

TECHNICAL DATA SHEET

Magnesium Chloride Hexahydrate FCC, USP GRADE

USP Grade · 46.63%

CAS NUMBER	ALLIANCE CODE	GENERATED
7791-18-6	magnesium-chloride- hexahydrate-fcc-usp-grade	2026-09-01
REVISION	REVIEWED	
1.1	2026-06-17 · Andre Taki	

IDENTITY & COMPOSITION

PRODUCT NAME	ALLIANCE CODE
Magnesium Chloride Hexahydrate FCC, USP GRADE	magnesium-chloride-hexahydrate-fcc-usp- grade
GRADE	CONCENTRATION
USP Grade	46.63%
CAS NUMBER	FORMULA
7791-18-6 PubChem	Cl2H12MgO6 PubChem
MOLECULAR WEIGHT	PRODUCT TYPE
203.30 PubChem	pure_substance

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay (MgCl2·6H2O) , USP	98.0 – 101.0 percent	99.5 percent	Complexometric titration with 0.05 M edetate disodium VS, eriochrome black TS indicator, to a blue endpoint (1 mL = 10.17 mg MgCl2·6H2O)	USP monograph

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Aluminum (only where labeled as intended for use in hemodialysis)	1 µg per g	0.2 µg per g	USP <206>, using 2.0 g to prepare the Test Preparation	USP monograph
Ammonium (NH ₄)	≤0.005 %	0.0005 %	—	FCC
Barium	No turbidity is produced within 2 hours	Passes test	Dissolve 1 g in 10 mL water, add 1 mL of 2 N sulfuric acid; observe 2 hours	USP monograph
Calcium (Ca)	≤0.01 %	0.003 %	—	USP monograph
Description	Colorless flakes or crystals; hygroscopic; very soluble in water, freely soluble in alcohol	Passes test	Visual	FCC
Heavy metals	0.001%	0.0002%	USP <231>, 2 g dissolved in water to make 25 mL.	USP monograph
Identification (FCC)	A 1:10 aqueous solution gives positive tests for Magnesium and for Chloride	Passes test	Positive tests for Magnesium and for Chloride on a 1:10 aqueous solution	FCC
Identification (USP)	A solution (1 in 20) responds to the tests for Magnesium and for Chloride	Passes test	USP <191> tests for Magnesium and for Chloride, on a 1 in 20 solution	USP monograph
Insoluble matter	Max. 0.005%	0.001%	Gravimetric.	Supplier specification

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Lead (Pb)	≤4 mg/kg	0.1 mg/kg	—	FCC
Potassium	No turbidity is produced within 5 minutes	Passes test	Dissolve 5 g in 5 mL water, add 0.2 mL sodium bitartrate TS; observe 5 minutes	USP monograph
Sulfate (SO ₄)	≤0.005 %	0.001 %	—	USP monograph
Iron (Fe)	Max. 0.001% (10 mg/kg)	0.00005 %	Colorimetric, USP <241> / ICP-OES	Interpreted
Arsenic (as As)	Max. 3 mg/kg	0.05 mg/kg	USP <211> / FCC arsenic limit test (or ICP-MS)	Interpreted

Specification values are guaranteed limits. Typical values are representative of production lots and are not guaranteed. Lot-specific certificates of analysis ship with every order.

PHYSICAL & CHEMICAL PROPERTIES

PROPERTY	VALUE	SOURCE
Appearance	Other Solid	Published reference
Form	Solid	Published reference
pH	between 4.5 and 7.0, in a 1 in 20 solution in carbon dioxide-free water	USP monograph
Boiling Point	1412	Published reference
Melting Point	117	Published reference
Flash Point	N/A	Published reference
Solubility (water)	High water solubility, moderate alcohol solubility	Published reference

MATERIALS OF CONSTRUCTION SERVICE ENVELOPE ≈ 46.63%

MATERIAL	RATING	MAX T (°C)	NOTES	SOURCE
Buna-N (NBR) Elastomer	Good	60	Acceptable	Cole-Parmer Chemical Compatibility
EPDM Elastomer	Excellent	100	Standard for brine gaskets.	Parker O-ring Chemical Compatibility
Viton (FKM) Elastomer	Excellent	100	Preferred elastomer	Cole-Parmer Chemical Compatibility
Borosilicate Glass Glass Ceramic	Excellent	100	Universally inert to salt solutions.	Cole-Parmer Chemical Compatibility

MATERIAL	RATING	MAX T (°C)	NOTES	SOURCE
Concrete (sealed) Glass Ceramic	Good	—	Acceptable with epoxy coating	Cole-Parmer Chemical Compatibility
304 stainless steel Metal	Fair	25	Pitting in chloride-rich service	Cole-Parmer Chemical Compatibility
316L Stainless Steel Metal	Good	60	Watch for chloride pitting above 60 °C in chloride salts.	NACE Chloride Pitting Guidelines
Aluminium Metal	Poor	—	Pitting; not recommended for brine	Cole-Parmer Chemical Compatibility
Carbon steel Metal	Poor	—	Rapid rust in brine	Cole-Parmer Chemical Compatibility
FRP Thermoplastic	Excellent	60	Common bulk-storage	Cole-Parmer Chemical Compatibility
HDPE Thermoplastic	Excellent	60	Universal salt brine compatibility.	Cole-Parmer Chemical Compatibility
PP Thermoplastic	Excellent	80	Acceptable for hot brine	Cole-Parmer Chemical Compatibility
PVC Thermoplastic	Excellent	60	Standard for brine piping.	Cole-Parmer Chemical Compatibility

Ratings reflect the service envelope (concentration × temperature) shown. Always confirm against your specific duty cycle and contact-time before equipment selection. The most cautious rating across overlapping references is shown.

REGULATORY & TRANSPORT

DOT / 49 CFR

UN NUMBER

Not regulated [Adjudicated](#)

PACKING GROUP

Not regulated [Adjudicated](#)

HAZARD CLASS

Not regulated [Adjudicated](#)

PROPER SHIPPING NAME

Not regulated [Adjudicated](#)

GHS / OSHA HAZCOM 2012

SIGNAL WORD

Not regulated [Adjudicated](#)

H-CODES (HAZARD STATEMENTS)

— [no canonical](#)

P-CODES (PRECAUTIONARY STATEMENTS)

— [no canonical](#)

OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)

— [no canonical](#)

ACGIH TLV

— [no canonical](#)

NIOSH REL

— [no canonical](#)

NIOSH IDLH

— [no canonical](#)

Transport descriptions reflect 49 CFR 172.101 lookup at time of publication. Sourced data: ECHA CLP Annex VI for harmonised classifications, NIOSH Pocket Guide for REL/IDLH, OSHA Z-Tables for PEL. Always verify against the latest regulatory text before shipment-critical decisions.

APPLICATIONS

Food additive functioning as a color-retention agent and firming agent (FCC Food Grade specification)

[mubychem.com](#)

Coagulant used in the preparation of cheese and tofu (sold as nigari in Japan, lushui in China)

[mubychem.com](#)

Ingredient in baby formula milk [mubychem.com](#)

Use in hemodialysis, where the USP material is labeled as intended for that use (and must then meet the 1 ppm aluminum limit)

[trungtamthuoc.com](#)

USP Grade material can be used in food, drug, or medical applications [laballey.com](#)

Reagent, personal care, and gardening uses [laballey.com](#)

May be intended for use in hemodialysis when labeled accordingly. [trungtamthuoc.com](#)

Applications are drawn from published manufacturer and supplier documentation; each is sourced. Suitability for a specific use is the buyer's to confirm.

STORAGE & HANDLING

RECOMMENDED STORAGE

Preserve in tight containers (USP packaging and storage requirement). The material is hygroscopic.

<ftp.uspbpep.com>

INCOMPATIBILITIES

Specific incompatibilities depend on the salt — consult the SDS. Many salts react with strong acids to release gases.

Class-level guidance — not product-specific; the SDS controls.

For full hazard, PPE, and emergency response guidance, refer to the Safety Data Sheet (SDS) for this product. The SDS controls in all cases where guidance differs.

HANDLING PRECAUTIONS

Standard chemical PPE — dust mask and goggles for handling of fine grades. Avoid generating airborne dust.

Class-level guidance — not product-specific; the SDS controls.

SHELF LIFE

Consult Technical Services for product-specific shelf life

PACKAGING & LOGISTICS

SHIPPING DESCRIPTION (US DOT)

Not regulated for transport.

Confirm against shipping documents and carrier requirements before tender.

NMFC CLASS
70

REVISION HISTORY

Last reviewed 2026-06-17 by Andre Taki, DOT Hazmat Specialist.

VERSION	DATE	CHANGE	TRIGGER
1.1	2026-06-17	Canonical data re-verified: 4 fields updated against independent vendor SDSs, CLP Annex VI, 49 CFR, and OSHA HazCom 2024 (GHS classification, hazard/precautionary codes, signal word, physical properties as applicable). - countryOfOrigin · canonical adjudication / reground (coa.data_provenance) - dotSubsidiaryHazardClass · canonical adjudication / reground (coa.data_provenance) - hsCode · canonical adjudication / reground (coa.data_provenance) - pH · canonical adjudication / reground (coa.data_provenance)	canonical_change
1.0	2026-05-20	Initial URL-first TDS published from canonical chemistry registry.	initial

This Technical Data Sheet is provided for technical reference. The Safety Data Sheet (SDS) controls in all cases where guidance differs. Values reflect Alliance Chemical canonical data at time of generation; subsequent revisions are recorded in the Revision History above.