

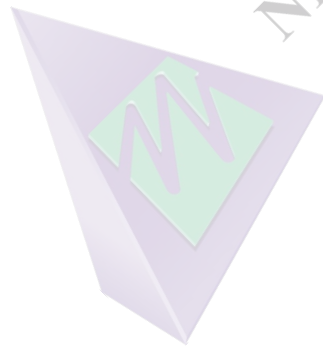


Suggested Formula	Norepinephrine Bitartrate 1.99 mg/mL Injection (Solution, 100 mL)	FIN	F 004 726
-------------------	---	-----	-----------

**NOTE:** Norepinephrine Bitartrate Monohydrate 1.99 mg/mL is equivalent to Norepinephrine 1 mg/mL.

### SUGGESTED FORMULATION

Ingredient Listing	Qty.	Unit	NDC #	Supplier	Lot Number	Expiry Date
Norepinephrine Bitartrate (Monohydrate), USP	0.199	g				
Benzyl Alcohol, NF	2.0	mL				
Sodium Metabisulfite, NF	0.20	g				
Sodium Chloride, USP	0.526	g				
Sterile Water For Injection, USP	90.0	mL				
Sterile Water For Injection, USP	q.s. to 100.0	mL				
Sodium Hydroxide 10% Solution	As required					
Hydrochloric Acid 10% Solution	As required					





Suggested Formula	Norepinephrine Bitartrate 1.99 mg/mL Injection (Solution, 100 mL)	FIN	F 004 726
-------------------	---	-----	-----------

## SPECIAL PREPARATORY CONSIDERATIONS

### Ingredient-Specific Information

**Light sensitive** (protect from light whenever possible):

*Norepinephrine Bitartrate,  
Sodium Metabisulfite  
Benzyl Alcohol*

**Air Sensitive** (protect from air whenever possible):

*Norepinephrine Bitartrate,  
Sodium Metabisulfite*

**Moisture sensitive** (protect from humidity whenever possible):

*Sodium Metabisulfite*

### Suggested Preparatory Guidelines

Non-Sterile Preparation     Sterile Preparation

#### Processing Error / Testing Considerations:

To account for processing error, pH testing, sterility and endotoxin testing considerations during preparation, it is suggested to measure an additional **3 to 5%** of the required quantities of ingredients.

#### Special Instruction:

This formula must be prepared within the appropriate facilities under adequate environmental conditions, following the necessary guidelines and procedures as stated within *USP 797*. 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.

Protective apparel, such as a sterile gown, sterile gloves, shoe covers, head cap, eyewear and face-masks should always be worn. In addition, proper personnel cleansing must be done before entering the buffer or clean area.

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.

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



Suggested Formula	Norepinephrine Bitartrate 1.99 mg/mL Injection (Solution, 100 mL)	FIN	F 004 726
-------------------	---	-----	-----------

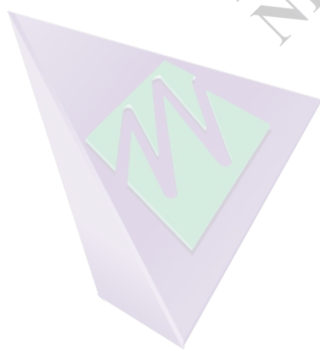
### SUGGESTED PREPARATION (for 100 mL)

Weigh and / or measure the following ingredients when appropriate:

Ingredient Listing	Qty.	Unit	Multiplication factor <sup>(*)</sup> : ____	Processing Error	Qty. to measure
Norepinephrine Bitartrate (Monohydrate), USP §	0.199	g			
Benzyl Alcohol, NF §	2.0	mL			
Sodium Metabisulfite, NF §	0.20	g			
Sodium Chloride, USP §	0.526	g			
Sterile Water For Injection, USP §	90.0	mL			
Sterile Water For Injection, USP §	q.s. to 100.0	mL			
Sodium Hydroxide 10% Solution §	As required				
Hydrochloric Acid 10% Solution §	As required				

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

§ Weigh / measure just prior to use.





Suggested Formula	Norepinephrine Bitartrate 1.99 mg/mL Injection (Solution, 100 mL)	FIN	F 004 726
-------------------	---	-----	-----------

Preparatory Instruction

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

1.	<p><b><u>Equipment sterilization:</u></b></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><b><u>Powder to medium integration:</u></b></p> <p>A. In the given order, sequentially add the following ingredients to the Sterile Water For Injection (90.0 mL <i>plus</i> processing error adjustments):</p> <ul style="list-style-type: none"><li>-Norepinephrine Bitartrate (Monohydrate)</li><li>-Benzyl Alcohol</li><li>-Sodium Metabisulfite</li><li>-Sodium Chloride</li></ul> <p><u>Specifications:</u> Continuously mix until all solid particles have completely dissolved.</p> <p><u>End result:</u> Homogeneous liquid-like solution.</p> <p><u>Note:</u> Add the next ingredient, once the previous one has been completely added and dissolved.</p>
3.	<p><b><u>pH testing:</u></b></p> <p>A. Draw an appropriate amount of the mixture (Step 2A).</p> <p>B. Test the pH of the sample. It should lie between 3.0 and 4.5.</p> <p>C. <u>If the pH &lt; 3.0, carefully add, in a dropwise fashion, the Sodium Hydroxide 10% solution to the mixture:</u></p> <ol style="list-style-type: none"><li>1. Draw and transfer 1 or 2 drops of the Sodium Hydroxide 10% solution to the mixture.</li><li>2. Stir for at least 5 minutes to evenly disperse the Sodium Hydroxide 10% solution.</li><li>3. Re-test the pH.</li><li>4. Continue to add the Sodium Hydroxide 10% solution until the pH of 3.0 to 4.5 is obtained.</li></ol> <p>IMPORTANT: Do not allow the pH to rise above 4.5.</p> <p>D. <u>If the pH &gt; 4.5, carefully add, in a dropwise fashion, the Hydrochloric Acid 10% solution to the mixture:</u></p> <ol style="list-style-type: none"><li>1. Draw and transfer 1 or 2 drops of the Hydrochloric Acid 10% solution to the mixture.</li><li>2. Stir for at least 5 minutes to evenly disperse the Hydrochloric Acid 10% solution.</li><li>3. Re-test the pH.</li><li>4. Continue to add the Hydrochloric Acid 10% solution until the pH of 3.0 to 4.5 is obtained.</li></ol> <p>IMPORTANT: Do not allow the pH to fall below 3.0.</p>



Suggested Formula	Norepinephrine Bitartrate 1.99 mg/mL Injection (Solution, 100 mL)	FIN	F 004 726
4.	<p><b><u>Filling to volume:</u></b></p> <p>A. Add additional Sterile Water For Injection to the above mixture to fill to the required batch size (100.0 mL <i>plus</i> processing error adjustments).</p> <p><u>Specifications:</u> Continuously mix.</p> <p><u>End result:</u> Homogeneous liquid-like solution.</p>		
5.	<p><b><u>Filtering and transferring:</u></b></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>		
6.	<p><b><u>Filter integrity test:</u></b></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>		
7.	<p><b><u>Sterility testing:</u></b></p> <p>Validate the Test sample for sterility and endotoxins, in accordance to current USP 797 regulatory guidelines.</p>		

**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 injection vials.	
Auxiliary Labels	1	Use as directed. Do not exceed prescribed dose.	6	Discard container after use.
	2	Keep out of reach of children.	7	Protect from light.
	3	Keep refrigerated. Do not freeze.	8	Equilibrate to room temperature before use.
	4	Consult your health care practitioner if any other prescription or over-the-counter medications are currently being used or are prescribed for future use.	9	Discard in the presence of particulate matter.
	5	Do not use if product changes color.	10	Keep in a dry place.
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.			



Suggested Formula	Norepinephrine Bitartrate 1.99 mg/mL Injection (Solution, 100 mL)	FIN	F 004 726
-------------------	---	-----	-----------

## REFERENCES

1.	Parenteral Preparations. In: Allen, LV, Jr. <i>The Art, Science and Technology of Pharmaceutical Compounding Third Edition</i> . American Pharmaceutical Association; 2008: 313.
2.	Norepinephrine Bitartrate Injection USP. In: Canadian Pharmacists Association. <i>Compendium of Pharmacists and Specialties</i> ; 2010: 1596.
3.	Sodium Metabisulfate. In: Rowe RC. <i>Handbook of Pharmaceutical Excipients, 6<sup>th</sup> Edition</i> . American Pharmaceutical Association; 2009: 654.
4.	Dextrose. In: Rowe RC. <i>Handbook of Pharmaceutical Excipients, 6<sup>th</sup> Edition</i> . American Pharmaceutical Association; 2009: 222.
5.	Benzyl Alcohol. In: Rowe RC. <i>Handbook of Pharmaceutical Excipients, 6<sup>th</sup> Edition</i> . American Pharmaceutical Association; 2009: 64.
6.	Norepinephrine Acid Tartrate. In: Sweetman SC, ed. <i>Martindale: The Complete Drug Reference, 36<sup>th</sup> Edition</i> . London, England: The Pharmaceutical Press; 2009: 1360.
7.	Norepinephrine (Monograph). In: O'Neil MJ. <i>The Merck Index 14<sup>th</sup> Edition</i> . Whitehouse Station, NJ: Merck & Co, Inc.; 2006: Monograph #6695.
8.	Chapter 8: Buffered and Isotonic Solutions. In: Martin, A. <i>Physical Pharmacy, Fourth Edition</i> . Philadelphia, PA: Lippincott Williams & Wilkins; 1993: 169~189.
9.	Chapter 18: Tonicity, Osmoticity, Osmolality and Osmolarity. In: D.B Troy. <i>Remington: The Science and Practice of Pharmacy, 21st Edition</i> . Baltimore, MD: Lippincott Williams & Wilkins; 2006: 250~265.
10.	Norepinephrine Bitartrate (Monograph). <i>United States Pharmacopeia XXXII / National Formulary 27</i> . Rockville, MD. US Pharmacopeial Convention, Inc. 2009: 3103.
11.	USP <797>. <i>United States Pharmacopeia XXXII / National Formulary 27</i> . Rockville, MD. US Pharmacopeial Convention, Inc. 2009: 318.

**DISCLAIMER: MEDISCA NETWORK INC. & RÉSEAU MEDISCA NETWORK INC., HEREBY REFERRED TO AS 'THE NETWORK', HAVE PROVIDED THE FORMULA AND INSTRUCTIONS ABOVE AS A MODEL FOR EDUCATIONAL PURPOSES ONLY ON THE BASIS OF THE RECOGNIZED COMPENDIA AND TEXTS REFERENCED AT THE END OF THIS DOCUMENT. THE NETWORK TAKES NO RESPONSIBILITY FOR THE VALIDITY OR ACCURACY OF THIS INFORMATION OR FOR ITS SAFETY OR EFFECTIVENESS, NOR FOR ANY USE THEREOF, WHICH IS AT THE SOLE RISK OF THE LICENSED PHARMACIST. ADJUSTMENTS MAY BE NEEDED TO MEET SPECIFIC PATIENT NEEDS AND IN ACCORDANCE WITH A LICENSED PRESCRIBER'S PRESCRIPTION. THE PHARMACIST MUST EMPLOY APPROPRIATE TESTS TO DETERMINE THE STABILITY OF THIS SUGGESTED FORMULA. THE NETWORK CANNOT BE HELD LIABLE TO ANY PERSON OR ENTITY CONCERNING CLAIMS, LOSS, OR DAMAGE CAUSED BY, OR ALLEGED TO BE CAUSED BY, DIRECTLY OR INDIRECTLY, THE USE OR MISUSE OF THE INFORMATION CONTAINED IN THIS SUGGESTED FORMULA. IN ALL CASES IT IS THE RESPONSIBILITY OF THE LICENSED PHARMACIST TO KNOW THE LAW, TO COMPOUND ANY FINISHED PRODUCT AND TO DISPENSE THESE PRODUCTS IN ACCORDANCE WITH FEDERAL AND STATE LAW.**