

SAFETY DATA SHEET

Version Number: 6

Revision Date: 12 Feb 2013

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

Product Name: Osmium tetroxide solution
Product Code: CMG – 14036S
REACH Registration No: Not applicable, substance is exempt from registration.

1.2 Relevant identified use for the substance or mixture and uses advised against

Laboratory Chemical, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

MANUFACTURER: Ceimig Limited
ADDRESS: Units 1 – 3 Smeaton Road
Wester Gourdie Industrial Estate
DUNDEE
DD2 4UT
Telephone: + 44 (0) 1382 624127
Fax: + 44 (0) 1382 611777
E-mail address: info@ceimig.com

1.4 Emergency Telephone Number

Telephone: + 44 (0) 1382 624127
The above telephone number is only available during office hours of 9am to 5pm (UK Time)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (EU-GHS/CLP)

Flammable liquids (Category 2)
Acute toxicity, Oral (Category 3)
Acute toxicity, Inhalation (Category 1)
Skin irritation (Category 2)
Eye irritation (Category 2)
Respiratory sensitization (Category 1)
Specific target organ toxicity – single exposure (Category 3)

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Highly flammable. Toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes and respiratory system.

2.2 Label Elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

Pictogram



Signal Word

Danger

Hazard Statement(s)

H225	Highly flammable liquid and vapour
H301	Toxic if swallowed
H315	Causes skin irritation
H319	Causes serious eye irritation
H330	Fatal if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled

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H335 May cause respiratory irritation

Precautionary Statement(s)

P210 Keep away from heat/ sparks/ open flames/ hot surfaces. – No Smoking
 P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray
 P264 Wash hands thoroughly after handling
 P284 Wear respiratory protection
 P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
 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

Supplemental Hazard Statement(s) none

According to EU Directive 67/548/EEC as amended

Hazard Symbol(s)



R-phrase(s)

R11 Highly flammable
 R23/24/25 Toxic by inhalation, in contact with skin and if swallowed
 R36/37 Irritating to eyes and respiratory system
 S-phrase(s)
 S16 Keep away from sources of ignition – No smoking
 S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
 S36/37 Wear suitable protective clothing and gloves
 S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

2.3 Other Hazards
 none

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Formula O₄Os
 Molecular Weight 254.23 g/mol

Component	Classification	Concentration
tert-Butyl Alcohol		
CAS No: 75-65-0 EC No: 200-889-7 Index No: 603-005-00-1	Flam Liq 2; Acute Tox 4; Eye Irrit 2; STOT SE 3; H225, H319, H332, H335 F, Xn, R11-R20-R36/37	50 – 100 %
tert-Butyl hydroperoxide solution		
CAS No: 75-91-2 EC No: 200-915-7 Index No: -	Flam Liq 3; Acute Tox 2; Acute Tox 3; Acute Tox 4; Skin Corr 1B; H226, H302, H311, H314, H330 O, T, R7-R10-R21/22-R23-R34	1 – 5 %
Osmic Acid		
CAS No: 20816-12-0 EC No: 244-058-7 Index No: 076-001-00-5	Acute Tox 2; Acute Tox 1; Acute Tox 2; Skin Corr 1B; Resp Sens 1; H300, H310, H314, H330, H334 T+, R26/27/28 – R34	1 – 5 %

For full text of H-Statements and R-phrases mentioned in this sections, see section 16.

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SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General Advice

Consult a physician. Show this SDS to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing give artificial respiration. Contact a physician.

In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin, spasm, inflammation and edema of the larynx, inflammation and edema of the bronch, pneumonitis, pulmonary edema, burning sensation, Coughm wheezing, laryngitis, Shortness of breath, Headache.

4.3 Indication of any immediate medical attention and special treatment needed

no data available

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Use water spray, alcohol resistant foam, dry chemical or carbon dioxide

5.2 Special Hazards arising from the substance or mixture

Carbon oxides

5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electronically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections

For exposure control see section 8. For disposal see section 13

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapours and mist. Keep away from sources of ignition – No smoking. Take measures to prevent the build up of electrostatic charge.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be Carefully resealed and kept upright to prevent leakage.

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Store cold – 2 – 8 °C

7.3 Specific end use(s)

no data available

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

Components with workplace control parameters

Component	CAS No.	Value	Control Parameters	Basis
tert-Butyl alcohol	75-65-0	STEL	150 ppm 462 mg/m ³	UK. EH40 WEL – Workplace exposure limits
		TWA	100 ppm 308 mg/m ³	UK. EH40 WEL – Workplace exposure limits
Osmic Acid	20816-12-0	STEL	0.0006 ppm 0.006 mg/m ³	UK. EH40 WEL – Workplace exposure limits
		TWA	0.0002 ppm 0.002 mg/m ³	UK. EH40 WEL – Workplace exposure limits

8.2 Exposure Controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Respiratory Protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Eye Protection

Face Shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN166(EU).

Skin and body protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching gloves outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU directive 89/686/EEC and the standard EN 374 derived from it. Complete suit protecting against chemicals, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- | | |
|---|------------------------------|
| a) Appearance | Form: liquid, Colour: yellow |
| b) Odour | no data available |
| c) Odour Threshold | no data available |
| d) pH | no data available |
| e) Melting point/freezing point | no data available |
| f) Initial boiling point and boiling range | no data available |
| g) Flash point | 4 °C – closed cup |
| h) Evaporation rate | no data available |
| i) Flammability (solid, gas) | no data available |
| j) Upper/Lower flammability or explosive limits | no data available |
| k) Vapour pressure | 465.951 hPa at 55°C |
| l) Vapour density | no data available |
| m) Relative density | 0.811 g/cm ³ |
| n) Solubility | no data available |

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o) Partition coefficient: n-octanol/water	no data available
p) Auto-ignition temperature	no data available
q) Decomposition temperature	no data available
r) Viscosity	no data available
s) Explosive properties	no data available
t) Oxidising properties	no data available

9.2 Other information

no data available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

no data available

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

no data available

10.4 Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5 Incompatible materials

Alkali metals, Powdered metals, Strong oxidizing agents, Copper, Organic materials, Aluminum, Strong reducing agents, Contact with Hydrochloric acid will cause formation of poisonous chlorine gas.

10.6 Hazardous decomposition products

no data available

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

no data available

Skin corrosion/Irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin Sensitisation

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed Human carcinogen by IARC

Reproductive toxicity

no data available

Specific target organ toxicity – single exposure

no data available

Specific target organ toxicity – repeated exposure

no data available



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Aspiration hazard
no data available

Potential Health Effects

Inhalation

May be fatal if inhaled. Causes respiratory tract irritation.

Ingestion

Toxic if swallowed.

Skin

Harmful if absorbed through skin. Causes skin irritation.

Eyes

Causes serious eye irritation

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin, spasm, inflammation and edema of the larynx, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Coughm wheezing, laryngitis, Shortness of breath, Headache.

Additional Information

RTECS#: Not available

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Results of PBT and vPvB assessment

no data available

12.6 Other adverse effects

no data available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. The material is to be disposed of as hazardous waste.

Contaminated packaging

Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

ADR/RID

UN2929

IMDG

UN2929

IATA

UN2929

14.2 UN proper shipping name

ADR/RID

TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S (Osmic acid, tert-butyl alcohol)

IMDG

TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S (Osmic acid, tert-butyl alcohol)

IATA

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Toxic liquid, flammable, organic, n.o.s (Osmic acid, tert-butyl alcohol)

14.3 Transport hazard class(es)

ADR/RID Class 6.1 (3)	IMDG Class 6.1 (3)	IATA Class 6.1 (3)
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14.4 Packing Group

ADR/RID Packing Group I	IMDG Packing Group I	IATA Packing Group I
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14.5 Environmental Hazards

ADR/RID No	IMDG Marine Pollutant: No	IATA No
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14.6 Special Precautions for user

no data available

SECTION 15: REGULATORY INFORMATION

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

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

no data available

15.2 Chemical Safety Assessment

no data available

SECTION 16: OTHER INFORMATION

Text of H-code(s) and R-phrases mentioned in Section 3.

Acute Tox	Acute Toxicity
Eye Irrit	Eye irritation
Flam liq	Flammable liquid
H225	Highly flammable liquid and vapour
H226	Flammable liquid and vapour
H300	Fatal if swallowed
H302	Harmful if swallowed
H310	Fatal in contact with skin
H311	Toxic in contact with skin
H314	Causes severe skin burns and eye damage
H319	Causes serious eye irritation
H330	Fatal if inhaled
H332	Harmful if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335	May cause respiratory irritation
Resp Sens	Respiratory sensitization
Skin Corr	Skin corrosion
STOT SE	Specific target organ toxicity – single exposure
F	Highly flammable
O	Oxidising
T+	Very Toxic
T	Toxic
R7	Keep container tightly closed
R10	Keep away from combustible material
R11	Highly flammable
R20	Harmful by inhalation
R21/22	Harmful in contact with skin and if swallowed
R23	Toxic by inhalation
R26/27/28	Very toxic by inhalation, in contact with skin and if swallows
R34	Causes burns
R36/37	Irritating to eyes and respiratory system
Xn	Harmful

Further Information:



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The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.