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Suggested Formula	Ketamine Hydrochloride 11.5 mg/mL Stock Solution for Intravenous Infusion (Solution, 5 mL)	FIN	F 007 516

Note: Ketamine Hydrochloride 11.5 mg/mL is equivalent to Ketamine 10 mg/mL.

SUGGESTED FORMULATION

Ingredient Listing	Qty.	Unit	NDC #	Supplier	Lot Number	Expiry Date
Ketamine Hydrochloride, USP	0.058	g				
Benzyl Alcohol, NF	0.03	mL				
Sodium Chloride, USP	0.03	g				
Sterile Water for Injection, USP	4.0	mL				
Sterile Water for Injection, USP	q.s. to 5.0	mL				

SPECIAL PREPARATORY CONSIDERATIONS

Ingredient-Specific Information

Light sensitive *(protect from light whenever possible):* *Ketamine Hydrochloride, Benzyl Alcohol*

Controlled substance *(adhere to proper handling and documentation procedures)* *Ketamine 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 **70 to 80%** 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, 2016. **General Chapter <800> Hazardous Drugs – Handling in Healthcare Settings** was formally published February 1, 2016 in the First Supplement to USP 39-NF 34 and has a delayed **official implementation date of December 31st , 2019**.

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.

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 (GFIs) 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 5 mL)

Weigh and / or measure the following ingredients when appropriate:

Ingredient Listing	Qty.	Unit	Multiplication factor (*): ____	Processing Error	Qty. to measure
Ketamine Hydrochloride, USP §	0.058	g			
Benzyl Alcohol, NF §	0.03	mL			
Sodium Chloride, USP §	0.03	g			
Sterile Water for Injection, USP §	4.0	mL			
Sterile Water for Injection, USP §	q.s. to 5.0	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**
1.	**Equipment sterilization:** Following the manufacturer's specifications, sterilize and depyrogenate all heat stable, reusable materials and equipment, then return to ambient temperature.
2.	**Powder-liquid preparation:** A. In the given order, sequentially add the following ingredients to the Sterile Water for Injection (4.0 mL *plus* processing error adjustments): -Benzyl Alcohol -Sodium Chloride -Ketamine Hydrochloride Specifications: Continuously mix until all solid particles have completely dissolved. End result: Homogeneous liquid-like solution
3.	**Filling to volume:** A. Add additional Sterile Water for Injection to the above mixture to fill to the required batch size (5.0 mL *plus* processing error adjustments). Specifications: Continuously mix. End result: Homogeneous liquid-like solution.

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4.	**Filtering and transferring:** 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.
5.	**Filter integrity test:** 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.
6.	**Sterility testing:** Validate the test samples for sterility and endotoxins, in accordance to current USP 797 regulatory guidelines.

SUGGESTED PRESENTATION

Estimated Beyond-Use Date		14 days, refrigerated, as per USP <797>. BUD based on a successful sterility and endotoxin test result.	Packaging Requirements	Sterile, tightly closed, light-resistant unit dose injection vials.
Auxiliary Labels	1	Controlled substance. Dangerous unless used as directed.	7	Consult your health care practitioner if any prescription or over-the-counter medications are currently being used or are prescribed for future use.
	2	Keep out of reach of children.	8	Discard in the presence of particulate matter.
	3	May impair mental and/or physical ability. Use care when operating a car or machinery.	9	**For intravenous infusion use only after appropriate dilution.**
	4	May produce psychological and/or physical dependence.	10	Do not take with alcohol, sleep aids, tranquilizers or other CNS depressants.
	5	Equilibrate to room temperature before use.	11	Protect from light.
	6	Keep refrigerated. Do not freeze.	12	Use as directed. Do not exceed prescribed dose.
Pharmacist Instructions	Add any auxiliary labels specific to the API to the dispensing container as deemed necessary.			
Patient Instructions	Contact your pharmacist in the event of adverse reactions.			

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REFERENCES

1. Parenteral Preparations. In: Allen, LV, Jr. *The Art, Science, and Technology of Pharmaceutical Compounding Fifth Edition.* American Pharmacists Association; 2016: 399.
2. Benzyl Alcohol. In: Rowe RC. *Handbook of Pharmaceutical Excipients, 7th Edition*. American Pharmaceutical Association; 2012: 68.
3. Sodium Chloride. In: Rowe RC. *Handbook of Pharmaceutical Excipients, 7th Edition*. American Pharmaceutical Association; 2012: 729.
4. Chapter 8: Buffered and Isotonic Solutions. In: Sinko, D. J. and Singh, Y. *Martin's Physical Pharmacy and Pharmaceutical Sciences, Sixth Edition.* Philadelphia, PA: Lipponcott Williams & Wilkins; 2011: 163-181.
5. Chapter 18: Tonicity, Osmoticity, Osmolaltiy and Osmolarity. In: D.B Troy. *Remington: The Science and Practice of Pharmacy, 21st Edition.* Baltimore, MD: Lippincott Williams & Wilkins; 2006: 250~265.
6. Ketamine Hydrochloride. In: Sweetman SC, ed. *Martindale: The Complete Drug Reference, 36th Edition.* London, England: The Pharmaceutical Press; 2009: 1787.
7. Ketamine (Monograph). In: O'Neil MJ. *The Merck Index 15th Edition*. Whitehouse Station, NJ: Merck & Co, Inc.; 2013: #5343.
8. Ketamine Hydrochloride. In: Trissel LA. *Trissel's Stability of Compounded Formulations, 5th Edition.* American Pharmaceutical Association; 2012: 270.
9. Ketamine Hydrochloride (Monograph). *United States Pharmacopeia XL / National Formulary 35.* Rockville, MD. US Pharmacopeial Convention, Inc. 2017: 4745.
10. USP <797>. *United States Pharmacopeia XL / National Formulary 35.* Rockville, MD. US Pharmacopeial Convention, Inc. 2017: 683.

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