1 | 75.4 | 32.7 | 11.05 | 23.40 | 12.35 | 8206.43 |
| | 1 | 21.2 | 21.1 | 25.9 | 25.9 | 77.7 | 33.1 | 32.1 | 75.5 | 33.5 | 11.10 | 23.50 | 12.40 | 8662.34 |
| | 1 | 21.1 | 21.2 | 25.7 | 25.5 | 78.3 | 27.1 | 31.0 | 75.7 | 32.1 | 11.05 | 23.45 | 12.40 | 8115.24 |
| 60 | 1 | 21.1 | 21.1 | 25.3 | 25.1 | 78.1 | 27.4 | 30.1 | 76.0 | 32.8 | 11.05 | 23.20 | 12.15 | 7476.97 |
| | 1 | 21.1 | 21.2 | 25.2 | 25.6 | 78.3 | 26.8 | 30.0 | 75.9 | 32.7 | 11.05 | 23.20 | 12.15 | 7750.51 |
| | 1 | 21.1 | 21.1 | 25.4 | 25.4 | 76.9 | 31.3 | 33.1 | 75.5 | 34.6 | 11.05 | 23.25 | 12.20 | 7841.70 |
| 50 | 1 | 21.1 | 21.1 | 24.7 | 25.1 | 76.5 | 29.3 | 32.6 | 75.4 | 33.4 | 11.05 | 22.90 | 11.85 | 6929.87 |
| | 1 | 21.1 | 21.1 | 24.7 | 25.2 | 77.8 | 29.1 | 31.3 | 76.0 | 33.5 | 11.05 | 22.90 | 11.85 | 7021.05 |
| | 1 | 21.2 | 21.1 | 25.1 | 25.1 | 78.5 | 25.7 | 29.5 | 76.2 | 32.8 | 11.10 | 23.10 | 12.00 | 7203.42 |
| 40 | 1 | 20.9 | 21.1 | 24.6 | 24.5 | 78.5 | 24.8 | 28.2 | 76.4 | 33.1 | 10.95 | 22.85 | 11.90 | 6473.96 |
| | 1 | 21.1 | 21.1 | 24.5 | 24.4 | 78.1 | 25.0 | 28.0 | 76.4 | 33.0 | 11.05 | 22.80 | 11.75 | 6109.23 |
| | 1 | 21.1 | 21.1 | 24.7 | 24.4 | 77.8 | 26.2 | 29.4 | 76.1 | 32.9 | 11.05 | 22.90 | 11.85 | 6291.59 |
| 30 | 1 | 21.1 | 21.1 | 23.4 | 23.5 | 78.8 | 22.8 | 24.5 | 76.9 | 33.7 | 11.05 | 22.25 | 11.20 | 4285.58 |
| | 1 | 21.1 | 21.1 | 23.4 | 23.7 | 78.8 | 22.7 | 24.9 | 76.9 | 34.8 | 11.05 | 22.25 | 11.20 | 4467.94 |
| | 1 | 21.1 | 21.1 | 23.5 | 23.8 | 78.8 | 23.4 | 26.4 | 76.6 | 33.4 | 11.05 | 22.30 | 11.25 | 4650.31 |
| 20 | 1 | 21.1 | 21.1 | 23.4 | 22.7 | 78.8 | 22.7 | 24.7 | 76.9 | 33.4 | 11.05 | 22.25 | 11.20 | 3556.12 |
| | 1 | 21.2 | 21.2 | 23.1 | 22.8 | 78.8 | 22.5 | 25.0 | 77.1 | 33.7 | 11.10 | 22.15 | 11.05 | 3191.39 |
| | 1 | 21.1 | 21.1 | 22.9 | 22.8 | 78.8 | 22.6 | 24.6 | 76.8 | 34.1 | 11.05 | 22.00 | 10.95 | 3191.39 |
| 10 | 1 | 21.1 | 21.1 | 22.4 | 22.3 | 79.0 | 21.9 | 22.7 | 77.1 | 34.9 | 11.05 | 21.75 | 10.70 | 2279.56 |
| | 1 | 21.1 | 21.1 | 22.4 | 22.2 | 79.0 | 21.8 | 22.6 | 77.0 | 34.4 | 11.05 | 21.75 | 10.70 | 2188.38 |
| | 1 | 21.1 | 21.1 | 22.4 | 22.1 | 79.0 | 22.0 | 22.5 | 77.2 | 34.1 | 11.05 | 21.75 | 10.70 | 2097.20 |
| 0 | 1 | 21.1 | 21.2 | 21.4 | 21.4 | 79.4 | 21.2 | 21.3 | 51.6 | 52.0 | 11.05 | 21.30 | 10.25 | 455.91 |
| | 1 | 21.3 | 21.2 | 21.5 | 21.4 | 79.4 | 21.2 | 21.3 | 51.8 | 52.0 | 11.15 | 21.35 | 10.20 | 364.73 |
| | 1 | 21.2 | 21.2 | 21.6 | 21.4 | 79.4 | 21.2 | 21.4 | 51.7 | 51.9 | 11.10 | 21.40 | 10.30 | 547.10 |
| -10 | 1 | 21.4 | 21.3 | 21.7 | 21.4 | 79.5 | 21.5 | 21.4 | 49.7 | 50.1 | 11.20 | 21.50 | 10.30 | 364.73 |
| | 1 | 21.4 | 21.3 | 21.7 | 21.4 | 79.4 | 21.4 | 21.3 | 49.6 | 50.1 | 11.20 | 21.50 | 10.30 | 364.73 |
| | 1 | 21.4 | 21.2 | 21.6 | 21.4 | 79.4 | 21.4 | 21.3 | 49.2 | 49.8 | 11.20 | 21.40 | 10.20 | 364.73 |
| -30 | 1 | 21.1 | 21.2 | 21.6 | 21.4 | 79.4 | 21.2 | 21.2 | 48.1 | 48.4 | 11.05 | 21.40 | 10.35 | 638.28 |
| | 1 | 21.3 | 21.4 | 21.6 | 21.4 | 79.4 | 21.2 | 21.2 | 48.1 | 48.5 | 11.15 | 21.50 | 10.35 | 273.55 |
| | 1 | 21.4 | 21.3 | 21.6 | 21.4 | 79.7 | 21.3 | 21.3 | 48.3 | 48.7 | 11.20 | 21.45 | 10.25 | 273.55 |
| -50 | 1 | 21.4 | 21.4 | 21.6 | 21.4 | 79.4 | 21.3 | 21.3 | 48.0 | 48.5 | 11.20 | 21.50 | 10.30 | 182.37 |
| | 1 | 21.4 | 21.2 | 21.5 | 21.3 | 79.3 | 21.3 | 21.3 | 48.0 | 48.5 | 11.20 | 21.35 | 10.15 | 182.37 |
| | 1 | 21.4 | 21.3 | 21.4 | 21.4 | 79.4 | 21.3 | 21.2 | 47.9 | 48.4 | 11.20 | 21.35 | 10.15 | 91.18 |
| -70 | 1 | 21.4 | 21.2 | 21.5 | 21.4 | 79.3 | 21.4 | 21.3 | 48.0 | 48.4 | 11.20 | 21.35 | 10.15 | 273.55 |
| | 1 | 21.4 | 21.3 | 21.4 | 21.4 | 79.3 | 21.3 | 21.2 | 48.0 | 48.5 | 11.20 | 21.35 | 10.15 | 91.18 |
| | 1 | 21.4 | 21.2 | 21.5 | 21.4 | 79.4 | 21.4 | 21.3 | 48.2 | 48.5 | 11.20 | 21.35 | 10.15 | 273.55 |
| -90 | 1 | 21.3 | 21.2 | 21.4 | 21.3 | 79.3 | 21.3 | 21.4 | 47.8 | 48.4 | 11.15 | 21.30 | 10.15 | 182.37 |
| | 1 | 21.3 | 21.2 | 21.4 | 21.3 | 79.3 | 21.3 | 21.4 | 47.8 | 48.2 | 11.15 | 21.30 | 10.15 | 182.37 |
| | 1 | 21.3 | 21.3 | 21.4 | 21.4 | 79.4 | 21.3 | 21.4 | 47.6 | 48.2 | 11.15 | 21.35 | 10.20 | 182.37 |

ตาราง ก-46 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 2.03 mm. Lt 5 m. Le 5 cm.

| มุม องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | η (W/m ²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|-------------------------------|
| 90 | 1 | 21.0 | 21.1 | 28.1 | 27.7 | 74.1 | 38.1 | 30.4 | 55.8 | 57.8 | 11.00 | 24.60 | 13.60 | 30749.55 |
| | 1 | 20.9 | 21.0 | 28.0 | 27.7 | 74.2 | 37.7 | 39.8 | 56.0 | 57.0 | 10.95 | 24.50 | 13.55 | 30974.00 |
| | 1 | 20.9 | 21.0 | 28.1 | 27.7 | 74.3 | 37.5 | 39.9 | 55.8 | 57.0 | 10.95 | 24.55 | 13.60 | 31198.45 |
| 80 | 1 | 21.0 | 21.0 | 28.1 | 27.7 | 73.8 | 38.0 | 40.5 | 56.2 | 57.8 | 11.00 | 24.55 | 13.55 | 30974.00 |
| | 1 | 20.9 | 20.9 | 28.0 | 27.7 | 74.1 | 38.2 | 40.4 | 55.8 | 57.8 | 10.95 | 24.45 | 13.50 | 31198.45 |
| | 1 | 20.8 | 20.9 | 28.3 | 28.1 | 74.2 | 38.4 | 40.4 | 55.9 | 57.7 | 10.90 | 24.60 | 13.70 | 32994.04 |
| 70 | 1 | 21.0 | 21.0 | 28.0 | 27.8 | 74.2 | 37.5 | 40.7 | 57.6 | 58.6 | 11.00 | 24.50 | 13.50 | 30974.00 |
| | 1 | 21.1 | 21.0 | 27.9 | 27.5 | 74.0 | 37.7 | 39.8 | 56.1 | 57.0 | 11.05 | 24.45 | 13.40 | 29851.75 |
| | 1 | 21.1 | 20.9 | 27.9 | 27.7 | 74.1 | 37.1 | 40.4 | 55.6 | 57.4 | 11.05 | 24.40 | 13.35 | 30525.10 |
| 60 | 1 | 21.1 | 20.9 | 27.7 | 27.7 | 74.1 | 38.0 | 40.7 | 56.6 | 58.2 | 11.05 | 24.30 | 13.25 | 30076.20 |
| | 1 | 21.0 | 20.9 | 28.1 | 27.8 | 74.1 | 38.3 | 40.5 | 59.2 | 59.5 | 11.00 | 24.50 | 13.50 | 31422.90 |
| | 1 | 21.1 | 21.0 | 28.1 | 27.7 | 74.3 | 38.1 | 40.1 | 58.6 | 58.4 | 11.05 | 24.55 | 13.50 | 30749.55 |
| 50 | 1 | 20.9 | 20.9 | 27.9 | 27.7 | 74.3 | 37.4 | 40.2 | 59.3 | 58.6 | 10.95 | 24.40 | 13.45 | 30974.00 |
| | 1 | 20.9 | 20.8 | 28.1 | 27.8 | 74.2 | 37.6 | 40.1 | 59.2 | 58.5 | 10.95 | 24.45 | 13.50 | 31871.80 |
| | 1 | 20.9 | 21.1 | 28.1 | 27.9 | 74.4 | 37.7 | 40.1 | 60.4 | 59.0 | 10.95 | 24.60 | 13.65 | 31422.90 |
| 40 | 1 | 21.1 | 20.9 | 27.9 | 27.7 | 74.2 | 37.7 | 40.4 | 57.6 | 58.2 | 11.05 | 24.40 | 13.35 | 30525.10 |
| | 1 | 21.0 | 21.0 | 27.9 | 27.9 | 74.4 | 37.6 | 40.6 | 59.1 | 58.6 | 11.00 | 24.45 | 13.45 | 30974.00 |
| | 1 | 21.0 | 20.9 | 28.0 | 27.9 | 74.4 | 37.4 | 39.9 | 61.0 | 58.9 | 11.00 | 24.45 | 13.45 | 31422.90 |
| 30 | 1 | 21.1 | 21.0 | 27.7 | 27.6 | 74.4 | 37.7 | 40.1 | 59.8 | 58.7 | 11.05 | 24.35 | 13.30 | 29627.30 |
| | 1 | 21.1 | 20.9 | 27.7 | 27.8 | 74.4 | 37.3 | 40.2 | 60.0 | 58.9 | 11.05 | 24.30 | 13.25 | 30300.65 |
| | 1 | 21.0 | 21.0 | 27.7 | 27.7 | 74.4 | 37.2 | 39.5 | 61.9 | 59.2 | 11.00 | 24.35 | 13.35 | 30076.20 |
| 20 | 1 | 21.0 | 21.0 | 26.5 | 26.5 | 75.4 | 35.2 | 38.2 | 59.5 | 58.3 | 11.00 | 23.75 | 12.75 | 24689.42 |
| | 1 | 20.9 | 21.0 | 26.7 | 26.7 | 75.4 | 35.4 | 38.7 | 59.7 | 58.7 | 10.95 | 23.85 | 12.90 | 25811.67 |
| | 1 | 21.0 | 21.0 | 26.7 | 26.5 | 75.3 | 27.6 | 40.1 | 60.8 | 58.7 | 11.00 | 23.85 | 12.85 | 25138.32 |
| 10 | 1 | 21.1 | 21.1 | 25.3 | 25.2 | 77.4 | 29.3 | 29.8 | 69.2 | 58.4 | 11.05 | 23.20 | 12.15 | 18629.29 |
| | 1 | 21.0 | 21.1 | 25.3 | 25.2 | 77.5 | 29.2 | 29.4 | 69.5 | 58.1 | 11.00 | 23.20 | 12.20 | 18853.74 |
| | 1 | 21.1 | 21.1 | 25.3 | 25.1 | 77.4 | 27.1 | 29.1 | 52.1 | 48.1 | 11.05 | 23.20 | 12.15 | 18404.84 |
| 0 | 1 | 21.1 | 21.1 | 21.8 | 22.1 | 79.4 | 23.4 | 25.0 | 43.5 | 51.6 | 11.05 | 21.45 | 10.40 | 3815.64 |
| | 1 | 21.1 | 21.1 | 22.0 | 21.8 | 79.4 | 23.4 | 24.9 | 46.9 | 51.5 | 11.05 | 21.55 | 10.50 | 3591.19 |
| | 1 | 21.1 | 21.0 | 21.9 | 21.9 | 79.2 | 23.1 | 24.9 | 47.3 | 50.7 | 11.05 | 21.45 | 10.40 | 3815.64 |
| -10 | 1 | 21.0 | 21.0 | 21.8 | 21.7 | 79.4 | 21.9 | 21.8 | 54.9 | 51.4 | 11.00 | 21.40 | 10.40 | 3366.74 |
| | 1 | 21.0 | 21.0 | 21.8 | 21.5 | 79.4 | 21.9 | 21.7 | 54.7 | 51.2 | 11.00 | 21.40 | 10.40 | 2917.84 |
| | 1 | 20.9 | 21.0 | 21.7 | 21.3 | 79.3 | 21.8 | 21.7 | 54.9 | 51.1 | 10.95 | 21.35 | 10.40 | 2468.94 |
| -30 | 1 | 21.1 | 21.0 | 21.7 | 21.5 | 79.4 | 26.2 | 26.9 | 59.6 | 57.3 | 11.05 | 21.35 | 10.30 | 2468.94 |
| | 1 | 21.1 | 21.0 | 21.7 | 21.5 | 79.3 | 26.6 | 27.0 | 59.9 | 57.5 | 11.05 | 21.35 | 10.30 | 2468.94 |
| | 1 | 21.1 | 21.1 | 21.7 | 21.6 | 79.4 | 26.8 | 27.1 | 60.0 | 57.6 | 11.05 | 21.40 | 10.35 | 2468.94 |
| -50 | 1 | 21.1 | 21.1 | 21.7 | 21.5 | 79.4 | 31.8 | 33.7 | 62.0 | 59.7 | 11.05 | 21.40 | 10.35 | 2244.49 |
| | 1 | 21.1 | 21.1 | 21.7 | 21.4 | 79.4 | 31.9 | 34.0 | 62.2 | 59.8 | 11.05 | 21.40 | 10.35 | 2020.04 |
| | 1 | 21.1 | 21.1 | 21.7 | 21.5 | 79.4 | 32.0 | 34.1 | 62.2 | 60.0 | 11.05 | 21.40 | 10.35 | 2244.49 |
| -70 | 1 | 21.1 | 21.1 | 21.7 | 21.5 | 79.4 | 33.4 | 36.3 | 62.8 | 60.5 | 11.05 | 21.40 | 10.35 | 2244.49 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.5 | 79.3 | 33.3 | 36.3 | 62.8 | 60.6 | 11.05 | 21.45 | 10.40 | 2468.94 |
| | 1 | 21.1 | 21.1 | 21.8 | 21.6 | 79.4 | 33.7 | 36.3 | 62.9 | 60.7 | 11.05 | 21.45 | 10.40 | 2693.39 |
| -90 | 1 | 21.1 | 21.1 | 21.7 | 21.4 | 79.4 | 32.9 | 35.7 | 62.6 | 60.3 | 11.05 | 21.40 | 10.35 | 2020.04 |
| | 1 | 21.1 | 21.0 | 21.7 | 21.4 | 79.4 | 32.7 | 36.0 | 62.7 | 60.2 | 11.05 | 21.35 | 10.30 | 2244.49 |
| | 1 | 21.0 | 20.9 | 21.7 | 21.4 | 79.3 | 32.8 | 35.9 | 62.7 | 60.2 | 11.00 | 21.30 | 10.30 | 2693.39 |

ตาราง ก-47 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร MP39 Di 2.03 mm, Lt 5 m, Le 10 cm.

| มุม องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|--------------------------|
| 90 | 1 | 20.9 | 20.8 | 26.5 | 26.5 | 74.8 | 51.8 | 31.7 | 73.4 | 64.6 | 10.95 | 23.65 | 12.70 | 23551.14 |
| | 1 | 20.9 | 20.8 | 26.9 | 26.5 | 74.6 | 52.2 | 31.7 | 73.3 | 63.7 | 10.95 | 23.85 | 12.90 | 24384.81 |
| | 1 | 20.9 | 20.9 | 26.4 | 26.4 | 74.6 | 51.7 | 31.6 | 73.4 | 65.6 | 10.95 | 23.65 | 12.70 | 22925.89 |
| 80 | 1 | 20.8 | 20.9 | 27.1 | 27.1 | 74.7 | 52.6 | 31.3 | 73.4 | 65.0 | 10.90 | 24.00 | 13.10 | 26052.15 |
| | 1 | 21.0 | 20.9 | 27.4 | 27.3 | 74.8 | 52.0 | 31.1 | 73.4 | 65.3 | 11.00 | 24.15 | 13.15 | 26677.40 |
| | 1 | 21.0 | 20.9 | 27.7 | 27.1 | 74.8 | 52.3 | 31.3 | 73.4 | 64.9 | 11.00 | 24.30 | 13.30 | 26885.82 |
| 70 | 1 | 20.9 | 20.7 | 27.5 | 27.1 | 74.5 | 51.4 | 31.2 | 73.3 | 66.5 | 10.95 | 24.10 | 13.15 | 27094.23 |
| | 1 | 20.9 | 20.9 | 27.6 | 27.2 | 74.4 | 52.0 | 31.1 | 73.2 | 65.9 | 10.95 | 24.25 | 13.30 | 27094.23 |
| | 1 | 20.9 | 20.8 | 27.7 | 27.3 | 74.2 | 51.7 | 31.3 | 73.3 | 66.8 | 10.95 | 24.25 | 13.30 | 27719.49 |
| 60 | 1 | 20.8 | 20.9 | 27.1 | 27.6 | 74.1 | 50.4 | 30.7 | 72.9 | 66.5 | 10.90 | 24.00 | 13.10 | 27094.23 |
| | 1 | 20.8 | 20.8 | 27.5 | 27.2 | 74.4 | 50.2 | 30.2 | 73.1 | 66.9 | 10.90 | 24.15 | 13.25 | 27302.65 |
| | 1 | 20.9 | 20.8 | 27.5 | 27.4 | 74.4 | 50.3 | 30.6 | 73.1 | 66.9 | 10.95 | 24.15 | 13.20 | 27511.07 |
| 50 | 1 | 21.0 | 21.0 | 27.6 | 27.5 | 74.2 | 49.7 | 30.0 | 73.1 | 66.8 | 11.00 | 24.30 | 13.30 | 27302.65 |
| | 1 | 20.9 | 20.9 | 27.7 | 27.5 | 74.6 | 50.1 | 30.0 | 73.2 | 66.6 | 10.95 | 24.30 | 13.35 | 27927.90 |
| | 1 | 21.0 | 21.0 | 27.4 | 27.7 | 74.4 | 50.1 | 30.4 | 72.9 | 66.7 | 11.00 | 24.20 | 13.20 | 27302.65 |
| 40 | 1 | 21.0 | 20.9 | 27.3 | 27.6 | 74.2 | 49.8 | 29.6 | 72.9 | 63.1 | 11.00 | 24.10 | 13.10 | 27094.23 |
| | 1 | 21.0 | 20.8 | 27.4 | 27.3 | 73.9 | 50.1 | 29.7 | 72.9 | 61.7 | 11.00 | 24.10 | 13.10 | 26885.82 |
| | 1 | 20.9 | 20.8 | 27.3 | 27.5 | 73.9 | 49.8 | 29.4 | 72.9 | 61.9 | 10.95 | 24.05 | 13.10 | 27302.65 |
| 30 | 1 | 20.9 | 21.0 | 27.1 | 27.1 | 74.2 | 50.0 | 29.3 | 73.1 | 59.1 | 10.95 | 24.05 | 13.10 | 25635.31 |
| | 1 | 21.0 | 21.0 | 27.4 | 27.1 | 74.0 | 50.0 | 29.0 | 73.2 | 58.9 | 11.00 | 24.20 | 13.20 | 26052.15 |
| | 1 | 21.0 | 21.0 | 27.2 | 27.2 | 74.0 | 50.1 | 29.7 | 73.0 | 58.9 | 11.00 | 24.10 | 13.10 | 25843.73 |
| 20 | 1 | 21.0 | 20.9 | 27.6 | 26.5 | 73.6 | 50.1 | 28.7 | 72.4 | 54.5 | 11.00 | 24.25 | 13.25 | 25426.90 |
| | 1 | 21.1 | 20.9 | 26.4 | 26.9 | 73.4 | 49.9 | 28.8 | 72.4 | 54.5 | 11.05 | 23.65 | 12.60 | 23551.14 |
| | 1 | 20.9 | 20.9 | 26.8 | 27.1 | 73.2 | 49.9 | 28.5 | 72.4 | 54.4 | 10.95 | 23.85 | 12.90 | 25218.48 |
| 10 | 1 | 20.9 | 20.9 | 25.4 | 26.2 | 73.5 | 49.5 | 26.6 | 72.6 | 48.8 | 10.95 | 23.15 | 12.20 | 20424.88 |
| | 1 | 20.9 | 20.8 | 25.7 | 26.1 | 72.8 | 49.5 | 26.5 | 72.6 | 49.0 | 10.95 | 23.25 | 12.30 | 21050.14 |
| | 1 | 21.0 | 20.8 | 25.9 | 25.8 | 73.3 | 49.4 | 26.5 | 72.5 | 48.5 | 11.00 | 23.35 | 12.35 | 20633.30 |
| 0 | 1 | 20.9 | 20.9 | 21.2 | 21.4 | 79.4 | 21.3 | 20.9 | 60.4 | 56.6 | 10.95 | 21.05 | 10.10 | 1667.34 |
| | 1 | 21.0 | 20.9 | 21.3 | 21.4 | 79.3 | 21.3 | 20.9 | 61.0 | 57.0 | 11.00 | 21.10 | 10.10 | 1667.34 |
| | 1 | 21.0 | 20.9 | 21.2 | 21.4 | 79.3 | 21.3 | 20.8 | 61.0 | 57.0 | 11.00 | 21.05 | 10.05 | 1458.92 |
| -10 | 1 | 21.0 | 20.9 | 21.1 | 21.1 | 79.4 | 28.9 | 21.0 | 64.7 | 61.5 | 11.00 | 21.00 | 10.00 | 625.25 |
| | 1 | 21.0 | 20.9 | 21.0 | 21.1 | 79.3 | 29.7 | 21.1 | 65.4 | 61.4 | 11.00 | 20.95 | 9.95 | 416.83 |
| | 1 | 20.9 | 20.9 | 21.1 | 21.1 | 79.4 | 29.7 | 21.1 | 64.9 | 60.2 | 10.95 | 21.00 | 10.05 | 833.67 |
| -30 | 1 | 21.0 | 21.0 | 21.1 | 21.1 | 79.4 | 34.8 | 21.6 | 62.7 | 61.1 | 11.00 | 21.05 | 10.05 | 416.83 |
| | 1 | 21.0 | 20.9 | 21.0 | 21.1 | 79.3 | 35.1 | 21.7 | 62.5 | 61.4 | 11.00 | 20.95 | 9.95 | 416.83 |
| | 1 | 20.9 | 20.9 | 21.0 | 21.1 | 79.4 | 35.3 | 21.7 | 62.5 | 61.6 | 10.95 | 20.95 | 10.00 | 625.25 |
| -50 | 1 | 20.9 | 20.9 | 20.9 | 21.0 | 79.4 | 35.4 | 22.7 | 62.9 | 61.8 | 10.95 | 20.90 | 9.95 | 208.42 |
| | 1 | 20.9 | 20.8 | 21.0 | 21.0 | 79.2 | 35.5 | 22.7 | 62.9 | 61.7 | 10.95 | 20.90 | 9.95 | 625.25 |
| | 1 | 21.1 | 21.0 | 21.1 | 21.1 | 79.4 | 35.7 | 23.0 | 63.1 | 61.9 | 11.05 | 21.05 | 10.00 | 208.42 |
| -70 | 1 | 21.1 | 20.9 | 21.0 | 21.1 | 79.4 | 35.7 | 23.0 | 62.8 | 62.1 | 11.05 | 20.95 | 9.90 | 208.42 |
| | 1 | 21.1 | 21.0 | 21.1 | 21.1 | 79.5 | 35.7 | 23.1 | 62.8 | 62.1 | 11.05 | 21.05 | 10.00 | 208.42 |
| | 1 | 21.1 | 21.0 | 21.1 | 21.1 | 79.4 | 35.7 | 23.1 | 62.8 | 62.0 | 11.05 | 21.05 | 10.00 | 208.42 |
| -90 | 1 | 21.1 | 20.8 | 21.0 | 21.1 | 79.4 | 35.8 | 23.0 | 62.7 | 62.0 | 11.05 | 20.90 | 9.85 | 416.83 |
| | 1 | 21.1 | 20.8 | 20.9 | 21.1 | 79.4 | 35.9 | 23.1 | 62.8 | 62.0 | 11.05 | 20.85 | 9.80 | 208.42 |
| | 1 | 21.1 | 20.9 | 21.0 | 21.1 | 79.5 | 35.9 | 23.1 | 62.6 | 62.0 | 11.05 | 20.95 | 9.90 | 208.42 |

ตาราง ก-48 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 2.03 mm. Lt 5 m. Le 15 cm.

| มุมองศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti,ave (°C) | To,ave (°C) | Δ T (°C) | q (W/m ²) |
|---------|------------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-------------|-------------|----------|-----------------------|
| 90 | 1 | 21.3 | 21.3 | 27.9 | 27.7 | 75.9 | 35.1 | 35.1 | 74.4 | 48.6 | 11.15 | 24.60 | 13.45 | 25287.95 |
| | 1 | 21.1 | 21.1 | 27.9 | 27.5 | 75.8 | 33.4 | 33.4 | 74.5 | 48.3 | 11.05 | 24.50 | 13.45 | 25677.00 |
| | 1 | 21.3 | 21.1 | 27.5 | 27.8 | 75.9 | 34.0 | 34.0 | 74.5 | 48.3 | 11.15 | 24.30 | 13.15 | 25093.43 |
| 80 | 1 | 21.2 | 21.6 | 27.3 | 27.1 | 76.3 | 37.3 | 37.3 | 74.6 | 49.4 | 11.10 | 24.45 | 13.35 | 22564.63 |
| | 1 | 21.7 | 21.9 | 27.1 | 27.2 | 76.1 | 38.1 | 38.1 | 74.3 | 49.5 | 11.35 | 24.50 | 13.15 | 20813.93 |
| | 1 | 21.1 | 21.6 | 26.8 | 27.1 | 76.0 | 37.3 | 37.3 | 74.6 | 49.6 | 11.05 | 24.20 | 13.15 | 21786.54 |
| 70 | 1 | 21.0 | 21.4 | 27.0 | 27.2 | 76.0 | 38.3 | 38.3 | 74.5 | 49.7 | 11.00 | 24.20 | 13.20 | 22953.68 |
| | 1 | 21.1 | 21.3 | 27.3 | 26.7 | 76.2 | 37.4 | 37.4 | 74.5 | 49.6 | 11.05 | 24.30 | 13.25 | 22564.63 |
| | 1 | 21.2 | 21.0 | 27.0 | 27.1 | 76.1 | 37.4 | 37.4 | 74.5 | 49.8 | 11.10 | 24.00 | 12.90 | 23148.20 |
| 60 | 1 | 21.1 | 21.1 | 27.1 | 26.9 | 76.0 | 38.7 | 38.7 | 74.6 | 49.2 | 11.05 | 24.10 | 13.05 | 22953.68 |
| | 1 | 21.4 | 21.1 | 27.2 | 27.1 | 76.2 | 39.8 | 39.8 | 74.7 | 50.1 | 11.20 | 24.15 | 12.95 | 22953.68 |
| | 1 | 21.2 | 21.1 | 27.4 | 27.4 | 76.1 | 38.3 | 38.3 | 74.7 | 49.9 | 11.10 | 24.25 | 13.15 | 24315.34 |
| 50 | 1 | 21.1 | 21.1 | 26.9 | 26.9 | 76.2 | 38.3 | 38.3 | 74.8 | 49.1 | 11.05 | 24.00 | 12.95 | 22564.63 |
| | 1 | 21.1 | 21.1 | 26.8 | 26.9 | 76.1 | 36.7 | 36.7 | 74.8 | 48.5 | 11.05 | 23.95 | 12.90 | 22370.11 |
| | 1 | 21.1 | 21.1 | 27.1 | 26.9 | 76.1 | 37.1 | 37.1 | 74.8 | 48.8 | 11.05 | 24.10 | 13.05 | 22953.68 |
| 40 | 1 | 21.2 | 21.1 | 26.8 | 26.7 | 76.1 | 40.8 | 40.8 | 74.9 | 46.3 | 11.10 | 23.95 | 12.85 | 21786.54 |
| | 1 | 21.1 | 21.0 | 26.5 | 26.5 | 76.1 | 39.5 | 39.5 | 74.8 | 46.5 | 11.05 | 23.75 | 12.70 | 21202.98 |
| | 1 | 21.3 | 21.1 | 26.4 | 26.3 | 76.2 | 38.5 | 38.5 | 74.7 | 46.0 | 11.15 | 23.75 | 12.60 | 20035.84 |
| 30 | 1 | 21.1 | 21.2 | 25.9 | 25.8 | 76.3 | 38.1 | 38.1 | 75.1 | 43.7 | 11.05 | 23.55 | 12.50 | 18285.13 |
| | 1 | 21.1 | 21.1 | 26.0 | 25.9 | 76.3 | 41.9 | 41.9 | 75.1 | 43.7 | 11.05 | 23.55 | 12.50 | 18868.70 |
| | 1 | 21.1 | 21.1 | 26.1 | 25.9 | 76.3 | 41.8 | 41.8 | 75.0 | 43.5 | 11.05 | 23.60 | 12.55 | 19063.23 |
| 20 | 1 | 21.1 | 21.0 | 25.3 | 25.4 | 76.4 | 42.4 | 42.4 | 75.3 | 40.2 | 11.05 | 23.15 | 12.10 | 16728.95 |
| | 1 | 21.3 | 21.2 | 25.8 | 25.4 | 76.5 | 40.7 | 40.7 | 75.6 | 40.5 | 11.15 | 23.50 | 12.35 | 16923.48 |
| | 1 | 21.3 | 21.1 | 25.7 | 25.6 | 76.6 | 39.6 | 39.6 | 75.4 | 40.5 | 11.15 | 23.40 | 12.25 | 17312.52 |
| 10 | 1 | 21.1 | 21.1 | 24.1 | 24.0 | 77.6 | 33.4 | 33.4 | 74.9 | 33.8 | 11.05 | 22.60 | 11.55 | 11476.84 |
| | 1 | 21.0 | 21.1 | 24.0 | 24.1 | 77.5 | 32.8 | 32.8 | 74.8 | 33.6 | 11.00 | 22.55 | 11.55 | 11671.36 |
| | 1 | 21.1 | 21.1 | 24.0 | 23.8 | 77.8 | 32.4 | 32.4 | 75.0 | 33.6 | 11.05 | 22.55 | 11.50 | 10893.27 |
| 0 | 1 | 21.1 | 21.1 | 21.3 | 21.3 | 79.5 | 22.6 | 22.6 | 42.8 | 61.8 | 11.05 | 21.20 | 10.15 | 778.09 |
| | 1 | 21.2 | 21.1 | 21.3 | 21.3 | 79.4 | 22.5 | 22.5 | 40.9 | 62.4 | 11.10 | 21.20 | 10.10 | 583.57 |
| | 1 | 21.2 | 21.1 | 21.3 | 21.4 | 79.4 | 22.4 | 22.4 | 40.7 | 61.8 | 11.10 | 21.20 | 10.10 | 778.09 |
| -10 | 1 | 21.2 | 21.1 | 21.2 | 21.1 | 79.4 | 21.1 | 21.1 | 49.6 | 51.6 | 11.10 | 21.15 | 10.05 | 0.00 |
| | 1 | 21.1 | 21.1 | 21.1 | 21.1 | 79.5 | 21.1 | 21.1 | 49.7 | 51.7 | 11.05 | 21.10 | 10.05 | 0.00 |
| | 1 | 21.1 | 21.1 | 21.2 | 21.2 | 79.5 | 21.1 | 21.1 | 49.7 | 51.7 | 11.05 | 21.15 | 10.10 | 389.05 |
| -30 | 1 | 21.1 | 21.1 | 21.1 | 21.2 | 79.4 | 21.1 | 21.1 | 50.0 | 51.8 | 11.05 | 21.10 | 10.05 | 194.52 |
| | 1 | 21.2 | 21.1 | 21.3 | 21.3 | 79.6 | 21.3 | 21.3 | 50.1 | 52.0 | 11.10 | 21.20 | 10.10 | 583.57 |
| | 1 | 21.4 | 21.3 | 21.3 | 21.4 | 79.6 | 21.3 | 21.3 | 50.0 | 52.0 | 11.20 | 21.30 | 10.10 | 0.00 |
| -50 | 1 | 21.4 | 21.3 | 21.3 | 21.4 | 79.6 | 21.3 | 21.3 | 49.8 | 52.0 | 11.20 | 21.30 | 10.10 | 0.00 |
| | 1 | 21.4 | 21.3 | 21.3 | 21.4 | 79.6 | 21.2 | 21.2 | 49.8 | 52.0 | 11.20 | 21.30 | 10.10 | 0.00 |
| | 1 | 21.4 | 21.3 | 21.3 | 21.4 | 79.6 | 20.9 | 20.9 | 49.8 | 52.1 | 11.20 | 21.30 | 10.10 | 0.00 |
| -70 | 1 | 21.3 | 21.4 | 21.3 | 21.4 | 79.5 | 21.2 | 21.2 | 49.6 | 52.0 | 11.15 | 21.35 | 10.20 | 0.00 |
| | 1 | 21.4 | 21.4 | 21.4 | 21.4 | 79.6 | 21.2 | 21.2 | 49.6 | 52.0 | 11.20 | 21.40 | 10.20 | 0.00 |
| | 1 | 21.4 | 21.4 | 21.4 | 21.4 | 79.5 | 21.2 | 21.2 | 49.6 | 51.9 | 11.20 | 21.40 | 10.20 | 0.00 |
| -90 | 1 | 21.3 | 21.3 | 21.3 | 21.3 | 79.6 | 21.1 | 21.1 | 49.5 | 51.8 | 11.15 | 21.30 | 10.15 | 0.00 |
| | 1 | 21.2 | 21.3 | 21.2 | 21.3 | 79.6 | 21.2 | 21.2 | 49.5 | 51.7 | 11.10 | 21.25 | 10.15 | 0.00 |
| | 1 | 21.2 | 21.2 | 21.2 | 21.2 | 79.6 | 21.1 | 21.1 | 49.5 | 51.8 | 11.10 | 21.20 | 10.10 | 0.00 |

ตาราง ก-49 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 2.03 mm. Lt 10 m. Le 5 cm.

| มุมองศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|---------|------------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-------------|-------------|---------|-----------------------|
| 90 | 1 | 21.4 | 21.4 | 33.5 | 33.9 | 70.3 | 53.7 | 55.5 | 55.2 | 67.4 | 11.20 | 27.45 | 16.25 | 25635.31 |
| | 1 | 21.4 | 21.4 | 34.4 | 32.3 | 70.2 | 52.9 | 55.3 | 54.9 | 67.6 | 11.20 | 27.90 | 16.70 | 24905.85 |
| | 1 | 21.3 | 21.4 | 32.3 | 34.2 | 70.2 | 53.5 | 55.5 | 55.0 | 67.4 | 11.15 | 26.85 | 15.70 | 24801.65 |
| 80 | 1 | 21.4 | 21.4 | 33.5 | 32.7 | 69.9 | 52.7 | 53.4 | 54.4 | 66.7 | 11.20 | 27.45 | 16.25 | 24384.81 |
| | 1 | 21.3 | 21.4 | 35.6 | 32.7 | 69.9 | 51.9 | 53.6 | 54.3 | 66.3 | 11.15 | 28.50 | 17.35 | 26677.40 |
| | 1 | 22.0 | 21.4 | 32.8 | 32.7 | 70.2 | 51.9 | 53.4 | 54.4 | 66.5 | 11.50 | 27.10 | 15.60 | 23030.10 |
| 70 | 1 | 21.5 | 21.4 | 33.4 | 34.5 | 69.6 | 51.4 | 53.1 | 54.6 | 65.9 | 11.25 | 27.40 | 16.15 | 26052.15 |
| | 1 | 21.4 | 21.3 | 36.3 | 32.7 | 69.8 | 51.9 | 53.3 | 54.6 | 66.2 | 11.20 | 28.80 | 17.60 | 27406.86 |
| | 1 | 21.3 | 21.4 | 33.7 | 32.4 | 69.6 | 51.6 | 52.6 | 54.3 | 66.2 | 11.15 | 27.55 | 16.40 | 24384.81 |
| 60 | 1 | 21.5 | 21.5 | 32.1 | 33.4 | 68.6 | 47.6 | 48.1 | 54.3 | 64.9 | 11.25 | 26.80 | 15.55 | 23446.93 |
| | 1 | 21.5 | 21.5 | 32.6 | 33.4 | 69.5 | 48.3 | 49.1 | 54.3 | 65.2 | 11.25 | 27.05 | 15.80 | 23967.98 |
| | 1 | 21.8 | 21.5 | 32.2 | 32.5 | 69.8 | 48.6 | 48.2 | 54.5 | 65.3 | 11.40 | 26.85 | 15.45 | 22300.64 |
| 50 | 1 | 21.5 | 21.6 | 32.4 | 32.6 | 69.3 | 46.3 | 46.3 | 54.4 | 64.5 | 11.25 | 27.00 | 15.75 | 22821.68 |
| | 1 | 21.5 | 21.5 | 32.4 | 33.7 | 68.9 | 48.2 | 46.6 | 54.2 | 64.5 | 11.25 | 26.95 | 15.70 | 24072.19 |
| | 1 | 21.6 | 21.6 | 33.8 | 32.6 | 68.6 | 46.2 | 47.5 | 53.7 | 64.8 | 11.30 | 27.70 | 16.40 | 24176.39 |
| 40 | 1 | 21.5 | 21.5 | 32.0 | 31.1 | 73.5 | 40.8 | 40.5 | 62.2 | 63.8 | 11.25 | 26.75 | 15.50 | 20945.93 |
| | 1 | 21.2 | 21.5 | 32.5 | 30.7 | 70.2 | 42.6 | 44.8 | 63.2 | 58.7 | 11.10 | 27.00 | 15.90 | 21362.76 |
| | 1 | 21.6 | 21.6 | 33.0 | 31.4 | 68.7 | 43.5 | 43.8 | 57.6 | 58.6 | 11.30 | 27.30 | 16.00 | 22092.22 |
| 30 | 1 | 21.5 | 21.6 | 31.4 | 30.1 | 69.9 | 40.0 | 40.0 | 63.8 | 64.5 | 11.25 | 26.50 | 15.25 | 19174.38 |
| | 1 | 21.5 | 21.6 | 30.7 | 30.2 | 75.6 | 33.8 | 38.4 | 64.9 | 66.8 | 11.25 | 26.15 | 14.90 | 18549.13 |
| | 1 | 21.5 | 21.6 | 30.0 | 31.4 | 73.7 | 39.9 | 38.0 | 64.8 | 63.4 | 11.25 | 25.80 | 14.55 | 19070.17 |
| 20 | 1 | 21.6 | 21.6 | 27.5 | 28.4 | 75.0 | 37.8 | 38.0 | 59.5 | 66.9 | 11.30 | 24.55 | 13.25 | 13234.49 |
| | 1 | 21.6 | 21.5 | 27.4 | 28.1 | 67.7 | 37.3 | 34.7 | 65.0 | 61.5 | 11.30 | 24.45 | 13.15 | 12921.87 |
| | 1 | 21.5 | 21.6 | 27.8 | 28.4 | 71.1 | 42.2 | 35.6 | 66.3 | 62.6 | 11.25 | 24.70 | 13.45 | 13651.33 |
| 10 | 1 | 21.5 | 21.5 | 26.3 | 25.6 | 76.6 | 28.7 | 24.8 | 69.1 | 67.4 | 11.25 | 23.90 | 12.65 | 9274.56 |
| | 1 | 21.5 | 21.4 | 26.1 | 26.0 | 75.7 | 28.6 | 25.7 | 68.9 | 68.0 | 11.25 | 23.75 | 12.50 | 9587.19 |
| | 1 | 21.6 | 21.5 | 26.6 | 25.8 | 76.6 | 28.9 | 25.1 | 68.0 | 68.2 | 11.30 | 24.05 | 12.75 | 9691.40 |
| 0 | 1 | 21.5 | 21.6 | 23.4 | 23.6 | 79.2 | 23.0 | 22.1 | 61.3 | 60.1 | 11.25 | 22.50 | 11.25 | 4064.14 |
| | 1 | 21.4 | 21.5 | 23.4 | 23.3 | 79.2 | 22.9 | 22.3 | 61.3 | 59.8 | 11.20 | 22.45 | 11.25 | 3959.93 |
| | 1 | 21.4 | 21.5 | 23.3 | 23.2 | 79.1 | 22.9 | 22.3 | 61.2 | 59.5 | 11.20 | 22.40 | 11.20 | 3751.51 |
| -10 | 1 | 21.4 | 21.5 | 23.4 | 23.1 | 79.2 | 23.1 | 22.3 | 59.5 | 59.0 | 11.20 | 22.45 | 11.25 | 3751.51 |
| | 1 | 21.4 | 21.5 | 23.1 | 23.7 | 79.1 | 23.2 | 22.2 | 59.5 | 58.8 | 11.20 | 22.30 | 11.10 | 4064.14 |
| | 1 | 21.5 | 21.6 | 23.5 | 23.1 | 79.3 | 23.1 | 22.3 | 59.5 | 58.8 | 11.25 | 22.55 | 11.30 | 3647.30 |
| -30 | 1 | 21.6 | 21.5 | 22.9 | 23.1 | 78.5 | 22.7 | 22.7 | 60.4 | 60.6 | 11.30 | 22.20 | 10.90 | 3022.05 |
| | 1 | 21.5 | 21.5 | 23.1 | 23.1 | 78.3 | 22.7 | 22.2 | 60.4 | 60.2 | 11.25 | 22.30 | 11.05 | 3334.67 |
| | 1 | 21.5 | 21.5 | 23.0 | 23.1 | 78.1 | 22.7 | 22.1 | 60.5 | 60.2 | 11.25 | 22.25 | 11.00 | 3230.47 |
| -50 | 1 | 21.4 | 21.5 | 23.4 | 22.4 | 77.7 | 22.5 | 22.1 | 60.5 | 60.4 | 11.20 | 22.45 | 11.25 | 3022.05 |
| | 1 | 21.5 | 21.6 | 22.7 | 23.1 | 77.6 | 22.5 | 22.2 | 60.5 | 60.4 | 11.25 | 22.15 | 10.90 | 2813.63 |
| | 1 | 21.4 | 21.5 | 22.5 | 23.4 | 77.6 | 22.5 | 22.1 | 60.5 | 60.4 | 11.20 | 22.00 | 10.80 | 3126.26 |
| -70 | 1 | 21.3 | 21.7 | 22.7 | 22.4 | 79.3 | 22.2 | 22.2 | 62.1 | 62.1 | 11.15 | 22.20 | 11.05 | 2188.38 |
| | 1 | 21.3 | 21.5 | 22.4 | 22.7 | 79.3 | 22.3 | 22.2 | 62.2 | 62.0 | 11.15 | 21.95 | 10.80 | 2396.80 |
| | 1 | 21.4 | 21.6 | 22.8 | 22.8 | 79.3 | 22.3 | 22.3 | 62.2 | 62.1 | 11.20 | 22.20 | 11.00 | 2709.42 |
| -90 | 1 | 21.3 | 21.5 | 22.6 | 22.2 | 79.3 | 22.4 | 22.4 | 62.3 | 62.2 | 11.15 | 22.05 | 10.90 | 2084.17 |
| | 1 | 21.4 | 21.6 | 22.7 | 22.7 | 79.3 | 22.4 | 22.4 | 62.3 | 62.0 | 11.20 | 22.15 | 10.95 | 2501.01 |
| | 1 | 21.4 | 21.6 | 22.3 | 22.7 | 79.3 | 22.4 | 22.8 | 62.3 | 62.2 | 11.20 | 21.95 | 10.75 | 2084.17 |

ตาราง ก-50 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร MP39 Di 2.03 mm. Lt 10 m. Le 10 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δτ (°C) | q (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|------------|--------------------------|
| 90 | 1 | 21.4 | 21.4 | 30.1 | 30.5 | 71.3 | 48.5 | 44.1 | 69.3 | 47.5 | 11.20 | 25.75 | 14.55 | 16230.49 |
| | 1 | 21.3 | 21.4 | 31.4 | 30.7 | 70.7 | 49.7 | 45.5 | 69.3 | 48.5 | 11.15 | 26.40 | 15.25 | 17689.41 |
| | 1 | 21.4 | 21.4 | 29.7 | 29.6 | 69.9 | 47.9 | 44.5 | 69.3 | 47.9 | 11.20 | 25.55 | 14.35 | 15045.12 |
| 80 | 1 | 21.4 | 21.1 | 32.4 | 29.1 | 71.0 | 47.0 | 43.1 | 69.2 | 47.3 | 11.20 | 26.75 | 15.55 | 17324.68 |
| | 1 | 21.4 | 21.3 | 31.8 | 29.7 | 70.6 | 48.1 | 43.4 | 69.2 | 47.8 | 11.20 | 26.55 | 15.35 | 17142.31 |
| | 1 | 21.4 | 21.4 | 32.0 | 28.4 | 70.8 | 47.2 | 42.9 | 69.3 | 47.5 | 11.20 | 26.70 | 15.50 | 16048.12 |
| 70 | 1 | 21.4 | 21.2 | 32.4 | 30.7 | 72.1 | 47.5 | 42.4 | 69.4 | 47.9 | 11.20 | 26.80 | 15.60 | 18692.42 |
| | 1 | 21.3 | 21.4 | 33.2 | 30.1 | 70.8 | 46.8 | 41.6 | 69.6 | 47.9 | 11.15 | 27.30 | 16.15 | 18783.60 |
| | 1 | 21.3 | 21.4 | 31.1 | 30.8 | 70.3 | 46.6 | 41.5 | 69.6 | 47.9 | 11.15 | 26.25 | 15.10 | 17507.04 |
| 60 | 1 | 21.4 | 21.4 | 31.4 | 31.4 | 70.2 | 45.9 | 40.0 | 69.8 | 47.7 | 11.20 | 26.40 | 15.20 | 18236.50 |
| | 1 | 21.4 | 21.4 | 31.1 | 31.3 | 71.1 | 45.2 | 39.9 | 69.9 | 47.6 | 11.20 | 26.25 | 15.05 | 17871.77 |
| | 1 | 21.4 | 21.4 | 31.6 | 31.2 | 70.6 | 45.5 | 40.1 | 69.8 | 47.5 | 11.20 | 26.50 | 15.30 | 18236.50 |
| 50 | 1 | 21.4 | 21.4 | 32.9 | 29.7 | 70.6 | 44.7 | 38.5 | 69.9 | 48.0 | 11.20 | 27.15 | 15.95 | 18054.14 |
| | 1 | 21.3 | 21.4 | 32.6 | 29.0 | 70.9 | 44.4 | 38.6 | 69.9 | 47.9 | 11.15 | 27.00 | 15.85 | 17233.50 |
| | 1 | 21.4 | 21.4 | 32.6 | 28.5 | 71.1 | 44.3 | 38.2 | 69.8 | 47.8 | 11.20 | 27.00 | 15.80 | 16686.40 |
| 40 | 1 | 21.1 | 21.4 | 28.9 | 32.1 | 71.1 | 42.2 | 37.3 | 70.5 | 48.0 | 11.05 | 25.15 | 14.10 | 16868.77 |
| | 1 | 21.2 | 21.4 | 28.5 | 31.7 | 71.4 | 42.3 | 37.0 | 70.2 | 48.0 | 11.10 | 24.95 | 13.85 | 16048.12 |
| | 1 | 21.1 | 21.3 | 32.3 | 29.1 | 71.0 | 42.9 | 37.5 | 70.2 | 48.2 | 11.05 | 26.80 | 15.75 | 17324.68 |
| 30 | 1 | 21.2 | 21.4 | 31.3 | 30.2 | 71.5 | 40.5 | 33.7 | 71.5 | 47.7 | 11.10 | 26.35 | 15.25 | 17233.50 |
| | 1 | 21.2 | 21.2 | 32.2 | 28.9 | 72.0 | 40.4 | 34.0 | 71.3 | 47.5 | 11.10 | 26.70 | 15.60 | 17051.13 |
| | 1 | 21.2 | 21.4 | 29.9 | 31.1 | 71.8 | 40.2 | 33.7 | 71.5 | 47.6 | 11.10 | 25.65 | 14.55 | 16777.58 |
| 20 | 1 | 21.1 | 21.3 | 31.1 | 26.9 | 73.6 | 36.6 | 29.8 | 73.2 | 43.8 | 11.05 | 26.20 | 15.15 | 14224.47 |
| | 1 | 21.3 | 21.4 | 28.1 | 27.4 | 73.4 | 36.0 | 29.8 | 73.1 | 43.9 | 11.15 | 24.75 | 13.60 | 11671.36 |
| | 1 | 21.4 | 21.5 | 29.9 | 30.8 | 74.1 | 36.2 | 30.0 | 73.2 | 43.9 | 11.20 | 25.70 | 14.50 | 16230.49 |
| 10 | 1 | 21.2 | 21.4 | 25.6 | 25.6 | 76.2 | 28.0 | 26.0 | 75.7 | 40.8 | 11.10 | 23.50 | 12.40 | 7841.70 |
| | 1 | 21.3 | 21.4 | 26.3 | 26.1 | 76.1 | 28.0 | 25.9 | 75.7 | 40.9 | 11.15 | 23.85 | 12.70 | 8844.70 |
| | 1 | 21.2 | 21.4 | 27.4 | 25.4 | 76.0 | 28.1 | 25.8 | 75.6 | 40.8 | 11.10 | 24.40 | 13.30 | 9300.62 |
| 0 | 1 | 21.3 | 21.4 | 22.1 | 21.7 | 79.1 | 21.4 | 22.0 | 58.4 | 58.8 | 11.15 | 21.75 | 10.60 | 1003.01 |
| | 1 | 21.1 | 21.3 | 22.1 | 21.7 | 79.5 | 21.4 | 22.1 | 58.5 | 58.9 | 11.05 | 21.70 | 10.65 | 1276.56 |
| | 1 | 21.2 | 21.5 | 22.3 | 22.3 | 79.5 | 21.5 | 22.2 | 58.7 | 58.9 | 11.10 | 21.90 | 10.80 | 1732.47 |
| -10 | 1 | 21.8 | 22.0 | 22.0 | 21.9 | 79.4 | 21.8 | 21.7 | 61.1 | 61.4 | 11.40 | 22.00 | 10.60 | 91.18 |
| | 1 | 21.7 | 22.0 | 21.9 | 21.9 | 79.4 | 21.7 | 21.7 | 61.0 | 61.5 | 11.35 | 21.95 | 10.60 | 91.18 |
| | 1 | 21.7 | 22.0 | 21.9 | 21.8 | 79.4 | 21.8 | 21.5 | 61.1 | 61.4 | 11.35 | 21.95 | 10.60 | 0.00 |
| -30 | 1 | 21.8 | 22.2 | 22.3 | 22.5 | 79.6 | 22.3 | 21.7 | 60.0 | 60.3 | 11.40 | 22.25 | 10.85 | 729.46 |
| | 1 | 21.8 | 22.1 | 22.4 | 22.1 | 79.5 | 22.1 | 21.8 | 60.0 | 60.2 | 11.40 | 22.25 | 10.85 | 547.10 |
| | 1 | 21.8 | 22.2 | 22.5 | 22.4 | 79.4 | 22.2 | 21.7 | 60.1 | 60.3 | 11.40 | 22.35 | 10.95 | 820.64 |
| -50 | 1 | 21.8 | 21.9 | 22.1 | 22.1 | 79.4 | 22.1 | 21.7 | 59.1 | 59.3 | 11.40 | 22.00 | 10.60 | 455.91 |
| | 1 | 21.9 | 22.1 | 22.1 | 22.0 | 79.5 | 22.0 | 21.7 | 59.0 | 59.5 | 11.45 | 22.10 | 10.65 | 91.18 |
| | 1 | 21.8 | 22.1 | 22.2 | 22.1 | 79.5 | 22.0 | 21.6 | 58.9 | 59.3 | 11.40 | 22.15 | 10.75 | 364.73 |
| -70 | 1 | 21.8 | 22.1 | 22.1 | 22.1 | 79.4 | 22.1 | 21.4 | 58.1 | 58.5 | 11.40 | 22.10 | 10.70 | 273.55 |
| | 1 | 21.7 | 22.0 | 22.1 | 22.1 | 79.3 | 22.1 | 21.6 | 57.9 | 58.3 | 11.35 | 22.05 | 10.70 | 455.91 |
| | 1 | 21.9 | 22.1 | 22.1 | 22.1 | 79.5 | 22.0 | 21.7 | 58.1 | 58.5 | 11.45 | 22.10 | 10.65 | 182.37 |
| -90 | 1 | 21.7 | 22.1 | 22.3 | 22.1 | 79.6 | 22.1 | 21.6 | 57.1 | 57.5 | 11.35 | 22.20 | 10.85 | 547.10 |
| | 1 | 22.0 | 22.1 | 22.1 | 22.2 | 79.5 | 22.1 | 21.7 | 57.3 | 57.6 | 11.50 | 22.10 | 10.60 | 182.37 |
| | 1 | 21.8 | 22.0 | 22.2 | 21.9 | 79.4 | 22.1 | 21.6 | 57.1 | 57.6 | 11.40 | 22.10 | 10.70 | 273.55 |

ตาราง ก-51 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 2.03 mm. Lt 10 m. Le 15 cm.

| มุมองศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|---------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|--------------------------|
| 90 | 1 | 21.4 | 21.3 | 33.1 | 33.4 | 69.2 | 36.2 | 54.1 | 52.3 | 67.6 | 11.20 | 27.20 | 16.00 | 21043.82 |
| | 1 | 21.4 | 21.3 | 32.9 | 32.7 | 69.9 | 36.3 | 54.9 | 51.9 | 67.8 | 11.20 | 27.10 | 15.90 | 20248.05 |
| | 1 | 21.4 | 21.4 | 34.1 | 33.4 | 69.8 | 36.8 | 56.4 | 52.7 | 67.7 | 11.20 | 27.75 | 16.55 | 21839.59 |
| 80 | 1 | 21.4 | 21.4 | 34.1 | 34.6 | 69.7 | 36.7 | 55.5 | 52.2 | 68.0 | 11.20 | 27.75 | 16.55 | 22900.63 |
| | 1 | 21.4 | 21.4 | 34.1 | 34.4 | 69.8 | 36.7 | 55.8 | 52.3 | 67.9 | 11.20 | 27.75 | 16.55 | 22723.79 |
| | 1 | 21.4 | 21.4 | 34.9 | 34.3 | 69.3 | 37.4 | 55.9 | 52.5 | 68.0 | 11.20 | 28.15 | 16.95 | 23342.72 |
| 70 | 1 | 21.4 | 21.2 | 34.2 | 34.0 | 69.9 | 37.9 | 55.5 | 52.1 | 68.0 | 11.20 | 27.70 | 16.50 | 22635.37 |
| | 1 | 21.4 | 21.4 | 33.7 | 34.4 | 69.7 | 36.2 | 55.8 | 52.3 | 67.9 | 11.20 | 27.55 | 16.35 | 22370.11 |
| | 1 | 21.4 | 21.4 | 33.7 | 33.4 | 69.9 | 36.0 | 55.8 | 52.5 | 68.0 | 11.20 | 27.55 | 16.35 | 21485.92 |
| 60 | 1 | 21.4 | 21.4 | 33.4 | 33.9 | 69.6 | 35.1 | 55.2 | 51.4 | 67.7 | 11.20 | 27.40 | 16.20 | 21662.76 |
| | 1 | 21.4 | 21.4 | 33.4 | 33.4 | 69.7 | 34.9 | 54.9 | 51.3 | 67.7 | 11.20 | 27.40 | 16.20 | 21220.66 |
| | 1 | 21.4 | 21.4 | 33.5 | 33.2 | 69.6 | 35.4 | 54.6 | 51.0 | 67.6 | 11.20 | 27.45 | 16.25 | 21132.24 |
| 50 | 1 | 21.5 | 21.4 | 33.4 | 33.2 | 70.1 | 34.5 | 55.5 | 50.1 | 67.8 | 11.25 | 27.40 | 16.15 | 20955.40 |
| | 1 | 21.5 | 21.3 | 33.6 | 33.3 | 69.6 | 34.5 | 55.4 | 50.2 | 67.8 | 11.25 | 27.45 | 16.20 | 21309.08 |
| | 1 | 21.5 | 21.4 | 33.8 | 33.5 | 69.6 | 34.4 | 55.3 | 50.4 | 67.8 | 11.25 | 27.60 | 16.35 | 21574.34 |
| 40 | 1 | 21.4 | 21.4 | 34.3 | 34.2 | 70.2 | 35.7 | 55.2 | 50.7 | 68.4 | 11.20 | 27.85 | 16.65 | 22723.79 |
| | 1 | 21.6 | 21.2 | 33.9 | 34.1 | 70.1 | 35.5 | 55.0 | 50.5 | 68.3 | 11.30 | 27.55 | 16.25 | 22281.69 |
| | 1 | 21.6 | 21.4 | 34.1 | 34.2 | 70.4 | 34.1 | 55.2 | 50.8 | 68.3 | 11.30 | 27.75 | 16.45 | 22370.11 |
| 30 | 1 | 21.4 | 21.3 | 32.5 | 32.3 | 70.1 | 32.2 | 53.7 | 50.0 | 68.3 | 11.20 | 26.90 | 15.70 | 19540.69 |
| | 1 | 21.4 | 21.4 | 32.5 | 32.5 | 70.2 | 32.1 | 53.7 | 49.5 | 68.3 | 11.20 | 26.95 | 15.75 | 19629.11 |
| | 1 | 21.4 | 21.4 | 32.1 | 31.9 | 70.2 | 31.8 | 51.9 | 49.6 | 68.3 | 11.20 | 26.75 | 15.55 | 18744.92 |
| 20 | 1 | 21.4 | 21.4 | 31.0 | 31.8 | 71.5 | 28.9 | 46.5 | 46.5 | 69.1 | 11.20 | 26.20 | 15.00 | 17683.88 |
| | 1 | 21.4 | 21.3 | 31.6 | 31.1 | 71.4 | 28.7 | 46.6 | 46.3 | 69.2 | 11.20 | 26.45 | 15.25 | 17683.88 |
| | 1 | 21.4 | 21.3 | 31.3 | 31.1 | 71.1 | 28.1 | 44.5 | 46.2 | 69.4 | 11.20 | 26.30 | 15.10 | 17418.62 |
| 10 | 1 | 21.4 | 21.6 | 28.7 | 28.6 | 73.8 | 22.4 | 42.6 | 40.2 | 66.3 | 11.20 | 25.15 | 13.95 | 12643.98 |
| | 1 | 21.4 | 21.6 | 28.8 | 28.7 | 73.2 | 22.6 | 42.1 | 42.9 | 73.2 | 11.20 | 25.20 | 14.00 | 12820.81 |
| | 1 | 21.4 | 21.4 | 28.1 | 28.8 | 73.6 | 22.5 | 42.7 | 41.5 | 74.0 | 11.20 | 24.75 | 13.55 | 12467.14 |
| 0 | 1 | 21.5 | 21.6 | 21.8 | 21.6 | 79.4 | 21.4 | 21.4 | 64.4 | 64.7 | 11.25 | 21.70 | 10.45 | 265.26 |
| | 1 | 21.5 | 21.7 | 21.7 | 21.6 | 79.1 | 21.3 | 21.3 | 64.4 | 64.7 | 11.25 | 21.70 | 10.45 | 88.42 |
| | 1 | 21.5 | 21.6 | 21.7 | 21.5 | 79.1 | 21.3 | 21.2 | 64.1 | 64.7 | 11.25 | 21.65 | 10.40 | 88.42 |
| -10 | 1 | 21.5 | 21.7 | 21.7 | 21.7 | 79.1 | 21.5 | 21.4 | 63.7 | 62.7 | 11.25 | 21.70 | 10.45 | 176.84 |
| | 1 | 21.4 | 21.7 | 21.7 | 21.7 | 78.5 | 21.5 | 21.3 | 63.5 | 62.7 | 11.20 | 21.70 | 10.50 | 265.26 |
| | 1 | 21.6 | 21.7 | 21.7 | 21.6 | 76.8 | 21.5 | 21.4 | 62.2 | 61.6 | 11.30 | 21.70 | 10.40 | 0.00 |
| -30 | 1 | 21.4 | 21.5 | 21.5 | 21.6 | 79.1 | 21.4 | 21.2 | 61.3 | 60.7 | 11.20 | 21.50 | 10.30 | 176.84 |
| | 1 | 21.4 | 21.4 | 21.5 | 21.5 | 79.1 | 21.4 | 21.3 | 61.6 | 61.0 | 11.20 | 21.45 | 10.25 | 176.84 |
| | 1 | 21.4 | 21.5 | 21.6 | 21.5 | 79.1 | 21.4 | 21.2 | 61.5 | 60.7 | 11.20 | 21.55 | 10.35 | 176.84 |
| -50 | 1 | 21.4 | 21.4 | 21.9 | 21.6 | 79.3 | 21.4 | 21.3 | 61.5 | 60.9 | 11.20 | 21.65 | 10.45 | 618.94 |
| | 1 | 21.4 | 21.5 | 21.7 | 21.7 | 79.3 | 21.4 | 21.4 | 61.6 | 61.2 | 11.20 | 21.60 | 10.40 | 442.10 |
| | 1 | 21.4 | 21.6 | 21.9 | 22.0 | 79.3 | 21.4 | 21.4 | 61.6 | 61.1 | 11.20 | 21.75 | 10.55 | 795.77 |
| -70 | 1 | 21.4 | 21.4 | 22.0 | 21.8 | 79.5 | 21.4 | 21.3 | 57.8 | 58.4 | 11.20 | 21.70 | 10.50 | 884.19 |
| | 1 | 21.4 | 21.5 | 21.9 | 22.0 | 78.9 | 21.4 | 21.3 | 58.0 | 58.0 | 11.20 | 21.70 | 10.50 | 884.19 |
| | 1 | 21.4 | 21.4 | 22.0 | 21.8 | 79.4 | 21.5 | 21.4 | 58.1 | 58.0 | 11.22 | 21.70 | 10.49 | 857.67 |
| -90 | 1 | 21.4 | 21.4 | 21.6 | 21.6 | 79.9 | 21.3 | 21.3 | 57.9 | 57.6 | 11.20 | 21.50 | 10.30 | 353.68 |
| | 1 | 21.4 | 21.4 | 21.6 | 21.4 | 79.5 | 21.4 | 21.3 | 57.0 | 57.0 | 11.20 | 21.50 | 10.30 | 176.84 |
| | 1 | 21.4 | 21.4 | 21.6 | 21.5 | 79.5 | 21.4 | 21.3 | 56.3 | 56.3 | 11.20 | 21.50 | 10.30 | 265.26 |

ตาราง ก-52 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 2.03 mm. Lt 15 m. Le 5 cm.

| มุม องศา | \dot{Q} (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | ΔT (°C) | q (W/m ²) |
|-------------|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|--------------------|--------------------------|
| 90 | 1 | 21.6 | 21.5 | 37.1 | 37.4 | 62.3 | 52.8 | 51.4 | 61.2 | 58.2 | 11.30 | 29.30 | 18.00 | 20822.77 |
| | 1 | 21.5 | 21.6 | 37.3 | 37.3 | 62.2 | 53.1 | 51.0 | 56.0 | 62.5 | 11.25 | 29.45 | 18.20 | 20889.09 |
| | 1 | 21.6 | 21.6 | 37.6 | 37.2 | 63.0 | 53.7 | 51.0 | 55.2 | 59.3 | 11.30 | 29.60 | 18.30 | 20955.40 |
| 80 | 1 | 21.5 | 21.5 | 38.6 | 38.5 | 63.1 | 52.7 | 51.3 | 58.5 | 59.3 | 11.25 | 30.05 | 18.80 | 22613.26 |
| | 1 | 21.7 | 21.7 | 38.4 | 37.9 | 63.2 | 52.9 | 50.9 | 55.8 | 62.5 | 11.35 | 30.05 | 18.70 | 21817.49 |
| | 1 | 21.3 | 21.4 | 38.3 | 38.0 | 64.5 | 53.1 | 51.4 | 59.5 | 59.1 | 11.15 | 29.85 | 18.70 | 22281.69 |
| 70 | 1 | 21.4 | 21.5 | 37.7 | 37.8 | 64.3 | 49.4 | 52.6 | 60.2 | 60.3 | 11.20 | 29.60 | 18.40 | 21618.55 |
| | 1 | 21.6 | 21.7 | 38.0 | 37.7 | 63.3 | 49.3 | 51.7 | 60.2 | 59.0 | 11.30 | 29.85 | 18.55 | 21485.92 |
| | 1 | 21.6 | 21.7 | 38.5 | 37.1 | 66.1 | 49.5 | 53.1 | 60.4 | 62.7 | 11.30 | 30.10 | 18.80 | 21419.60 |
| 60 | 1 | 21.7 | 21.7 | 37.7 | 37.3 | 66.1 | 47.8 | 54.2 | 60.1 | 61.4 | 11.35 | 29.70 | 18.35 | 20955.40 |
| | 1 | 21.4 | 21.5 | 37.5 | 37.2 | 64.7 | 47.7 | 53.8 | 59.4 | 60.5 | 11.20 | 29.50 | 18.30 | 21088.03 |
| | 1 | 21.6 | 21.5 | 37.0 | 37.3 | 66.6 | 47.6 | 53.9 | 57.9 | 59.3 | 11.30 | 29.25 | 17.95 | 20690.14 |
| 50 | 1 | 21.6 | 21.6 | 37.3 | 37.1 | 65.6 | 45.5 | 51.3 | 59.2 | 61.7 | 11.30 | 29.45 | 18.15 | 20690.14 |
| | 1 | 21.6 | 21.7 | 37.0 | 37.1 | 64.6 | 45.4 | 51.9 | 62.1 | 61.0 | 11.30 | 29.35 | 18.05 | 20424.88 |
| | 1 | 21.6 | 21.6 | 37.3 | 36.9 | 64.7 | 45.5 | 51.8 | 61.5 | 59.2 | 11.30 | 29.45 | 18.15 | 20557.51 |
| 40 | 1 | 21.7 | 21.6 | 37.9 | 37.6 | 66.5 | 43.6 | 50.0 | 60.0 | 59.8 | 11.35 | 29.75 | 18.40 | 21353.29 |
| | 1 | 21.7 | 21.6 | 37.5 | 37.5 | 66.2 | 43.6 | 52.5 | 60.2 | 60.2 | 11.35 | 29.55 | 18.20 | 21021.72 |
| | 1 | 21.5 | 21.7 | 37.7 | 37.8 | 65.7 | 43.5 | 53.0 | 59.0 | 57.8 | 11.25 | 29.70 | 18.45 | 21419.60 |
| 30 | 1 | 21.7 | 21.5 | 37.0 | 37.1 | 64.1 | 40.7 | 52.3 | 62.0 | 62.8 | 11.35 | 29.25 | 17.90 | 20491.20 |
| | 1 | 21.4 | 21.4 | 36.7 | 37.0 | 66.2 | 40.8 | 51.5 | 59.9 | 56.6 | 11.20 | 29.05 | 17.85 | 20491.20 |
| | 1 | 21.4 | 21.3 | 37.4 | 36.7 | 63.6 | 40.7 | 50.6 | 60.1 | 62.8 | 11.20 | 29.35 | 18.15 | 20822.77 |
| 20 | 1 | 21.4 | 21.4 | 35.9 | 36.1 | 66.4 | 39.1 | 48.1 | 59.5 | 63.5 | 11.20 | 28.65 | 17.45 | 19363.85 |
| | 1 | 21.5 | 21.4 | 36.1 | 35.8 | 66.9 | 39.0 | 50.5 | 61.6 | 61.2 | 11.25 | 28.75 | 17.50 | 19231.22 |
| | 1 | 21.4 | 21.5 | 36.6 | 35.8 | 68.5 | 39.1 | 45.6 | 59.1 | 62.8 | 11.20 | 29.05 | 17.85 | 19562.80 |
| 10 | 1 | 21.6 | 21.6 | 30.4 | 30.6 | 69.5 | 36.1 | 40.7 | 53.6 | 63.4 | 11.30 | 26.00 | 14.70 | 11803.99 |
| | 1 | 21.5 | 21.5 | 30.8 | 31.0 | 70.3 | 36.0 | 38.5 | 60.1 | 64.0 | 11.25 | 26.15 | 14.90 | 12467.14 |
| | 1 | 21.4 | 21.3 | 30.3 | 30.8 | 70.4 | 36.1 | 41.4 | 59.2 | 62.6 | 11.20 | 25.80 | 14.60 | 12201.88 |
| 0 | 1 | 21.4 | 21.4 | 28.5 | 28.4 | 74.5 | 33.0 | 29.2 | 56.1 | 52.3 | 11.20 | 24.95 | 13.75 | 9350.35 |
| | 1 | 21.3 | 21.2 | 28.6 | 28.7 | 74.5 | 32.9 | 29.1 | 56.0 | 51.7 | 11.15 | 24.90 | 13.75 | 9814.55 |
| | 1 | 21.3 | 21.3 | 28.6 | 28.6 | 74.8 | 33.3 | 29.2 | 55.5 | 51.7 | 11.15 | 24.95 | 13.80 | 9681.93 |
| -10 | 1 | 21.6 | 21.5 | 24.3 | 24.1 | 79.1 | 22.3 | 23.7 | 52.5 | 51.0 | 11.30 | 22.90 | 11.60 | 3514.67 |
| | 1 | 21.6 | 21.5 | 24.3 | 24.1 | 79.2 | 22.3 | 23.7 | 52.6 | 50.8 | 11.30 | 22.90 | 11.60 | 3514.67 |
| | 1 | 21.6 | 21.5 | 24.1 | 24.1 | 79.2 | 22.3 | 23.5 | 52.8 | 50.9 | 11.30 | 22.80 | 11.50 | 3382.04 |
| -30 | 1 | 21.4 | 21.3 | 23.4 | 23.5 | 78.8 | 22.3 | 22.8 | 52.7 | 49.5 | 11.20 | 22.35 | 11.15 | 2785.21 |
| | 1 | 21.5 | 21.4 | 23.7 | 23.8 | 78.9 | 22.4 | 22.9 | 53.3 | 49.9 | 11.25 | 22.55 | 11.30 | 3050.47 |
| | 1 | 21.5 | 21.4 | 23.6 | 23.7 | 79.1 | 22.4 | 23.0 | 52.8 | 50.1 | 11.25 | 22.50 | 11.25 | 2917.84 |
| -50 | 1 | 21.4 | 21.4 | 23.2 | 23.4 | 79.0 | 22.1 | 23.2 | 53.2 | 50.8 | 11.20 | 22.30 | 11.10 | 2519.95 |
| | 1 | 21.4 | 21.4 | 23.1 | 23.7 | 79.0 | 22.1 | 23.2 | 53.3 | 51.2 | 11.20 | 22.25 | 11.05 | 2652.58 |
| | 1 | 21.4 | 21.4 | 23.5 | 23.7 | 79.1 | 22.1 | 23.3 | 53.4 | 51.1 | 11.20 | 22.45 | 11.25 | 2917.84 |
| -70 | 1 | 21.4 | 21.3 | 23.1 | 23.5 | 79.3 | 22.3 | 23.7 | 56.6 | 54.6 | 11.20 | 22.20 | 11.00 | 2586.27 |
| | 1 | 21.4 | 21.4 | 23.4 | 23.4 | 79.3 | 22.1 | 23.7 | 56.5 | 54.5 | 11.20 | 22.40 | 11.20 | 2652.58 |
| | 1 | 21.4 | 21.4 | 23.1 | 23.3 | 79.4 | 22.2 | 23.6 | 56.4 | 54.6 | 11.20 | 22.25 | 11.05 | 2387.32 |
| -90 | 1 | 21.4 | 21.4 | 23.0 | 23.1 | 79.0 | 21.8 | 23.5 | 56.7 | 54.9 | 11.20 | 22.20 | 11.00 | 2188.38 |
| | 1 | 21.3 | 21.3 | 23.1 | 23.2 | 78.7 | 21.8 | 23.6 | 56.8 | 54.8 | 11.15 | 22.20 | 11.05 | 2453.64 |
| | 1 | 21.4 | 21.4 | 23.0 | 23.2 | 79.1 | 21.9 | 23.6 | 56.7 | 54.9 | 11.20 | 22.20 | 11.00 | 2254.70 |

ตาราง ก-53 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP
ที่ใช้สาร MP39 Di 2.03 mm, Lt 15 m, Le 10 cm.

| มุม องศา | Q̇ (l/min) | Ti.1 (°C) | Ti.2 (°C) | To.1 (°C) | To.2 (°C) | Tevap (°C) | Tc.1 (°C) | Tc.2 (°C) | Ta.1 (°C) | Ta.2 (°C) | Ti.ave (°C) | To.ave (°C) | Δ T (°C) | q (W/m ²) |
|-------------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|-------------|--------------------------|
| 90 | 1 | 21.2 | 21.2 | 36.7 | 37.3 | 68.9 | 53.5 | 47.7 | 48.5 | 65.2 | 11.10 | 28.95 | 17.85 | 20044.30 |
| | 1 | 21.2 | 21.3 | 36.2 | 36.3 | 70.6 | 43.8 | 40.9 | 47.0 | 65.0 | 11.10 | 28.75 | 17.65 | 19029.40 |
| | 1 | 21.2 | 21.2 | 36.2 | 36.7 | 68.8 | 49.2 | 43.1 | 48.3 | 65.6 | 11.10 | 28.70 | 17.60 | 19346.55 |
| 80 | 1 | 21.3 | 21.2 | 36.4 | 37.8 | 70.4 | 44.0 | 40.0 | 47.9 | 63.0 | 11.15 | 28.80 | 17.65 | 20107.73 |
| | 1 | 21.4 | 21.2 | 37.6 | 37.4 | 70.5 | 43.6 | 39.6 | 45.8 | 64.7 | 11.20 | 29.40 | 18.20 | 20551.75 |
| | 1 | 21.3 | 21.3 | 37.5 | 37.9 | 68.7 | 47.8 | 42.7 | 45.0 | 65.8 | 11.15 | 29.40 | 18.25 | 20805.47 |
| 70 | 1 | 21.4 | 21.3 | 36.6 | 36.4 | 71.2 | 42.6 | 35.8 | 48.2 | 63.3 | 11.20 | 28.95 | 17.75 | 19219.69 |
| | 1 | 21.3 | 21.3 | 36.7 | 36.4 | 70.2 | 42.3 | 35.9 | 47.4 | 63.8 | 11.15 | 29.00 | 17.85 | 19346.55 |
| | 1 | 21.2 | 21.2 | 36.3 | 36.5 | 70.5 | 44.5 | 37.6 | 46.6 | 65.2 | 11.10 | 28.75 | 17.65 | 19283.12 |
| 60 | 1 | 21.3 | 21.2 | 36.6 | 36.7 | 71.8 | 42.9 | 36.0 | 48.0 | 64.9 | 11.15 | 28.90 | 17.75 | 19536.85 |
| | 1 | 21.4 | 21.3 | 37.1 | 36.9 | 70.8 | 42.5 | 35.6 | 48.9 | 63.6 | 11.20 | 29.20 | 18.00 | 19854.00 |
| | 1 | 21.4 | 21.3 | 36.7 | 36.9 | 72.1 | 42.8 | 35.4 | 49.1 | 63.7 | 11.20 | 29.00 | 17.80 | 19600.28 |
| 50 | 1 | 21.2 | 21.2 | 36.5 | 36.7 | 70.8 | 43.0 | 34.8 | 48.4 | 64.4 | 11.10 | 28.85 | 17.75 | 19536.85 |
| | 1 | 21.3 | 21.3 | 37.0 | 36.7 | 72.0 | 42.1 | 34.7 | 49.4 | 63.7 | 11.15 | 29.15 | 18.00 | 19727.14 |
| | 1 | 21.4 | 21.3 | 37.0 | 37.1 | 71.9 | 42.5 | 34.5 | 49.1 | 63.3 | 11.20 | 29.15 | 17.95 | 19917.43 |
| 40 | 1 | 21.3 | 21.2 | 35.9 | 35.8 | 70.9 | 41.4 | 31.7 | 48.1 | 65.1 | 11.15 | 28.55 | 17.40 | 18521.94 |
| | 1 | 21.3 | 21.1 | 35.8 | 35.6 | 71.1 | 41.0 | 31.4 | 47.5 | 65.4 | 11.15 | 28.45 | 17.30 | 18395.08 |
| | 1 | 21.1 | 21.1 | 35.6 | 35.6 | 71.1 | 41.9 | 31.7 | 48.0 | 65.6 | 11.05 | 28.35 | 17.30 | 18395.08 |
| 30 | 1 | 21.3 | 21.3 | 35.1 | 35.1 | 72.3 | 40.7 | 30.5 | 48.6 | 66.1 | 11.15 | 28.20 | 17.05 | 17507.04 |
| | 1 | 21.2 | 21.2 | 35.4 | 35.4 | 71.6 | 41.1 | 30.4 | 48.8 | 66.2 | 11.10 | 28.30 | 17.20 | 18014.49 |
| | 1 | 21.3 | 21.2 | 35.4 | 35.2 | 72.5 | 40.8 | 30.5 | 49.3 | 65.4 | 11.15 | 28.30 | 17.15 | 17824.20 |
| 20 | 1 | 21.2 | 21.1 | 35.1 | 35.3 | 72.1 | 41.3 | 29.8 | 48.0 | 67.8 | 11.10 | 28.10 | 17.00 | 17824.20 |
| | 1 | 21.4 | 21.1 | 35.0 | 35.1 | 73.2 | 40.6 | 29.8 | 47.9 | 67.7 | 11.20 | 28.05 | 16.85 | 17507.04 |
| | 1 | 21.3 | 21.3 | 35.4 | 35.6 | 72.3 | 41.0 | 30.0 | 48.0 | 68.0 | 11.15 | 28.35 | 17.20 | 18014.49 |
| 10 | 1 | 21.4 | 21.4 | 34.4 | 32.7 | 73.6 | 42.4 | 28.1 | 44.5 | 72.0 | 11.20 | 27.90 | 16.70 | 15413.81 |
| | 1 | 21.2 | 21.2 | 32.6 | 33.2 | 73.2 | 42.6 | 28.1 | 44.3 | 71.8 | 11.10 | 26.90 | 15.80 | 14842.93 |
| | 1 | 21.2 | 21.2 | 33.1 | 32.9 | 73.0 | 42.8 | 28.2 | 44.7 | 71.9 | 11.10 | 27.15 | 16.05 | 14969.79 |
| 0 | 1 | 21.3 | 21.2 | 25.3 | 25.5 | 79.4 | 22.0 | 21.8 | 53.0 | 54.8 | 11.15 | 23.25 | 12.10 | 5264.80 |
| | 1 | 21.4 | 21.4 | 25.4 | 25.4 | 79.3 | 21.9 | 21.7 | 52.7 | 54.6 | 11.20 | 23.40 | 12.20 | 5074.51 |
| | 1 | 21.4 | 21.4 | 25.4 | 25.4 | 79.2 | 21.9 | 21.7 | 53.1 | 54.5 | 11.20 | 23.40 | 12.20 | 5074.51 |
| -10 | 1 | 21.4 | 21.4 | 22.5 | 22.5 | 79.4 | 22.7 | 21.7 | 56.0 | 57.7 | 11.20 | 21.95 | 10.75 | 1395.49 |
| | 1 | 21.4 | 21.4 | 22.4 | 22.5 | 79.3 | 22.7 | 21.8 | 55.9 | 57.6 | 11.20 | 21.90 | 10.70 | 1332.06 |
| | 1 | 21.4 | 21.3 | 22.5 | 22.5 | 79.2 | 22.7 | 21.7 | 55.7 | 57.3 | 11.20 | 21.90 | 10.70 | 1458.92 |
| -30 | 1 | 21.4 | 21.4 | 22.1 | 22.1 | 79.3 | 22.1 | 21.7 | 58.5 | 60.1 | 11.20 | 21.75 | 10.55 | 888.04 |
| | 1 | 21.4 | 21.2 | 22.1 | 22.1 | 79.4 | 22.1 | 21.7 | 58.4 | 60.0 | 11.20 | 21.65 | 10.45 | 1014.90 |
| | 1 | 21.4 | 21.3 | 22.1 | 22.4 | 79.3 | 22.2 | 21.8 | 58.5 | 60.2 | 11.20 | 21.70 | 10.50 | 1141.76 |
| -50 | 1 | 21.4 | 21.3 | 22.1 | 22.2 | 79.1 | 22.1 | 21.7 | 58.8 | 60.4 | 11.20 | 21.70 | 10.50 | 1014.90 |
| | 1 | 21.4 | 21.3 | 22.1 | 22.2 | 79.1 | 22.2 | 21.7 | 58.8 | 60.5 | 11.20 | 21.70 | 10.50 | 1014.90 |
| | 1 | 21.4 | 21.4 | 22.1 | 22.3 | 79.4 | 22.3 | 21.7 | 58.9 | 60.6 | 11.20 | 21.75 | 10.55 | 1014.90 |
| -70 | 1 | 21.3 | 21.4 | 22.0 | 22.3 | 79.1 | 22.1 | 21.7 | 58.8 | 60.6 | 11.15 | 21.70 | 10.55 | 1014.90 |
| | 1 | 21.4 | 21.3 | 21.9 | 22.2 | 79.2 | 22.1 | 21.8 | 58.9 | 60.5 | 11.20 | 21.60 | 10.40 | 888.04 |
| | 1 | 21.4 | 21.4 | 22.0 | 22.3 | 79.2 | 22.1 | 21.8 | 58.8 | 60.6 | 11.20 | 21.70 | 10.50 | 951.47 |
| -90 | 1 | 21.4 | 21.4 | 21.7 | 21.9 | 79.2 | 21.9 | 21.7 | 58.8 | 60.4 | 11.20 | 21.55 | 10.35 | 507.45 |
| | 1 | 21.4 | 21.2 | 21.8 | 21.7 | 79.4 | 21.9 | 21.9 | 58.7 | 60.4 | 11.20 | 21.50 | 10.30 | 570.88 |
| | 1 | 21.3 | 21.5 | 21.8 | 21.7 | 79.4 | 22.0 | 21.8 | 58.6 | 60.4 | 11.15 | 21.65 | 10.50 | 444.02 |

ตาราง ก-54 ผลการทดสอบคุณลักษณะการถ่ายเทความร้อนของท่อความร้อนแบบ CLOHP

ที่ใช้สาร MP39 Di 2.03 mm. Lt 15 m. Lc 15 cm.

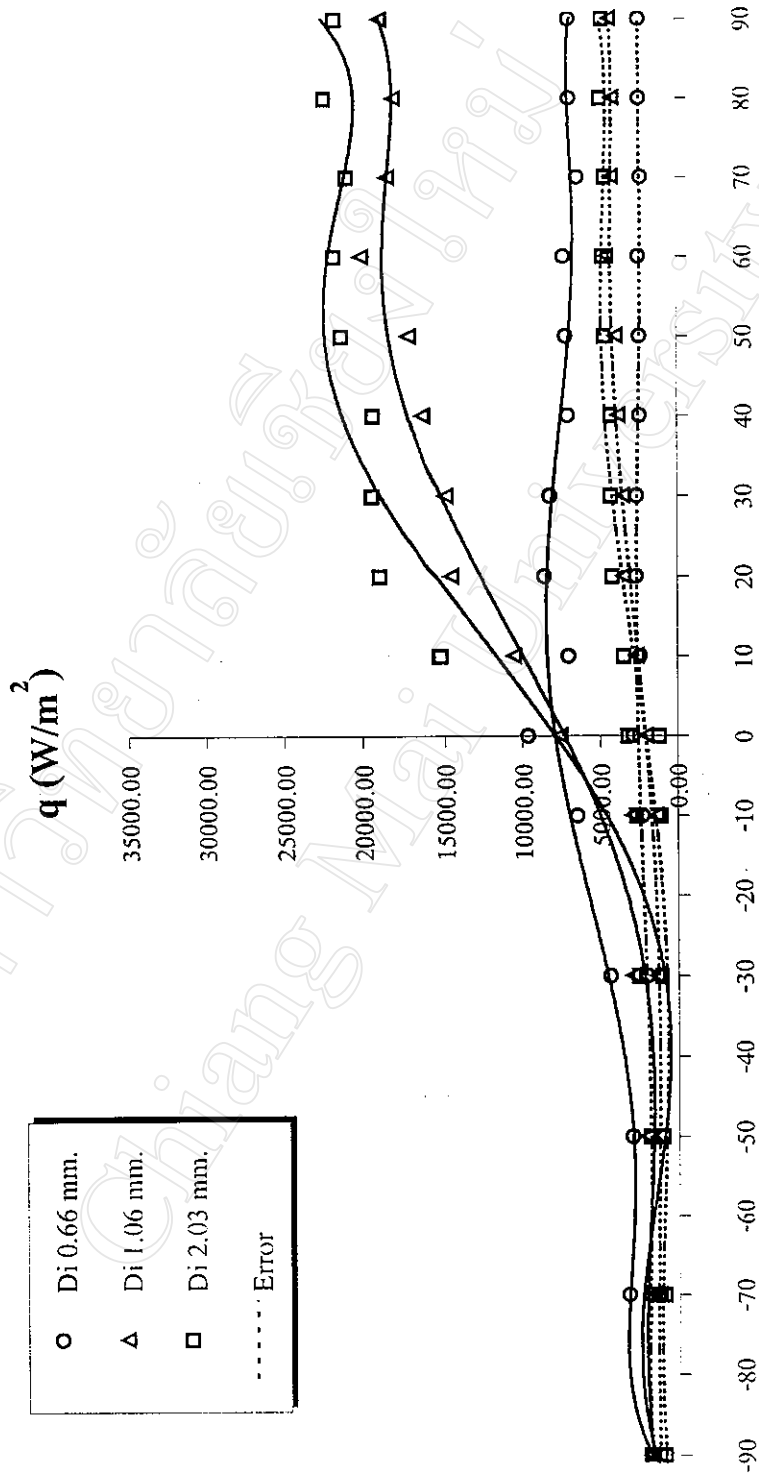
| อุณหภูมิ | Q̇ (l/min) | Ti,1 (°C) | Ti,2 (°C) | To,1 (°C) | To,2 (°C) | Tevap (°C) | Tc,1 (°C) | Tc,2 (°C) | Ta,1 (°C) | Ta,2 (°C) | Ti,ave (°C) | To,ave (°C) | ΔT (°C) | q (W/m ²) |
|----------|---------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|----------------|------------|--------------------------|
| 90 | 1 | 21.5 | 21.4 | 35.3 | 35.1 | 69.9 | 42.5 | 57.7 | 66.7 | 60.1 | 11.25 | 28.35 | 17.10 | 16716.80 |
| | 1 | 21.6 | 21.4 | 34.8 | 34.7 | 70.8 | 42.7 | 60.2 | 66.4 | 55.6 | 11.30 | 28.10 | 16.80 | 16108.91 |
| | 1 | 21.6 | 21.3 | 35.0 | 35.0 | 69.6 | 42.0 | 59.7 | 65.3 | 59.1 | 11.30 | 28.15 | 16.85 | 16473.64 |
| 80 | 1 | 21.7 | 21.4 | 34.7 | 34.7 | 72.3 | 37.3 | 56.5 | 61.0 | 62.2 | 11.35 | 28.05 | 16.70 | 15987.34 |
| | 1 | 21.7 | 21.4 | 34.7 | 34.5 | 71.4 | 40.7 | 54.9 | 67.3 | 60.1 | 11.35 | 28.05 | 16.70 | 15865.76 |
| | 1 | 21.6 | 21.4 | 34.7 | 34.8 | 69.9 | 41.9 | 59.6 | 64.7 | 57.9 | 11.30 | 28.05 | 16.75 | 16108.91 |
| 70 | 1 | 21.6 | 21.5 | 35.4 | 35.3 | 72.0 | 38.8 | 59.1 | 59.3 | 65.7 | 11.30 | 28.45 | 17.15 | 16777.58 |
| | 1 | 21.6 | 21.4 | 35.4 | 35.1 | 72.1 | 38.8 | 58.3 | 66.1 | 56.1 | 11.30 | 28.40 | 17.10 | 16716.80 |
| | 1 | 21.6 | 21.4 | 34.9 | 34.9 | 73.3 | 37.4 | 58.8 | 65.9 | 59.5 | 11.30 | 28.15 | 16.85 | 16291.28 |
| 60 | 1 | 21.7 | 21.4 | 35.6 | 35.9 | 72.6 | 39.4 | 52.7 | 59.1 | 65.9 | 11.35 | 28.50 | 17.15 | 17263.89 |
| | 1 | 21.7 | 21.5 | 36.2 | 35.5 | 71.0 | 38.6 | 59.5 | 60.3 | 65.3 | 11.35 | 28.85 | 17.50 | 17324.68 |
| | 1 | 21.7 | 21.5 | 35.5 | 35.5 | 72.7 | 38.7 | 56.4 | 59.8 | 65.7 | 11.35 | 28.50 | 17.15 | 16899.16 |
| 50 | 1 | 21.8 | 21.4 | 35.0 | 35.1 | 71.4 | 39.5 | 52.3 | 65.5 | 59.5 | 11.40 | 28.20 | 16.80 | 16352.07 |
| | 1 | 21.7 | 21.4 | 35.1 | 35.4 | 71.4 | 41.5 | 58.2 | 66.8 | 53.6 | 11.35 | 28.25 | 16.90 | 16656.01 |
| | 1 | 21.8 | 21.5 | 35.4 | 35.5 | 72.1 | 41.3 | 53.2 | 66.1 | 60.4 | 11.40 | 28.45 | 17.05 | 16777.58 |
| 40 | 1 | 21.8 | 21.5 | 35.5 | 35.5 | 70.7 | 36.0 | 59.3 | 52.7 | 66.1 | 11.40 | 28.50 | 17.10 | 16838.37 |
| | 1 | 21.9 | 21.6 | 35.4 | 35.4 | 71.9 | 35.8 | 60.1 | 62.8 | 60.8 | 11.45 | 28.50 | 17.05 | 16595.22 |
| | 1 | 21.8 | 21.6 | 35.4 | 35.3 | 69.3 | 38.2 | 58.2 | 64.8 | 58.1 | 11.40 | 28.50 | 17.10 | 16595.22 |
| 30 | 1 | 21.7 | 21.4 | 34.6 | 34.7 | 69.9 | 36.1 | 56.9 | 63.1 | 58.8 | 11.35 | 28.00 | 16.65 | 15926.55 |
| | 1 | 21.8 | 21.5 | 34.3 | 34.4 | 72.6 | 35.8 | 50.6 | 66.9 | 54.4 | 11.40 | 27.90 | 16.50 | 15440.24 |
| | 1 | 21.8 | 21.5 | 34.7 | 34.4 | 70.2 | 36.7 | 56.4 | 67.1 | 48.1 | 11.40 | 28.10 | 16.70 | 15683.39 |
| 20 | 1 | 21.8 | 21.5 | 32.1 | 32.1 | 75.4 | 32.9 | 52.0 | 60.4 | 57.3 | 11.40 | 26.80 | 15.40 | 12704.76 |
| | 1 | 21.8 | 21.7 | 32.0 | 31.7 | 75.2 | 32.6 | 53.8 | 58.5 | 54.3 | 11.40 | 26.85 | 15.45 | 12279.25 |
| | 1 | 21.7 | 21.7 | 32.0 | 32.2 | 73.9 | 33.4 | 51.8 | 65.8 | 52.4 | 11.35 | 26.85 | 15.50 | 12643.98 |
| 10 | 1 | 21.8 | 21.6 | 30.8 | 31.0 | 74.3 | 32.1 | 51.4 | 63.7 | 57.9 | 11.40 | 26.20 | 14.80 | 11185.06 |
| | 1 | 21.7 | 21.6 | 30.5 | 31.1 | 73.0 | 31.7 | 49.1 | 61.0 | 58.8 | 11.35 | 26.05 | 14.70 | 11124.27 |
| | 1 | 21.9 | 21.6 | 30.9 | 30.9 | 74.8 | 32.1 | 50.4 | 59.1 | 56.6 | 11.45 | 26.25 | 14.80 | 11124.27 |
| 0 | 1 | 21.7 | 21.6 | 31.4 | 31.4 | 74.2 | 31.3 | 50.0 | 59.5 | 57.0 | 11.35 | 26.50 | 15.15 | 11853.73 |
| | 1 | 21.7 | 21.4 | 31.1 | 31.1 | 74.9 | 31.3 | 48.3 | 59.8 | 55.1 | 11.35 | 26.25 | 14.90 | 11610.57 |
| | 1 | 21.6 | 21.4 | 31.1 | 31.1 | 72.1 | 31.0 | 48.9 | 53.3 | 57.3 | 11.30 | 26.25 | 14.95 | 11671.36 |
| -10 | 1 | 21.8 | 21.7 | 24.7 | 25.5 | 75.4 | 22.4 | 32.7 | 62.0 | 53.9 | 11.40 | 23.20 | 11.80 | 4072.82 |
| | 1 | 21.8 | 21.7 | 25.2 | 26.1 | 74.9 | 22.7 | 32.4 | 62.1 | 52.6 | 11.40 | 23.45 | 12.05 | 4741.49 |
| | 1 | 21.8 | 21.7 | 24.6 | 24.7 | 78.2 | 22.2 | 33.3 | 59.7 | 53.9 | 11.40 | 23.15 | 11.75 | 3525.72 |
| -30 | 1 | 21.5 | 21.4 | 22.2 | 22.0 | 78.9 | 21.5 | 21.8 | 53.0 | 49.5 | 11.25 | 21.80 | 10.55 | 790.25 |
| | 1 | 21.4 | 21.4 | 22.1 | 21.8 | 78.7 | 21.5 | 21.7 | 52.9 | 49.6 | 11.20 | 21.75 | 10.55 | 668.67 |
| | 1 | 21.6 | 21.6 | 22.2 | 22.0 | 79.0 | 21.6 | 21.8 | 52.7 | 49.5 | 11.30 | 21.90 | 10.60 | 607.88 |
| -50 | 1 | 21.6 | 21.8 | 22.3 | 21.9 | 78.9 | 21.5 | 21.7 | 52.0 | 49.4 | 11.30 | 22.05 | 10.75 | 486.31 |
| | 1 | 21.6 | 21.7 | 22.2 | 22.1 | 79.1 | 21.6 | 21.9 | 52.2 | 49.6 | 11.30 | 21.95 | 10.65 | 607.88 |
| | 1 | 21.7 | 21.8 | 22.3 | 22.1 | 79.1 | 21.6 | 21.9 | 52.2 | 49.6 | 11.35 | 22.05 | 10.70 | 547.10 |
| -70 | 1 | 21.6 | 21.4 | 22.1 | 21.9 | 79.3 | 21.4 | 21.7 | 51.2 | 49.1 | 11.30 | 21.75 | 10.45 | 607.88 |
| | 1 | 21.4 | 21.3 | 21.9 | 21.7 | 79.3 | 21.5 | 21.9 | 51.4 | 49.3 | 11.20 | 21.60 | 10.40 | 547.10 |
| | 1 | 21.5 | 21.4 | 22.1 | 21.7 | 79.1 | 21.4 | 21.7 | 51.3 | 49.3 | 11.25 | 21.75 | 10.50 | 547.10 |
| -90 | 1 | 21.4 | 21.4 | 22.0 | 21.9 | 79.4 | 21.5 | 21.8 | 51.1 | 49.1 | 11.20 | 21.70 | 10.50 | 668.67 |
| | 1 | 21.4 | 21.4 | 22.1 | 21.9 | 79.4 | 21.4 | 21.8 | 51.1 | 49.0 | 11.20 | 21.75 | 10.55 | 729.46 |
| | 1 | 21.4 | 21.4 | 21.9 | 21.7 | 79.2 | 21.4 | 21.7 | 51.0 | 49.0 | 11.20 | 21.65 | 10.45 | 486.31 |

มหาวิทยาลัยเชียงใหม่
Chiang Mai University

ภาคผนวก ข

กราฟแสดงค่า q จากการปรับค่ามุมเอียงการทดสอบ

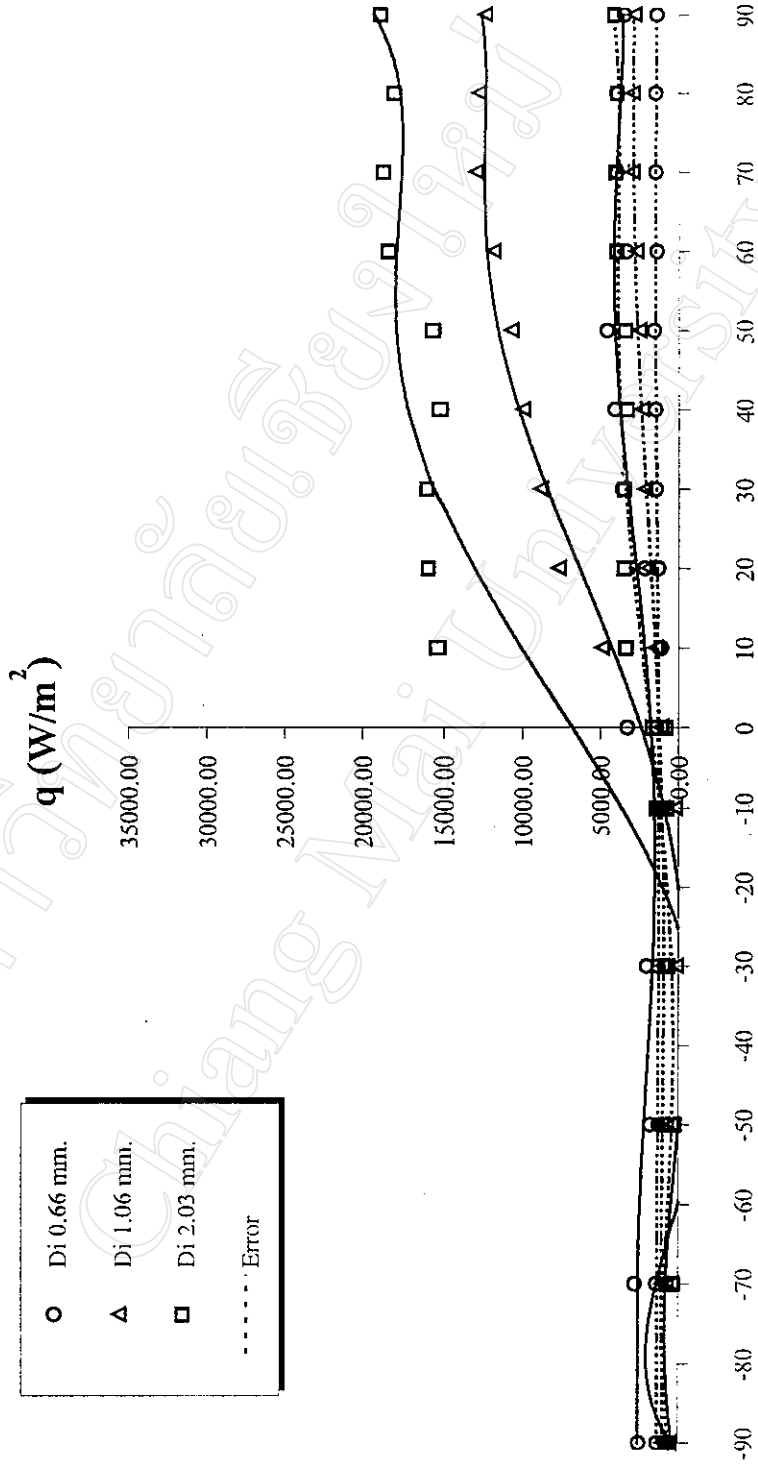
HP62, $L_e=5$ cm., $L_f=5$



Inclination angle

รูปที่ ข-1 ผลของค่ามุมเชิงการทำงานที่มีต่อ q

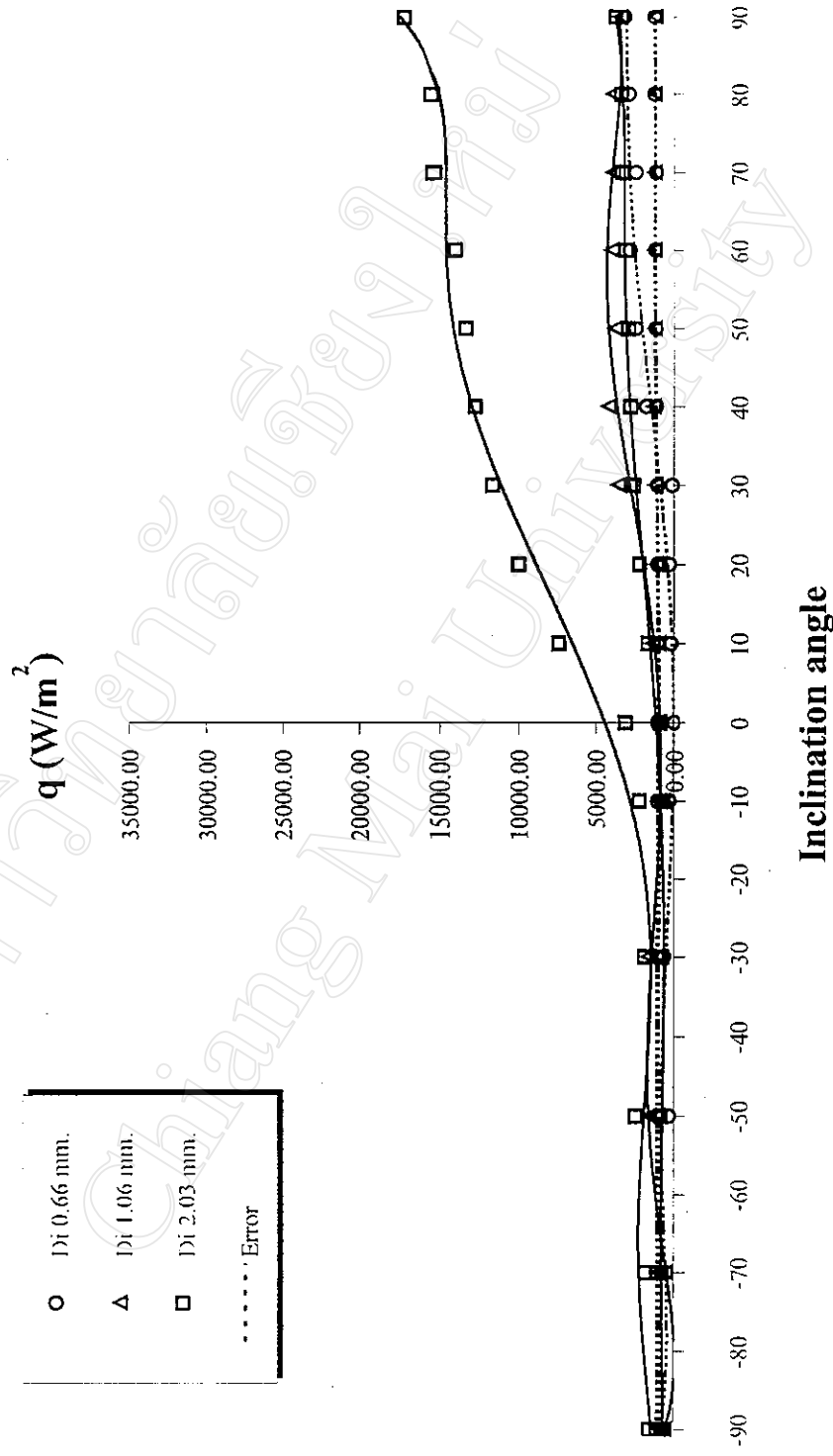
HP62, $L_e=10$ cm., $L_t=5$ m.



Inclination angle

รูปที่ ข-2 ผลของค่ามุมเรียงการทำงานที่มีต่อ q

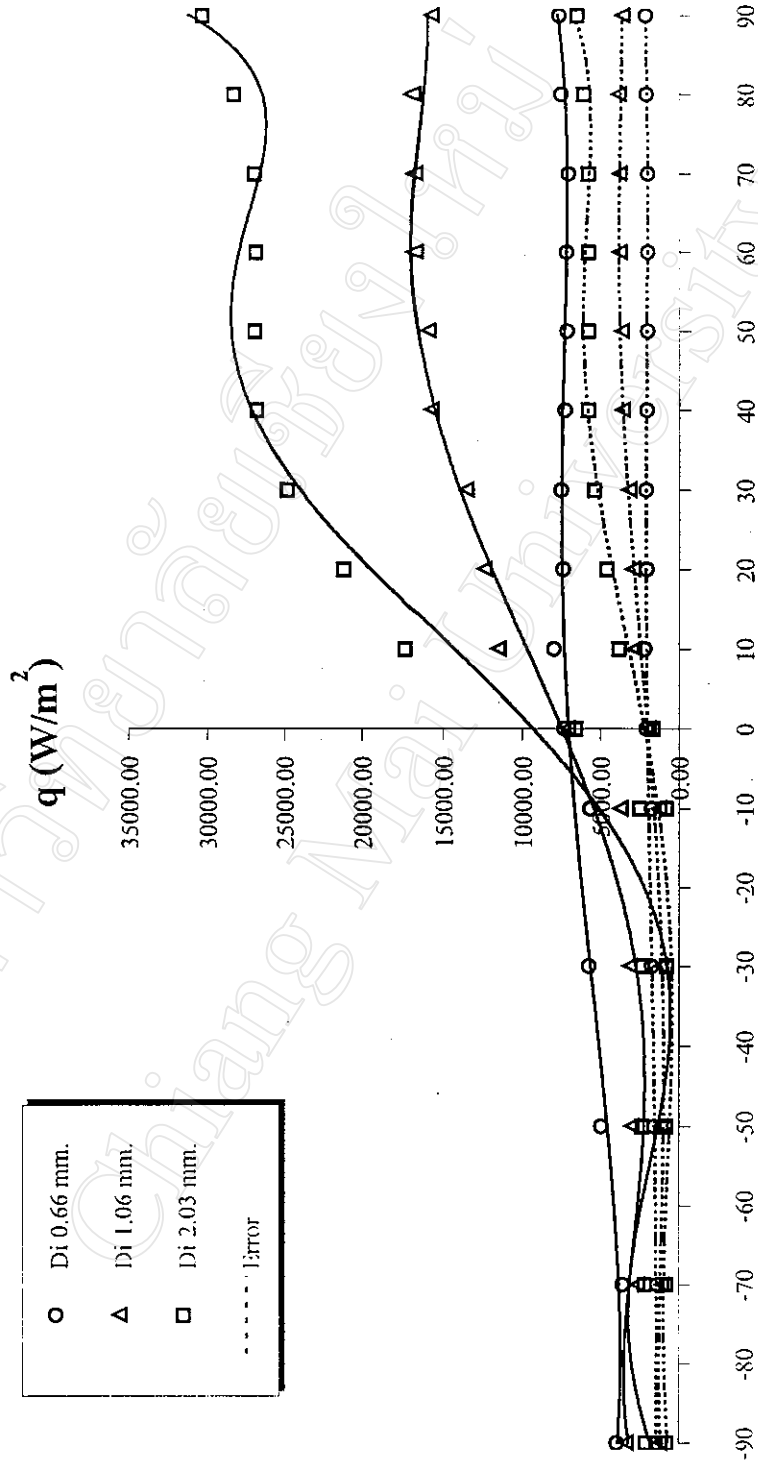
HP62, $L_e=15$ cm., $L_r=5$ m.



Inclination angle

รูปที่ ข-3 ผลของค่ามุมเรียงการทำงานที่มีต่อ q

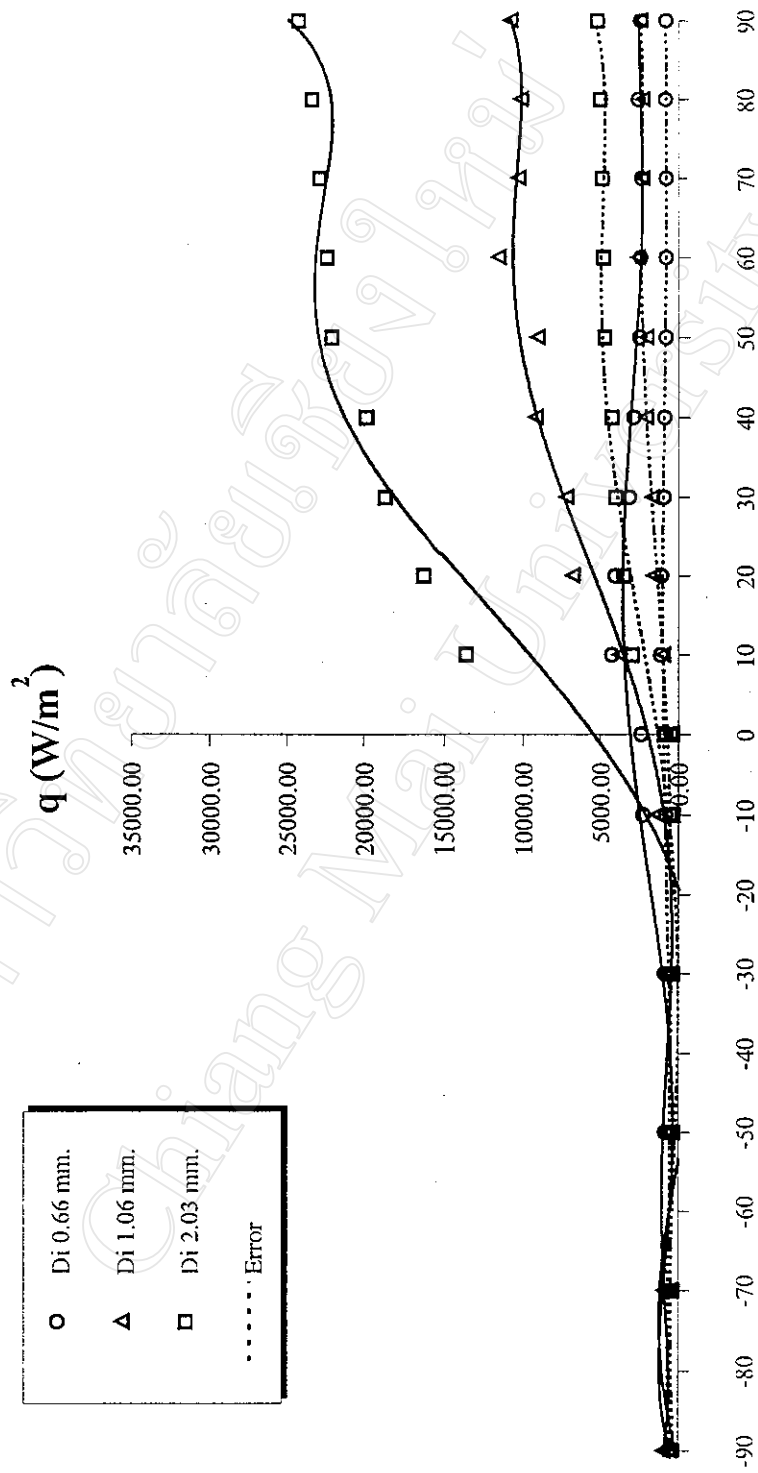
HP62, $L_e=5$ cm., $L_t=10$ m.



Inclination angle

รูปที่ ข-4 ผลของค่ามุมเชิงการทำงานที่มีต่อ q

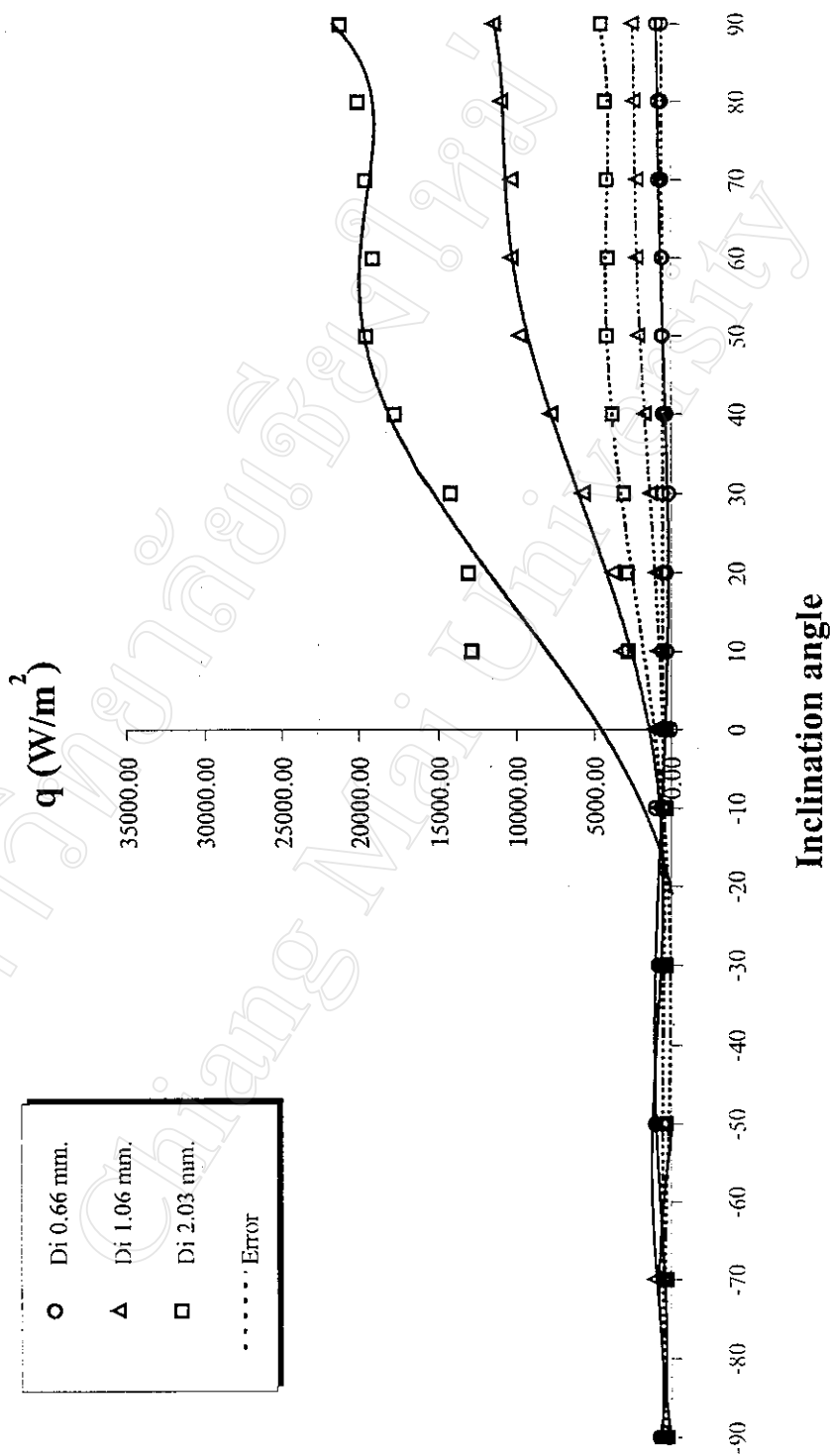
HP62, $L_e=10$ cm., $L_t=10$ m.



Inclination angle

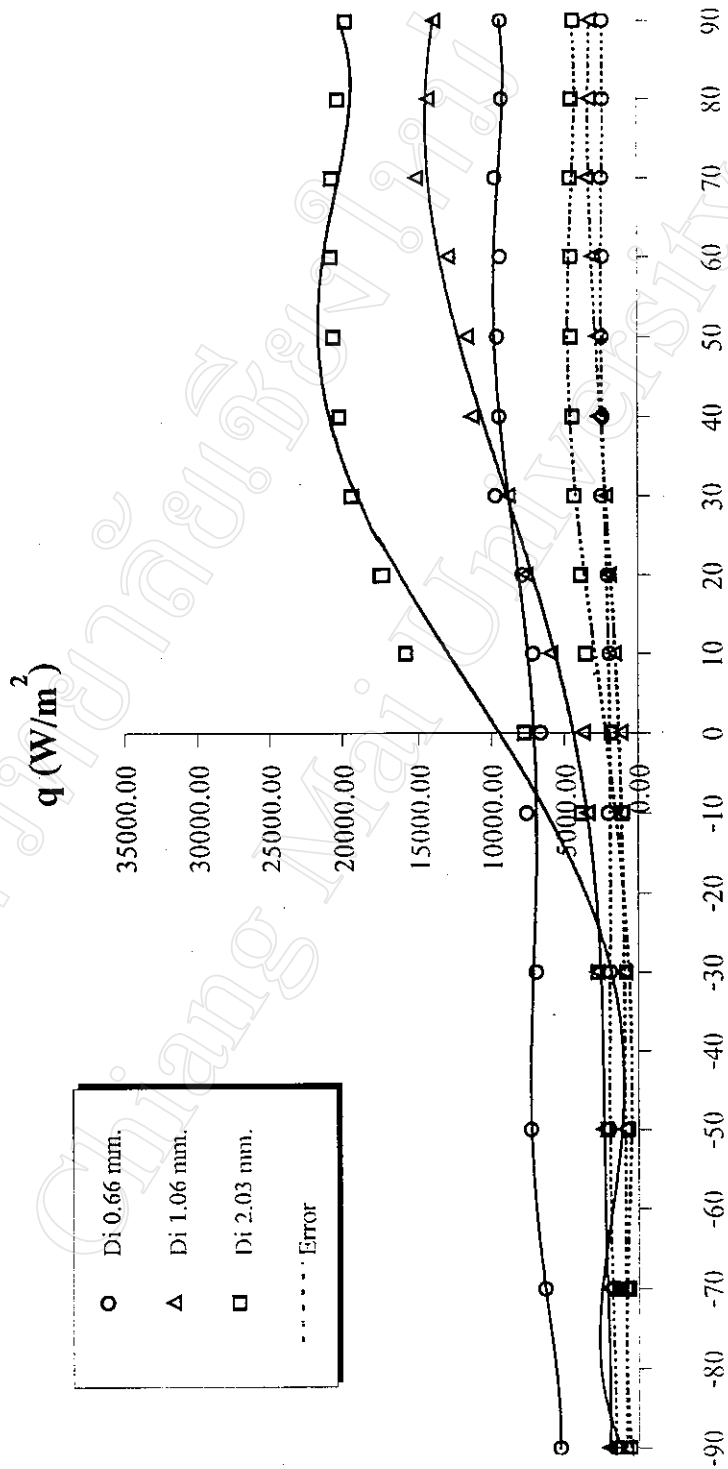
รูปที่ ข-5 ผลของการทำมุมเอียงการทำงานที่มีต่อ q

HP62, $L_e=15$ cm., $L_t=10$ m.



รูปที่ ข-6 ผลของค่ามุมเอียงการทำงานที่มีต่อ q

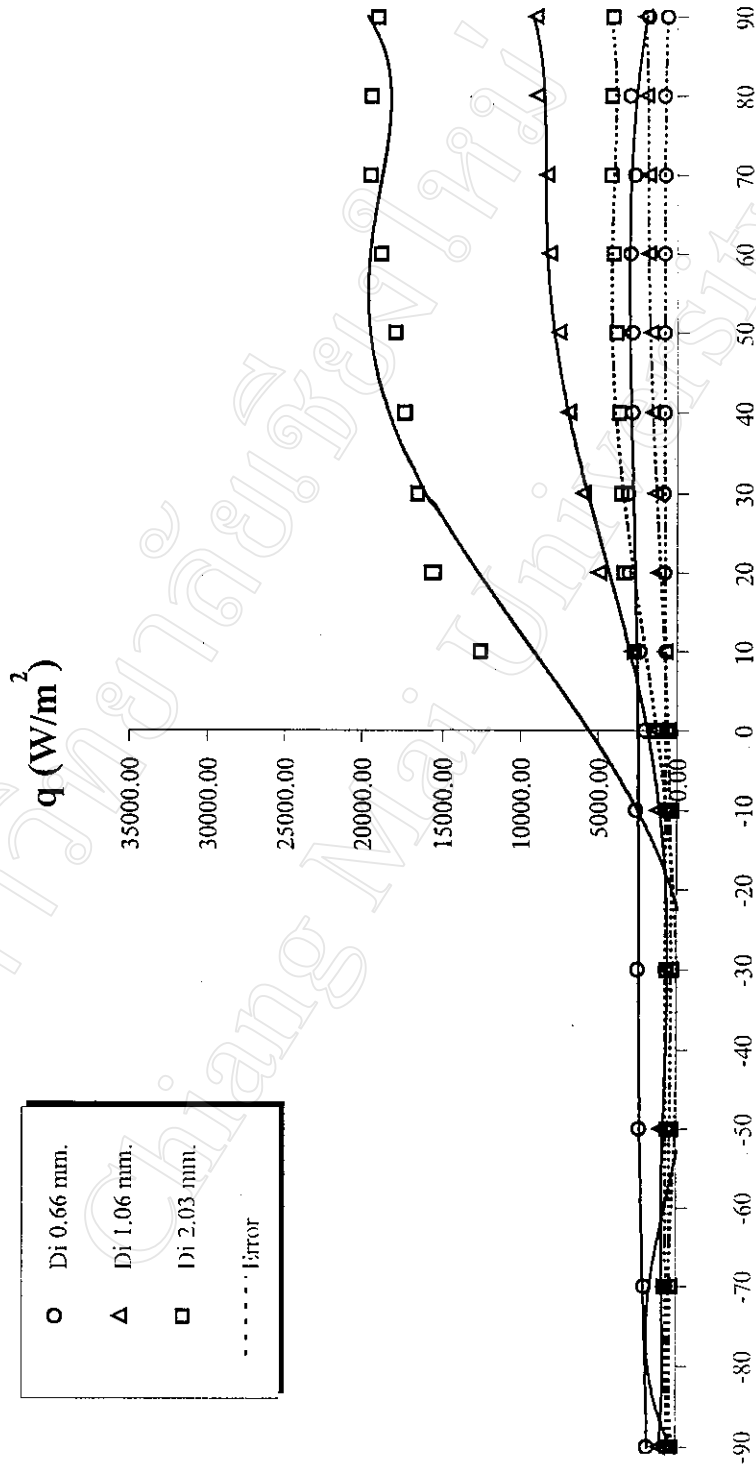
HP62, $L_e=5$ cm., $L_f=15$ m.



Inclination angle

รูปที่ ข-7 ผลของค่ามุมเชิงการทำงานที่มีต่อ q

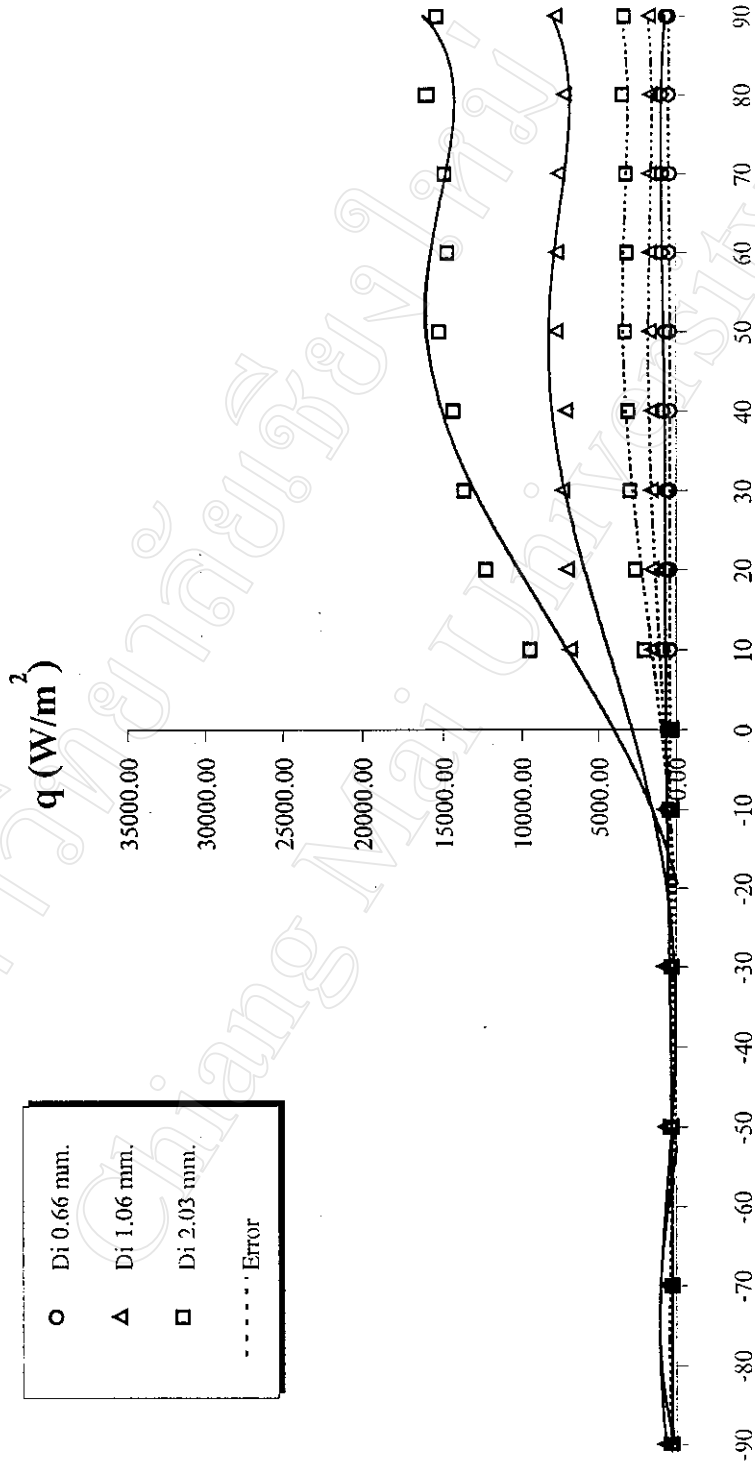
HP62, $L_e=10$ cm., $L_f=15$ m.



Inclination angle

รูปที่ ข-8 ผลของค่ามุมเอียงการทำงานที่มีต่อ q

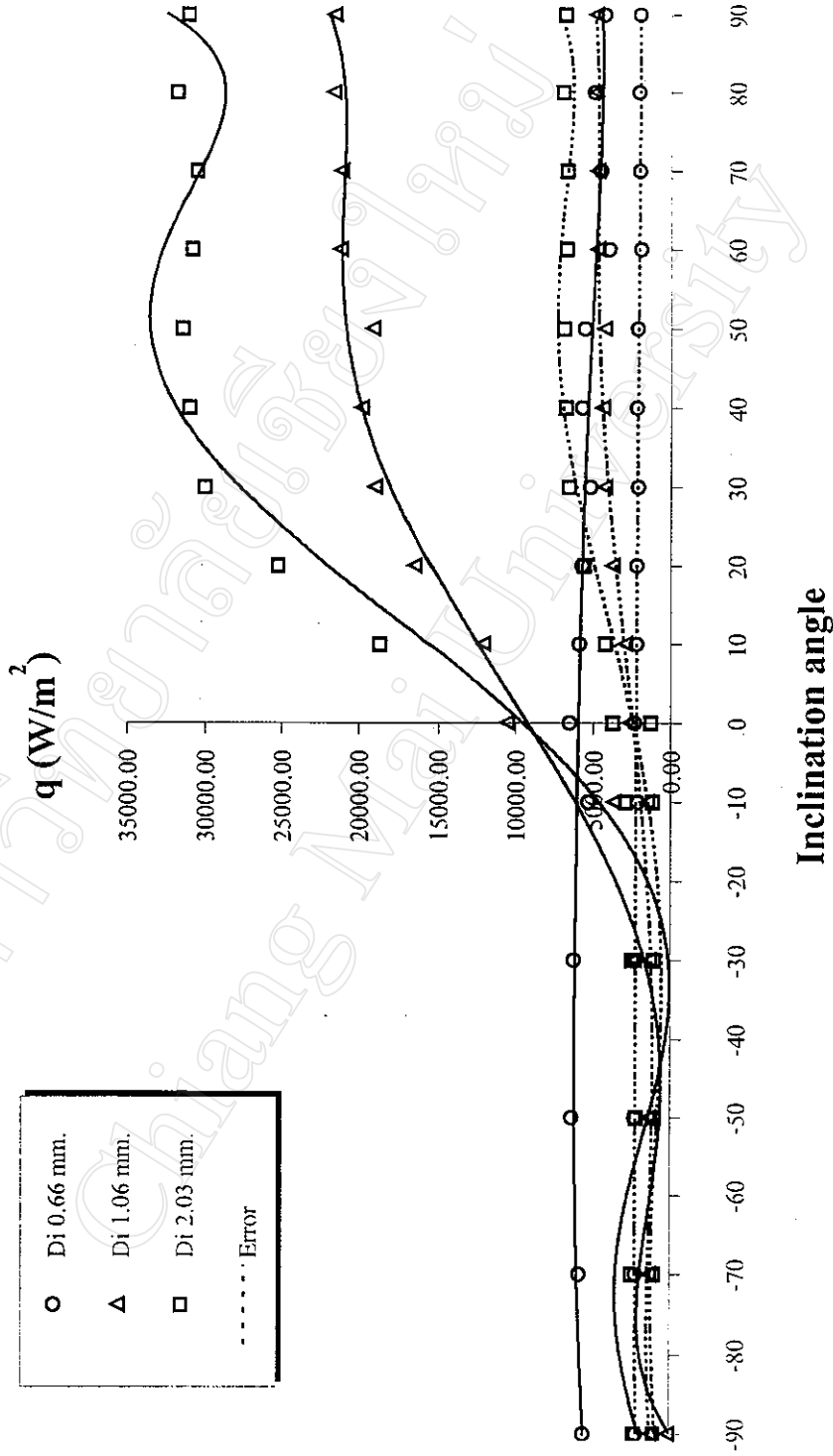
HP62, $L_c=15$ cm., $L_t=15$ m.



Inclination angle

รูปที่ ข-9 ผลของค่ามุมเชิงการทำงานที่มีต่อ q

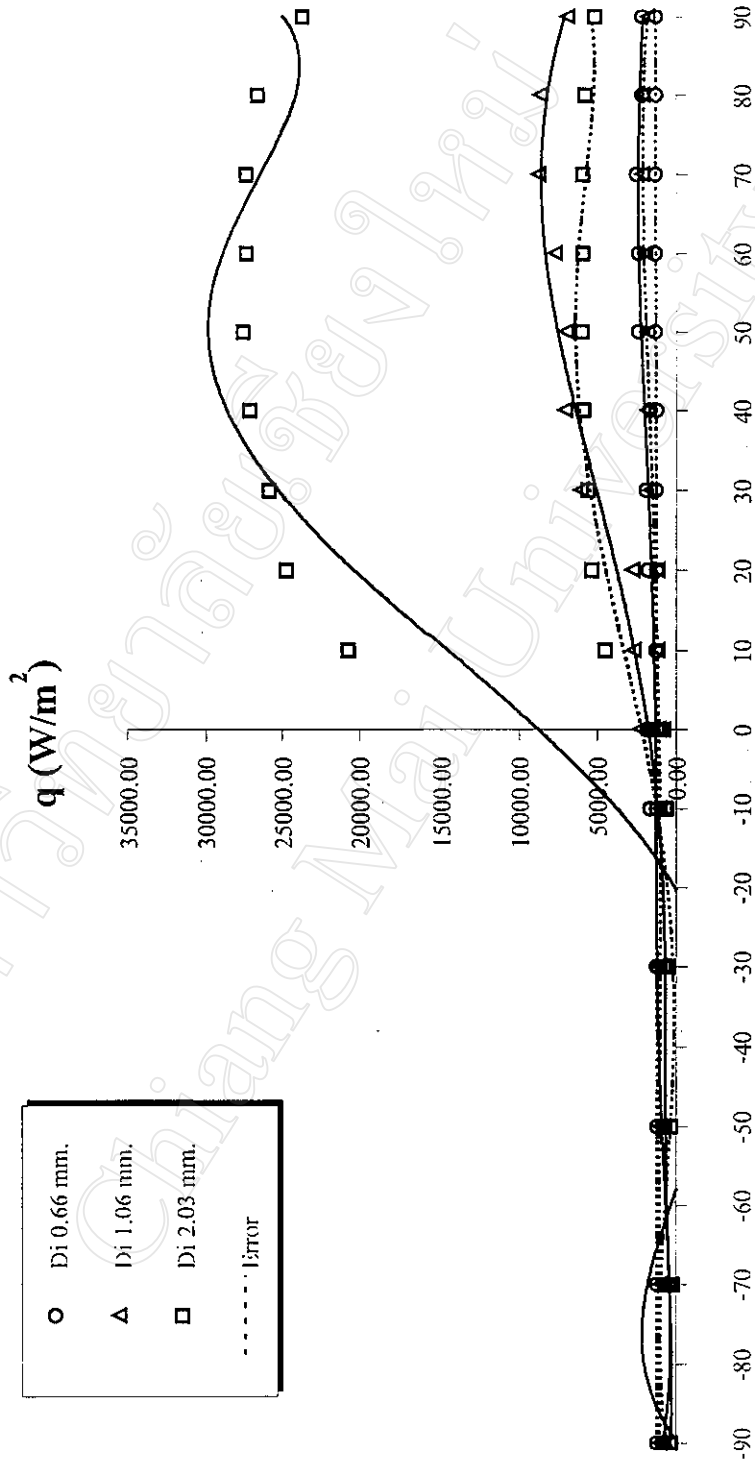
MP39, $L_e=5$ cm., $L_f=5$ m.



Inclination angle

รูปที่ ข-10 ผลของค่ามุมเชิงการทำงานที่มีต่อ q

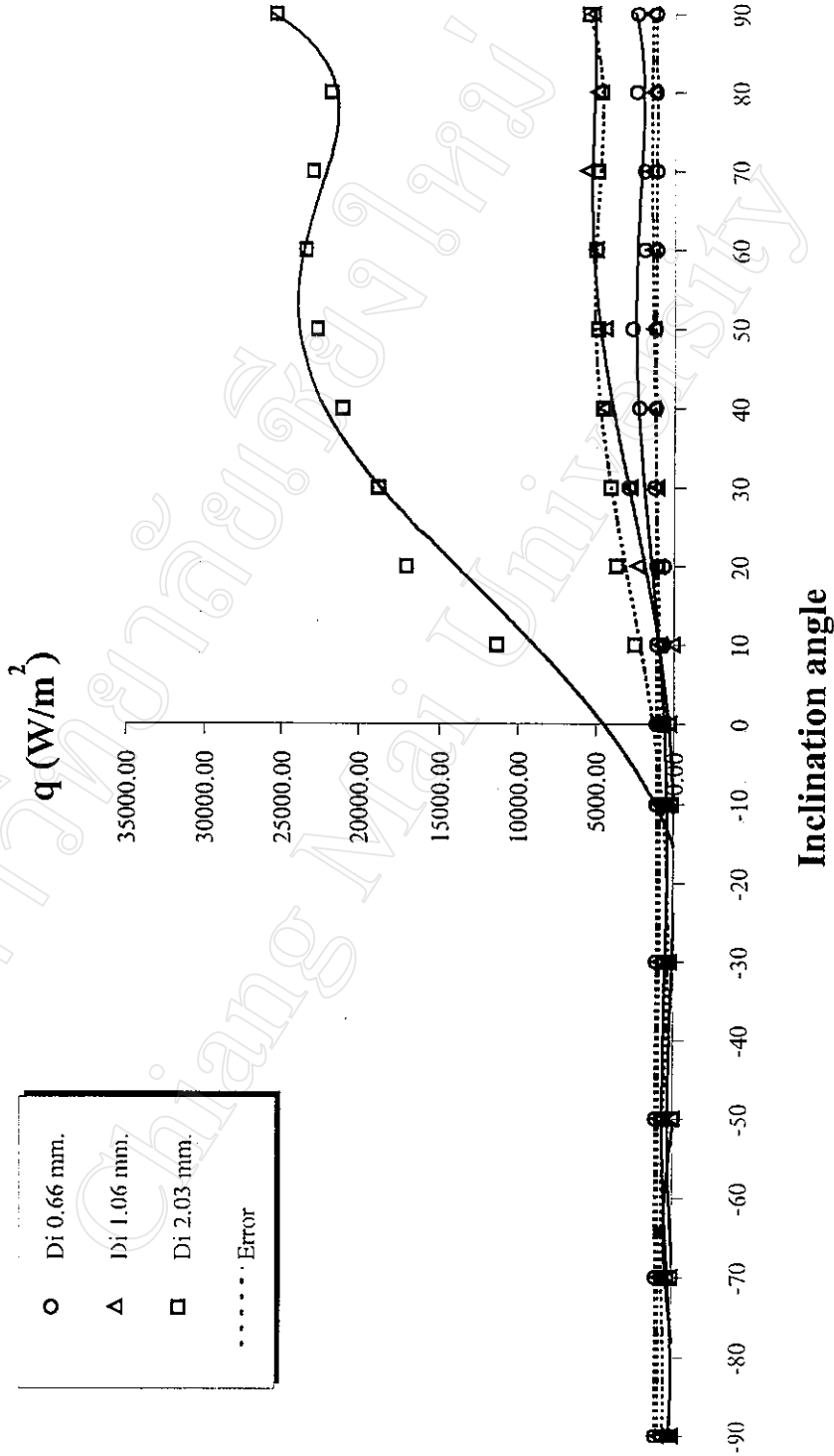
MP39, $L_e=10$ cm., $L_f=5$ m.



Inclination angle

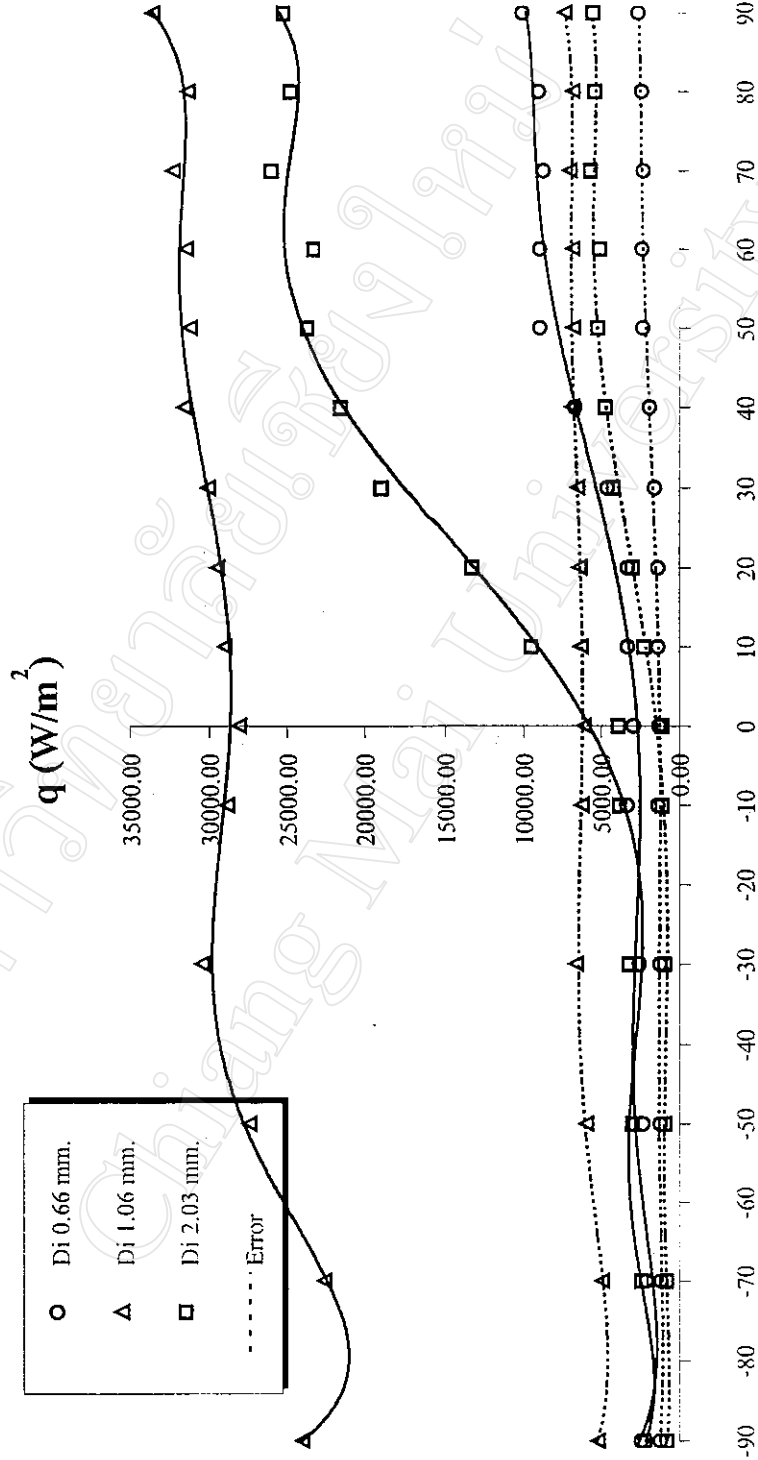
รูปที่ ข-11 ผลของค่ามุมเอียงการทำงานที่มีต่อ q

MP39, $L_e=15$ cm., $L_f=5$ m.



รูปที่ ข-12 ผลของค่ามุมเอียงการทำงานที่มีต่อ q

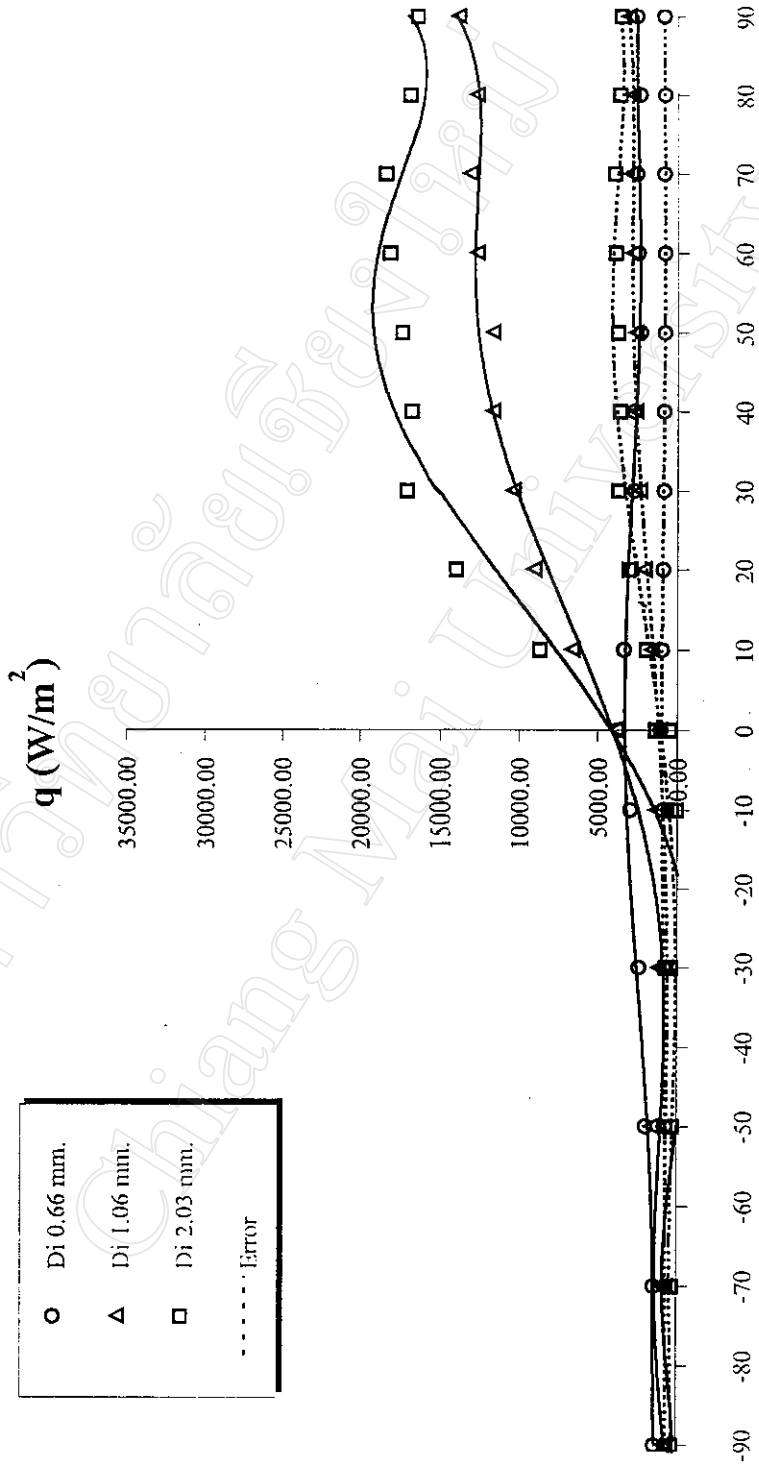
MP39, $L_e=5$ cm., $L_f=10$ m.



Inclination angle

รูปที่ ข-13 ผลของค่ามุมเอียงการทำงานที่มีต่อ q

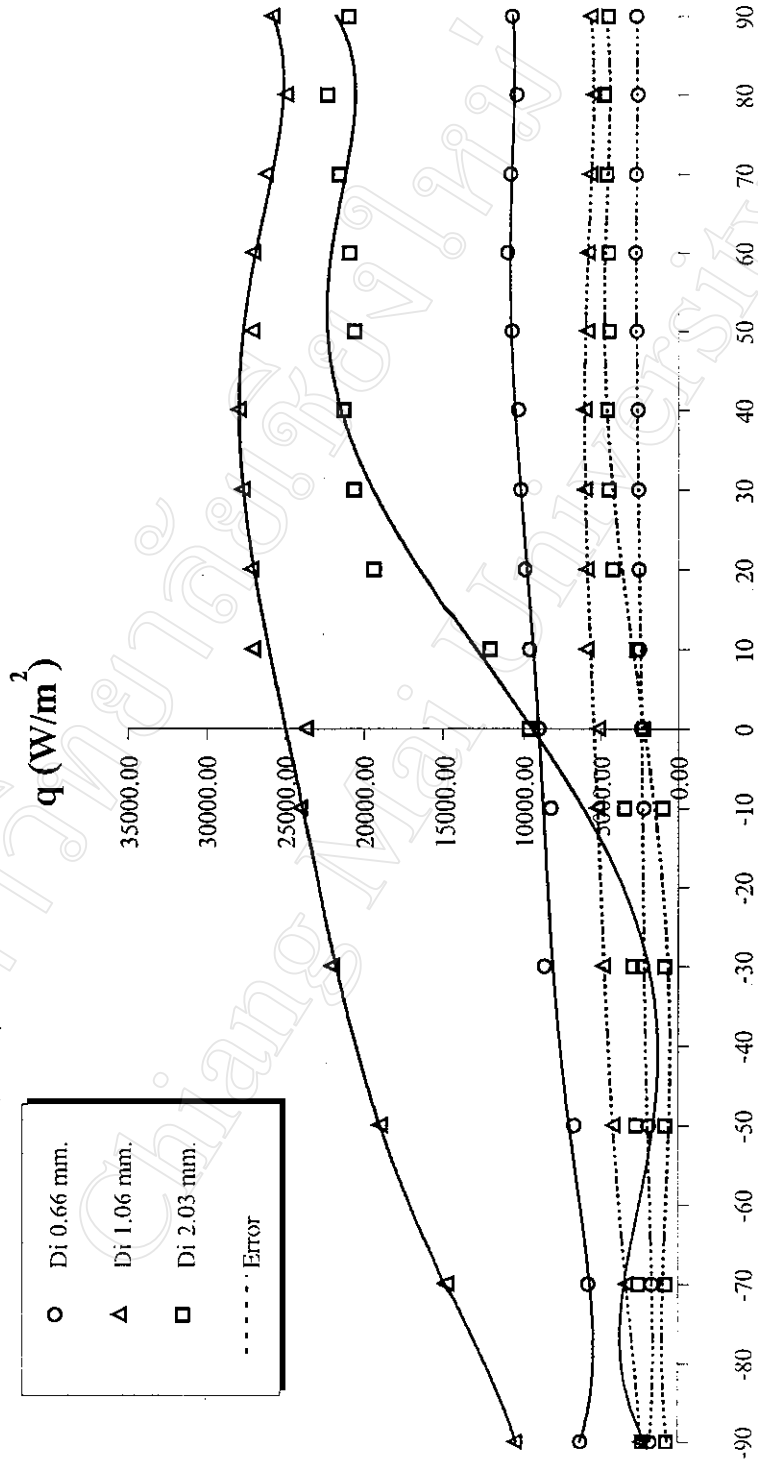
MP39, $L_e=10$ cm., $L_t=10$ m.



Inclination angle

รูปที่ ข-14 ผลของค่ามุมเชิงการทำงานที่มีต่อ q

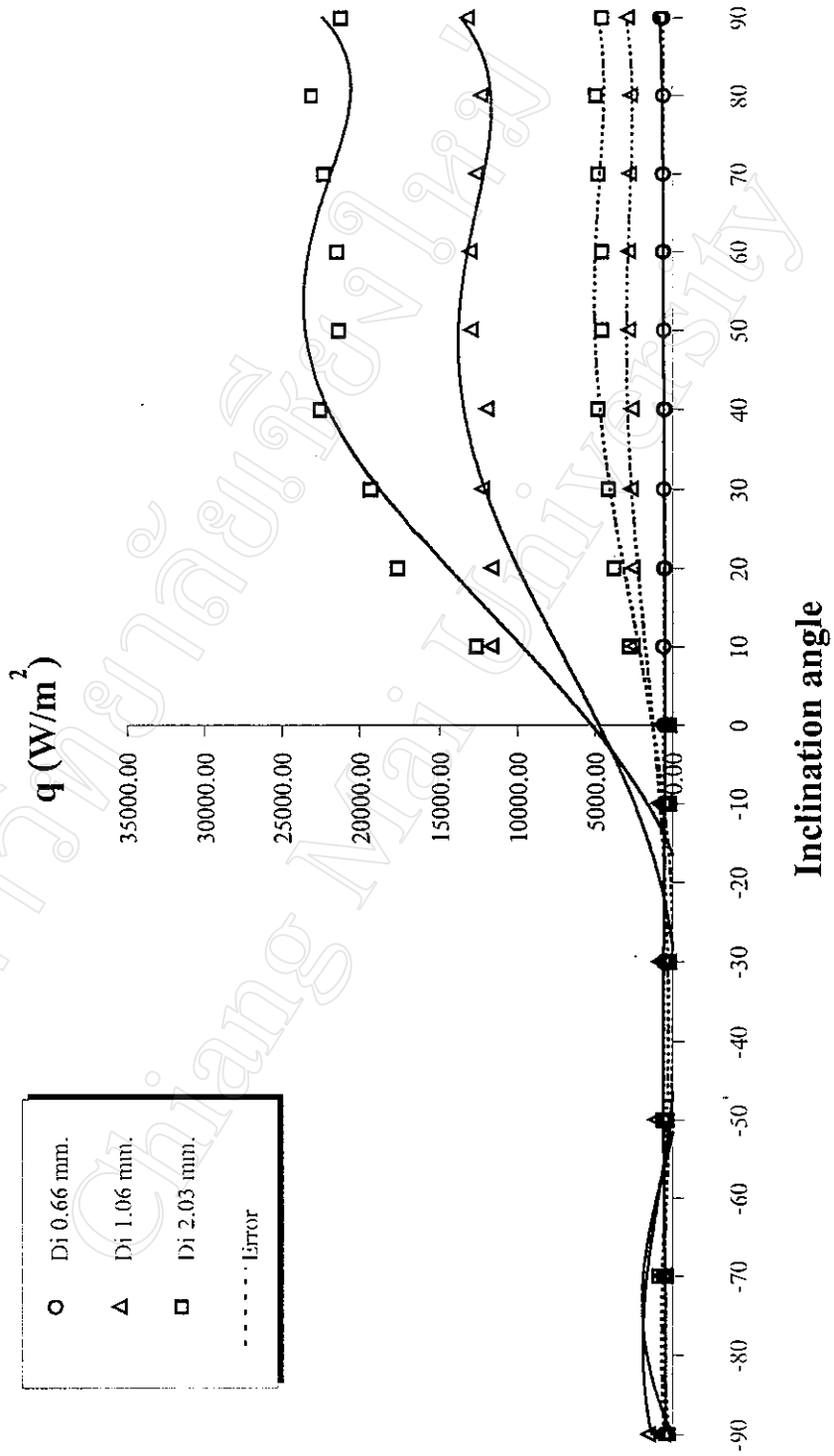
MP39, $L_e=5$ cm., $L_t=15$ m.



Inclination angle

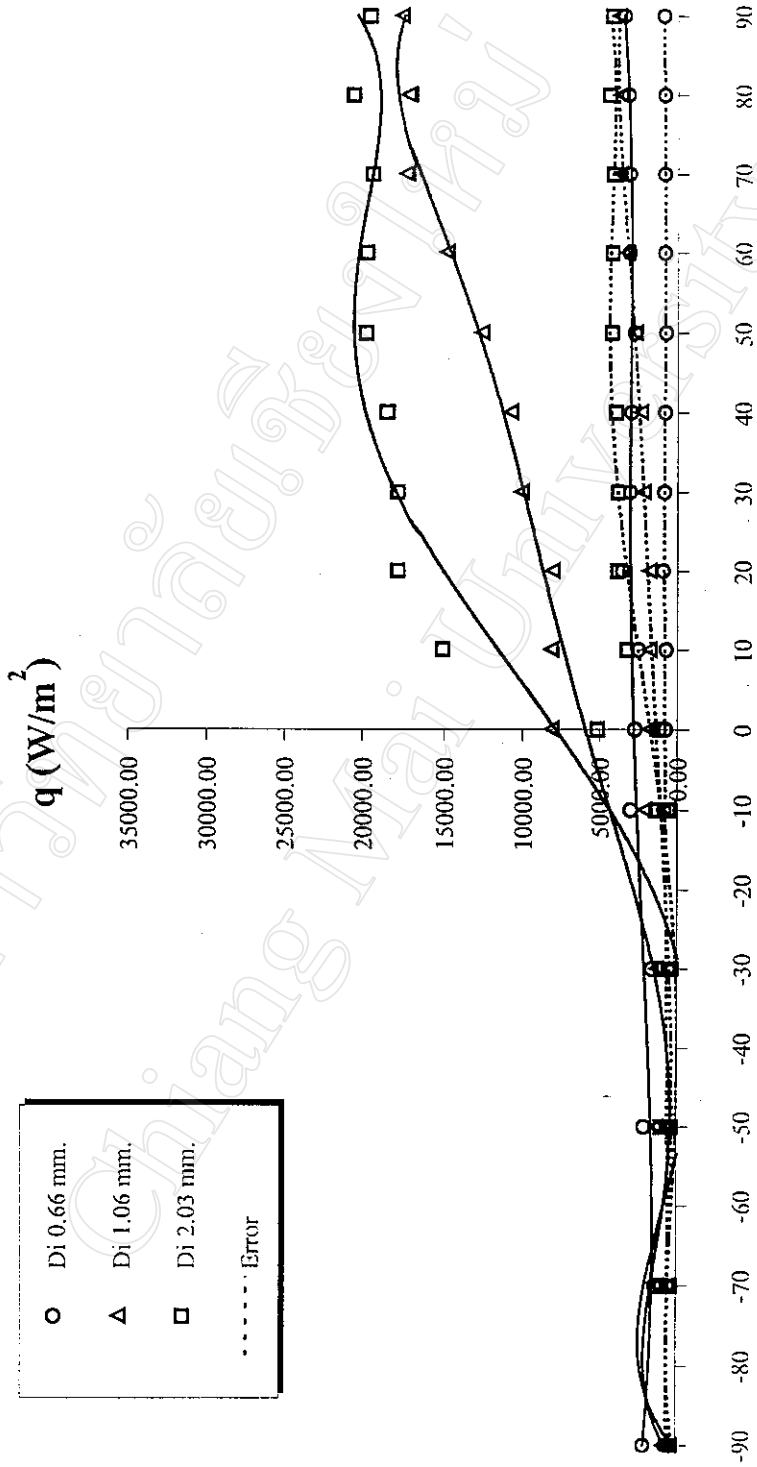
รูปที่ ข-15 ผลของค่ามุมเอียงการทำงานที่มีต่อ q

MP39, $L_e=15$ cm., $L_t=10$ m.



รูปที่ ข-16 ผลของค่ามุมเอียงการทำงานที่มีต่อ q

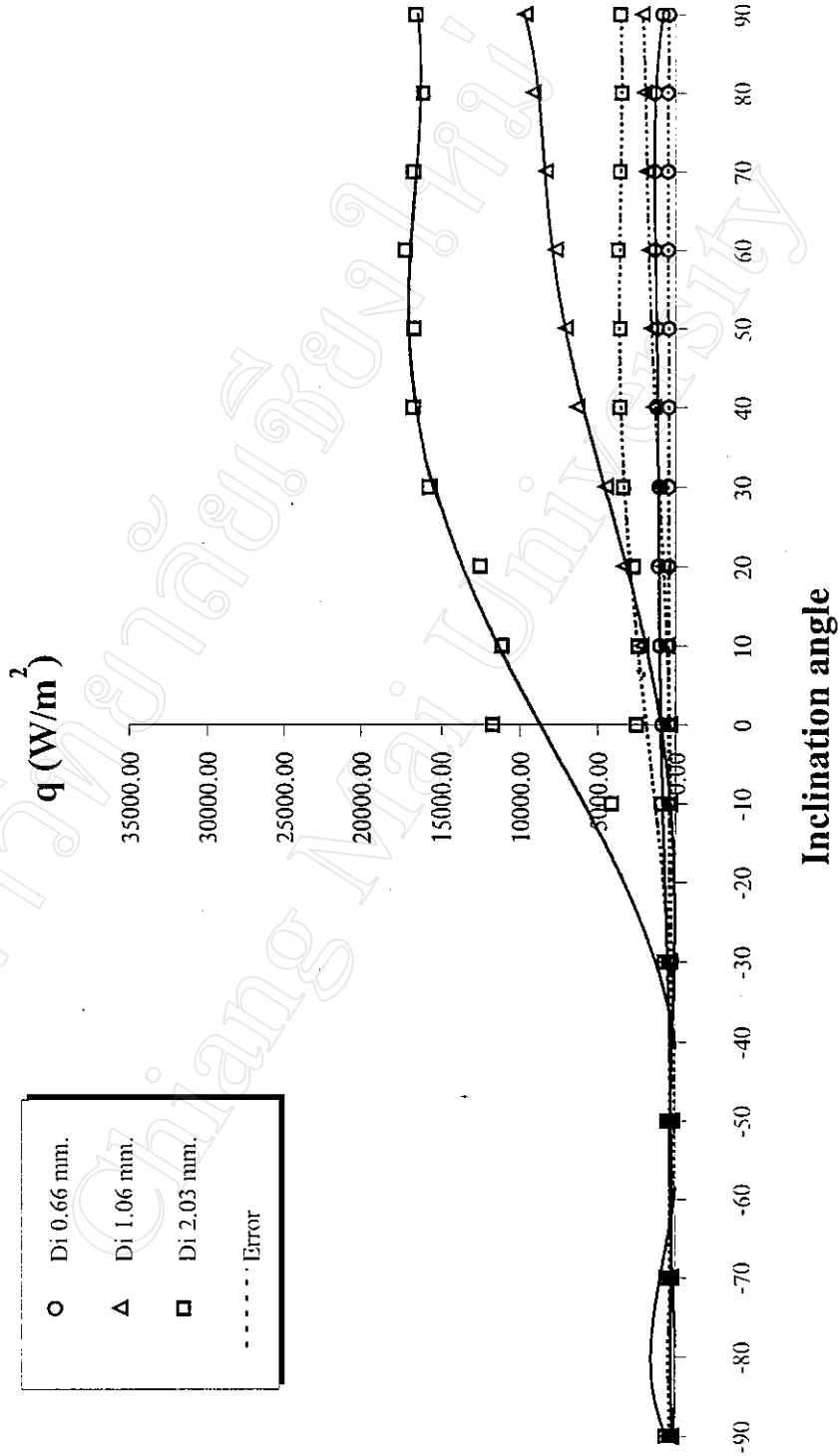
MP39, $L_e=10$ cm., $L_t=15$ m.



Inclination angle

รูปที่ ๑-17 ผลของค่ามุมเชิงการทำงานที่มีต่อ q

MP39, $L_e=15$ cm., $L_t=15$ m.



รูปที่ ข-18 ผลของค่ามุมเอียงการทำงานที่มีต่อ q

ภาคผนวก ค

ตารางคุณสมบัติของสารทำงาน HP62 และ MP39

ตารางคุณสมบัติของสารผสมน้ำและเอทิลีนไกลคอล

ตาราง ค-1 คุณสมบัติทางกายภาพของสารทำงาน HP62 และ MP39

| Property | HP62 | MP39 |
|---|---------------------------------|--------------------------------|
| Refrigerant Number | R-404A | R-401A |
| Replaces | R-502, R-22 | R-12 |
| Chemical Formular / Composition | R125/R143a/R134a 44/52/4 wt% | R22/R152a/R124 53/13/34 wt% |
| Molecular Weight | 97.6 | 94.4 |
| Boiling Point at 1 atm, °C | -46.5 | -33 |
| Liquid Density at 25 °C, kg/m ³ | 1048 | 1194 |
| Vapor Pressure of Satd. Liquid at 25 °C, kPa | 1255 | 772.9 |
| Heat Capacity of Liquid at 1 atm at 25 °C, kJ/kgK | 1.54 | 1.3 |
| Heat Capacity of Vapor at 1 atm at 25 °C, kJ/kgK | 0.867 | 0.737 |
| Thermal Conductivity of Liquid at 25 °C, W/mK | 0.0683 | 0.09 |
| Thermal Conductivity of Vapor at 1 atm, W/mK | 0.01346 | 0.0119 |
| Critical Temperature, °C | 72.1 | 108 |
| Critical Pressure, kPa | 3732 | 4604 |
| ODP, CFC-12=1 | 0 | 0.03 |

ตาราง ก-2 คุณสมบัติทางเทอร์โมไดนามิกส์ของสารทำงาน HP62

| Tem K | P(L) kPa | P(V) kPa | Density L kg/m ³ | Density V kg/m ³ | h(L) kJ/kg | h(V) kJ/kg | Cp L kJ/K-kg | Cp V kJ/K-kg | Viscosity L uPa-s | Viscosity V uPa-s | Therm Cond L W/m-K | Therm Cond V W/m-K | Surf Tension N/m |
|----------|-------------|-------------|--------------------------------|--------------------------------|---------------|---------------|-----------------|-----------------|----------------------|----------------------|-----------------------|-----------------------|---------------------|
| 273 | 611.3 | 600.9 | 1151 | 30.50 | 199.8 | 365.0 | 1.379 | 1.022 | 177.3 | 11.05 | 0.07783 | 0.01284 | 0.00750 |
| 274 | 630.8 | 620.3 | 1147 | 31.48 | 201.2 | 365.5 | 1.384 | 1.029 | 175.1 | 11.09 | 0.07741 | 0.01295 | 0.00738 |
| 275 | 650.7 | 640.1 | 1143 | 32.50 | 202.6 | 366.0 | 1.389 | 1.035 | 172.8 | 11.14 | 0.07698 | 0.01305 | 0.00727 |
| 276 | 671.1 | 660.3 | 1139 | 33.54 | 204.0 | 366.5 | 1.394 | 1.042 | 170.6 | 11.19 | 0.07656 | 0.01316 | 0.00715 |
| 277 | 692.0 | 681.1 | 1135 | 34.61 | 205.4 | 367.0 | 1.399 | 1.049 | 168.4 | 11.24 | 0.07614 | 0.01327 | 0.00703 |
| 278 | 713.4 | 702.3 | 1131 | 35.71 | 206.8 | 367.5 | 1.404 | 1.057 | 166.2 | 11.29 | 0.07571 | 0.01338 | 0.00691 |
| 279 | 735.3 | 724.0 | 1127 | 36.83 | 208.2 | 367.9 | 1.409 | 1.064 | 164.0 | 11.34 | 0.07529 | 0.01349 | 0.00679 |
| 280 | 757.6 | 746.2 | 1123 | 37.99 | 209.6 | 368.4 | 1.414 | 1.071 | 161.9 | 11.39 | 0.07487 | 0.01361 | 0.00667 |
| 281 | 780.5 | 768.9 | 1119 | 39.18 | 211.0 | 368.9 | 1.419 | 1.079 | 159.8 | 11.44 | 0.07445 | 0.01372 | 0.00656 |
| 282 | 803.9 | 792.2 | 1115 | 40.40 | 212.4 | 369.3 | 1.425 | 1.087 | 157.7 | 11.49 | 0.07403 | 0.01384 | 0.00644 |
| 283 | 827.8 | 815.9 | 1111 | 41.65 | 213.8 | 369.8 | 1.430 | 1.095 | 155.7 | 11.55 | 0.07361 | 0.01396 | 0.00632 |
| 284 | 852.2 | 840.2 | 1107 | 42.94 | 215.3 | 370.3 | 1.436 | 1.103 | 153.6 | 11.60 | 0.07319 | 0.01409 | 0.00620 |
| 285 | 877.2 | 865.0 | 1103 | 44.26 | 216.7 | 370.7 | 1.442 | 1.111 | 151.6 | 11.65 | 0.07277 | 0.01421 | 0.00608 |
| 286 | 902.7 | 890.4 | 1099 | 45.62 | 218.1 | 371.1 | 1.448 | 1.120 | 149.6 | 11.71 | 0.07235 | 0.01434 | 0.00596 |
| 287 | 928.8 | 916.3 | 1094 | 47.02 | 219.6 | 371.6 | 1.454 | 1.129 | 147.6 | 11.76 | 0.07193 | 0.01447 | 0.00584 |
| 288 | 955.4 | 942.8 | 1090 | 48.45 | 221.0 | 372.0 | 1.461 | 1.138 | 145.6 | 11.82 | 0.07151 | 0.01460 | 0.00573 |
| 289 | 982.6 | 969.8 | 1086 | 49.92 | 222.5 | 372.4 | 1.467 | 1.147 | 143.7 | 11.87 | 0.07109 | 0.01473 | 0.00561 |
| 290 | 1010 | 997.4 | 1081 | 51.43 | 224.0 | 372.8 | 1.474 | 1.157 | 141.8 | 11.93 | 0.07068 | 0.01487 | 0.00549 |
| 291 | 1039 | 1026 | 1077 | 52.99 | 225.4 | 373.2 | 1.481 | 1.167 | 139.9 | 11.99 | 0.07026 | 0.01501 | 0.00537 |
| 292 | 1068 | 1054 | 1073 | 54.58 | 226.9 | 373.7 | 1.488 | 1.177 | 138.0 | 12.04 | 0.06984 | 0.01515 | 0.00525 |
| 293 | 1097 | 1084 | 1068 | 56.22 | 228.4 | 374.0 | 1.495 | 1.187 | 136.1 | 12.10 | 0.06942 | 0.01530 | 0.00514 |
| 294 | 1127 | 1114 | 1064 | 57.91 | 229.9 | 374.4 | 1.503 | 1.198 | 134.2 | 12.16 | 0.06900 | 0.01545 | 0.00502 |
| 295 | 1158 | 1144 | 1059 | 59.64 | 231.4 | 374.8 | 1.510 | 1.209 | 132.4 | 12.22 | 0.06859 | 0.01560 | 0.00490 |
| 296 | 1189 | 1176 | 1054 | 61.42 | 232.9 | 375.2 | 1.518 | 1.220 | 130.5 | 12.29 | 0.06817 | 0.01576 | 0.00478 |
| 297 | 1221 | 1208 | 1050 | 63.25 | 234.4 | 375.5 | 1.527 | 1.232 | 128.7 | 12.35 | 0.06775 | 0.01592 | 0.00467 |
| 298 | 1254 | 1240 | 1045 | 65.13 | 235.9 | 375.9 | 1.535 | 1.245 | 126.9 | 12.41 | 0.06733 | 0.01608 | 0.00455 |
| 299 | 1287 | 1273 | 1040 | 67.07 | 237.4 | 376.2 | 1.544 | 1.257 | 125.1 | 12.48 | 0.06692 | 0.01625 | 0.00443 |
| 300 | 1321 | 1307 | 1035 | 69.06 | 239.0 | 376.6 | 1.553 | 1.271 | 123.4 | 12.54 | 0.06650 | 0.01642 | 0.00432 |
| 301 | 1356 | 1342 | 1030 | 71.11 | 240.5 | 376.9 | 1.563 | 1.284 | 121.6 | 12.61 | 0.06608 | 0.01660 | 0.00420 |
| 302 | 1391 | 1377 | 1025 | 73.21 | 242.1 | 377.2 | 1.572 | 1.299 | 119.8 | 12.68 | 0.06566 | 0.01679 | 0.00409 |
| 303 | 1427 | 1413 | 1020 | 75.38 | 243.6 | 377.5 | 1.583 | 1.313 | 118.1 | 12.75 | 0.06524 | 0.01698 | 0.00397 |
| 304 | 1464 | 1449 | 1015 | 77.62 | 245.2 | 377.8 | 1.593 | 1.329 | 116.4 | 12.82 | 0.06482 | 0.01717 | 0.00386 |
| 305 | 1501 | 1486 | 1010 | 79.92 | 246.7 | 378.1 | 1.604 | 1.345 | 114.7 | 12.90 | 0.06440 | 0.01738 | 0.00374 |
| 306 | 1539 | 1524 | 1005 | 82.29 | 248.3 | 378.4 | 1.616 | 1.362 | 112.9 | 12.97 | 0.06398 | 0.01759 | 0.00363 |
| 307 | 1578 | 1563 | 999.6 | 84.74 | 249.9 | 378.7 | 1.628 | 1.380 | 111.2 | 13.05 | 0.06356 | 0.01780 | 0.00351 |
| 308 | 1618 | 1603 | 994.2 | 87.26 | 251.5 | 378.9 | 1.640 | 1.398 | 109.6 | 13.13 | 0.06314 | 0.01803 | 0.0034 |
| 309 | 1658 | 1643 | 988.8 | 89.86 | 253.1 | 379.1 | 1.653 | 1.418 | 107.9 | 13.21 | 0.06272 | 0.01826 | 0.00329 |
| 310 | 1699 | 1684 | 983.2 | 92.54 | 254.7 | 379.4 | 1.667 | 1.438 | 106.2 | 13.29 | 0.06229 | 0.01850 | 0.00318 |
| 311 | 1741 | 1726 | 977.6 | 95.30 | 256.4 | 379.6 | 1.681 | 1.460 | 104.5 | 13.38 | 0.06187 | 0.01875 | 0.00306 |
| 312 | 1783 | 1768 | 971.8 | 98.16 | 258.0 | 379.8 | 1.697 | 1.483 | 102.9 | 13.46 | 0.06145 | 0.01901 | 0.00295 |
| 313 | 1827 | 1811 | 966.0 | 101.1 | 259.7 | 379.9 | 1.713 | 1.507 | 101.2 | 13.55 | 0.06102 | 0.01928 | 0.00284 |
| 314 | 1871 | 1855 | 960.1 | 104.2 | 261.3 | 380.1 | 1.729 | 1.532 | 99.58 | 13.65 | 0.06060 | 0.01956 | 0.00273 |
| 315 | 1916 | 1900 | 954.1 | 107.3 | 263.0 | 380.3 | 1.747 | 1.559 | 97.94 | 13.74 | 0.06017 | 0.01986 | 0.00262 |
| 316 | 1962 | 1946 | 947.9 | 110.6 | 264.7 | 380.4 | 1.766 | 1.588 | 96.31 | 13.84 | 0.05974 | 0.02017 | 0.00251 |
| 317 | 2008 | 1993 | 941.7 | 114.0 | 266.4 | 380.5 | 1.786 | 1.619 | 94.67 | 13.94 | 0.05932 | 0.02049 | 0.00241 |
| 318 | 2056 | 2040 | 935.3 | 117.5 | 268.1 | 380.6 | 1.808 | 1.652 | 93.04 | 14.05 | 0.05889 | 0.02083 | 0.0023 |
| 319 | 2104 | 2088 | 928.7 | 121.1 | 269.9 | 380.6 | 1.831 | 1.687 | 91.41 | 14.16 | 0.05846 | 0.02118 | 0.00219 |

ตาราง ค-2 คุณสมบัติทางเทอร์โมไดนามิกส์ของสารทำงาน HP62 (ต่อ)

| Tem | P(L) | P(V) | Density L | Density V | h(L) | h(V) | Cp L | Cp V | Viscosity L | Viscosity V | Therm Cond L | Therm Cond V | Surf Tension |
|-----|------|------|-------------------|-------------------|-------|-------|---------|---------|-------------|-------------|--------------|--------------|--------------|
| K | kPa | kPa | kg/m ³ | kg/m ³ | kJ/kg | kJ/kg | kJ/K-kg | kJ/K-kg | uPa-s | uPa-s | W m-K | W/m-K | N/m |
| 320 | 2153 | 2137 | 922.1 | 124.9 | 271.6 | 380.7 | 1.855 | 1.725 | 89.79 | 14.27 | 0.05803 | 0.02156 | 0.00209 |
| 321 | 2203 | 2187 | 915.3 | 126.8 | 273.4 | 380.7 | 1.882 | 1.766 | 88.16 | 14.39 | 0.05760 | 0.02195 | 0.00199 |
| 322 | 2254 | 2238 | 908.3 | 132.9 | 275.2 | 380.7 | 1.910 | 1.810 | 86.53 | 14.51 | 0.05717 | 0.02237 | 0.00188 |
| 323 | 2306 | 2290 | 901.1 | 137.2 | 277.0 | 380.7 | 1.941 | 1.858 | 84.90 | 14.64 | 0.05674 | 0.02281 | 0.00178 |
| 324 | 2359 | 2343 | 893.8 | 141.6 | 278.8 | 380.6 | 1.974 | 1.911 | 83.27 | 14.77 | 0.05631 | 0.02328 | 0.00168 |
| 325 | 2412 | 2397 | 886.3 | 146.2 | 280.6 | 380.5 | 2.011 | 1.968 | 81.63 | 14.91 | 0.05588 | 0.02377 | 0.00158 |
| 326 | 2467 | 2451 | 878.6 | 151.1 | 282.5 | 380.4 | 2.051 | 2.032 | 79.98 | 15.06 | 0.05545 | 0.0243 | 0.00148 |
| 327 | 2522 | 2507 | 870.6 | 156.2 | 284.4 | 380.2 | 2.095 | 2.102 | 78.33 | 15.21 | 0.05502 | 0.02486 | 0.00138 |
| 328 | 2579 | 2564 | 862.4 | 161.5 | 286.3 | 380 | 2.144 | 2.18 | 76.67 | 15.38 | 0.05459 | 0.02547 | 0.00129 |
| 329 | 2637 | 2622 | 853.9 | 167.1 | 288.2 | 379.8 | 2.198 | 2.267 | 74.99 | 15.55 | 0.05417 | 0.02611 | 0.00119 |
| 330 | 2695 | 2680 | 845 | 173 | 290.2 | 379.5 | 2.26 | 2.366 | 73.3 | 15.73 | 0.05375 | 0.02681 | 0.0011 |
| 331 | 2755 | 2740 | 835.9 | 179.2 | 292.2 | 379.1 | 2.33 | 2.478 | 71.6 | 15.93 | 0.05334 | 0.02756 | 0.00101 |
| 332 | 2816 | 2801 | 826.4 | 185.8 | 294.3 | 378.7 | 2.41 | 2.607 | 69.87 | 16.14 | 0.05293 | 0.02838 | 0.00092 |
| 333 | 2877 | 2863 | 816.4 | 192.8 | 296.4 | 378.2 | 2.502 | 2.757 | 68.11 | 16.36 | 0.05254 | 0.02928 | 0.00083 |
| 334 | 2940 | 2926 | 806 | 200.3 | 298.5 | 377.7 | 2.611 | 2.933 | 66.33 | 16.6 | 0.05216 | 0.03027 | 0.00074 |
| 335 | 3004 | 2990 | 795 | 208.3 | 300.7 | 377.1 | 2.741 | 3.143 | 64.5 | 16.87 | 0.05181 | 0.03136 | 0.00066 |
| 336 | 3069 | 3056 | 783.4 | 217 | 303 | 376.3 | 2.899 | 3.398 | 62.64 | 17.16 | 0.05148 | 0.03258 | 0.00058 |
| 337 | 3136 | 3123 | 771 | 226.4 | 305.3 | 375.5 | 3.096 | 3.714 | 60.71 | 17.48 | 0.0512 | 0.03397 | 0.0005 |
| 338 | 3203 | 3191 | 757.7 | 236.8 | 307.8 | 374.5 | 3.347 | 4.117 | 58.72 | 17.84 | 0.05099 | 0.03556 | 0.00042 |
| 339 | 3272 | 3260 | 743.2 | 248.2 | 310.3 | 373.4 | 3.681 | 4.647 | 56.64 | 18.25 | 0.05087 | 0.03743 | 0.00035 |
| 340 | 3342 | 3331 | 727.3 | 261.1 | 313 | 372 | 4.149 | 5.378 | 54.44 | 18.73 | 0.05089 | 0.03968 | 0.00027 |
| 341 | 3414 | 3403 | 709.3 | 275.9 | 315.9 | 370.3 | 4.849 | 6.452 | 52.07 | 19.29 | 0.05115 | 0.04252 | 0.00021 |
| 342 | 3560 | 3477 | 710.7 | 293.5 | 317.1 | 368.3 | 4.358 | 8.183 | 52.32 | 19.99 | 0.05064 | 0.04628 | 0.00015 |

ตาราง ค-3 คุณสมบัติทางเทอร์โมไดนามิกส์ของสารทำงาน MP39

| Temp K | P(L) kPa | P(V) kPa | Density L kg/m ³ | Density V kg/m ³ | h(L) kJ/kg | h(V) kJ/kg | Cp L kJ/K-kg | Cp V kJ/K-kg | Viscosity L uPa-s | Viscosity V uPa-s | Therm Cond L W/m-K | Therm Cond V W/m-K | Surf Tension N/m |
|-----------|-------------|-------------|--------------------------------|--------------------------------|---------------|---------------|-----------------|-----------------|----------------------|----------------------|-----------------------|-----------------------|---------------------|
| 273 | 380.7 | 320.8 | 1266 | 14.56 | 199.8 | 401.2 | 1.207 | 0.7755 | 232.8 | 11.05 | 0.08984 | 0.00985 | 0.01245 |
| 274 | 393.6 | 332.3 | 1262 | 15.06 | 201 | 401.7 | 1.209 | 0.7792 | 230.2 | 11.1 | 0.08943 | 0.00993 | 0.01231 |
| 275 | 406.7 | 344.1 | 1259 | 15.57 | 202.2 | 402.2 | 1.212 | 0.783 | 227.7 | 11.1 | 0.08903 | 0.00994 | 0.01216 |
| 276 | 420.2 | 356.2 | 1256 | 16.1 | 203.5 | 402.7 | 1.215 | 0.7868 | 225.1 | 11.15 | 0.08862 | 0.01002 | 0.01202 |
| 277 | 434 | 368.7 | 1253 | 16.64 | 204.7 | 403.2 | 1.217 | 0.7907 | 222.6 | 11.19 | 0.08822 | 0.01009 | 0.01187 |
| 278 | 448.1 | 381.4 | 1250 | 17.19 | 205.9 | 403.6 | 1.22 | 0.7946 | 220.1 | 11.24 | 0.08782 | 0.01017 | 0.01173 |
| 279 | 462.6 | 394.5 | 1246 | 17.76 | 207.1 | 404.1 | 1.223 | 0.7986 | 217.7 | 11.28 | 0.08742 | 0.01024 | 0.01159 |
| 280 | 477.4 | 407.9 | 1243 | 18.35 | 208.4 | 404.6 | 1.226 | 0.8026 | 215.3 | 11.33 | 0.08701 | 0.01032 | 0.01144 |
| 281 | 492.6 | 421.7 | 1240 | 18.95 | 209.6 | 405.1 | 1.228 | 0.8067 | 212.9 | 11.37 | 0.08661 | 0.01039 | 0.0113 |
| 282 | 508.2 | 435.8 | 1237 | 19.56 | 210.8 | 405.5 | 1.231 | 0.8108 | 210.5 | 11.42 | 0.08621 | 0.01047 | 0.01116 |
| 283 | 524.1 | 450.3 | 1233 | 20.19 | 212.1 | 406 | 1.234 | 0.815 | 208.2 | 11.46 | 0.08581 | 0.01055 | 0.01101 |
| 284 | 540.4 | 465.2 | 1230 | 20.84 | 213.3 | 406.5 | 1.237 | 0.8193 | 205.9 | 11.51 | 0.08541 | 0.01063 | 0.01087 |
| 285 | 557.1 | 480.4 | 1227 | 21.5 | 214.5 | 406.9 | 1.24 | 0.8236 | 203.6 | 11.55 | 0.08501 | 0.01071 | 0.01073 |
| 286 | 574.1 | 496 | 1223 | 22.18 | 215.8 | 407.4 | 1.243 | 0.828 | 201.4 | 11.6 | 0.08461 | 0.01079 | 0.01059 |
| 287 | 591.5 | 511.9 | 1220 | 22.88 | 217 | 407.8 | 1.246 | 0.8324 | 199.1 | 11.64 | 0.08421 | 0.01087 | 0.01045 |
| 288 | 609.4 | 528.3 | 1217 | 23.6 | 218.3 | 408.3 | 1.249 | 0.8369 | 196.9 | 11.69 | 0.08381 | 0.01095 | 0.01031 |
| 289 | 627.6 | 545 | 1213 | 24.33 | 219.5 | 408.7 | 1.253 | 0.8414 | 194.8 | 11.73 | 0.08342 | 0.01103 | 0.01017 |
| 290 | 646.2 | 562.1 | 1210 | 25.08 | 220.8 | 409.2 | 1.256 | 0.8461 | 192.6 | 11.78 | 0.08302 | 0.01111 | 0.01003 |
| 291 | 665.3 | 579.7 | 1206 | 25.85 | 222 | 409.6 | 1.259 | 0.8508 | 190.5 | 11.82 | 0.08262 | 0.0112 | 0.00989 |
| 292 | 684.7 | 597.6 | 1203 | 26.64 | 223.3 | 410.1 | 1.263 | 0.8556 | 188.4 | 11.87 | 0.08222 | 0.01128 | 0.00975 |
| 293 | 704.6 | 616 | 1200 | 27.45 | 224.6 | 410.5 | 1.266 | 0.8604 | 186.3 | 11.91 | 0.08183 | 0.01136 | 0.00961 |
| 294 | 724.9 | 634.8 | 1196 | 28.27 | 225.8 | 410.9 | 1.27 | 0.8653 | 184.2 | 11.96 | 0.08143 | 0.01145 | 0.00947 |
| 295 | 745.6 | 654 | 1193 | 29.12 | 227.1 | 411.4 | 1.273 | 0.8703 | 182.2 | 12 | 0.08103 | 0.01154 | 0.00934 |
| 296 | 766.8 | 673.6 | 1189 | 29.99 | 228.4 | 411.8 | 1.277 | 0.8754 | 180.1 | 12.05 | 0.08064 | 0.01163 | 0.0092 |
| 297 | 788.4 | 693.7 | 1185 | 30.88 | 229.7 | 412.2 | 1.28 | 0.8806 | 178.1 | 12.1 | 0.08024 | 0.01171 | 0.00906 |
| 298 | 810.5 | 714.2 | 1182 | 31.79 | 231 | 412.6 | 1.284 | 0.8859 | 176.1 | 12.14 | 0.07985 | 0.0118 | 0.00893 |
| 299 | 833 | 735.2 | 1178 | 32.73 | 232.2 | 413 | 1.288 | 0.8912 | 174.2 | 12.19 | 0.07945 | 0.01189 | 0.00879 |
| 300 | 856 | 756.6 | 1175 | 33.68 | 233.5 | 413.4 | 1.292 | 0.8967 | 172.2 | 12.24 | 0.07906 | 0.01199 | 0.00865 |
| 301 | 879.4 | 778.5 | 1171 | 34.66 | 234.8 | 413.9 | 1.296 | 0.9022 | 170.3 | 12.29 | 0.07866 | 0.01208 | 0.00852 |
| 302 | 903.3 | 800.9 | 1167 | 35.67 | 236.1 | 414.3 | 1.3 | 0.9079 | 168.4 | 12.34 | 0.07827 | 0.01217 | 0.00838 |
| 303 | 927.7 | 823.8 | 1164 | 36.7 | 237.4 | 414.6 | 1.304 | 0.9137 | 166.5 | 12.38 | 0.07787 | 0.01227 | 0.00825 |
| 304 | 952.6 | 847.1 | 1160 | 37.75 | 238.7 | 415 | 1.308 | 0.9195 | 164.6 | 12.43 | 0.07748 | 0.01237 | 0.00811 |
| 305 | 978 | 870.9 | 1156 | 38.83 | 240 | 415.4 | 1.313 | 0.9255 | 162.7 | 12.47 | 0.07708 | 0.01246 | 0.00798 |
| 306 | 1004 | 895.3 | 1152 | 39.93 | 241.4 | 415.8 | 1.317 | 0.9316 | 160.9 | 12.52 | 0.07669 | 0.01256 | 0.00785 |
| 307 | 1030 | 920.1 | 1149 | 41.06 | 242.7 | 416.2 | 1.322 | 0.9378 | 159.1 | 12.56 | 0.0763 | 0.01267 | 0.00771 |
| 308 | 1057 | 945.4 | 1145 | 42.22 | 244 | 416.6 | 1.326 | 0.9442 | 157.2 | 12.61 | 0.0759 | 0.01277 | 0.00758 |
| 309 | 1084 | 971.3 | 1141 | 43.41 | 245.3 | 416.9 | 1.331 | 0.9507 | 155.4 | 12.65 | 0.07551 | 0.01287 | 0.00745 |
| 310 | 1112 | 997.7 | 1137 | 44.62 | 246.7 | 417.3 | 1.336 | 0.9573 | 153.7 | 12.7 | 0.07512 | 0.01298 | 0.00732 |
| 311 | 1141 | 1025 | 1133 | 45.87 | 248 | 417.6 | 1.341 | 0.9641 | 151.9 | 12.75 | 0.07472 | 0.01309 | 0.00719 |
| 312 | 1170 | 1052 | 1129 | 47.14 | 249.3 | 418 | 1.346 | 0.971 | 150.1 | 12.8 | 0.07433 | 0.0132 | 0.00706 |
| 313 | 1199 | 1080 | 1125 | 48.44 | 250.7 | 418.3 | 1.351 | 0.9781 | 148.4 | 12.85 | 0.07393 | 0.01331 | 0.00693 |
| 314 | 1229 | 1109 | 1121 | 49.78 | 252 | 418.7 | 1.357 | 0.9853 | 146.7 | 12.9 | 0.07354 | 0.01342 | 0.0068 |
| 315 | 1260 | 1138 | 1117 | 51.15 | 253.4 | 419 | 1.362 | 0.9927 | 144.9 | 12.95 | 0.07315 | 0.01354 | 0.00667 |
| 316 | 1291 | 1167 | 1113 | 52.55 | 254.7 | 419.3 | 1.368 | 1 | 143.2 | 13 | 0.07275 | 0.01365 | 0.00654 |
| 317 | 1323 | 1198 | 1109 | 53.99 | 256.1 | 419.7 | 1.374 | 1.008 | 141.5 | 13.06 | 0.07236 | 0.01377 | 0.00641 |
| 318 | 1355 | 1228 | 1105 | 55.46 | 257.5 | 420 | 1.38 | 1.016 | 139.9 | 13.11 | 0.07196 | 0.0139 | 0.00628 |
| 319 | 1388 | 1260 | 1101 | 56.97 | 258.8 | 420.3 | 1.386 | 1.024 | 138.2 | 13.16 | 0.07157 | 0.01402 | 0.00615 |

ตาราง ค-3 คุณสมบัติทางเทอร์โมไดนามิกของสารทำงาน MP39 (ต่อ)

| Temp | P(L) | P(V) | Density L | Density V | h(L) | h(V) | Cp L | Cp V | Viscosity L | Viscosity V | Therm Cond L | Therm Cond V | Surf Tension |
|------|------|------|-------------------|-------------------|-------|-------|---------|---------|-------------|-------------|--------------|--------------|--------------|
| K | kPa | kPa | kg/m ³ | kg/m ³ | kJ/kg | kJ/kg | kJ/K-kg | kJ/K-kg | uPa-s | uPa-s | W/m-K | W/m-K | N/m |
| 320 | 1421 | 1292 | 1097 | 58.51 | 260.2 | 420.6 | 1.392 | 1.033 | 136.5 | 13.22 | 0.07117 | 0.01415 | 0.00603 |
| 321 | 1455 | 1325 | 1093 | 60.09 | 261.6 | 420.9 | 1.399 | 1.041 | 134.9 | 13.28 | 0.07078 | 0.01428 | 0.0059 |
| 322 | 1490 | 1358 | 1088 | 61.72 | 263 | 421.2 | 1.405 | 1.05 | 133.3 | 13.33 | 0.07038 | 0.01441 | 0.00578 |
| 323 | 1525 | 1392 | 1084 | 63.38 | 264.4 | 421.5 | 1.412 | 1.059 | 131.6 | 13.39 | 0.06999 | 0.01455 | 0.00565 |
| 324 | 1561 | 1426 | 1080 | 65.08 | 265.8 | 421.7 | 1.419 | 1.069 | 130 | 13.45 | 0.06959 | 0.01468 | 0.00553 |
| 325 | 1597 | 1461 | 1075 | 66.83 | 267.2 | 422 | 1.427 | 1.079 | 128.4 | 13.51 | 0.0692 | 0.01483 | 0.0054 |
| 326 | 1635 | 1497 | 1071 | 68.62 | 268.6 | 422.3 | 1.434 | 1.089 | 126.8 | 13.57 | 0.0688 | 0.01497 | 0.00528 |
| 327 | 1672 | 1533 | 1066 | 70.45 | 270 | 422.5 | 1.442 | 1.099 | 125.2 | 13.63 | 0.06841 | 0.01512 | 0.00515 |
| 328 | 1711 | 1571 | 1062 | 72.34 | 271.5 | 422.8 | 1.45 | 1.11 | 123.7 | 13.69 | 0.06801 | 0.01527 | 0.00503 |
| 329 | 1750 | 1608 | 1057 | 74.27 | 272.9 | 423 | 1.459 | 1.121 | 122.1 | 13.75 | 0.06761 | 0.01543 | 0.00491 |
| 330 | 1789 | 1647 | 1053 | 76.25 | 274.3 | 423.2 | 1.467 | 1.132 | 120.5 | 13.82 | 0.06721 | 0.01559 | 0.00479 |
| 331 | 1829 | 1686 | 1048 | 78.28 | 275.8 | 423.4 | 1.476 | 1.144 | 119 | 13.88 | 0.06682 | 0.01575 | 0.00467 |
| 332 | 1870 | 1726 | 1043 | 80.37 | 277.2 | 423.7 | 1.486 | 1.156 | 117.5 | 13.95 | 0.06642 | 0.01592 | 0.00455 |
| 333 | 1912 | 1766 | 1038 | 82.51 | 278.7 | 423.9 | 1.496 | 1.169 | 115.9 | 14.02 | 0.06602 | 0.0161 | 0.00443 |
| 334 | 1954 | 1807 | 1033 | 84.71 | 280.2 | 424 | 1.506 | 1.182 | 114.4 | 14.09 | 0.06562 | 0.01628 | 0.00431 |
| 335 | 1997 | 1849 | 1029 | 86.97 | 281.7 | 424.2 | 1.517 | 1.196 | 112.9 | 14.16 | 0.06522 | 0.01646 | 0.00419 |
| 336 | 2041 | 1892 | 1024 | 89.29 | 283.1 | 424.4 | 1.528 | 1.21 | 111.4 | 14.23 | 0.06482 | 0.01665 | 0.00407 |
| 337 | 2085 | 1935 | 1019 | 91.68 | 284.6 | 424.5 | 1.539 | 1.225 | 109.8 | 14.31 | 0.06442 | 0.01685 | 0.00395 |
| 338 | 2130 | 1980 | 1013 | 94.13 | 286.1 | 424.7 | 1.551 | 1.24 | 108.3 | 14.38 | 0.06402 | 0.01705 | 0.00384 |
| 339 | 2176 | 2025 | 1008 | 96.65 | 287.7 | 424.8 | 1.564 | 1.256 | 106.8 | 14.46 | 0.06362 | 0.01726 | 0.00372 |
| 340 | 2223 | 2070 | 1003 | 99.24 | 289.2 | 424.9 | 1.577 | 1.273 | 105.3 | 14.54 | 0.06322 | 0.01748 | 0.00361 |
| 341 | 2270 | 2117 | 997.6 | 101.9 | 290.7 | 425 | 1.591 | 1.291 | 103.9 | 14.62 | 0.06282 | 0.01771 | 0.00349 |
| 342 | 2318 | 2164 | 992.2 | 104.7 | 292.3 | 425.1 | 1.606 | 1.31 | 102.4 | 14.71 | 0.06242 | 0.01794 | 0.00338 |
| 343 | 2366 | 2212 | 986.7 | 107.5 | 293.8 | 425.2 | 1.621 | 1.329 | 100.9 | 14.79 | 0.06201 | 0.01818 | 0.00326 |
| 344 | 2416 | 2261 | 981.1 | 110.4 | 295.4 | 425.3 | 1.638 | 1.35 | 99.41 | 14.88 | 0.06161 | 0.01843 | 0.00315 |
| 345 | 2466 | 2311 | 975.5 | 113.4 | 297 | 425.3 | 1.655 | 1.371 | 97.94 | 14.97 | 0.06121 | 0.0187 | 0.00304 |
| 346 | 2517 | 2361 | 969.7 | 116.5 | 298.5 | 425.3 | 1.673 | 1.394 | 96.47 | 15.07 | 0.06081 | 0.01897 | 0.00293 |
| 347 | 2569 | 2413 | 963.8 | 119.7 | 300.1 | 425.4 | 1.692 | 1.418 | 94.99 | 15.16 | 0.06041 | 0.01925 | 0.00282 |
| 348 | 2621 | 2465 | 957.8 | 123 | 301.8 | 425.4 | 1.713 | 1.444 | 93.52 | 15.26 | 0.06001 | 0.01955 | 0.00271 |
| 349 | 2675 | 2518 | 951.7 | 126.4 | 303.4 | 425.3 | 1.735 | 1.471 | 92.05 | 15.37 | 0.05961 | 0.01986 | 0.0026 |
| 350 | 2729 | 2572 | 945.5 | 129.9 | 305 | 425.3 | 1.758 | 1.5 | 90.58 | 15.48 | 0.05921 | 0.02018 | 0.00249 |
| 351 | 2784 | 2627 | 939.1 | 133.6 | 306.7 | 425.2 | 1.783 | 1.531 | 89.11 | 15.59 | 0.05881 | 0.02052 | 0.00238 |
| 352 | 2840 | 2683 | 932.6 | 137.3 | 308.4 | 425.1 | 1.81 | 1.564 | 87.63 | 15.7 | 0.05842 | 0.02087 | 0.00228 |
| 353 | 2896 | 2740 | 925.9 | 141.2 | 310.1 | 425 | 1.838 | 1.599 | 86.15 | 15.82 | 0.05802 | 0.02125 | 0.00217 |
| 354 | 2954 | 2797 | 919.1 | 145.3 | 311.8 | 424.9 | 1.869 | 1.637 | 84.67 | 15.95 | 0.05763 | 0.02164 | 0.00207 |
| 355 | 3012 | 2856 | 912.2 | 149.5 | 313.5 | 424.7 | 1.903 | 1.678 | 83.19 | 16.08 | 0.05725 | 0.02205 | 0.00197 |
| 356 | 3071 | 2916 | 905 | 153.9 | 315.3 | 424.6 | 1.939 | 1.723 | 81.69 | 16.21 | 0.05686 | 0.02249 | 0.00186 |
| 357 | 3131 | 2976 | 897.7 | 158.4 | 317 | 424.3 | 1.979 | 1.771 | 80.19 | 16.35 | 0.05649 | 0.02295 | 0.00176 |
| 358 | 3192 | 3038 | 890.1 | 163.2 | 318.8 | 424.1 | 2.023 | 1.824 | 78.69 | 16.5 | 0.05612 | 0.02344 | 0.00166 |
| 359 | 3254 | 3101 | 882.4 | 168.1 | 320.7 | 423.8 | 2.071 | 1.882 | 77.17 | 16.66 | 0.05576 | 0.02396 | 0.00156 |
| 360 | 3316 | 3165 | 874.3 | 173.3 | 322.5 | 423.5 | 2.124 | 1.945 | 75.64 | 16.82 | 0.05542 | 0.02451 | 0.00146 |
| 361 | 3380 | 3229 | 866 | 178.7 | 324.4 | 423.1 | 2.183 | 2.016 | 74.09 | 17 | 0.05509 | 0.0251 | 0.00137 |
| 362 | 3444 | 3295 | 857.4 | 184.4 | 326.3 | 422.7 | 2.25 | 2.095 | 72.53 | 17.18 | 0.05478 | 0.02574 | 0.00127 |
| 363 | 3510 | 3363 | 848.5 | 190.4 | 328.3 | 422.2 | 2.325 | 2.183 | 70.96 | 17.38 | 0.05449 | 0.02642 | 0.00118 |
| 364 | 3576 | 3431 | 839.3 | 196.7 | 330.3 | 421.7 | 2.411 | 2.283 | 69.35 | 17.58 | 0.05424 | 0.02716 | 0.00109 |
| 365 | 3643 | 3500 | 829.6 | 203.4 | 332.3 | 421.1 | 2.51 | 2.396 | 67.73 | 17.8 | 0.05403 | 0.02796 | 0.00099 |
| 366 | 3712 | 3571 | 819.4 | 210.5 | 334.4 | 420.5 | 2.625 | 2.527 | 66.07 | 18.04 | 0.05388 | 0.02883 | 0.0009 |

ตาราง ค-4 ความจุความร้อนจำเพาะของสารผสมน้ำ-เอทิลีนไกลคอล

| Temperature °C | Concentration in Volume Percent Ethylene Glycol | | | | | | | | |
|----------------|---|-------|-------|-------|-------|-------|-------|-------|-------|
| | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% |
| -35 | | | | | 3.068 | 2.844 | 2.612 | 2.370 | |
| -30 | | | | | 3.088 | 2.866 | 2.636 | 2.397 | |
| -25 | | | | | 3.107 | 2.888 | 2.66 | 2.423 | 2.177 |
| -20 | | | | 3.334 | 3.126 | 2.909 | 2.685 | 2.450 | 2.206 |
| -15 | | | | 3.351 | 3.145 | 2.931 | 2.709 | 2.477 | 2.235 |
| -10 | | | 3.560 | 3.367 | 3.165 | 2.953 | 2.733 | 2.503 | 2.264 |
| -5 | | 3.757 | 3.574 | 3.384 | 3.184 | 2.975 | 2.757 | 2.530 | 2.293 |
| 0 | 3.937 | 3.769 | 3.589 | 3.401 | 3.203 | 2.997 | 2.782 | 2.556 | 2.322 |
| 5 | 3.946 | 3.780 | 3.603 | 3.418 | 3.223 | 3.018 | 2.806 | 2.583 | 2.351 |
| 10 | 3.954 | 3.792 | 3.617 | 3.435 | 3.242 | 3.040 | 2.830 | 2.610 | 2.380 |
| 15 | 3.963 | 3.803 | 3.631 | 3.451 | 3.261 | 3.062 | 2.854 | 2.636 | 2.409 |
| 20 | 3.972 | 3.815 | 3.645 | 3.468 | 3.281 | 3.084 | 2.878 | 2.663 | 2.438 |
| 25 | 3.981 | 3.826 | 3.660 | 3.485 | 3.300 | 3.106 | 2.903 | 2.690 | 2.467 |
| 30 | 3.989 | 3.838 | 3.674 | 3.502 | 3.319 | 3.127 | 2.927 | 2.716 | 2.496 |
| 35 | 3.998 | 3.849 | 3.688 | 3.518 | 3.339 | 3.149 | 2.951 | 2.743 | 2.525 |
| 40 | 4.007 | 3.861 | 3.702 | 3.535 | 3.358 | 3.171 | 2.975 | 2.770 | 2.554 |
| 45 | 4.015 | 3.872 | 3.716 | 3.552 | 3.377 | 3.193 | 3.000 | 2.796 | 2.583 |
| 50 | 4.024 | 3.884 | 3.730 | 3.569 | 3.396 | 3.215 | 3.024 | 2.823 | 2.612 |
| 55 | 4.033 | 3.895 | 3.745 | 3.585 | 3.416 | 3.236 | 3.048 | 2.850 | 2.641 |
| 60 | 4.042 | 3.907 | 3.759 | 3.602 | 3.435 | 3.258 | 3.072 | 2.876 | 2.670 |
| 65 | 4.050 | 3.918 | 3.773 | 3.619 | 3.454 | 3.280 | 3.097 | 2.903 | 2.699 |
| 70 | 4.059 | 3.930 | 3.787 | 3.636 | 3.474 | 3.302 | 3.121 | 2.929 | 2.728 |
| 75 | 4.068 | 3.941 | 3.801 | 3.653 | 3.493 | 3.324 | 3.145 | 2.956 | 2.757 |
| 80 | 4.077 | 3.953 | 3.816 | 3.669 | 3.512 | 3.345 | 3.169 | 2.983 | 2.786 |
| 85 | 4.085 | 3.964 | 3.830 | 3.686 | 3.535 | 3.367 | 3.193 | 3.009 | 2.815 |
| 90 | 4.094 | 3.976 | 3.844 | 3.703 | 3.551 | 3.389 | 3.218 | 3.036 | 2.844 |
| 95 | 4.103 | 3.987 | 3.858 | 3.720 | 3.570 | 3.411 | 3.242 | 3.063 | 2.873 |
| 100 | 4.112 | 3.999 | 3.872 | 3.736 | 3.590 | 3.433 | 3.266 | 3.089 | 2.902 |
| 105 | 4.120 | 4.010 | 3.886 | 3.753 | 3.609 | 3.454 | 3.290 | 3.116 | 2.931 |
| 110 | 4.129 | 4.022 | 3.901 | 3.770 | 3.628 | 3.476 | 3.315 | 3.143 | 2.960 |
| 115 | 4.138 | 4.033 | 3.915 | 3.787 | 3.647 | 3.498 | 3.339 | 3.169 | 2.989 |
| 120 | 4.147 | 4.045 | 3.929 | 3.804 | 3.667 | 3.520 | 3.363 | 3.196 | 3.018 |
| 125 | 4.155 | 4.056 | 3.943 | 3.820 | 3.686 | 3.542 | 3.387 | 3.223 | 3.047 |

Note : Specific heat in kJ/(kg K)

ประวัติผู้เขียน

| | |
|--------------------------|--|
| ชื่อ | นางสาวอภิมน มณีวรรณ |
| วัน เดือน ปี สถานที่เกิด | 26 กันยายน 2517 จ.เชียงใหม่ |
| ประวัติการศึกษา | ระดับมัธยมศึกษาตอนต้น โรงเรียนเรยีนาเชลี วิทยาลัย จังหวัดเชียงใหม่ ปีการศึกษา 2532 ระดับมัธยมศึกษาตอนปลาย โรงเรียนมงฟอร์ตวิทยาลัย จังหวัดเชียงใหม่ ปีการศึกษา 2535 ระดับปริญญาตรี วิศวกรรมศาสตรบัณฑิต สาขาวิศวกรรมเครื่องกล คณะวิศวกรรมศาสตร์ มหาวิทยาลัยเชียงใหม่ ปีการศึกษา 2539 |