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| Suggested Formula | Hydromorphone Hydrochloride 5 mg/mL Intravenous Injection (Solution, 30 mL) | FIN | F 004 336v2 |
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SUGGESTED FORMULATION

| Ingredient Listing | Qty. | Unit | NDC # | Supplier | Lot Number | Expiry Date |
|--|-------|------|-------|----------|------------|-------------|
| Hydromorphone Hydrochloride 10 mg/mL Injection (Sterile) | 15.00 | mL | | | | |
| Sodium Chloride 0.9% for Injection (Sterile), USP | 15.0 | mL | | | | |

SPECIAL PREPARATORY CONSIDERATIONS

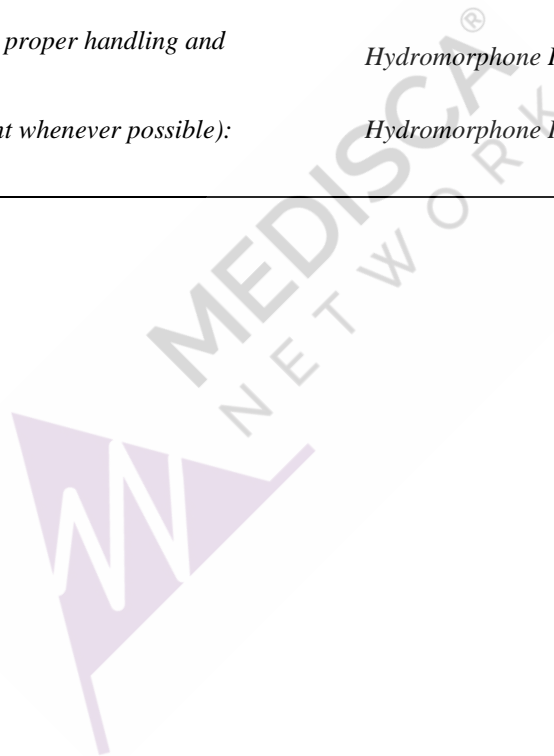
Ingredient-Specific Information

Controlled Substance (adhere to proper handling and documentation procedures)

Hydromorphone Hydrochloride

Light Sensitive (protect from light whenever possible):

Hydromorphone Hydrochloride





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SPECIAL PREPARATORY CONSIDERATIONS (CONTINUED)

Suggested Preparatory Guidelines

Non-Sterile Preparation Sterile Preparation

Processing Error / Testing Considerations: To account for processing error, sterility and endotoxin testing considerations during preparation, it is suggested to measure an additional **12 to 15%** of the required quantities of ingredients.

Special Instruction: This formula may contain one or more Active Pharmaceutical Ingredients (APIs) that may be classified as hazardous, please refer & verify the current NIOSH list of Antineoplastic and Other Hazardous Drugs in Healthcare Settings. At this time, **General Chapter <800> Hazardous Drugs – Handling in Healthcare Settings** is informational and not compendially applicable unless otherwise specified by regulators and enforcement bodies. For information on the scope, intended applicability, and implementation context for USP General Chapter <800>, see: <https://www.usp.org/compounding/general-chapter-hazardous-drugs-handling-healthcare>.

This formula must be prepared within the appropriate facilities under adequate environmental conditions, following the necessary guidelines and procedures as stated within *USP 797* and *USP 800*, when handling hazardous drugs. Only trained and qualified personnel must prepare this formula.

All heat stable, reusable materials and equipment must be sterilized and depyrogenated by dry heat sterilization at 250°C for 2 hours prior to use.

Compounder needs to verify as per USP, if every batch of final product compounded using this procedure must be sterility and endotoxin tested before being dispensed.

All required personal protective equipment (sterile and hazardous if applicable), such as but not limited to, gowns, aprons, sleeves, gloves both inner and outer if applicable, shoe covers, hairnet, head cap, beard cover, eyewear, appropriate face mask, respirator and face shield, etc., where applicable must be worn at all times. In addition, proper personnel cleansing must be done before entering the buffer or clean area.

If applicable, follow all required procedures for hazardous drug handling including but not limited to procurement, transport, storage, preparation, dispensing, administration, clean up (spills) & disposal.

Filter integrity must be validated by performing a filter stress test. If the test demonstrates that the filter might be defective, the solution must be discarded and remade.

If you are a registered 503B facility, please refer to all relevant guidance documents including but not limited to the Code of Federal Regulations (CFR), Guidance for Industry (GFI) and Compliance Policy Guides (CPGs).

This procedure requires the use of very small quantities of ingredients. All calculations and preparation techniques must be verified before dispensing the final product.



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SUGGESTED PREPARATION (for 30 mL)

Weigh and / or measure the following ingredients when appropriate:

| Ingredient Listing | Qty. | Unit | Multiplication factor (*): _____ | Processing Error | Qty. to measure |
|--|-------|------|----------------------------------|------------------|-----------------|
| Hydromorphone Hydrochloride 10 mg/mL Injection (Sterile) § | 15.00 | mL | | | |
| Sodium Chloride 0.9% for Injection (Sterile), USP § | 15.0 | mL | | | |

* Takes into account increased batch size conversions and density conversions, if required.

§ Weigh / measure just prior to use.

Preparatory Instruction

IMPORTANT: All preparatory procedures must be performed using proper Aseptic Technique

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| 1. | <p><u>Equipment sterilization:</u></p> <p>Following the manufacturer's specifications, sterilize and depyrogenate all heat stable, reusable materials and equipment, then return to ambient temperature.</p> |
| 2. | <p><u>Medium integration:</u></p> <p>Note: All manipulations must be done under a laminar airflow hood. Disinfect the commercial vials with Alcohol 70% prior to withdrawing the required amount of liquid.</p> <p>A. Incrementally add the Hydromorphone Hydrochloride 10 mg/mL Injection (Sterile) to the Sodium Chloride 0.9% for Injection (Sterile).</p> <p><u>Specifications:</u> Continuously mix.</p> <p><u>End result:</u> Homogeneous liquid-like solution.</p> |
| 3. | <p><u>Filtering and transferring:</u></p> <p>Aseptically filter the solution through a 0.22-µm sterile filter into the recommended dispensing container (see Packaging requirements). Transfer the remainder into a separate dispensing container. This is to be used as the Test sample for sterility and endotoxin testing.</p> |
| 4. | <p><u>Filter integrity test:</u></p> <p>Validate filter integrity by performing a filter stress test. If the test demonstrates that the filter might be defective, the solution must be discarded and remade.</p> |
| 5. | <p><u>Terminal Sterilization:</u></p> <p>In relation to the chemical composition of the formulation, final packaging, etc., select and validate an end-stage sterilization method and follow the manufacturer's specifications.</p> |



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| 6. | <p><u>Sterility and Endotoxin testing:</u></p> <p>Validate the Test sample for sterility and endotoxins, in accordance to current USP 797 regulatory guidelines.</p> |
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SUGGESTED PRESENTATION

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| Estimated Beyond-Use Date | 48 hours controlled room temperature, 14 days refrigerated, or 45 days frozen, as per USP 797. BUD based on successful endotoxin test result. | Packaging Requirements | Sterile, tightly closed, light-resistant injection vials. ⊕ | |
| Auxiliary Labels | 1 | Use as directed. Do not exceed prescribed dose. | 8 | Do not used if product changes color. |
| | 2 | Keep out of reach of children. | 9 | Protect from light. |
| | 3 | Keep at controlled room temperature, (20°C – 25°C), refrigerated (2°C – 8°C) or frozen (-25°C to -10°C). | 10 | Discard container after use. |
| | 4 | Do not take with alcohol, sleep aids, tranquilizers or other CNS depressants. | 11 | May produce psychological and/or physical dependence. |
| | 5 | May impair mental and/or physical ability. Use care when operating a car or machinery. | 12 | Controlled substance. Dangerous unless used as directed. |
| | 6 | Consult your health care practitioner if any other prescription or over-the-counter medications are currently being used or are prescribed for future use. | 13 | For medical office use only. |
| | 7 | Equilibrate to room temperature before use. | | |
| Pharmacist Instructions | Add any auxiliary labels specific to the active ingredients to the dispensing container as deemed necessary. IMPORTANT: TO BE ADMINISTERED ONLY BY THE PRESCRIBING PHYSICIAN. | | | |
| Patient Instructions | Contact your pharmacist in the event of adverse reactions. | | | |



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REFERENCES

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| 1. | USP <797>. <i>United States Pharmacopeia XXXII / National Formulary 27</i> . Rockville, MD. US Pharmacopeial Convention, Inc. 2009: 318. |
| 2. | Parenteral Preparations. In: Allen, LV, Jr. <i>The Art, Science and Technology of Pharmaceutical Compounding Third Edition</i> . American Pharmaceutical Association; 2008: 313. |
| 3. | Hydromorphone (Monograph). In: O'Neil MJ. <i>The Merck Index 14th Edition</i> . Whitehouse Station, NJ: Merck & Co, Inc.; 2006: Monograph #4803. |
| 4. | Hydromorphone Hydrochloride. In: Trissel LA. <i>Trissel's Stability of Compounded Formulations, 3rd Edition</i> . American Pharmaceutical Association; 2005: 216. |
| 5. | Hydromorphone Hydrochloride. <i>United States Pharmacopeia XXXII / National Formulary 27</i> . Rockville, MD. US Pharmacopeial Convention, Inc. 2009: 2588. |

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