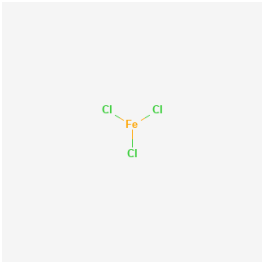
Technical Data Sheet

Ferric Chloride 40% Water Treatment Grade

Reagent · 40%

Alliance Code	Revised	Revision
ferric-chloride-40	2026-10-07	1.8

CAS number 7705-08-0	UN number UN2582	Hazard class · packing group 8 · PG III
 Structure · PubChem	Grade Reagent · 40%	Signal word **Danger**
Hazards Corrosive · Irritant / harmful · H290 H302 H314 H412		
Proper shipping name Ferric chloride, solution		

IDENTITY & COMPOSITION

PRODUCT NAME
Ferric Chloride 40% Water Treatment Grade

ALLIANCE CODE
ferric-chloride-40

GRADE
Reagent

CONCENTRATION
40% w/w

CAS NUMBER
7705-08-0 PubChem

FORMULA
FeCl3 PubChem

PRODUCT TYPE
Solution

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay (FeCl3)	38 - 42 % w/w	—	—	Interpreted

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Ferrous chloride (FeCl2)	2.5 % max	—	—	Interpreted
Ferrous (as Fe2)	Max 0.5% (w/w)	—	—	Interpreted
Iron (Fe, total)	13.8 ± 0.4 % w/w	—	—	Interpreted
pH (20 °C)	< 1	—	—	Interpreted
Sulfate (SO4 2-)	< 0.5 %	—	—	Interpreted
Free acid (as HCl)	1.0 % max	—	—	Interpreted
Total insoluble matter	0.2 % max	—	—	Interpreted
Arsenic (As)	Max 3 mg/kg	—	ICP-MS / EPA 200.8	Interpreted
Lead (Pb)	Max 5 mg/kg	—	ICP-MS / EPA 200.8	Interpreted
Mercury (Hg)	Max 0.5 mg/kg	—	Cold vapour AAS / EPA 245.1	Interpreted

Values are reproduced from the current product reference. Source labels do not by themselves establish a supplier guarantee or a test result for your lot. Confirm applicable acceptance limits and request lot-specific documentation.

AVAILABLE GRADES SAME CAS, ALTERNATE GRADES AND CONCENTRATIONS

GRADE	CONCENTRATION	TYPICAL ASSAY	SKU
THIS GRADE Reagent	40%	—	current
Technical	10%	—	ferric-chloride-10
Technical	—	—	ferric-chloride-20
Technical	—	—	ferric-chloride-30

Typical assay for each grade is the average of its recent lots. Confirm a grade meets your specification before substituting it.

PHYSICAL & CHEMICAL PROPERTIES

PROPERTY	VALUE	SOURCE
Appearance	Dark brown liquid	Adjudicated
Form	Liquid	Published reference
Odor	Slight acidic odor	Adjudicated
pH	1–2	Adjudicated
Specific Gravity	1.41–1.44 at 20 °C (water = 1)	Adjudicated
Density	1.40-1.43 g/cm^3 (40%, 20°C)	Published reference
Boiling Point	100 to 110 °C (212 to 230 °F) (aqueous solution)	Adjudicated
Melting Point	< -20 °C	Published reference
Flash Point	Not applicable	Adjudicated
Vapor Pressure	About 17.5 mmHg at 20 °C (water vapor)	Adjudicated
Solubility (water)	Completely miscible with water	Adjudicated

MATERIALS OF CONSTRUCTION

MATERIAL	RATING	CONDITIONS	SOURCE
fiberglass tank	Compatible	—	scribd.com
plastic tank (type unspecified)	Compatible	—	scribd.com
metals (unspecified)	Not recommended	—	thaichloride.com
fiberglass	Compatible	—	scribd.com
plastic	Compatible	—	scribd.com

Compatibility is drawn from published manufacturer and supplier documentation for this product; each rating is sourced. Confirm against your specific duty cycle before equipment selection.

REGULATORY & TRANSPORT

DOT / 49 CFR

UN NUMBER

UN2582 49 CFR 172.101

HAZARD CLASS

8 Adjudicated

PACKING GROUP

III Adjudicated

PROPER SHIPPING NAME

Ferric chloride, solution Adjudicated

GHS / OSHA HCS 2024

SIGNAL WORD

Danger Adjudicated

H-CODES (HAZARD STATEMENTS)

H290, H302, H314, H412 Adjudicated

P-CODES (PRECAUTIONARY STATEMENTS)

P234, P260, P264, P270, P273, P280, P301+P312, P301+P330+P331, P303+P361+P353, P304+P340, P305+P351+P338, P310, P321, P330, P363, P390, P405, P406, P501

Adjudicated

OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)

— no canonical

ACGIH TLV

1 mg/m^3 TWA (soluble iron salts, as Fe); hydrogen chloride 2 ppm Ceiling

Adjudicated

NIOSH REL

1 mg/m^3 TWA (Fe) Adjudicated

NIOSH IDLH

— no canonical

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

HEALTH & FIRE HAZARD

ACUTE TOXICOLOGY

LD_{50} ORAL (RAT)

450–900 mg/kg (ferric chloride); product ATE about 455 mg/kg

Adjudicated

LD_{50} DERMAL (RABBIT)

> 2,000 mg/kg (ferric chloride, rat)

Adjudicated

Acute toxicology values from SDS Section 11 or NIOSH RTECS.

APPLICATIONS

Coagulant for water quality improvement, municipal wastewater treatment, and industrial wastewater treatment

thaichloride.com

Removal of phosphates and heavy metals (lead, cadmium, mercury) from wastewater thaichloride.com

Dissolving metals such as copper and zinc (metal etching / pickling) thaichloride.com

Coagulant for potable water and wastewater treatment scribd.com

Municipal and industrial water and wastewater treatment (37-42% ferric chloride solution) corecheminc.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

Store in closed polyethylene, fiberglass or rubber-lined containers, never metal. Keep away from bases and metals.

Adjudicated

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.

INCOMPATIBILITIES

Metals, especially copper, aluminum, zinc and mild steel (corrosion and flammable hydrogen); alkalis and bases; strong oxidizers and reducing agents.

Adjudicated

SHELF LIFE

Consult Technical Services for product-specific shelf life

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.

PACKAGING & LOGISTICS

SHIPPING DESCRIPTION (US DOT)

```
UN2582, Ferric chloride, solution, 8, PG III
```

Sourced from 49 CFR 172.101. Confirm against shipping documents and carrier requirements before tender.

NMFC CLASS	PLACARD	PACKING GROUP
65	Corrosive	PG III

REVISION HISTORY

Last reviewed 2026-10-07 by Andre Taki, Chief Commercial Officer, DOT Hazmat–certified (49 CFR 172.704).

VERSION	DATE	CHANGE	TRIGGER
1.8	2026-10-07	Canonical data updated: 20 fields changed via the provenance/adjudication pipeline. • ghsClassification · canonical change (coa.data_provenance / adjudication) • hazard_h_codes · canonical change (coa.data_provenance / adjudication) • hazard_p_codes · canonical change (coa.data_provenance / adjudication) • synonyms · canonical change (coa.data_provenance / adjudication) • recommended_use · canonical change (coa.data_provenance / adjudication) • restrictions_on_use · canonical change (coa.data_provenance / adjudication) • odor · canonical change (coa.data_provenance / adjudication) • pH · canonical change (coa.data_provenance / adjudication) • vaporPressure · canonical change (coa.data_provenance / adjudication) • specificGravity · canonical change (coa.data_provenance / adjudication) • solubility · canonical change (coa.data_provenance / adjudication) • flashPoint · canonical change (coa.data_provenance / adjudication) • oel_acgih_tlv · canonical change (coa.data_provenance / adjudication) • incompatible_materials · canonical change (coa.data_provenance / adjudication) • conditions_to_avoid · canonical change (coa.data_provenance / adjudication) • hazardous_decomposition_products · canonical change (coa.data_provenance / adjudication) • storage_precautions · canonical change (coa.data_provenance / adjudication) • rcra_waste_codes · canonical change (coa.data_provenance / adjudication) • cercla_rq · canonical change (coa.data_provenance / adjudication) • dot_transport_note · canonical change (coa.data_provenance / adjudication)	canonical_change

VERSION	DATE	CHANGE	TRIGGER
1.7	2026-10-06	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. • `appearance` · canonical change (coa.data_provenance / adjudication)	canonical_change
1.6	2026-10-05	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. • `oel_niosh_rel` · canonical change (coa.data_provenance / adjudication)	canonical_change
1.5	2026-09-30	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • `boilingPoint` · canonical change (coa.data_provenance / adjudication) • `appearance` · canonical change (coa.data_provenance / adjudication)	canonical_change
1.4	2026-08-05	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. • `unNumber` · canonical change (coa.data_provenance / adjudication)	canonical_change
1.3	2026-07-22	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • `dotSubsidiaryHazardClass` · canonical change (coa.data_provenance / adjudication) • `ghsClassification` · canonical change (coa.data_provenance / adjudication) • `dotProperShippingName` · canonical change (coa.data_provenance / adjudication)	canonical_change
1.2	2026-07-17	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • `ghsClassification` · canonical change (coa.data_provenance / adjudication) • `hazard_h_codes` · canonical change (coa.data_provenance / adjudication) • `hazard_p_codes` · canonical change (coa.data_provenance / adjudication)	canonical_change

VERSION	DATE	CHANGE	TRIGGER
1.1	2026-07-17	Canonical data re-verified: 7 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) • ghsClassification · canonical adjudication / reground (coa.data_provenance) • hazard_h_codes · canonical adjudication / reground (coa.data_provenance) • hazard_p_codes · canonical adjudication / reground (coa.data_provenance) • hsCode · canonical adjudication / reground (coa.data_provenance) • physicalProperties · canonical adjudication / reground (coa.data_provenance) • specificGravity · 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.