# SAFETY DATA SHEET (SDS)

in accordance with Regulation (EC) No 1907/2006 (REACH), Annex II — Regulation (EU) 2020/878

Date: 02.09.2026 | Version: 1 | EN

## chlorek tytanu(IV)

tetrachlorotitanium

**CAS 7550-45-0**

$Cl_4Ti$ | EC 231-441-9

MOLAR MASS
**189.70**

## HAZARD CLASSIFICATION (GHS / CLP)

**Danger**

H314 | EUH014

Hazard class scope limited to the harmonised classification (CLP Annex VI); classes outside the harmonised entry may require supplier self-classification (CLP Art. 4(3)) — verify with the supplier safety data sheet.

## 1. Identification of the substance/mixture and of the company/undertaking

| | |
|---|---|
| **1.1 Substance name** | chlorek tytanu(IV) |
| **1.1 IUPAC name** | tetrachlorotitanium |
| **1.1 CAS number** | 7550-45-0 |
| **1.1 EC number** | 231-441-9 |
| **1.1 PubChem CID** | 24193 |
| **1.1 InChIKey** | XJDNKRIXUMDJCW-UHFFFAOYSA-J |
| **1.1 SMILES** | Cl[Ti](Cl)(Cl)Cl |
| **1.1 Molecular formula** | $Cl_4Ti$ [7] |
| **1.1 Molar mass** | 189.7 g/mol [7] |
| **1.1 Exact mass** | 189.8204 Da [7] |

### 1.2 Uses

For laboratory and research purposes. Not for use in the production of food, medicines or cosmetics without appropriate authorisation.

### 1.3 Details of the supplier

| | |
|---|---|
| REFERENCE COPY — NO SUPPLIER DETAILS — NOT FOR DISTRIBUTION | Supplier details are not included in this reference copy. The supplier placing the substance on the market must complete this section and remains responsible for the sheet under REACH. MolGod.org prepares documentation and is not the supplier of this substance. |

### 1.4 Emergency telephone number

| | |
|---|---|
| **Emergency telephone** | 112 (EU-wide emergency number) |

The number above is the Polish poison centre (CIT, Lodz, 24/7). It is NOT the poison centre designated for your country. Under Article 45 of Regulation (EC) No 1272/2008 the competent body is the centre designated in the country of placing on the market — consult it before use.

## 2. Hazards identification

GHS:

PPE:

**Danger**

### Hazard statements (H) [3][4][9]

| | |
|---|---|
| H314 | Causes severe skin burns and eye damage |
| EUH014 | Reacts violently with water. |

### Precautionary statements (P) [3][4][9]

| | |
|---|---|
| P260 | Do not breathe dust/fume/gas/mist/vapours/spray |
| P264 | Wash thoroughly after handling |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection |
| P301+P330+P331 | IF SWALLOWED: Rinse mouth; Do NOT induce vomiting |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing; Rinse skin with water or shower |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes; Remove contact lenses, if present and easy to do. Continue rinsing |
| P310 | Immediately call a POISON CENTER or doctor/physician |
| P321 | Specific treatment |
| P363 | Wash contaminated clothing before reuse |
| P405 | Store locked up |
| P501 | Dispose of contents/container to an approved waste collection point |

**Hazard class scope limited to the harmonised classification (CLP Annex VI); classes outside the harmonised entry may require supplier self-classification (CLP Art. 4(3)) — verify with the supplier safety data sheet.**

## 3. Composition/information on ingredients

| | |
|---|---|
| **Substance type** | pure substance |
| **CAS Number** | 7550-45-0 |
| **EC number** | 231-441-9 |
| **Molecular formula** | $Cl_4Ti$ |
| **Concentration** | ≥99% (typical reagent-grade purity — to be confirmed by the supplier's specification) |
| **Clp index no** | 022-001-00-5 |

## 4. First aid measures

### Inhalation

Move the affected person to fresh air. Keep at rest. If not breathing: artificial respiration (qualified personnel only). [1][2][11]

### Skin contact

Remove contaminated clothing. Rinse skin with soap and water (min. 15 minutes). Call a physician immediately. [1][2][11]

### Eye contact

Rinse eyes with running water (min. 15 minutes). Remove contact lenses if possible. If irritation persists — consult an ophthalmologist. [1][2][11]

### Ingestion

Do NOT induce vomiting (unless directed by a physician). Rinse mouth with water. Never give anything by mouth to an unconscious person. Poison Centre Łódź: +48 42 631 47 24 (24/7). Emergency number: 112. [1][2][11]

### Symptoms and effects

skin redness and irritation. [3][9]

### Notes for physician

Requires verification

**Emergency numbers: CIT Łódź: +48 42 631 47 24 (24/7) | Emergency: 112**

## 5. Firefighting measures

| | |
|---|---|
| **Suitable extinguishing media** | Selection of extinguishing media requires verification by a competent person (substance water-reactive). Do NOT use water or CO2 without confirmation. [1][2][11] |
| **Unsuitable extinguishing media** | Water and CO2 may intensify the fire (substance water-reactive, EUH014) — do not use without verification. [1][2][11] |
| **Specific hazards** | Thermal decomposition products:HCl (hydrogen chloride). [12] |
| **Advice for firefighters** | Use self-contained breathing apparatus (SCBA). Full protective suit. [1][2][11] |

## 6. Accidental release measures

| | |
|---|---|
| **Personal precautions** | Use personal protective equipment (see Section 8). Avoid breathing vapours. [1][2][11] |
| **Environmental precautions** | Prevent entry into sewers, groundwater and surface water. [1][2][11] |
| **Methods for containment and cleaning up** | Contain the spill with a barrier. Absorb with inert material (sand, vermiculite, diatomaceous earth). Collect into sealed, labelled containers. Do not release into drains. [1][2][11] |
| **Related sections** | 8; 13 |

## 7. Handling and storage

| | |
|---|---|
| **Precautions** | Work in a fume hood or with adequate ventilation. No eating, drinking or smoking in the work area. [1][2][11] |
| **Storage temperature** | Store at room temperature (15-25°C) or as indicated on the label. [1][2][11] |
| **Humidity** | Store in a dry place (<60% RH). [1][2][11] |
| **Light** | Protect from direct sunlight. [1][2][11] |
| **Incompatible materials** | Strong oxidizers, strong acids, strong bases. [12] |

## 8. Exposure controls/personal protection

### 8.1 Control parameters

| | |
|---|---|
| **OEL — NDS (Poland)** | No NDS (OEL) value in the available working list — verify in the current MRPiPS regulation before use; do not assume the absence of a limit value. |
| **OEL (EU)** | The EU OEL value has not been verified against the available dataset — check the IOELV/BOELV directives; do not assume the absence of a value. |
| **DNEL** | No data available. |
| **PNEC** | No data available. |

### 8.2 Personal protective equipment (PPE) [5][6][13]

**Chemical-resistant protective gloves**
EN ISO 374-1:2016+A1:2018
fluoroelastomer FKM (Viton), min. 0.4 mm — NOT nitrile (breakthrough within minutes)

**Closed safety spectacles or goggles**
EN ISO 16321-1:2022 / EN 166:2001

**Face shield (splash risk)**
EN ISO 16321-1:2022

**Chemical-resistant protective clothing**
EN 13034:2005+A1:2009 (typ 6) / EN 14126:2003 (bio)

**Closed safety footwear with toe protection**
EN ISO 20345:2022 (S2/S3)

## 9. Physical and chemical properties

| Property (item 9.1) | Value | Source |
|---|---|---|
| **Physical state** | Liquid | |
| **Colour** | No data available. | |
| **Odour** | No data available. | |
| **pH (1% aqueous solution)** | No data available. | |
| **Melting point** | -24.3692°C [8] [7] | |
| **Boiling point** | 135.3231°C [8] [7] | |
| **Flash point** | No data available. | |
| **Flammability** | No data available. | |
| **Lower and upper explosion limit** | No data available. | |
| **Density (20°C)** | 1.726 g/cm³ [7] | |
| **Vapour pressure** | 1.327 kPa (0.0131 atm, 20°C) (experimental data) [7] | |

| Property (item 9.1) | Value | Source |
|---|---|---|
| **Relative vapour density** | 6.55 [14] | |
| **Dynamic viscosity** | 0.079 mPa·s [7] | |
| **Kinematic viscosity** | No data available. | |
| **Refractive index nD²⁰** | 1.61 (experimental data) [7] | |
| **Auto-ignition temperature** | No data available. | |
| **Decomposition temperature** | Not applicable | |
| **Rozpuszcz. w wodzie** | No data available. | |
| **Particle characteristics** | Not applicable (REACH 9.1(r)) | |
| **log Kow (XLogP3)** | Not applicable (REACH 9.1(n)) | |
| **Molar mass** | 189.7 g/mol [7] | |
| **Molecular formula** | $Cl_4Ti$ [7] | |

Where a property above reads "No data available", no measured value was found in the public sources consulted for this substance. The property has not been determined by MolGod.org and no value is inferred. "Not applicable" means the property has no meaning for this substance in the form supplied.

## 10. Stability and reactivity

| | |
|---|---|
| **Reactivity** | Reactive according to classification (EUH014) — see hazardous reactions. [12] |
| **Chemical stability** | Thermally stable under recommended conditions. |
| **Hazardous reactions** | The substance carries a reactivity classification (EUH014) — hazardous reactions possible (water-reactive). Requires verification by a competent person; do not assume the absence of reactions. [12] |
| **Conditions to avoid** | High temperatures, direct sunlight, moisture. |
| **Incompatible materials** | Strong oxidizers, strong acids, strong bases. |
| **Decomposition products** | Thermal decomposition products:HCl (hydrogen chloride). |

## 11. Toxicological information

| | |
|---|---|
| **LD50 (oral)** | No data available. |
| **LD50 (dermal)** | No data available. |
| **LC50 (inhalation)** | LC50 400 mg/m3 (rat) [7] |
| **Skin irritation** | Category 1 (H314) — corrosive; sub-category (1A/1B/1C) per CLP Annex VI entry. [3][9] |
| **Eye irritation** | Serious eye damage — covered by the corrosive classification (H314; CLP Annex I 3.3.2.1). [3][9] |
| **Sensitisation** | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][9] |
| **Mutagenicity** | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][9] |
| **Carcinogenicity** | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][9] |
| **IARC classification (carcinogenicity)** | No individual IARC monograph for this CAS — this is not confirmation of the absence of carcinogenicity (cf. CLP/GHS classification in section 2). |
| **Reproductive toxicity** | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][9] |
| **STOT — single exposure** | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][9] |

| | |
|---|---|
| **STOT — repeated exposure** | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][9] |
| **Aspiration hazard** | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][9] |

## 12. Ecological information

| | |
|---|---|
| **Aquatic toxicity** | No data available. |
| **Persistence / biodegradability** | No data available. |
| **Bioaccumulative potential** | No data available. |
| **Mobility in soil** | No data available. |
| **PBT/vPvB assessment** | Insufficient data to assess PBT/ vPvB. |
| **Endocrine disrupting properties** | No information. |

## 13. Disposal considerations

| | |
|---|---|
| **Disposal method** | Hand over for disposal to licensed contractors in accordance with national and local regulations. Do not discharge into sewers. |
| **Waste code (EWC)** | 16 05 06* — Laboratory and analytical chemicals (np. chemical reagents) zawierajace substancje niebezpieczne. EWC code verification required. [10] |
| **Packaging** | Cleaned packaging may be recycled. Contaminated packaging must be treated as hazardous waste. |

## 14. Transport information


Class 8 — Corrosive substances

| | |
|---|---|
| **UN number** | UN 1838 [7] |
| **Transport hazard class** | Suggested from GHS classification — VERIFICATION REQUIRED. |
| **Environmental hazard** | Not classified as environmentally hazardous for transport (no H400/H410/ H411 in CLP Annex VI; no marine pollutant mark required) [3] |
| **Special precautions** | Handle as dangerous goods according to the assigned class (ADR/IMDG/IATA); apply the precautions appropriate to that class. |
| **CN/HS code** | CN/HS code: verification required in the Eurostat Combined Nomenclature. |
| **Notes** | UN number per the indicated source. Verify the transport class and packing group in ADR Table A / UN Model Regulations before shipment. [7] |

## 15. Regulatory information

| | |
|---|---|
| **SVHC status** | SVHC status not verified against the available dataset — check the current ECHA Candidate List; do not assume absence. [1] |
| **REACH Annex XIV** | Not verified against the ECHA Authorisation List — check REACH Annex XIV. [1] |
| **REACH Annex XVII** | Not confirmed in the available Annex XVII dataset — verify against the current ECHA list before placing on the market; do not assume absence of restriction. [1] |

## 16. Other information

Legal status of classification: harmonised under CLP Annex VI — Reg. (EC) No 1272/2008 (as at the date of issue).Entries with an entry-into-force date after02.09.2026 were omitted as future (not yet applicable).

**Data aggregated automatically from public reference databases (PubChem, ECHA, NIST and others).**

### Scientific citations (10)

R. E. Wagner. Laser drilling mechanics. Journal of Applied Physics (1974). DOI: 10.1063/1.1663102

Cavallaro PA, De Santo M, Marinaro R et al.. Efficient Solution-Phase Dipeptide Synthesis Using Titanium Tetrachloride and Microwave Heating.. International journal of molecular sciences (2024). DOI: 10.3390/ijms25179729

Witte JM, Ayim E, Sams CJ et al.. Diastereoselective Synthesis of the HIV Protease Inhibitor Darunavir and Related Derivatives via a Titanium Tetrachloride-Mediated Asymmetric Glycolate Aldol Addition Reaction.. The Journal of organic chemistry (2024). DOI: 10.1021/acs.joc.4c01057

Gerardo Vásquez Arenas. Paisaje racializado de la violencia en Colombia. Nómadas (2016). DOI: 10.30578/nomadas.n45a12

C. G. Hoffman. Laser-target interactions. Journal of Applied Physics (1974). DOI: 10.1063/1.1663556

## Full text of H statements

| | |
|---|---|
| **H314** | Causes severe skin burns and eye damage |
| **EUH014** | Reacts violently with water. |

## Full text of P statements

| | |
|---|---|
| **P260** | Do not breathe dust/fume/gas/mist/vapours/spray |
| **P264** | Wash thoroughly after handling |
| **P280** | Wear protective gloves/protective clothing/eye protection/face protection |
| **P301+P330+P331** | IF SWALLOWED: Rinse mouth; Do NOT induce vomiting |
| **P303+P361+P353** | IF ON SKIN (or hair): Take off immediately all contaminated clothing; Rinse skin with water or shower |
| **P304+P340** | IF INHALED: Remove person to fresh air and keep comfortable for breathing |
| **P305+P351+P338** | IF IN EYES: Rinse cautiously with water for several minutes; Remove contact lenses, if present and easy to do. Continue rinsing |
| **P310** | Immediately call a POISON CENTER or doctor/physician |
| **P321** | Specific treatment |
| **P363** | Wash contaminated clothing before reuse |
| **P405** | Store locked up |
| **P501** | Dispose of contents/container to an approved waste collection point |

## Abbreviations

| | |
|---|---|
| **ADR** | European Agreement concerning the International Carriage of Dangerous Goods by Road |
| **ATE** | Acute Toxicity Estimate |
| **CAS** | Chemical Abstracts Service |
| **CLP** | Classification, Labelling and Packaging (Reg. (EC) 1272/2008) |
| **CMR** | Carcinogenic, Mutagenic, toxic to Reproduction |
| **DNEL** | Derived No-Effect Level |
| **EC** | European Community number |
| **EPI** | Personal protective equipment |
| **GHS** | Globally Harmonized System |
| **IATA** | International Air Transport Association |
| **IMDG** | International Maritime Dangerous Goods Code |
| **SDS** | Safety Data Sheet |
| **LC50** | Lethal Concentration, 50% |
| **LD50** | Lethal Dose, 50% |
| **NDS** | Maximum admissible concentration (workplace, PL) |
| **NDSCh** | Short-term exposure limit (PL) |
| **OEL** | Occupational Exposure Limit |
| **PBT** | Persistent, Bioaccumulative and Toxic |
| **PNEC** | Predicted No-Effect Concentration |
| **REACH** | Registration, Evaluation, Authorisation and Restriction of Chemicals (Reg. (EC) 1907/2006) |
| **STOT** | Specific Target Organ Toxicity |

| | |
|---|---|
| **SVHC** | Substance of Very High Concern |
| **TPSA** | Topological Polar Surface Area |
| **vPvB** | very Persistent and very Bioaccumulative |

## Version history

| | |
|---|---|
| **v1 (02.09.2026)** | Based on ECHA harmonised classification (Annex VI to CLP, ATP 23). |

## References


[1] EP and Council. Reg.(EC) No 1907/2006 (REACH). Art.31, Annex II. OJ EU L 396/2006. URL: https://eur-lex.europa.eu/eli/reg/2006/1907/oj Accessed: 2026-09-02.

[2] European Commission. Reg.(EU) 2020/878 — amending Annex II REACH. OJ EU L 203/2020. From 01.01.2023. URL: https://eur-lex.europa.eu/eli/reg/2020/878/oj Accessed: 2026-09-02.

[3] EP and Council. Reg.(EC) 1272/2008 (CLP) + ATP 23. OJ EU L 353/2008. (2026-07-07) URL: https://eur-lex.europa.eu/eli/reg/2008/1272/oj Accessed: 2026-09-02.

[4] United Nations. GHS Rev.9. ST/SG/AC.10/30/Rev.9. New York and Geneva: United Nations, 2021. URL: https://unece.org/transport/dangerous-goods/ghs-rev9-2021 Accessed: 2026-09-02.

[5] ISO. ISO 7010:2019 — Graphical symbols. Safety signs. URL: https://www.iso.org/standard/72424.html Accessed: 2026-09-02.

[6] ISO. ISO 3864-1:2011 — Safety colours and safety signs. URL: https://www.iso.org/standard/51021.html Accessed: 2026-09-02.

[7] PubChem. National Center for Biotechnology Information (NIH/NLM), chemical compound database. URL: https://pubchem.ncbi.nlm.nih.gov/compound/24193

[8] NIST. Chemistry WebBook, SRD 69. National Institute of Standards and Technology. URL: https://webbook.nist.gov/cgi/cbook.cgi?ID=7550-45-0

[9] ECHA. European Chemicals Agency — harmonised classification inventory (CLP Annex VI). URL: https://echa.europa.eu

[10] European Commission. Decision 2000/532/EC establishing a list of wastes (European Waste Catalogue). OJ EU L 226/3. URL: https://eur-lex.europa.eu/eli/dec/2000/532/oj

[11] European Chemicals Agency (ECHA). Guidance on the Compilation of Safety Data Sheets. Version 4.0. Helsinki: European Chemicals Agency, 2020. URL: https://echa.europa.eu/documents/10162/2324906/sds_en.pdf

[12] Urben, P.G., ed. Bretherick's Handbook of Reactive Chemical Hazards. 8th ed. Oxford: Academic Press.

[13] CEN. Personal protective equipment standards (EN ISO 374-1, EN 166, EN 149, EN 14387, EN ISO 20345). Brussels: European Committee for Standardization.

[14] MOL-GOD. Value obtained by calculation from the molecular formula/molecular weight (the specific quantity and its formula are indicated at the respective field). Calculated value, not an experimental measurement. URL: https://www.nist.gov/pml/atomic-weights-and-isotopic-compositions-relative-atomic-masses

[15] MRiPS Regulation of 12.06.2018 — NDS/NDN. Journal of Laws 2024 item 1017. URL: https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20240001017 Accessed: 2026-09-02.


## External links

NIST: https://webbook.nist.gov/cgi/cbook.cgi?ID=7550-45-0

Wikidata: https://www.wikidata.org/wiki/Q413471

**NFPA 704** (supplementary information — NFPA/USA system; not a required element of an EU safety data sheet under REACH Annex II)



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