

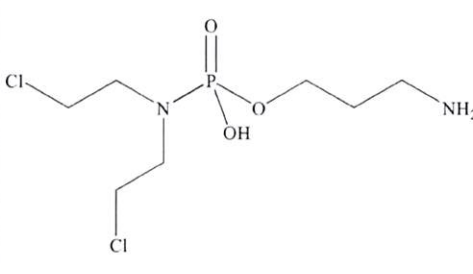


Certificate of Analysis


Certificate No.: 20231013005

Date: October 13, 2023

Retest date: October 12, 2026

Compound Name:	Cyclophosphamide Impurity 19	
Synonyms:	3-aminopropyl hydrogen bis(2-chloroethyl)phosphoramidate	
TLC Catalogue Number:	C-10235	
CAS Number:	3308-51-8	
Molecular Weight:	279.10	
Molecular Formula:	C ₇ H ₁₇ Cl ₂ N ₂ O ₃ P	
Source:	TLC Pharmaceutical Standards	
Source Lot No.:	3983-100A5	
Storage Conditions:	Store at 2-8 °C	
Solubility:	Water	

Test Description	Specifications	Results
Visual Description	White to off-white solid	Conforms
Identification		
IR	Conforms to structure	Conforms
MS	Conforms to structure	Conforms
¹ H NMR	Conforms to structure	Conforms
Elemental Analysis	Conforms to structure	Conforms
Purity (HPLC)	Not less than 95.0%	99.9%
Impurity (HPLC)	N/A	
Residual Solvents (NMR)	No residual solvent	
Assay (qNMR)	Not less than 90.0%	90.6%
Recommendation:	Release.	

Name	Department	Signature	Date
Reviewed and approved by:	Quality Control		10/16/2023
Approved by:	Quality Assurance		10/16/2023

Attachments: HPLC, IR, MS and NMR spectra.