

## SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 28.08.2015

Version 3.0

**SECTION 1. Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Catalogue No. 109099

Product name Iodine solution  $c(I_2) = 0.05 \text{ mol/l}$  (0.1 N) Titripur® Reag. Ph Eur, Reag. USP

REACH Registration Number This product is a mixture. REACH Registration Number see section 3.

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses Reagent for analysis  
For additional information on uses please refer to the Merck Chemicals portal ([www.merckgroup.com](http://www.merckgroup.com)).

**1.3 Details of the supplier of the safety data sheet**

Responsible Department EQ-RS \* e-mail: [prodsafe@merckgroup.com](mailto:prodsafe@merckgroup.com)

Regional representation Merck Chemicals Ltd \* Boulevard Industrial Park \* Padge Road \* Beeston \* Nottingham \* NG9 2JR \* Tel. 01159 430840 \* [information@merckchem.co.uk](mailto:information@merckchem.co.uk).

**1.4 Emergency telephone number** +49 (0) 6151 722440

**SECTION 2. Hazards identification****2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

Specific target organ toxicity - repeated exposure, Category 2, thyroid, H373

For the full text of the H-Statements mentioned in this Section, see Section 16.

**Classification (67/548/EEC or 1999/45/EC)** In accordance with EC directives or respective national laws, the product does not need to be classified nor labelled.**2.2 Label elements****Labelling (REGULATION (EC) No 1272/2008)***Hazard pictograms**Signal word*  
Warning*Hazard statements*

H373 May cause damage to organs (thyroid) through prolonged or repeated exposure.

*Precautionary statements*

Response

SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

Catalogue No. 109099  
Product name Iodine solution c(I<sub>2</sub>) = 0.05 mol/l (0.1 N) Titripur® Reag. Ph Eur, Reag. USP

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P314 Get medical advice/ attention if you feel unwell.

**Reduced labelling (≤125 ml)**

*Hazard pictograms*



*Signal word*  
Warning

**2.3 Other hazards**

None known.

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**SECTION 3. Composition/information on ingredients**

Chemical nature Aqueous solution of inorganic compounds.

**3.1 Substance**

Not applicable

**3.2 Mixture**

**Hazardous components (REGULATION (EC) No 1272/2008)**

*Chemical Name (Concentration)*

CAS-No. Registration number Classification

Iodine (>= 1 % - < 2.5 %)

*Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.*

7553-56-2 01-2119485285-30-XXXX

Acute toxicity, Category 4, H332

Acute toxicity, Category 4, H312

Skin irritation, Category 2, H315

Eye irritation, Category 2, H319

Specific target organ toxicity - single exposure, Category 3, H335

Specific target organ toxicity - repeated exposure, Category 1, H372

Acute aquatic toxicity, Category 1, H400

For the full text of the H-Statements mentioned in this Section, see Section 16.

**Hazardous components (1999/45/EC)**

*Chemical Name (Concentration)*

CAS-No. Classification

Iodine (>= 1 % - < 10 %)

7553-56-2 Xn, Harmful; R20/21

N, Dangerous for the environment; R50

For the full text of the R-phrases mentioned in this Section, see Section 16.

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**SECTION 4. First aid measures**

**4.1 Description of first aid measures**

After inhalation: fresh air. Call in physician.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

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SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

Catalogue No. 109099  
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After eye contact: rinse out with plenty of water. Call in ophthalmologist.

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

**4.2 Most important symptoms and effects, both acute and delayed**  
irritant effects

**4.3 Indication of any immediate medical attention and special treatment needed**  
No information available.

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**SECTION 5. Firefighting measures**

**5.1 Extinguishing media**

*Suitable extinguishing media*

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

*Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

**5.2 Special hazards arising from the substance or mixture**

Not combustible.

Ambient fire may liberate hazardous vapours.

Fire may cause evolution of:

hydrogen iodide

**5.3 Advice for firefighters**

*Special protective equipment for firefighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*

Prevent fire extinguishing water from contaminating surface water or the ground water system.

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**SECTION 6. Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

**6.2 Environmental precautions**

Do not let product enter drains.

**6.3 Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent and neutralising material (e.g. Chemizorb® H<sup>+</sup>, Merck Art. No. 101595). Dispose of properly. Clean up affected area.

**6.4 Reference to other sections**

Indications about waste treatment see section 13.

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SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

Catalogue No. 109099  
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**SECTION 7. Handling and storage**

**7.1 Precautions for safe handling**

*Advice on safe handling*

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Observe label precautions.

*Hygiene measures*

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

**7.2 Conditions for safe storage, including any incompatibilities**

*Storage conditions*

Tightly closed.

Recommended storage temperature see product label.

**7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

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**SECTION 8. Exposure controls/personal protection**

**8.1 Control parameters**

**Components with workplace control parameters**

*Components*

Basis	Value	Threshold limits	Remarks
<i>Iodine (7553-56-2)</i>			
EH40 WEL	Short Term Exposure Limit (STEL):	0.1 ppm 1.1 mg/m <sup>3</sup>	

**Derived No Effect Level (DNEL)**

*Iodine (7553-56-2)*

Worker DNEL, acute	Systemic effects	inhalation	1 mg/m <sup>3</sup>
Worker DNEL, longterm	Systemic effects	inhalation	0.07 mg/m <sup>3</sup>
Worker DNEL, acute	Systemic effects	dermal	0.01 mg/kg Body weight
Worker DNEL, longterm	Systemic effects	dermal	0.01 mg/kg Body weight

**Recommended monitoring procedures**

Methods for measurement of the workplace atmosphere have to correspond to the requirements of norms DIN EN 482 and DIN EN 689.

**Predicted No Effect Concentration (PNEC)**

*Iodine (7553-56-2)*

PNEC Fresh water	0.01813 mg/l
PNEC Marine water	0.06001 mg/l
PNEC Sewage treatment plant	11 mg/l
PNEC Fresh water sediment	3.99 mg/kg
PNEC Marine sediment	20.22 mg/kg

SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

Catalogue No. 109099  
Product name Iodine solution c(I<sub>2</sub>) = 0.05 mol/l (0.1 N) Titripur® Reag. Ph Eur, Reag. USP

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PNEC Soil 5.95 mg/kg

## 8.2 Exposure controls

### Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

### Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

#### *Eye/face protection*

Safety glasses

#### *Hand protection*

full contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Break through time:	> 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet (>,<) supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

#### *Other protective equipment*

protective clothing

#### *Respiratory protection*

required when vapours/aerosols are generated.

Recommended Filter type: Filter P 2 (acc. to DIN 3181) for solid and liquid particles of harmful substances

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

### Environmental exposure controls

Do not let product enter drains.

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## SECTION 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

Catalogue No. 109099  
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Form	liquid
Colour	dark brown
Odour	slight
Odour Threshold	No information available.
pH	ca. 3.5 at 20 °C
Melting point	No information available.
Boiling point	No information available.
Flash point	No information available.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapour pressure	No information available.
Relative vapour density	No information available.
Density	1.02 g/cm <sup>3</sup> at 20 °C
Relative density	No information available.
Water solubility	at 20 °C soluble
Partition coefficient: n-octanol/water	No information available.
Auto-ignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	none

## 9.2 Other data

none

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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

Catalogue No. 109099  
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See section 10.3

**10.2 Chemical stability**

The product is chemically stable under standard ambient conditions (room temperature) .

**10.3 Possibility of hazardous reactions**

Violent reactions possible with:

The generally known reaction partners of water.

**10.4 Conditions to avoid**

no information available

**10.5 Incompatible materials**

no information available

**10.6 Hazardous decomposition products**

no information available

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**SECTION 11. Toxicological information**

**11.1 Information on toxicological effects**

**Mixture**

*Acute oral toxicity*

This information is not available.

*Acute inhalation toxicity*

Acute toxicity estimate: > 20 mg/l; 4 h ; vapour

Calculation method

*Acute dermal toxicity*

Acute toxicity estimate : > 2,000 mg/kg

Calculation method

*Skin irritation*

slight irritation

*Eye irritation*

slight irritation

*Sensitisation*

Sensitisation possible in predisposed persons.

*Germ cell mutagenicity*

This information is not available.

*Carcinogenicity*

This information is not available.

*Reproductive toxicity*

This information is not available.

*Teratogenicity*

This information is not available.

*Specific target organ toxicity - single exposure*

This information is not available.

SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

Catalogue No. 109099  
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*Specific target organ toxicity - repeated exposure*

Target Organs: thyroid

Mixture may cause damage to organs through prolonged or repeated exposure.

*Aspiration hazard*

This information is not available.

**11.2 Further information**

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

**Components**

*Iodine*

*Acute oral toxicity*

LD50 Rat: 14,000 mg/kg  
(RTECS)

*Acute dermal toxicity*

LD50 Rabbit: 1,425 mg/kg  
US-EPA

*Skin irritation*

In vitro study  
Result: non-corrosive  
OECD Test Guideline 435

In vitro study

Result: Irritations  
OECD Test Guideline 439

*Sensitisation*

In animal experiments: Mouse  
Result: negative  
Method: OECD Test Guideline 429

*Repeated dose toxicity*

Rat  
female  
Oral  
100 d  
daily  
NOAEL: 3 mg/l  
LOAEL: 10 mg/l  
OECD Test Guideline 408  
thyroid

(as aqueous solution)

Rat  
male and female  
Oral  
29 - 47 d  
daily  
NOAEL: 10 mg/kg  
OECD Test Guideline 422

*Germ cell mutagenicity*

*Genotoxicity in vitro*

Mutagenicity (mammal cell test):  
Mouse lymphoma test  
Result: negative  
Method: OECD Test Guideline 476



SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

Catalogue No. 109099  
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|| UDS (Unscheduled DNA synthesis assay)  
Result: negative  
Method: OECD Test Guideline 482

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**SECTION 12. Ecological information**

**Mixture**

**12.1 Toxicity**

No information available.

**12.2 Persistence and degradability**

No information available.

**12.3 Bioaccumulative potential**

No information available.

**12.4 Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

Substance(s) in the mixture do(es) not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII, or a PBT/vPvB assessment was not conducted.

**12.6 Other adverse effects**

Discharge into the environment must be avoided.

**Components**

*Iodine*

|| *Toxicity to fish*  
static test LC50 *Oncorhynchus mykiss* (rainbow trout): 1.67 mg/l; 96 h  
(ECHA)

|| *Toxicity to daphnia and other aquatic invertebrates*  
static test EC50 *Daphnia magna* (Water flea): 0.55 mg/l; 48 h  
(ECHA)

|| *Toxicity to algae*  
Growth inhibition ErC50 *Desmodesmus subspicatus* (green algae): 0.13 mg/l; 72 h  
OECD Test Guideline 201

|| Growth inhibition NOEC *Desmodesmus subspicatus* (green algae): 0.025 mg/l; 72 h  
OECD Test Guideline 201

|| *Toxicity to bacteria*  
EC50 activated sludge: 280 mg/l; 3 h  
OECD Test Guideline 209

*Biodegradability*

The methods for determining the biological degradability are not applicable to inorganic substances.

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

Catalogue No. 109099  
Product name Iodine solution c(I<sub>2</sub>) = 0.05 mol/l (0.1 N) Titripur® Reag. Ph Eur, Reag. USP

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**SECTION 13. Disposal considerations**

*Waste treatment methods*

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

Notice Directive on waste 2008/98/EC.

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**SECTION 14. Transport information**

**Land transport (ADR/RID)**

14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

**Inland waterway transport (ADN)**

Not relevant

**Air transport (IATA)**

14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

**Sea transport (IMDG)**

14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not relevant

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**SECTION 15. Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

*EU regulations*

Major Accident Hazard SEVESO III  
Legislation Not applicable

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work. Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

*National legislation*

Storage class 10 - 13

**15.2 Chemical Safety Assessment**

For this product a chemical safety assessment was not carried out.

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SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

Catalogue No. 109099  
Product name Iodine solution  $c(I_2) = 0.05 \text{ mol/l}$  (0.1 N) Titripur® Reag. Ph Eur, Reag. USP

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**SECTION 16. Other information**

**Full text of H-Statements referred to under sections 2 and 3.**

H312	Harmful in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H372	Causes damage to organs through prolonged or repeated exposure if swallowed.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.

**Full text of R-phrases referred to under sections 2 and 3**

R20/21	Harmful by inhalation and in contact with skin.
R50	Very toxic to aquatic organisms.

**Training advice**

Provide adequate information, instruction and training for operators.

**Labelling (67/548/EEC or 1999/45/EC)**

**Key or legend to abbreviations and acronyms used in the safety data sheet**

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

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*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*