



100 Majestic Way, Bangor, PA 18013 / www.biospectra.us

TECHNICALLY UNAVOIDABLE PARTICLE PROFILE
(TUPP) – GUANIDINE HYDROCHLORIDE 6M
SOLUTION

PROCESS ROOM L09

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1. PURPOSE:

- 1.1. The purpose of this document is to provide the user of this product with a Technically Unavoidable Particle Profile (TUPP) for Process Room L09 at BioSpectra's Bangor, PA facility used in the manufacture of cGMP Guanidine Hydrochloride 6M Solution Bio Excipient grade.

2. SCOPE:

- 2.1. This TUPP applies to the manufacturing and packaging process of Guanidine Hydrochloride 6M Solution manufactured at BioSpectra's Bangor, PA facility in Process Room L09.

3. REFERENCES:

- 3.1. IPEC; Technically Unavoidable Particle Profile (TUPP) Guide

4. DEFINITIONS:

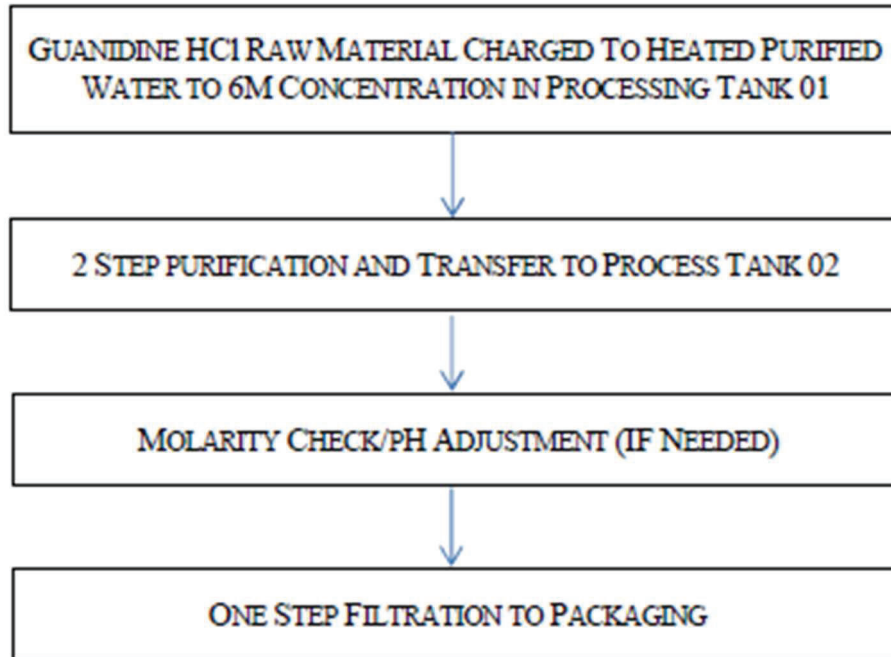
- 4.1. Technically Unavoidable Particle (TUP): A visibly different particle that can be viewed with the naked eye that is inherent to the raw material, manufacturing process or product and does not pose risk to patient safety.
- 4.2. Technically Unavoidable Particle Profiles (TUPPs): A report on all potential known Technically Unavoidable Particles (TUP) for an excipient process that can be shared with a customer or end user.
- 4.3. Atypical Particles – particles not consistent with the typical particulate profile; not previously encountered or identified.
- 4.4. Reprocessing: A system of improving an intermediate or finished product that does not conform to established specification by repeating a step or series of steps that are a part of the approved manufacturing process. The reprocessing of a batch of Guanidine HCl 6M Solution was approved as part of the validation of the Guanidine HCl 6M Solution manufacturing process.

5. TECHNICALLY UNAVOIDABLE PARTICLES (TUP):

- 5.1. The construction of a technically unavoidable particle profile assumes that GMPs are followed and possible mitigation strategies are taken, the remaining particles, if they pose no risk to safety, are deemed technically unavoidable.
- 5.2. Technically unavoidable particles could originate from any of the following parts of the manufacturing process: Material of Construction of the manufacturing equipment that is product contacting, consumable process equipment, Material of Construction of the packaging components and any materials that are involved in the manufacturing process that may come into contact with the product that are the lowest risk scenarios. Scenarios that are considered to be the lowest risk are situations in which no mitigation strategies exist or cannot be implemented within reason.

6. PROCESS FLOW DIAGRAM:

cGMP Guanidine HCl 6M Solution Manufacturing Process Flow Diagram



7. PROFILE

7.1. Manufacturing Location:

7.1.1. Bangor, PA Facility





7.2. Applicable Product Codes:

7.2.1. Guanidine HCl 6M Solution, GHCL-31XX and GHCL-71XX

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7.3. TUPPs originating from product contacting surfaces in the manufacturing process:

Originating from the Manufacturing Process					
Identity	Characterization	Origin	How Removed	How Prevented	Picture (Example of Sources)
316L Stainless Steel	Metallic Shaving	Heat Exchanger	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	
Carbon	Black or Gray Fragments	Centrifugal Pump Carbon Chamber	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	Not Available
Ceramic	Ceramic Fragments	Centrifugal Pump	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	
CPVC	Gray Plastic	Carbon Chamber (Housing and Piping) Cartridge Filter (Piping) FG Packaging Line	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	
Fluorosint Polytetrafluoroethylene (PTFE)	Opaque White Plastic	Centrifugal Pump	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	

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Hastelloy C-276	Metallic Shaving	Tank Agitators	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	
Kalrez	Plastic Fragments	Centrifugal Pump	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	
Kynar	White / Off- White Plastic	Carbon Chamber (Piping)	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	Not Available
Polyethylene	Opaque White Plastic	Process Tank #1 Process Tank #2 Chemical Hoses	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	
Polypropylene	Natural Colored Opaque Off- White Blue Plastic	Centrifugal Pump Diaphragm Pump Carbon Chamber (Piping) Cartridge Filter (Housing and Piping)	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	
Polytetra- fluoroethylene (PTFE)	Opaque White Plastic	Centrifugal Pump Diaphragm Pump	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	
PVC	White, Clear, or Gray Opaque Plastic	Carbon Chamber (Piping) Milk Hoses	Filtration Reprocessing	Pre-Process Inspection Preventative Maintenance	

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7.4. TUPPs originating from product contacting surfaces of the packaging components:

7.4.1. The following TUPPs are dependent on the packaging type.


Originating from the Packaging Components

Identity	Characterization	Origin	How Removed	How Prevented	Picture (Example of Source)
HDPE	Opaque White Plastic	55 Gallon Drum 1135 Liter Tote	Reprocessing	Inspection at time of use Product Care Procedure	

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7.5. Atypical particles originating from non-product contacting surfaces of the packaging components:

7.5.1. The following Atypical particles are dependent on the packaging type.

Atypical Particles: Originating from the Packaging Components					
Identity	Characterization	Origin	How Removed	How Prevented	Picture (Example of Source)
Wood	Wood Shaving	Pallet	Reprocessing	Inspection at time of use Product Care Procedure	

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