# SAFETY DATA SHEET
# 2-MERCAPTOBENZOTHIAZOLE
# REVISION 5, DATE 01 MAR 2022

## 1. IDENTIFICATION

| | |
|---|---|
| **Product Name** | **2-Mercaptobenzothiazole** |
| **Other Names** | Benzothiazole-2-thiol; MBT |
| **Uses** | Rubber accelerator. |
| **Chemical Family** | No Data Available |
| **Chemical Formula** | C7H5NS2 |
| **Chemical Name** | 2(3H)-Benzothiazolethione |
| **Product Description** | No Data Available |

### Contact Details of the Supplier of this Safety Data Sheet

| Organisation | Location | Telephone |
|---|---|---|
| Redox Ltd | 2 Swettenham Road<br>Minto NSW 2566<br>Australia | +61-2-97333000 |
| Redox Ltd | 11 Mayo Road<br>Wiri Auckland 2104<br>New Zealand | +64-9-2506222 |
| Redox Inc. | 3960 Paramount Boulevard<br>Suite 107<br>Lakewood CA 90712<br>USA | +1-424-675-3200 |
| Redox Chemicals Sdn Bhd | Suite 13A.03, Menara Summit<br>Persiaran Kewajipan USJ1<br>47600 UEP Subang Jaya<br>Selangor, Malaysia | +60-3-5614-2111 |

### Emergency Contact Details

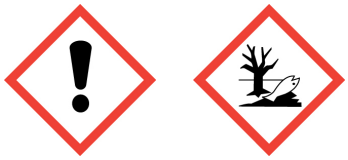
*For emergencies only; DO NOT contact these companies for general product advice.*

| Organisation | Location | Telephone |
|---|---|---|
| Poisons Information Centre | Australia – Westmead NSW | 1800-251525<br>131126 |
| Chemcall | Australia | 1800-127406<br>+64-4-9179888 |
| Chemcall | Malaysia | +64-4-9179888 |
| National Poison Centre | Malaysia | +60-4-6536-999 |
| Chemcall | New Zealand | 0800-243622<br>+64-4-9179888 |
| National Poisons Centre | New Zealand | 0800-764766 |
| CHEMTREC | USA & Canada | 1-800-424-9300 CN723420<br>+1-703-527-3887 |

## 2. HAZARD IDENTIFICATION

| | |
|---|---|
| **Poisons Schedule (Aust)** | Not Scheduled |

### Globally Harmonised System

| | | | |
|---|---|---|---|
| **Hazard Classification** | | | Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) |
| **Hazard Categories** | | | Sensitisation (Skin) - Category 1<br>Acute Hazard To The Aquatic Environment - Category 1<br>Long-term Hazard To The Aquatic Environment - Category 1 |
| **Pictograms** | | |  |
| **Signal Word** | | | Warning |
| **Hazard Statements** | | **H317** | May cause an allergic skin reaction. |
| | | **H410** | Very toxic to aquatic life with long lasting effects. |
| **Precautionary Statements** | Prevention | **P280** | Wear protective gloves. |
| | | **P261** | Avoid breathing dusts or mists. |
| | | **P273** | Avoid release to the environment. |
| | | **P272** | Contaminated work clothing should not be allowed out of the workplace. |
| | Response | **P302 + P352** | IF ON SKIN: Wash with plenty of soap and water. |
| | | **P333 + P313** | If skin irritation or rash occurs: Get medical advice. |
| | | **P391** | Collect spillage. |
| | | **P362 + P364** | Take off contaminated clothing and wash it before reuse. |
| | Disposal | **P501** | Dispose of contents/container in accordance with local / regional / national / international regulations. |

### National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

| | |
|---|---|
| **Dangerous Goods Classification** | NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code) |

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

***Ingredients***

| Chemical Entity | Formula | CAS Number | Proportion |
|---|---|---|---|
| Benzothiazole-2-thiol | C7H5NS2 | 149-30-4 | <=100 % |

## 4. FIRST AID MEASURES

***Description of necessary measures according to routes of exposure***

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|---|---|
| **Swallowed** | IF SWALLOWED: Rinse mouth, then give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical advice/attention if you feel unwell. Never give anything by mouth to an unconscious person. |

| | |
|---|---|
| **Eye** | IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention. |
| **Skin** | IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs, get medical advice/attention.<br>*Contaminated work clothing should not be allowed out of the workplace. |
| **Inhaled** | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. |
| **Advice to Doctor** | Treat symptomatically and supportively. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.<br>*Most important symptoms and effects, both acute and delayed: May cause an allergic skin reaction. |
| **Medical Conditions Aggravated by Exposure** | No information available. |

## 5. FIRE FIGHTING MEASURES

| | |
|---|---|
| **General Measures** | If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Dike fire-control water for later disposal |
| **Flammability Conditions** | May burn but does not ignite readily. Combustible in contact with open flame. |
| **Extinguishing Media** | Use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction. Do not scatter spilled material with high-pressure water streams. |
| **Fire and Explosion Hazard** | Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. |
| **Hazardous Products of Combustion** | Fire may produce irritating and/or toxic gases, including Carbon oxides (CO, CO2), Sulfur oxides (SOx), nitrous gases (NOx). |
| **Special Fire Fighting Instructions** | Contain runoff from fire control or dilution water - Runoff may cause pollution. |
| **Personal Protective Equipment** | Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection. |
| **Flash Point** | Approx. 252 °C |
| **Lower Explosion Limit** | No Data Available |
| **Upper Explosion Limit** | No Data Available |
| **Auto Ignition Temperature** | No Data Available |
| **Hazchem Code** | No Data Available |

## 6. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| **General Response Procedure** | Ensure adequate ventilation. ELIMINATE all ignition sources (if dust clouds can occur). Do not touch or walk through spilled material. Clear spills immediately! Avoid generating dust. Avoid breathing dust and contact with eyes, skin and clothing. |
| **Clean Up Procedures** | Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal (see SECTION 13).<br>*Wet clean or vacuum up solids. Don't use a brush or compressed air for cleaning surfaces or clothing. |
| **Containment** | Stop leak if you can do it without risk. Prevent dust cloud. Prevent entry into waterways, sewers, basements or confined areas. |
| **Decontamination** | No information available. |
| **Environmental Precautionary Measures** | Spillages and decontamination runoff should be prevented from entering drains and watercourses. Inform the relevant authorities if the product has caused environmental pollution. |
| **Evacuation Criteria** | Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground.<br>Use personal protective equipment as required (see SECTION 8). |

**Personal Precautionary Measures**

## 7. HANDLING AND STORAGE

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|---|---|
| **Handling** | Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practices. Minimise dust generation and accumulation. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). WARNING: May form combustible dust concentrations in air! Keep away from heat and sources of ignition - No smoking. Take precautionary measures against static discharges. Avoid release to the environment - Collect spillage (see SECTION 6). |
| **Storage** | Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Keep away from heat and all sources of ignition - No smoking. Keep away from incompatible materials (see SECTION 10). |
| **Container** | Keep in the original container. |

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| | |
|---|---|
| **General** | No specific exposure standards are available for this product. For dusts from solid substances without specific occupational exposure standards:<br>- Safe Work Australia Exposure Standard (Nuisance dusts): 8 hr TWA = 10 mg/m3 (measured as inhalable dust).<br>- New Zealand WES (Particulates not otherwise classified): TWA = 10 mg/m3; TWA = 3 mg/m3 (respirable dust). |
| **Exposure Limits** | No Data Available |
| **Biological Limits** | No information available. |
| **Engineering Measures** | A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. |
| **Personal Protection Equipment** | - Respiratory protection: Wear respiratory protection in case of inadequate ventilation or if an inhalation risk exists. Recommended: Dust mask/particulate respirator (e.g. Type P1) for nuisance exposures. For higher level protection, use combination type or ABEK-P2 respirator cartridges.<br>- Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety glasses with side-shields or if operating conditions cause high dust concentrations to be produced, wear chemical goggles.<br>- Hand protection: Wear protective gloves. Recommended: Impervious gloves, e.g. polyvinyl chloride (PVC), nitrile rubber (NBR) or polychloroprene (CR).<br>- Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Overalls, safety shoes. |
| **Special Hazards Precaustions** | No information available. |
| **Work Hygienic Practices** | Do not eat, drink or smoke when using this product. Wash hands before breaks and at the end of workday. Take off contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| **Physical State** | Solid |
| **Appearance** | Crystals, powder or granules |
| **Odour** | Pungent |
| **Colour** | Yellow |
| **pH** | No Data Available |
| **Vapour Pressure** | Negligible (<0.00000253 hPa) (@ 25 °C) |
| **Relative Vapour Density** | No Data Available |

| | |
|---|---|
| **Boiling Point** | No Data Available |
| **Melting Point** | 180 - 182 °C |
| **Freezing Point** | No Data Available |
| **Solubility** | 118 mg/l in water 25°C |
| **Specific Gravity** | No Data Available |
| **Flash Point** | Approx. 252 °C |
| **Auto Ignition Temp** | No Data Available |
| **Evaporation Rate** | No Data Available |
| **Bulk Density** | No Data Available |
| **Corrosion Rate** | No Data Available |
| **Decomposition Temperature** | No Data Available |
| **Density** | 1.42 g/cm3 |
| **Specific Heat** | No Data Available |
| **Molecular Weight** | No Data Available |
| **Net Propellant Weight** | No Data Available |
| **Octanol Water Coefficient** | No Data Available |
| **Particle Size** | No Data Available |
| **Partition Coefficient** | No Data Available |
| **Saturated Vapour Concentration** | No Data Available |
| **Vapour Temperature** | No Data Available |
| **Viscosity** | No Data Available |
| **Volatile Percent** | No Data Available |
| **VOC Volume** | No Data Available |
| **Additional Characteristics** | No information available. |
| **Potential for Dust Explosion** | Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. |
| **Fast or Intensely Burning Characteristics** | No information available. |
| **Flame Propagation or Burning Rate of Solid Materials** | No information available. |
| **Non-Flammables That Could Contribute Unusual Hazards to a Fire** | No information available. |
| **Properties That May Initiate or Contribute to Fire Intensity** | May burn but does not ignite readily. Combustible in contact with open flame. |
| **Reactions That Release Gases or Vapours** | Fire/decomposition may produce irritating and/or toxic gases, including Carbon oxides (CO, CO2), Sulfur oxides (SOx), nitrous gases (NOx). |
| **Release of Invisible Flammable Vapours and Gases** | No information available. |

## 10. STABILITY AND REACTIVITY

| | |
|---|---|
| **General Information** | No known hazardous reactions under normal conditions of use. |
| **Chemical Stability** | Stable under recommended storage and handling conditions. |
| **Conditions to Avoid** | Avoid generating dust. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. |
| **Materials to Avoid** | Incompatible/reactive with strong oxidising agents. |
| | Fire/decomposition may produce irritating and/or toxic gases, including Carbon oxides (CO, CO2), Sulfur oxides (SOx), |

| | |
|---|---|
| **Hazardous Decomposition Products** | nitrous gases (NOx). |
| **Hazardous Polymerisation** | No information available. |

## 11. TOXICOLOGICAL INFORMATION

**General Information**

Information on toxicological effects:
- Acute toxicity: Not classified.
- Skin corrosion/irritation: Not irritating (Rabbit).
- Eye damage/irritation: Not irritating (Rabbit).
- Respiratory/skin sensitisation: May cause an allergic skin reaction.
- Germ cell mutagenicity: Negative; not considered to be genotoxic.
- Carcinogenicity: 2-Mercaptobenzothiazole (CAS No. 149-30-4) is classified by the IARC Monographs as Probably carcinogenic to humans (Group 2A).
- Reproductive toxicity: Insufficient data to classify. The chemical does not show specific reproductive or developmental toxicity.
- STOT (single exposure): Insufficient data to classify.
- STOT (repeated exposure): Insufficient data to classify.
- Aspiration toxicity: Insufficient data to classify.

Information on possible routes of exposure:
- Ingestion: No information available.
- Eye contact: Slightly irritating to eyes.
- Skin contact: Slightly irritating to skin. May cause sensitisation by skin contact.
- Inhalation: No information available.

Chronic effects: No information available.

***Acute***

**Ingestion**

Acute toxicity (Oral):
- LD50, Rat: 3,800 mg/kg [Supplier's SDS].

**Other**

Acute toxicity (Dermal):
- LD50, Rabbit: >7,940 mg/kg [Supplier's SDS].

**Carcinogen Category**

None

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

Aquatic toxicity:
- LC50, Fish (Salmo gairdneri): 0.73 mg/L (96 h).
- EC50, Crustacea (Daphnia magna): 0.71 mg/L (48 h).
- EC50, Algae (Selenastrum capricornutum): 0.5 mg/L (72 h).

**Persistence/Degradability**

MBT is not readily biodegradable (2.5 %, 14 days) and also not inherently biodegradable (2 %, 35 days). MBT and its main metabolites are expected to be non-biodegradable and hence persistent in surface water, sediment and soil.

**Mobility**

MBT has moderate adsorption potential in soil/sediment.
- log Koc: 2.51 - 3.55

**Environmental Fate**

Very toxic to aquatic life with long lasting effects - Avoid release to the environment.

**Bioaccumulation Potential**

MBT and its main metabolites are not bioaccumulative (aquatic compartment).
- BCF (Cyprinus carpio, flow-through): <0.8 (0.1 mg/L) - <8 (0.01 mg/L).

**Environmental Impact**

No Data Available

## 13. DISPOSAL CONSIDERATIONS

| | |
|---|---|
| **General Information** | Dispose of contents/container via a professional organisation for waste disposal and in accordance with local/regional/national regulations. |
| **Special Precautions for Land Fill** | If empty container retains product residues, all label precautions must be observed. |

## 14. TRANSPORT INFORMATION

### Land Transport (Australia)
ADG Code

| | |
|---|---|
| **Proper Shipping Name** | 2-Mercaptobenzothiazole |
| **Class** | No Data Available |
| **Subsidiary Risk(s)** | No Data Available |
| **EPG** | 171 Substances (Low to Moderate Hazard) |
| **UN Number** | No Data Available |
| **Hazchem** | No Data Available |
| **Pack Group** | No Data Available |
| **Special Provision** | AU01 |
| **Comments** | Not regulated as DG when transported by road or rail in packagings that do not incorporate a receptacle exceeding 500 kg(L) or IBCs. |

### Land Transport (Malaysia)
ADR Code

| | |
|---|---|
| **Proper Shipping Name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (2-Mercaptobenzothiazole) |
| **Class** | 9 Miscellaneous Dangerous Goods and Articles |
| **Subsidiary Risk(s)** | No Data Available |
| **EPG** | 171 Substances (Low to Moderate Hazard) |
| **UN Number** | 3077 |
| **Hazchem** | 2Z |
| **Pack Group** | III |
| **Special Provision** | No Data Available |

### Land Transport (New Zealand)
NZS5433

| | |
|---|---|
| **Proper Shipping Name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (2-Mercaptobenzothiazole) |
| **Class** | 9 Miscellaneous Dangerous Goods and Articles |
| **Subsidiary Risk(s)** | No Data Available |
| **EPG** | 171 Substances (Low to Moderate Hazard) |
| **UN Number** | 3077 |
| **Hazchem** | 2Z |
| **Pack Group** | III |
| **Special Provision** | No Data Available |

### Land Transport (United States of America)
US DOT

| | |
|---|---|
| **Proper Shipping Name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (2-Mercaptobenzothiazole) |
| **Class** | 9 Miscellaneous Dangerous Goods and Articles |

| | |
|---|---|
| **Subsidiary Risk(s)** | No Data Available |
| **ERG** | 171 Substances (Low to Moderate Hazard) |
| **UN Number** | 3077 |
| **Hazchem** | 2Z |
| **Pack Group** | III |
| **Special Provision** | No Data Available |

### Sea Transport
IMDG Code

| | |
|---|---|
| **Proper Shipping Name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (2-Mercaptobenzothiazole) |
| **Class** | 9 Miscellaneous Dangerous Goods and Articles |
| **Subsidiary Risk(s)** | No Data Available |
| **UN Number** | 3077 |
| **Hazchem** | 2Z |
| **Pack Group** | III |
| **Special Provision** | No Data Available |
| **EMS** | F-A, S-F |
| **Marine Pollutant** | Yes |

### Air Transport
IATA DGR

| | |
|---|---|
| **Proper Shipping Name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (2-Mercaptobenzothiazole) |
| **Class** | 9 Miscellaneous Dangerous Goods and Articles |
| **Subsidiary Risk(s)** | No Data Available |
| **UN Number** | 3077 |
| **Hazchem** | 2Z |
| **Pack Group** | III |
| **Special Provision** | No Data Available |

### National Transport Commission (Australia)
Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

| | |
|---|---|
| **Dangerous Goods Classification** | NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code) |

## 15. REGULATORY INFORMATION

| | |
|---|---|
| **General Information** | No Data Available |
| **Poisons Schedule (Aust)** | Not Scheduled |

### Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

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|---|---|
| **Approval Code** | HSR002503 - Additives Process Chemicals and Raw Materials Subsidiary Hazard Group Standard 2020 |

### National/Regional Inventories

| | |
|---|---|
| **Australia (AIIC)** | Listed |
| **Canada (DSL)** | Not Determined |
| **Canada (NDSL)** | Not Determined |
| **China (IECSC)** | Not Determined |
| **Europe (EINECS)** | 205-736-8 |
| **Europe (REACh)** | Not Determined |
| **Japan (ENCS/METI)** | Not Determined |
| **Korea (KECI)** | Not Determined |
| **Malaysia (List of Classified Substances)** | Not Determined |
| **New Zealand (NZIoC)** | Listed |
| **Philippines (PICCS)** | Not Determined |
| **Taiwan (TCSI)** | Not Determined |
| **USA (TSCA)** | Not Determined |
| **Mexico (INSQ)** | Not Determined |

## 16. OTHER INFORMATION

| | |
|---|---|
| **Related Product Codes** | MBTAAA1000, MBTAAA1001, MBTAAA1002, MBTAAA1003, MBTAAA1004, MBTAAA1100, MBTAAA1500, MBTAAA1700, MBTAAA2000, MBTAAA2001, MBTAAA2200, MBTAAA2500, MBTAAA3000, MBTAAA3001, MBTAAA3002, MBTAAA3003, MBTAAA3004, MBTAAA3005, MBTAAA3006, MBTAAA3007, MBTAAA3500, MBTAAA3600, MBTAAA4000, MBTAAA4200, MBTAAA4500, MBTAAA4600, MBTAAA5000, MBTAAA6000, MBTAAA7000, MBTAAA8000 |
| **Revision** | 5 |
| **Revision Date** | 01 Mar 2022 |
| **Key/Legend** | < Less Than<br>> Greater Than<br>**AICS** Australian Inventory of Chemical Substances<br>**atm** Atmosphere<br>**CAS** Chemical Abstracts Service (Registry Number)<br>**$cm^2$** Square Centimetres<br>**CO2** Carbon Dioxide<br>**COD** Chemical Oxygen Demand<br>**deg C (°C)** Degrees Celcius<br>**EPA (New Zealand)** Environmental Protection Authority of New Zealand<br>**deg F (°F)** Degrees Farenheit<br>**g** Grams<br>**$g/cm^3$** Grams per Cubic Centimetre<br>**g/l** Grams per Litre<br>**HSNO** Hazardous Substance and New Organism<br>**IDLH** Immediately Dangerous to Life and Health<br>**immiscible** Liquids are insoluable in each other.<br>**inHg** Inch of Mercury<br>**inH2O** Inch of Water<br>**K** Kelvin<br>**kg** Kilogram<br>**$kg/m^3$** Kilograms per Cubic Metre |

**lb** Pound
**LC50** LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
**LD50** LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
**ltr** or **L** Litre
**$m^3$** Cubic Metre
**mbar** Millibar
**mg** Milligram
**mg/24H** Milligrams per 24 Hours
**mg/kg** Milligrams per Kilogram
**$mg/m^3$** Milligrams per Cubic Metre
**Misc** or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.
**mm** Millimetre
**mmH2O** Millimetres of Water
**mPa.s** Millipascals per Second
**N/A** Not Applicable
**NIOSH** National Institute for Occupational Safety and Health
**NOHSC** National Occupational Heath and Safety Commission
**OECD** Organisation for Economic Co-operation and Development
**Oz** Ounce
**PEL** Permissible Exposure Limit
**Pa** Pascal
**ppb** Parts per Billion
**ppm** Parts per Million
**ppm/2h** Parts per Million per 2 Hours
**ppm/6h** Parts per Million per 6 Hours
**psi** Pounds per Square Inch
**R** Rankine
**RCP** Reciprocal Calculation Procedure
**STEL** Short Term Exposure Limit
**TLV** Threshold Limit Value
**tne** Tonne
**TWA** Time Weighted Average
**ug/24H** Micrograms per 24 Hours
**UN** United Nations
**wt** Weight