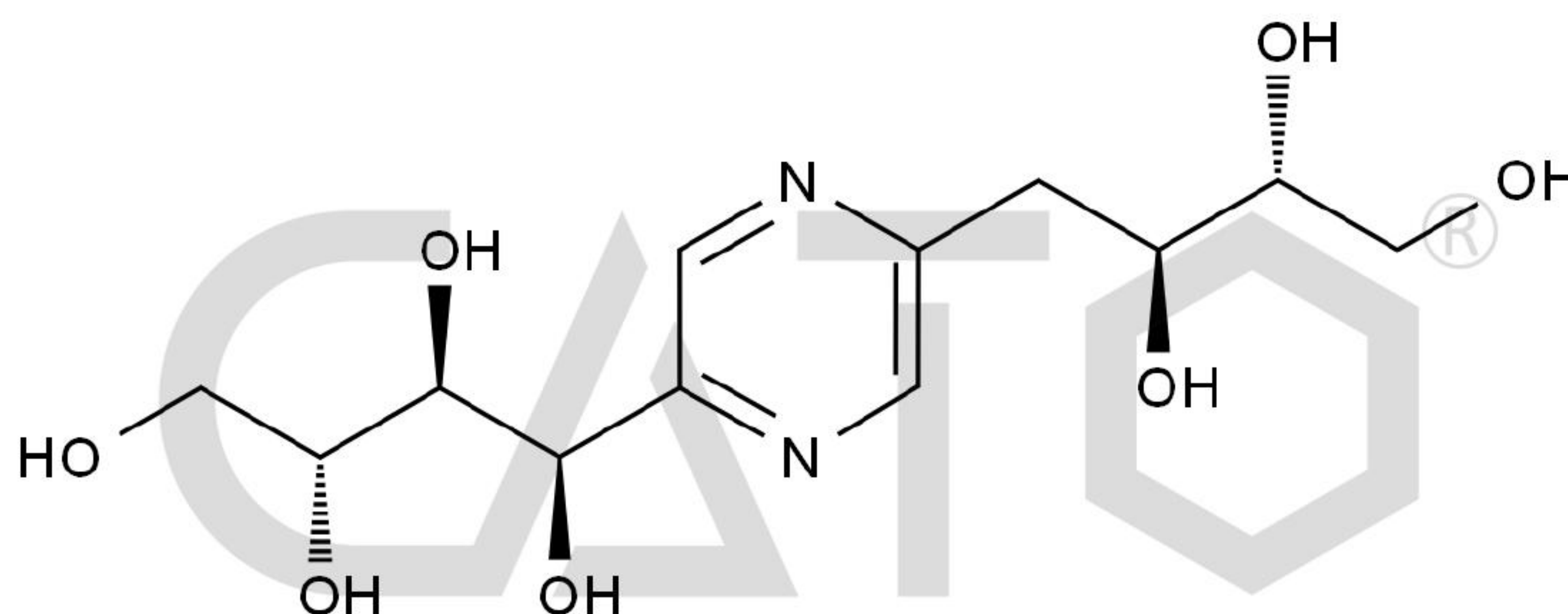


Certificate of Analysis

Reference Material & Standard

Product Name:	Glucosamine sulfate Impurity 12	Catalogue Number:	C4X-194612
Synonyms:	(1R,2S,3R)-1-[5-[(2S,3R)-2,3,4-Trihydroxybutyl]-2-pyrazinyl]-1,2,3,4-butanetetrol	Lot Number:	1106-RG-0016
CAS Number:	17460-13-8	Expiry Date:	Nov 12, 2029
Molecular Formula:	C ₁₂ H ₂₀ N ₂ O ₇	Storage:	2°C ~ 8°C Sealed
Molecular Weight:	304.30	Shipping Condition:	Shipping at Room Temperature
Solubility:	Soluble in DMSO and Water	Warning:	

Chemical Structure:



Test Items	Method	Results
Appearance	Visual inspection	Off-White Solid
Identification	LCMS&IR&CNMR&HNMR	Confirmed
Purity	HPLC	99.808%
Residue on Ignition	TGA	0.0481%
Loss On Drying	TGA	0.0250%
Assay	qNMR	99.2%
Assay	Mass Balance	99.7%

Comment:

- The retest date of this product is Nov 12, 2028.
- The calculation of the mass balance method follows the formula (calculated on the non-dried basis):

$$\text{Assay (\%)} = (100\% - \text{Residue on Ignition} - \text{Loss On Drying}) * \text{Purity HPLC (\%)} / 100\%$$
Residue on Ignition and Loss On Drying are considered as absolute effect, HPLC purity is considered as relative effect.

Signature:

Prepared by:

Koi

Reviewed by:

Alice

Approved by General Manager:

David

Date: Nov 13, 2025

Date: Nov 13, 2025

Date: Nov 13, 2025

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