

Certificate of Analysis

WFI Beyond,
Water for Injection, acc. to EP monograph 0169 and beyond compendial

FDA Drug Master File: Type IV (excipient) MF044505

Product	Description	Art. No.	Size
WFI Beyond	Water for Injection, acc. to EP monograph 0169 and beyond compendial	CT-981000	1000 mL

Lot No.: 2560826

Date of production: August 18, 2026

Storage conditions and stability:

Storage: +15°C to +25°C (RT)
Stability: 2 years from date of production
Based on stability studies performed for the microbiological parameters sterility and endotoxins.

Specification:	Acceptance criteria		Result
	acc. to EP monograph 0169	acc. to beyond compendial	(B, E: Beginning and End of Filling process)
Appearance Turbidity (Ph. Eur. 2.2.1.)	N/A	clear	B: pass E: pass
Appearance Coloration (Ph. Eur. 2.2.2. Method II)	N/A	colorless	B: pass E: pass
Conductivity (at 20°C) (Ph. Eur. 2.2.38.) (Measured continuously in the storage loop before filtration)	≤ 1.1 µS/cm	< 0.2 µS/cm	0.128 µS/cm
Total organic carbon (TOC) (Ph. Eur. 2.2.44.) (Measured continuously in the storage loop before filtration)	≤ 0.5 mg/L	< 0.05 mg/L	0.011 mg/L
Endotoxin (Ph. Eur. 2.6.14., Method C)	< 0.25 EU/ml	< 0.005 EU/mL	B: < 0.005 EU/mL E: < 0.005 EU/mL

Specification:	Acceptance criteria:		Result:	
	acc. to EP monograph 0169	acc. to beyond compendial	(B, E: Beginning and End of Filling process)	
RNase activity (AA 4.1.10, fluorometric method)	N/A	No RNase activity detected	B:	not detected
			E:	not detected
DNase activity (AA 4.1.10, fluorometric method)	N/A	No DNase activity detected	B:	not detected
			E:	not detected
Sterility (Ph. Eur. 2.6.1.) Full product-specific verification not included	no growth	no growth	no growth	
Elemental Impurities (Ph. Eur. 2.4.20., Procedure 2 (ICP-MS), 24 elements)	see the list below		B:	complies
			E:	complies

Class 1 - Human toxicants, evaluation always required

	limit acc. to ICH Q3D(R2)	limit acc. to beyond Compendial	LOQ = limit of quantification	Result
Arsenic (As)	≤ 1500 µg/L	≤ 750 µg/L	0.30 µg/L	B: < 0.30 µg/L E: < 0.30 µg/L
Cadmium (Cd)	≤ 200 µg/L	≤ 100 µg/L	0.04 µg/L	B: < 0.04 µg/L E: < 0.04 µg/L
Mercury (Hg)	≤ 300 µg/L	≤ 150 µg/L	0.06 µg/L	B: < 0.06 µg/L E: < 0.06 µg/L
Lead (Pb)	≤ 500 µg/L	≤ 250 µg/L	0.10 µg/L	B: < 0.10 µg/L E: < 0.10 µg/L

Class 2A - High probability of occurrence, evaluation always required

	limit acc. to ICH Q3D(R2)	limit acc. to beyond compendial	LOQ = limit of quantification	Result
Cobalt (Co)	≤ 500 µg/L	≤ 250 µg/L	0.10 µg/L	B: < 0.10 µg/L E: < 0.10 µg/L
Nickel (Ni)	≤ 2000 µg/L	≤ 1000 µg/L	0.40 µg/L	B: < 0.40 µg/L E: < 0.40 µg/L
Vanadium (V)	≤ 1000 µg/L	≤ 500 µg/L	0.20 µg/L	B: < 0.20 µg/L E: < 0.20 µg/L

Class 2B - Low probability of occurrence, evaluation required if intentionally added

	limit acc. to ICH Q3D(R2)	limit acc. to beyond Compendial	LOQ = limit of quantification	Result
Silver (Ag)	≤ 1500 µg/L	≤ 750 µg/L	0.20 µg/L	B: < 0.20 µg/L E: < 0.20 µg/L
Gold (Au)	≤ 30000 µg/L	≤ 15000 µg/L	2.0 µg/L	B: < 2.0 µg/L E: < 2.0 µg/L
Iridium (Ir)	≤ 1000 µg/L	≤ 500 µg/L	0.20 µg/L	B: < 0.20 µg/L E: < 0.20 µg/L
Osmium (Os)	≤ 1000 µg/L	≤ 500 µg/L	0.20 µg/L	B: < 0.20 µg/L E: < 0.20 µg/L
Palladium (Pd)	≤ 1000 µg/L	≤ 500 µg/L	0.20 µg/L	B: < 0.20 µg/L E: < 0.20 µg/L
Platinum (Pt)	≤ 1000 µg/L	≤ 500 µg/L	0.20 µg/L	B: < 0.20 µg/L E: < 0.20 µg/L
Rhodium (Rh)	≤ 1000 µg/L	≤ 500 µg/L	0.20 µg/L	B: < 0.20 µg/L E: < 0.20 µg/L
Ruthenium (Ru)	≤ 1000 µg/L	≤ 500 µg/L	0.20 µg/L	B: < 0.20 µg/L E: < 0.20 µg/L
Selenium (Se)	≤ 8000 µg/L	≤ 4000 µg/L	1.60 µg/L	B: < 1.60 µg/L E: < 1.60 µg/L
Thallium (Tl)	≤ 800 µg/L	≤ 400 µg/L	0.16 µg/L	B: < 0.16 µg/L E: < 0.16 µg/L

Class 3 - Low oral toxicity, evaluation required for the parenteral route

	limit acc. to ICH Q3D(R2)	limit acc. to beyond Compendial	LOQ = limit of quantification	Result
Barium (Ba)	≤ 70000 µg/L	≤ 35000 µg/L	14.00 µg/L	B: < 14.00 µg/L E: < 14.00 µg/L
Chromium (Cr)	≤ 110000 µg/L	≤ 55000 µg/L	22.00 µg/L	B: < 22.00 µg/L E: < 22.00 µg/L
Copper (Cu)	≤ 30000 µg/L	≤ 15000 µg/L	6.00 µg/L	B: < 6.00 µg/L E: < 6.00 µg/L
Lithium (Li)	≤ 25000 µg/L	≤ 12500 µg/L	5.00 µg/L	B: < 5.00 µg/L E: < 5.00 µg/L
Molybdenum (Mo)	≤ 150000 µg/L	≤ 75000 µg/L	30.00 µg/L	B: < 30.00 µg/L E: < 30.00 µg/L
Antimony (Sb)	≤ 9000 µg/L	≤ 4500 µg/L	1.80 µg/L	B: 2.6 µg/L E: < 1.80 µg/L
Tin (Sn)	≤ 60000 µg/L	≤ 30000 µg/L	12.00 µg/L	B: < 12.00 µg/L E: < 12.00 µg/L

Limits are calculated in accordance with ICH Q3D(R2), Section 7, Option 1, using the parenteral permitted daily exposures (PDE) listed in Table A.2.1:

Limit [µg/g] = parenteral PDE [µg/day] / 10 g/day.

For aqueous solutions with a density of 1.00 g/mL at 20 °C, 1 µg/g corresponds to 1 mg/L. The assumed daily intake is to be verified by the manufacturer of the finished medicinal product against its actual maximum daily intake.

Suitability

FOR FURTHER MANUFACTURING

User is responsible to assure product suitability for the intended use.

GMP compliance:

This batch has been manufactured according to EU-GMP guidelines.

Manufactured in Germany

Date: 13. OKT. 2026



Quality Assurance

Addendum to Certificate of Analysis

WFI Beyond, Water for Injection, acc. to EP monograph 0169 and beyond compendial *FDA Drug Master File: Type IV (excipient) MF044505*

Product	Description
WFI Beyond	Water for Injection, acc. to EP monograph 0169 and beyond compendial

Lot No.: 2560826

Additional elemental characterisation

Oxidation-Relevant Trace Metals: Copper & Iron

Oxidative degradation of monoclonal antibodies is driven predominantly by metal-catalyzed oxidation (Fenton chemistry), and the two dominant catalytic metals are copper and iron. This addendum reports the measured levels of both in this WFI Beyond batch. Copper is covered by ICH Q3D; iron is not tested by the Ph. Eur. Water for Injections monograph, nor by ICH Q3D — PAN reports it here as a beyond-compendial characterization.

Element	Role in oxidation	Reference limit [µg/L]	LOQ [µg/L]	Result [µg/L]
Copper (Cu)	Most potent MCO catalyst; site-specific (His/Met)	30000 (ICH Q3D, Class 3)	6	< 6
Iron (Fe)	Co-primary MCO catalyst; ubiquitous	25000 (in-house ref.)	5	< 5

LOQ = the LOQ is the accredited laboratory's limit of quantification for the executed method. The method is validated.

Both oxidation catalysts are effectively absent: copper and iron below the limit of quantification in every sample.

Limits are calculated in accordance with ICH Q3D(R2), Section 7, Option 1, using the parenteral permitted daily exposures (PDE) listed in Table A.2.1:

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What this means for antibody processes

The two metals that catalyze antibody oxidation are controlled at the water source — one of them (iron) beyond what the pharmacopoeia and ICH Q3D require. Building a monoclonal-antibody process on WFI Beyond removes trace copper and iron as an upstream contributor to oxidation, aggregation and the developability risks that surface late at CMC.

Date: 13. OKT. 2026

Quality Assurance