



2023
EDITION

ASHP[®] INJECTABLE DRUG INFORMATION[™]

**A Comprehensive
Guide to
Compatibility and
Stability**

Published under the
editorial authority of
ASHP[®]
American Society of
Health-System Pharmacists[®]

TABLE OF CONTENTS

Preface.....	vii
How to Use ASHP® Injectable Drug Information™	ix
AHFS® Pharmacologic-Therapeutic Classification®.....	xxi
Drug Monographs.....	1
Appendix I: Parenteral Nutrition Formulas.....	1659
References.....	1687
Index.....	1791

ASHP® *Injectable Drug Information*™ 2023 is a collection of compatibility and stability information on parenteral drug products and is the most recent con-

tributing internationally recognized, authoritative sources of drug information. Beginning with publication of the

Formulary Service (AHFS), now AHFS Drug Information,

book on *Injectable Drugs*® in 1977, and the *Medication*

manuscript, ASHP has consistently set the stan-

dard for effective drug therapy. For 80 years, ASHP has been at the forefront of efforts to improve medication use and patient safety. Publication of *ASHP® Injectable Drug Information*™ 2023 is an important component of those efforts. With the 2023 edition of *ASHP® Injectable Drug Information*™, ASHP marks 51 years of publishing such an invaluable resource on parenteral medications.

First published in 1977 as a key outgrowth of pharmaceutical research and pharmacy practice at the U.S. Public Health Service and National Institutes of Health (NIH), the *Handbook on Injectable Drugs*® has a long legacy of translating pharmaceuticals research into an essential resource for practical patient-care applications. Lawrence A. Trissel, who served as co-author of ASHP's first resource on injectable drugs—the *Parenteral Drug Information Guide*®, established this legacy by serving as the distinguished author of the *Handbook on Injectable Drugs*® for the first 17 editions. ASHP and the profession as a whole remain grateful to Mr. Trissel for his contribution to the pharmaceutical literature and his unyielding dedication to the science of stability and compatibility information on parenteral products.

With the publication of the *Mirror to Hospital Pharmacy* in 1964, ASHP paved the way for a transition from hospital-driven to pharmacy-led sterile compounding services and has remained an industry leader for both pharmacy and best practices related to parenteral medications. The mission of ASHP's reference publications on compatibility and stability of parenteral products has always been to facilitate the use of the vast body of pharmaceuticals research on parenteral medications in ways that could enable those who prescribe, prepare, and administer injectable drugs to more fully apply this

information to the benefit of patients. With increasingly complex drug therapy regimens, an abundance of new drug and drug formulation approvals, and ever-present

important implications for patient care in the

practices involving parenteral medications have resulted

in increased sterile compounding regulation and have

in the preparation and administration of parent

compounded), and application of principles and findings

information on sterile compounding. ASHP's

practices/health-care centers/compounding

Beginning with the 18th edition, the *Handbook on Injectable Drugs*® became an integral component of ASHP's AHFS® resource collection of authoritative drug information. Applying its expansive drug information and informatics expertise, ASHP's focus with the subsequent editions has been on the continuing addition and revision of new and existing drug monographs as well as important database enhancements to this indispensable authority on parenteral drugs. *ASHP® Injectable Drug Information*™ 2023, which was begun to provide a single standardized source of the primary research on the stability, compatibilities, and incompatibilities of injectable drugs, continues to be the most widely recognized "Gold Standard" for such information.

ASHP® Injectable Drug Information™ 2023 includes 6 new monographs, bringing the total in this edition to 410 monographs on parenteral drugs available in the United States and in other countries. In addition, nearly half of the existing monographs have been revised to update information on stability, compatibility, and safety and to provide more specific referencing of manufacturer information and other enhancements to the compatibility tables contained in *ASHP® Injectable Drug Information*™ 2023. The information cited throughout the text has been compiled from 3177 references, including 182 new to this edition. Because information from pharmaceutical manufacturers had not been uniquely cited until the 18th edition, the number of unique references supporting *ASHP® Injectable Drug Information*™ 2023 information actually greatly exceeds this number. While primary, peer-reviewed literature remains a major source of compatibility and stability information, ongoing