



SECTION 1: Identification of the substance/mixture and of the company/undertaking

- **1.1 Product identifier**
- **Trade name: Duroval Chlorid Titrationslösung**
- **UFI: SDGE-DH9E-VC0W-7M8K**
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
- **Application of the substance / the preparation:**
Reagent for analysis
EuPCS: PC-TEC-19 Reagents and laboratory chemical
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Gebrüder Heyl
Analystechnik GmbH & Co. KG
Orleansstraße 75 b
D-31135 Hildesheim
Phone +49 (0) 5121 2893390
Fax +49 (0) 5121 2893367
E-mail info@heyl.de
Internet www.heyl.de
- **Further information obtainable from:** product safety department
- **1.4 Emergency telephone number:**
Giftinformationszentrum Nord
Phone +49 (0) 551 19240

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS06 skull and crossbones

Acute Tox. 3 H311 Toxic in contact with skin.
Acute Tox. 3 H331 Toxic if inhaled.



GHS08 health hazard

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.
Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**
The product is classified and labelled according to the CLP regulation.
- **Hazard pictograms**



GHS06 GHS08

- **Signal word** Danger
- **Hazard-determining components of labelling:**
mercury dinitrate
nitric acid
- **Hazard statements**
H311+H331 Toxic in contact with skin or if inhaled.
H373 May cause damage to organs through prolonged or repeated exposure.
H412 Harmful to aquatic life with long lasting effects.

(Contd. on page 2)



Trade name: Duroval Chlorid Titrationslösung

(Contd. of page 1)

· **Precautionary statements**

- P260 Do not breathe mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
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.
P307+P311 IF exposed: Call a POISON CENTER or doctor/physician.

· **Labelling of packages where the contents do not exceed 125 ml**

· **Hazard pictograms**



GHS06 GHS08

· **Signal word** Danger

· **Hazard-determining components of labelling:**

mercury dinitrate
nitric acid

· **Hazard statements**

H311+H331 Toxic in contact with skin or if inhaled.
H412 Harmful to aquatic life with long lasting effects.

· **Precautionary statements**

- P260 Do not breathe mist/vapours/spray.
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P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P307+P311 IF exposed: Call a POISON CENTER or doctor/physician.

· **2.3 Other hazards**

· **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
· **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

· **3.2 Mixtures**

· **Description:**

Mixture of substances listed below with nonhazardous additions according to Regulation (EC) No 1272/2008.

Water CAS 7732-18-5

(Contd. on page 3)



Trade name: Duroval Chlorid Titrationslösung

(Contd. of page 2)

Dangerous components:

CAS: 10045-94-0 EINECS: 233-152-3 Index number: 080-002-00-6	<i>mercury dinitrate</i> Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330; STOT RE 2, H373; Aquatic Acute 1, H400; Aquatic Chronic 1, H410 Specific concentration limit: STOT RE 2; H373: C ≥ 0.1 %	≥ 0.25 – ≤ 1%
CAS: 7697-37-2 EINECS: 231-714-2 Index number: 007-004-00-1 Reg.nr.: 01-2119487297-23	<i>nitric acid</i> Ox. Liq. 2, H272; Acute Tox. 3, H331; Skin Corr. 1A, H314 Specific concentration limits: Skin Corr. 1A; H314: C ≥ 20 % Skin Corr. 1B; H314: 5 % ≤ C < 20 % Ox. Liq. 2; H272: C ≥ 99 % Ox. Liq. 3; H272: 65 % ≤ C < 99 %	≤ 1%

- **SVHC** Not applicable.
- **Additional information:** For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

- **4.1 Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:**
 Supply fresh air.
 Call a doctor immediately.
 In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:**
 Immediately wash with water and soap and rinse thoroughly.
 Call a doctor immediately.
- **After eye contact:**
 Rinse opened eye for several minutes under running water.
 Call a doctor immediately.
- **After swallowing:**
 A person vomiting while laying on their back should be turned onto their side.
 Rinse out mouth and then drink plenty of water.
 Induce vomiting only, if affected person is fully conscious.
 Call a doctor immediately.
- **4.2 Most important symptoms and effects, both acute and delayed**
 No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed**
 No further relevant information available.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:** Use fire extinguishing methods suitable to surrounding conditions.
- **5.2 Special hazards arising from the substance or mixture**
 Formation of toxic gases is possible during heating or in case of fire.
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained respiratory protective device.

EU

(Contd. on page 4)



Trade name: Duroval Chlorid Titrationslösung

(Contd. of page 3)

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
 Wear personal protection equipment.
- **6.2 Environmental precautions:**
 Inform respective authorities in case of seepage into water course or sewage system.
 Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**
 Ensure adequate ventilation.
 Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
 Dispose of the material collected according to regulations.
 Clean the affected area carefully; suitable cleaners are:
 Warm water
- **6.4 Reference to other sections**
 See Section 7 for information on safe handling.
 See Section 8 for information on personal protection equipment.
 See Section 13 for disposal information.

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
 Ensure good ventilation/exhaustion at the workplace.
 Open and handle receptacle with care.
 Prevent formation of aerosols.
- **Information about fire - and explosion protection:** Keep respiratory protective device available.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store only in the original receptacle.
- **Information about storage in one common storage facility:** Store away from foodstuffs.
- **Further information about storage conditions:**
 Keep container tightly sealed.
 Protect from heat and direct sunlight.
 Store receptacle in a well ventilated area.
 Store under lock and key and with access restricted to technical experts or their assistants only.
- **Recommended storage temperature:** 15 - 25 °C
- **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**

CAS: 10045-94-0 mercury dinitrate

IOELV	Long-term value: 0.02 mg/m ³ as Hg
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CAS: 7697-37-2 nitric acid

IOELV	Short-term value: 2.6 mg/m ³ , 1 ppm
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- **Regulatory information IOELV:** (EU) 2019/1831
- **Additional information:** The lists valid during the making were used as basis.

- **8.2 Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
 The usual precautionary measures are to be adhered to when handling chemicals.

(Contd. on page 5)



Trade name: Duroval Chlorid Titrationslösung

(Contd. of page 4)

Keep away from foodstuffs, beverages and feed.
 Immediately remove all soiled and contaminated clothing
 Wash hands before breaks and at the end of work.
 Store protective clothing separately.
 Do not inhale gases / fumes / aerosols.
 Avoid contact with the eyes and skin.
 Do not eat, drink, smoke or sniff while working.

· **Respiratory protection:**

Use suitable respiratory protective device when aerosol or mist is formed. Filter: Type Hg-P3
 In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

· **Protection of hands:**



Protective gloves

Wear gloves according to EN 374.
 The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
 Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
 Check protective gloves prior to each use for their proper condition.
 Preventive skin protection by use of skin-protecting agents is recommended.
 After use of gloves apply skin-cleaning agents and skin cosmetics.

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· **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.

· **For the permanent contact gloves made of the following materials are suitable:**

Nitrile rubber, NBR
 Recommended thickness of the material: ≥ 0.12 mm
 Value for the permeation: Level = 6 (> 480 min)

· **As protection from splashes gloves made of the following materials are suitable:**

Nitrile rubber, NBR
 Recommended thickness of the material: ≥ 0.12 mm
 Value for the permeation: Level = 6 (> 480 min)

· **Eye protection:**



Tightly sealed goggles according to EN 166

· **Body protection:** Protective work clothing

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· Form:	Fluid
· Colour:	Colourless
· Odour:	Odourless
· Odour threshold:	Not determined.

(Contd. on page 6)



Trade name: Duroval Chlorid Titrationslösung

(Contd. of page 5)

· pH-value:	Strongly acidic
· Change in condition Melting point/freezing point:	Undetermined.
Initial boiling point and boiling range:	Undetermined.
· Flash point:	Undetermined.
· Flammability (solid, gas):	Not applicable.
· Ignition temperature:	Not determined.
· Decomposition temperature:	Not determined.
· Auto-ignition temperature:	Product is not selfigniting.
· Explosive properties:	Product does not present an explosion hazard.
· Explosion limits: Lower:	Not determined.
Upper:	Not determined.
· Vapour pressure:	Not determined.
· Density at 20 °C:	1.04 g/cm ³
· Relative density	Not determined.
· Vapour density	Not determined.
· Evaporation rate	Not determined.
· Solubility in / Miscibility with water:	Fully miscible.
· Partition coefficient: n-octanol/water:	Not determined.
· Viscosity: Dynamic:	Not determined.
Kinematic:	Not determined.
· 9.2 Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
 To avoid thermal decomposition do not overheat.
- **10.3 Possibility of hazardous reactions** Reacts with metals forming hydrogen.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:**
 Nitrogen oxides
 Mercury

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity**
 Toxic in contact with skin or if inhaled.

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

CAS: 10045-94-0 mercury dinitrate

Oral	LD50	26 mg/kg (rat)
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(Contd. on page 7)



**Safety data sheet
according to 1907/2006/EC**

Printing date 09.04.2020

Version number 10

Revision: 09.04.2020

Trade name: Duroval Chlorid Titrationslösung

(Contd. of page 6)

CAS: 7697-37-2 nitric acid

Inhalative LC50/4 h 2.65 mg/l (rat)

- **Primary irritant effect:**
- **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
- **Serious eye damage/irritation** Based on available data, the classification criteria are not met.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure**
May cause damage to organs through prolonged or repeated exposure.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Harmful to fish
- **Additional ecological information:**
- **General notes:**
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
Harmful to aquatic organisms
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Disposal must be made according to official regulations.
- **Uncleaned packaging:**
- **Recommendation:**
Packagings that may not be cleansed are to be disposed of in the same manner as the product.
Disposal must be made according to official regulations.
- **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

SECTION 14: Transport information

- **14.1 UN-Number**
- **ADR, IMDG, IATA** UN3287

(Contd. on page 8)



Safety data sheet
 according to 1907/2006/EC

Printing date 09.04.2020

Version number 10

Revision: 09.04.2020

Trade name: Duroval Chlorid Titrationslösung

(Contd. of page 7)

· **14.2 UN proper shipping name**
 · **ADR** 3287 TOXIC LIQUID, INORGANIC, N.O.S.
 (MERCURIC NITRATE, NITRIC ACID)
 · **IMDG, IATA** TOXIC LIQUID, INORGANIC, N.O.S. (MERCURIC
 NITRATE, NITRIC ACID)

· **14.3 Transport hazard class(es)**
 · **ADR, IMDG, IATA**



· **Class** 6.1 Toxic substances.
 · **Label** 6.1

· **14.4 Packing group**
 · **ADR, IMDG, IATA** III

· **14.5 Environmental hazards:**
 · **Marine pollutant:** No

· **14.6 Special precautions for user** Warning: Toxic substances.
 · **Hazard identification number (Kemler code):** 60
 · **EMS Number:** F-A,S-A
 · **Segregation groups** Heavy metals and their salts (including their
 organometallic compounds), mercury and mercury
 compounds, strong acids
 · **Stowage Category** A
 · **Stowage Code** SW2 Clear of living quarters.

· **14.7 Transport in bulk according to Annex II
 of Marpol and the IBC Code** Not applicable.

· **Transport/Additional information:** Void

· **ADR**
 · **Limited quantities (LQ)** 5L
 · **Excepted quantities (EQ)** Code: E1
 Maximum net quantity per inner packaging: 30 ml
 Maximum net quantity per outer packaging: 1000
 ml
 · **Transport category** 2
 · **Tunnel restriction code** E

· **IMDG**
 · **Limited quantities (LQ)** 5L
 · **Excepted quantities (EQ)** Code: E1
 Maximum net quantity per inner packaging: 30 ml
 Maximum net quantity per outer packaging: 1000
 ml

· **UN "Model Regulation":** UN 3287 TOXIC LIQUID, INORGANIC, N.O.S.
 (MERCURIC NITRATE, NITRIC ACID), 6.1, III

EU

(Contd. on page 9)



Trade name: Duroval Chlorid Titrationslösung

(Contd. of page 8)

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** None of the ingredients is listed.
- **Seveso category H2 ACUTE TOXIC**
- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 50 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 200 t
- **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3, 18

- **Regulation (EU) No 649/2012**

CAS: 10045-94-0	mercury dinitrate	Annex I Part 1 Annex I Part 3 Annex V Part 2
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- **National regulations:**
- **Information about limitation of use:**
 Employment restrictions concerning juveniles must be observed.
 Employment restrictions concerning pregnant and lactating women must be observed.
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 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 phrases**
 H272 May intensify fire; oxidiser.
 H300 Fatal if swallowed.
 H310 Fatal in contact with skin.
 H314 Causes severe skin burns and eye damage.
 H330 Fatal if inhaled.
 H331 Toxic if inhaled.
 H373 May cause damage to organs through prolonged or repeated exposure.
 H400 Very toxic to aquatic life.
 H410 Very toxic to aquatic life with long lasting effects.
- **Department issuing SDS:** product safety department.
- **Abbreviations and acronyms:**
 RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
 ICAO: International Civil Aviation Organisation
 ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 IMDG: International Maritime Code for Dangerous Goods
 IATA: International Air Transport Association
 GHS: Globally Harmonised System of Classification and Labelling of Chemicals
 EINECS: European Inventory of Existing Commercial Chemical Substances
 ELINCS: European List of Notified Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent
 PBT: Persistent, Bioaccumulative and Toxic
 SVHC: Substances of Very High Concern
 vPvB: very Persistent and very Bioaccumulative
 Ox. Liq. 2: Oxidizing liquids – Category 2
 Acute Tox. 2: Acute toxicity - oral – Category 2
 Acute Tox. 1: Acute toxicity - dermal – Category 1
 Acute Tox. 3: Acute toxicity - inhalation – Category 3
 Skin Corr. 1A: Skin corrosion/irritation – Category 1A
 STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

(Contd. on page 10)



Safety data sheet
according to 1907/2006/EC

Printing date 09.04.2020

Version number 10

Revision: 09.04.2020

Trade name: Duroval Chlorid Titrationslösung

(Contd. of page 9)

Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3
· * **Data compared to the previous version altered.**

EU