

Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 01/23/2008

Reviewed on 01/23/2008

* 1 Identification of substance

- **Trade name:** CHLORIDE T2
- **Product use:** Reagent for water analysis
- **MSDS p/n:** 233240-001 Revision G
- **Part of Thermo Scientific item:** Orion AC2017
- **Manufacturer/Supplier:**
Thermo Fisher Scientific
Environmental Instruments
Water Analysis Group
166 Cummings Center
Beverly, MA 01915 - 6110
USA
phone: 978-232-6000
Made in Germany

* 2 Hazards identification

- **Hazard description:**



C Corrosive

- **Canadian Hazard Symbols:**



- **WHMIS classification:**

D2B

Toxic material causing other toxic effects

E

Corrosive material

- **Information pertaining to particular dangers for man and environment:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

R 34 Causes burns.

R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

- **Classification system:**

The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

- **NFPA ratings (scale 0 - 4)**



Health = 3

Fire = 0

Reactivity = 0

- **GHS label elements**

**Danger**

3.2/1B - Causes severe skin burns and eye damage.

4.1/3 - Harmful to aquatic life with long lasting effects.

- **Prevention:**

Do not breathe dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

Avoid release to the environment.

(Contd. on page 2)

— USA —

Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 01/23/2008

Reviewed on 01/23/2008

Trade name: **CHLORIDE T2**

(Contd. of page 1)

Wear protective gloves/protective clothing/eye protection/face protection.

Response:

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a POISON CENTER or doctor/physician.

Call a POISON CENTER or doctor/physician if you feel unwell.

Specific treatment (see label).

Wash contaminated clothing before reuse.

Storage:

Store locked up.

Store away from flammable substances.

Disposal:

Dispose of contents/container in accordance with local/regional/national/international regulations.

* 3 Composition / Data on components

Description: mixture of inorganic compounds**Composition and Information on Ingredients:**

CAS: 37222-66-5	potassium monopersulfate triple salt C, Xn, O; R 8-22-34 Danger: 3.1.O/3; 3.2/1B Warning: 2.14/2	5-10%
CAS: 7761-88-8 EINECS: 231-853-9 EU Number: 047-001-00-2	silver nitrate C, N; R 34-50/53 Danger: 3.2/1B Warning: 2.14/2; 4.1.C/1	≤ 2.5%
CAS: 10043-35-3 EINECS: 233-139-2 RTECS: ED 4550000	boric acid, crude natural, containing not more than 85 per cent of H ₃ BO ₃ calculated on the dry weight	> 50%
CAS: 9999-99-9	Nonhazardous components Any ingredient(s) of this product listed as "Nonhazardous component(s)" is not considered a health hazard according to OSHA definition.	< 20%

Additional information: For the wording of the listed risk phrases refer to section 16.

* 4 First aid measures

General information: Immediately remove any clothing soiled by the product.**After inhalation:**

Supply fresh air or oxygen; call for doctor.

In case of unconsciousness remove to fresh air, apply artificial respiration, and consult a physician.

After skin contact:

Immediately rinse with plenty of water.

Immediately wash with polyethylene glycol 400.

Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.

After eye contact:

Rinse opened eye for several minutes (15 min) under running water.

Call a doctor immediately.

After swallowing:

Do not induce vomiting; immediately call for medical help.

Rinse out mouth and then drink plenty of water.

(Contd. on page 3)

Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 01/23/2008

Reviewed on 01/23/2008

Trade name: **CHLORIDE T2**

(Contd. of page 2)

- **The following symptoms may occur:**

- after inhalation:

- sickness

- coughing

- vomiting

- damage to the affected mucous membranes

- after swallowing:

- strong caustic effect

- breathing difficulty

- cramps

- **Danger:**

- Danger of impaired breathing.

- Danger of gastric perforation.

- **Treatment**

- Later observation for pneumonia and pulmonary edema.

- If swallowed or in case of vomiting, danger of entering the lungs.

* 5 Fire fighting measures

- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.

- **Special hazards caused by the material, its products of combustion or resulting gases:**

- Formation of toxic gases is possible during heating or in case of fire.

- Sulfur oxides (SO_x)

- Nitrogen oxides (NO_x)

- Oxygen (O₂)

- potassium oxide

- **Protective equipment:**

- Wear self-contained respiratory protective device.

- Wear fully protective suit.

- **Additional information**

- Ambient fire may liberate hazardous vapours.

- Collect contaminated fire fighting water separately. It must not enter the sewage system.

- Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

* 6 Accidental release measures

- **Person-related safety precautions:** Wear protective equipment. Keep unprotected persons away.

- **Measures for environmental protection:**

- Do not allow product to reach sewage system or any water course.

- Inform respective authorities in case of seepage into water course or sewage system.

- Do not allow to enter sewers/ surface or ground water.

- **Measures for cleaning/collecting:**

- Dispose contaminated material as waste according to item 13.

- Pick up mechanically.

- Ensure adequate ventilation.

* 7 Handling and storage

- **Handling:**

- **Information for safe handling:**

- Prevent formation of dust.

- Open and handle receptacle with care.

- Keep away from heat and direct sunlight.

- **Information about protection against explosions and fires:** Protect from heat.

(Contd. on page 4)

Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 01/23/2008

Reviewed on 01/23/2008

Trade name: **CHLORIDE T2**

(Contd. of page 3)

- **Storage:**

- **Requirements to be met by storerooms and receptacles:** Store in a cool location.

- **Further information about storage conditions:**

- This product is hygroscopic.

- Keep receptacle tightly sealed.

- Protect from heat and direct sunlight.

- Store in dry conditions.

- Protect from humidity and water.

- Protect from exposure to the light.

* 8 Exposure controls and personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

- **Components with limit values that require monitoring at the workplace:**

10043-35-3 boric acid, crude natural, containing not more than 85 per cent of H3BO3 calculated on the dry weight

TLV (USA)	Short-term value: 6 l mg/m ³
	Long-term value: 2 l mg/m ³
EL (Canada)	Short-term value: 6 mg/m ³
	Long-term value: 2 mg/m ³

7761-88-8 silver nitrate

PEL (USA)	0.01 mg/m ³
	as Ag
REL (USA)	0.01 mg/m ³
	as Ag
TLV (USA)	0.01 mg/m ³
	as Ag
IOELV (European Union)	0.01 mg/m ³
	as Ag
EL (Canada)	Short-term value: 0.03 mg/m ³
	Long-term value: 0.01 mg/m ³
	as Ag

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Personal protective equipment:**

- **General protective and hygienic measures:**

- Keep away from foodstuffs, beverages and feed.

- Immediately remove all soiled and contaminated clothing.

- Wash hands before breaks and at the end of work.

- Avoid contact with the eyes and skin.

- **Breathing equipment:**

- In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

- **Recommended filter device for short term use:** Filter P3

- **Protection of hands:** After use of gloves apply skin-cleaning agents and skin cosmetics.

- **Material of gloves**

- Nitrile rubber, NBR

- Recommended thickness of the material: ≥ 0.11 mm

- **Penetration time of glove material**

- The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- Value for the permeation: Level ≥ 6 (480 min)

- **Eye protection:** Tightly sealed goggles

(Contd. on page 5)

— USA —

Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 01/23/2008

Reviewed on 01/23/2008

Trade name: **CHLORIDE T2**

(Contd. of page 4)

· **Body protection:** Protective work clothing

* 9 Physical and chemical properties

· Odor Threshold:	Not applicable.
· Form:	Tablets
· Color:	White
· Odor:	Odorless
· Melting point/Melting range:	Undetermined.
· Boiling point/Boiling range:	300°C (572°F)
· Freezing Point:	Not applicable.
· Flash point:	Not applicable.
· Flammability (solid, gaseous):	
Upper Flammable Limit:	Not applicable.
Lower Flammable Limit:	Not applicable.
· Ignition temperature:	Undetermined.
· Sensitivity to Mechanical Impact:	None
· Sensitivity to Static Discharge:	None
· Auto igniting:	Product is not selfigniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Vapor Pressure:	Undetermined.
· Vapor Density:	Not applicable.
· Specific Gravity:	Not applicable.
· Density:	Not determined.
· Solubility in / Miscibility with Water:	Soluble.
· Coefficient of Water / Oil Distribution:	Not applicable.
· pH-value (10.2 g/l) at 20°C (68°F):	4
· Solvent content:	
Organic solvents:	0.0 %
· Solids content:	100.0 %

* 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** strong heating
- **Materials to be avoided:**
 - metals
 - NH_x
- **Dangerous products of decomposition:** see chapter 5

* 11 Toxicological information

- **Acute toxicity:** Quantitative data on the toxicity of the preparation are not available.

· **LD/LC50 values that are relevant for classification:**

10043-35-3 boric acid, crude natural, containing not more than 85 per cent of H₃BO₃ calculated on the dry weight

Oral	LD50	2660 mg/kg (rat)
------	------	------------------

(Contd. on page 6)

— USA —

Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 01/23/2008

Reviewed on 01/23/2008

Trade name: **CHLORIDE T2**

(Contd. of page 5)

Dermal	LD50	> 2000 mg/kg (rat)
37222-66-5 potassium monopersulfate triple salt		
Oral	LD50	1250 mg/kg (rat)
7761-88-8 silver nitrate		
Oral	LD50	1173 mg/kg (rat)

- **Primary irritant effect:**

- **on the skin:** Caustic effect on skin and mucous membranes.

- **on the eye:** strong caustic effect

- **Sensitization:** No sensitizing effects known.

- **Subacute to chronic toxicity:**

CAS-No. 10043-35-3:

MERCK: Sensitization test (guinea pig): negative (OECD 406)

- **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:

Corrosive

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

- **Carcinogenicity:** NTP? IARC Monographs? OSHA Regulated?

Boric acid:

evaluation for carcinogenicity: negative in animals (NTP)

- **Teratogenicity:** Not found.

- **Mutagenicity:**

Boric acid:

Bacterial mutagenicity: Ames Test - negative (IUCLUD)

Mutagenicity (mammal cell test): chromosome aberration negative (NTP)

- **Reproductive Toxicity:**

Boric acid may cause developmental changes based on published data, at doses many times in excess of those that could occur through inhalation of dust in occupational settings.

- **Synergistic Products:** None

*12 Ecological information

- **Information about elimination (persistence and degradability):**

- **Other information:**

Methods for the determination of biodegradability are not applicable to inorganic substances.

Quantitative data on the ecological effect of this preparation are not available.

The following statements refer to the individual components.

- **Behavior in environmental systems:**

10043-35-3 boric acid, crude natural, containing not more than 85 per cent of H3BO3 calculated on the dry weight

log P(o/w) 0.76 (25°C) (.)

- **Mobility and bioaccumulation potential:** Nitrates: may contribute to the eutrophication of water supplies

- **Ecotoxicological effects:**

- **Aquatic toxicity:**

10043-35-3 boric acid, crude natural, containing not more than 85 per cent of H3BO3 calculated on the dry weight

EC50 133 mg/l/48h (Daphnia magna)

37222-66-5 potassium monopersulfate triple salt

LC50 36 - 52 mg/l/96h (Brachydanio rerio)

7761-88-8 silver nitrate

LC50 0.029 mg/l/96h (Leuciscus idus)

0.006 mg/l/96h (Oncorhynchus mykiss)

(Contd. on page 7)

Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 01/23/2008

Reviewed on 01/23/2008

Trade name: **CHLORIDE T2**

(Contd. of page 6)

· **Remark:**

Toxic for fish:
 sulfates > 7 g/l
 Harmful to aquatic organisms
 Harmful to fish
 Harmful effect due to pH shift.

· **Bacterial toxicity:** sulfates toxic > 2.5 g/l· **General notes:**

Water hazard class 2 (Self-assessment): hazardous for water
 Do not allow product to reach ground water, water course or sewage system.

13 Disposal considerations

· **Product:**· **Recommendation:**

Hand over to hazardous waste disposers.
 Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**· **Recommendation:** Disposal must be made according to official regulations.· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

* 14 Transport information

· **DOT regulations:**

· **Hazard class:** 8
 · **Identification number:** UN3260
 · **Packing group:** II
 · **Proper shipping name (technical name):** CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (potassium monopersulfate triple salt)
 · **Label:** 8

· **Land transport ADR/RID (cross-border):**

· **ADR/RID class:** 8 (C2) Corrosive substances
 · **Danger code (Kemler):** 80
 · **UN-Number:** 3260
 · **Packaging group:** II
 · **Description of goods:** 3260 CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (potassium monopersulfate triple salt)

· **Maritime transport IMDG:**· **IMDG Class:** 8

(Contd. on page 8)

Material Safety Data Sheet


acc. to ISO/DIS 11014

Printing date 01/23/2008

Reviewed on 01/23/2008

Trade name: **CHLORIDE T2**

(Contd. of page 7)

· UN Number:	3260
· Label	8
· Packaging group:	II
· EMS Number:	F-A,S-Q
· Marine pollutant:	No
· Proper shipping name:	CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (potassium monopersulfate triple salt)
· Air transport ICAO-TI and IATA-DGR:	
	
· ICAO/IATA Class:	8
· UN/ID Number:	3260
· Label	8
· Packaging group:	II
· Proper shipping name:	CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (potassium monopersulfate triple salt)
· Canadian TDG Class:	8
· UN "Model Regulation": UN3260; CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.; 8; II	

* 15 Regulations

· Sara

· Section 355 (Extremely hazardous substances):	None of the ingredients is listed.
· Section 313 (Specific toxic chemical listings):	None of the ingredients is listed.
· TSCA (Toxic Substances Control Act):	
10043-35-3	boric acid, crude natural, containing not more than 85 per cent of H3BO3 calculated on the dry weight
7761-88-8	silver nitrate

· Proposition 65

· Chemicals known to cause cancer:	None of the ingredients is listed.
· Chemicals known to cause reproductive toxicity for females:	None of the ingredients is listed.
· Chemicals known to cause reproductive toxicity for males:	None of the ingredients is listed.
· Chemicals known to cause developmental toxicity:	None of the ingredients is listed.

· Canadian Ingredient Disclosure List

· Limit 0,1%	None of the ingredients is listed.
· Limit 1%	
10043-35-3	boric acid, crude natural, containing not more than 85 per cent of H3BO3 calculated on the dry weight
7761-88-8	silver nitrate

(Contd. on page 9)

— USA —

Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 01/23/2008

Reviewed on 01/23/2008

Trade name: **CHLORIDE T2**

(Contd. of page 8)

· Canadian Domestic Substances List (DSL)	
10043-35-3	boric acid, crude natural, containing not more than 85 per cent of H ₃ BO ₃ calculated on the dry weight
7761-88-8	silver nitrate
· EPA (Environmental Protection Agency)	
None of the ingredients is listed.	
· IARC (International Agency for Research on Cancer)	
None of the ingredients is listed.	
· NTP (National Toxicology Program)	
None of the ingredients is listed.	
· NIOSH-Ca (National Institute for Occupational Safety and Health)	
None of the ingredients is listed.	
· OSHA-Ca (Occupational Safety & Health Administration)	
None of the ingredients is listed.	

· Product related hazard informations:

The product has been classified and marked in accordance with directives on hazardous materials.

· Hazard symbols:

C Corrosive

· Hazard-determining components of labelling:

potassium monopersulfate triple salt

· Risk phrases:

34 Causes burns.

52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

· Safety phrases:

1/2 Keep locked up and out of the reach of children.

20 When using do not eat or drink.

25 Avoid contact with eyes.

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

27/28 After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water.

29/56 Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point

36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

45 In case of accident or if you feel unwell, seek medical advice immediately.

· Information about limitation of use: Employment restrictions concerning young persons must be observed.

· Water hazard class: Water hazard class 2 (Self-assessment): hazardous for water.

· CPR Classification: Class D, Div. 2B, Class E

· MSDS discloses information elements required by the CPR .

* 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Relevant R-phrases

22 Harmful if swallowed.

34 Causes burns.

50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

8 Contact with combustible material may cause fire.

· Recommended restriction of use professional/industrial use only

(Contd. on page 10)

—USA—

Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 01/23/2008

Reviewed on 01/23/2008

Trade name: CHLORIDE T2

(Contd. of page 9)

· Contact:

Thermo Fisher Scientific
Environmental Instruments
Water Analysis Group
166 Cummings Center
Beverly, MA 01915 - 6110
USA
phone: 978-232-6000

CHEMTREC® 24 hr Emergency: US 800-424-9300; International 703-527-3887

· Abbreviations and acronyms:

EC50: effective concentration, 50 percent (in vivo)
ADR: Accord européen sur le transport des marchandises Dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Reglement internationale concernent le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
NFPA: National Fire Protection Association (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
GefStoffV: Gefahrstoffverordnung (Ordinance on Hazardous Substances, Germany)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

· Sources

International Chemical Safety Cards (ICSCs)
IUCLID (International Uniform Chemical Information Database)

· * Data compared to the previous version altered.

USA
