HEDINGER 1843 A pure decision.

SPECIFICATION

Glycerol 85 % Ph. Eur.* / JP*

product code: 049

LA / API / parenteral grade

Testing specifications: Ph. Eur.* / JP* / LSM 040* / LSM 049*
The material meets all requirements of Ph. Eur.* and JP*

Parameter	Ph. Eur.*		JP*	
	Specification	Test method	Specification	Test method
Characters (Ph. Eur.*) / Description (JP*)	conforms Ph. Eur.*	Ph. Eur.*	conforms JP*	JP*
Identification	A / B / C / D	Ph. Eur.*	conforms JP*	JP*
Appearance of solution	clear and colourless	Ph. Eur.*	-	-
Color	-	-	conforms JP*	JP*
Acidity or alkalinity	conforms Ph. Eur.*	Ph. Eur.*	conforms JP*	JP*
Esters (Ph. Eur.*) / Fatty acids and esters (JP*)	≥ 8.0 ml 0.1 N HCl	Ph. Eur.*	≤ 3.0 ml 0.1 N NaOH	JP*
Halogenated compounds	≤ 30 ppm	Ph. Eur.*	-	-
Acrolein, glucose and other reducing substances	-	-	conforms JP*	JP*
Sugars	conforms Ph. Eur.*	Ph. Eur.*	-	-
Calcium	-	-	conforms JP*	JP*
Arsenic	-	-	≤ 2 ppm	JP*
Ammonium	-	-	conforms JP*	JP*
Aldehydes	≤ 10 ppm	Ph. Eur.*	-	-
Sulfate	-	-	≤ 0.002 %	JP*
Chlorides	≤ 10 ppm	Ph. Eur.*	≤ 0.001 %	JP*
Heavy metals	-	-	≤ 5 ppm	JP*
Refractive index n_D^{20}	1.449 – 1.455	Ph. Eur.*	1.449 – 1.454	JP*
Specific gravity d_{20}^{20}	-	-	1.221 – 1.230	JP*
Readily carbonizable substances	-	-	conforms JP*	JP*
Sulphated ash	≤ 0.01 %	Ph. Eur.*	-	-
Residue on ignition	-	-	≤ 0.01 %	JP*
Water	12.0 – 16.0 %	Ph. Eur.*	13 – 17 %	JP*
Assay	83.5 – 88.5 %	Ph. Eur.*	84.0 – 87.0 %	JP*
Impurity A and related substances: - ∑ Impurities with retention time > retention time of glycerol - Each impurity with retention time < retention time of glycerol - Diethylene glycol (Impurity A)	 ≤ 0.5 % ≤ 0.1 % ≤ 0.1 %	Ph. Eur.*	-	-

*current version

Compiled by: 01.08.2017	Approved by: 01.08.2017	Released by: 01.08.2017	Effective:	Supersedes:
Dr. Philipp Hoch QA/QC-Manager	Dr. Katja Dahms QC-Manager	Dr. Frank Milek Qualified Person (GMP)	07.08.2017	01.01.2017

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	Specification	Test method	Specification	Test method
Ethylene glycol, diethylene glycol and related substances:	-	-		JP*
- Ethylene glycol			≤ 0.1 %	
- Diethylene glycol			≤ 0.1 %	
- ∑ Impurities			≤ 1.0 %	
- Each other related substance			≤ 0.1 %	

Microbiological Specification		
Parameter	**Specification**	**Method**
Bioburden (∑ Total aerobic microbial count + Total yeast mould count)	≤ 100 CFU/g	Ph. Eur.* 2.6.12 / USP* <61> / JP*
Endotoxins	≤ 0.5 IU/mg	Ph. Eur.* / USP* / JP* (LAL, kinetic-turbidimetric method)

HPLC Aldehyde Specification		
Parameter	**Specification**	**Method**
Glyceraldehyde	≤ 5 ppm	LSM 049* (HPLC)
Dihydroxyacetone	≤ 5 ppm	LSM 049* (HPLC)
Hydroxyacetone	≤ 5 ppm	LSM 049* (HPLC)
Formaldehyde	≤ 2 ppm	LSM 049* (HPLC)

Quality Assurance and Quality Control	
Process/Operation	**Standard / Requirement**
Starting materials	**Glycerol Ph. Eur.* / USP* 99.7% synth.** (OPTIM™ Plus Glycerine 99.7% USP/EP) produced by Blue Cube Germany Assets GmbH & Co. KG, Stade (Germany) according to IPEC-PQG GMP guideline and tested acc. to Ph. Eur. and USP methods by Aug. Hedinger GmbH & Co. KG. **Highly Purified Water Ph. Eur.*** produced by Aug. Hedinger GmbH & Co. KG according to EU-GMP and tested acc. to Ph. Eur. methods by Aug. Hedinger GmbH & Co. KG.
Manufacturing process	Final manufacturing steps, packaging, testing and release of the product are carried out by Aug. Hedinger GmbH & Co. KG
Supply chain	WHO – GTDP Guidelines for Pharmaceutical Starting Materials
Analytical quality control	Full analysis of specification for each batch in a GMP qualified laboratory

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Process/Operation	Standard / Requirement
Batch release	Qualified Person according to EU-GMP (2001/83/EC; Articles 48 & 49)
Packaging	Class D (100,000) clean room according to GMP (EU-GMP Part I Annex 1,US cGMP)
Packaging	Extended supervision of repackaging process by chemist or pharmacist
Primary packaging material	Specified packaging materials from audited suppliers: 1 L, 2.5 L amber glass bottles 5L, 10L HDPE containers 200 L HDPE-steel combi-drums 1000 L HDPE EVOH Intermediate Bulk Container with diffusion barrier
Labelling of seal caps	Labelling with filling date and batch no.
Packaging material reconciliation	Full seal cap and label reconciliation
End control of filled containers	First and last container of filling process (water content, color, FTIR)

Stability:

Shelf life: 24 months (excluding HPLC aldehyde specification)

Stability data according to ICH Q1 are available on request.

Regulatory Compliance:

Manufacturing process:

Final manufacturing step, packaging, testing and release of the product are carried-out in compliance with EU-GMP Part II.

Low aldehyde content:

The certified low aldehyde content of Glycerol 85% Ph. Eur.* / JP* (LA / API / parenteral grade) is advantageous for aldehyde sensitive pharmaceuticals such as formulations containing polypeptide based active pharmaceutical ingredients.

BSE/GMO/Kosher Status:

Key raw materials for the production of Glycerol 85% Ph. Eur.* / JP* (LA / API / parenteral grade) are Glycerol Ph. Eur.* / USP* 99.7% synth (OPTIM™ Plus Glycerine 99.7% USP/EP) and Highly Purified Water Ph. Eur.*. Glycerol has been produced only from synthetic raw materials. No vegetable or animal derived precursors are used. Glycerol 85% Ph. Eur.* / JP* (LA / API / parenteral grade) has no BSE risk, is not derived from GMO and is kosher.

Residual solvents (Ph. Eur.* 5.4 / ICH Q3C*):

Based on the process knowledge only one Class 3 solvent is likely to be present. The level of this Residual Solvent is less than 100 ppm.

Batch certification:

Every batch is analysed according to all parameters of this specification (except characters/description and Ph. Eur.* identification C and D). The Certificate of Analysis (CoA) provides all test results including release date, manufacturing date and residual solvents statement. All CoAs are signed by a Qualified Person according to GMP.

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