1. IDENTIFICATION

Product Name: Nonylphenol

Other Names: Nonyl phenol; Nonylphenol, 4-branched

Uses: Intermediate; used in manufacturing antioxidants, lubricating oil additives, laundry and dish detergents, emulsifiers and solubilisers.

Chemical Family: No Data Available

Chemical Formula: Unspecified

Chemical Name: Phenol, 4-nonyl-, branched

Product Description: No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation: Redox Ltd
Location: 2 Swettenham Road
Minto NSW 2566
Australia

Telephone: +61-2-97333000

Redox Ltd
Location: 11 Mayo Road
Wiri Auckland 2104
New Zealand

Telephone: +64-9-2506222

Redox Inc.
Location: 3960 Paramount Boulevard
Suite 107
Lakewood CA 90712
USA

Telephone: +1-424-675-3200

Redox Chemicals Sdn Bhd
Location: Level 2, No. 8, Jalan Sapir 33/7
Seksen 33, Shah Alam Premier Industrial Park
40400 Shah Alam
Sengalor, Malaysia

Telephone: +60-3-5614-2111

Emergency Contact Details

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

Organisation: Poisons Information Centre
Location: Westmead NSW

Telephone: 1800-251525

Chemcall
Location: Australia

Telephone: 1800-127406

Chemcall
Location: Malaysia

Telephone: +64-4-9179888

Chemcall
Location: New Zealand

Telephone: 0800-243622

National Poisons Centre
Location: New Zealand

Telephone: 0800-764766

CHEMTREC
Location: USA & Canada

Telephone: 1-800-424-9300 CN723420

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
Acute Toxicity (Oral) - Category 4
Skin Corrosion/Irritation - Category 1B
Serious Eye Damage/Irritation - Category 1
Toxic To Reproduction - Category 2
Acute Hazard To The Aquatic Environment - Category 1
Long-term Hazard To The Aquatic Environment - Category 1

Pictograms

Signal Word
Danger

Hazard Statements
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements
Prevention
P260 Do not breathe mist/vapour/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P201 Obtain special instructions before use.
P273 Avoid release to the environment.
P270 Do not eat, drink or smoke when using this product.

Response
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
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.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P363 Wash contaminated clothing before reuse.
P308 + P313 IF exposed or concerned: Get medical attention.
P391 Collect spillage.
P304 + P340 IF INHALED: Remove victim to fresh air and keep comfortable for breathing.

Storage
P405 Store locked up.

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
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

<table>
<thead>
<tr>
<th>Chemical Entity</th>
<th>Formula</th>
<th>CAS Number</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonylphenol, 4-branched</td>
<td>Unspecified</td>
<td>84852-15-3</td>
<td>&gt;=99 - 100 %</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a Poison Centre or doctor/physician for advice. 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. Immediately call a Poison Centre or doctor/physician for advice.

Skin
IF ON SKIN (or hair): Remove contaminated clothing and shoes immediately. Flush skin with running water for at least 15 minutes. Immediately call a Poison Centre or doctor/physician for advice. For minor skin contact, avoid spreading material on unaffected skin. Wash contaminated clothing and shoes before reuse.

Inhaled
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a Poison Centre or doctor/physician for advice. Apply resuscitation if victim is not breathing - Do not use direct mouth-to-mouth method if victim ingested or inhaled the substance; use alternative respiratory method or proper respiratory device - Administer oxygen if breathing is difficult.

Advice to Doctor
Keep victim calm and warm - Obtain immediate medical care. Ensure that attending medical personnel are aware of identity and nature of product(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

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. Avoid getting water inside containers.

Flammability Conditions
Combustible; May burn but does not ignite readily.

Extinguishing Media
Use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction - Do not use water jets.

Fire and Explosion Hazard
Containers may explode when heated. When heated, vapours may form explosive mixtures with air.

Hazardous Products of Combustion
Fire will produce irritating, toxic and/or corrosive gases, including Carbon oxides and/or low molecular weight hydrocarbons.

Special Fire Fighting Instructions
Contain runoff from fire control or dilution water - Runoff may be toxic and/or corrosive and may pollute waterways.

Personal Protective Equipment
Wear self-contained breathing apparatus (SCBA) and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter’s uniform is NOT effective for this material.

Flash Point
154 °C [PMCC]

Lower Explosion Limit
No Data Available

Upper Explosion Limit
No Data Available

Auto Ignition Temperature
372 °C

Hazchem Code
2X
6. ACCIDENTAL RELEASE MEASURES

General Response Procedure
Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Do not breathe vapours and prevent contact with eyes, skin and clothing.

Clean Up Procedures
Absorb with earth, sand or other non-combustible material and transfer to a suitable container for disposal (see SECTION 13). Never return spills into original containers for re-use.

Containment
Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. Cover with plastic sheet to prevent spreading.

Decontamination
Clean surface thoroughly to remove residual contamination.

Environmental Precautionary Measures
Spillages and decontamination runoff should be prevented from entering drains and watercourses.

Evacuation Criteria
Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground. Large spill: Immediately contact Police or Fire Brigade; Consider initial downwind evacuation of areas within at least 250 m.

Personal Precautionary Measures
Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (see SECTION 8). Large spill: Wear SCBA and chemical splash suit.

7. HANDLING AND STORAGE

Handling
Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Obtain special instructions before use - Do not handle until all safety precautions have been read and understood. Do not breathe mist/vapours/spray and prevent contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection (see SECTION 8). Do not handle, store or open near sources of heat or ignition - No smoking. Organics can obtain an electrostatic charge during processing activities (including storage, mixing, filtering, or pumping) and may result in a discharge as sparks capable of causing ignition of organic vapours. All equipment used when handling the product must be grounded. 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. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Use care in handling/storage. The pressure in sealed containers can increase under the influence of heat. Keep away from heat and sources of ignition - No smoking. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Keep away from foodstuffs and incompatible materials (see SECTION 10). Store locked up.

Container
Keep in the original container. Empty containers retain product residue (liquid or vapour) and can be dangerous. Do not re-use empty containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General
No specific exposure standards are available for this product.

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: In case of inadequate ventilation, wear respiratory protection. Recommended: Full-face respirator with multi-purpose combination or type ABEK respirator cartridges. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection (refer to AS/NZS 1715 & 1716).
- Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Tightly fitting safety goggles; Face-shield, as appropriate.
- Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Complete
Work Hygienic Practices

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>Phenolic</td>
</tr>
<tr>
<td>Colour</td>
<td>Yellow</td>
</tr>
<tr>
<td>pH</td>
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</tr>
<tr>
<td>Vapour Pressure</td>
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</tr>
<tr>
<td>Relative Vapour Density</td>
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</tr>
<tr>
<td>Boiling Point</td>
<td>302 °C</td>
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<tr>
<td>Melting Point</td>
<td>&lt;-7 °C (Pour point)</td>
</tr>
<tr>
<td>Freezing Point</td>
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</tr>
<tr>
<td>Solubility</td>
<td>Slightly soluble in water</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.95</td>
</tr>
<tr>
<td>Flash Point</td>
<td>154 °C [PMCC]</td>
</tr>
<tr>
<td>Auto Ignition Temp</td>
<td>372 °C</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Corrosion Rate</td>
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</tr>
<tr>
<td>Decomposition Temperature</td>
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<tr>
<td>Density</td>
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</tr>
<tr>
<td>Specific Heat</td>
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<tr>
<td>Molecular Weight</td>
<td>220.35 g/mol</td>
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<tr>
<td>Net Propellant Weight</td>
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<tr>
<td>Octanol Water Coefficient</td>
<td>log Pow: 5.4 (23 °C)</td>
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<tr>
<td>Particle Size</td>
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</tr>
<tr>
<td>Partition Coefficient</td>
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<tr>
<td>Saturated Vapour Concentration</td>
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</tr>
<tr>
<td>Viscosity</td>
<td>2,320 mPa.s (@ 20 °C)</td>
</tr>
<tr>
<td>Volatile Percent</td>
<td>No Data Available</td>
</tr>
<tr>
<td>VOC Volume</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Additional Characteristics</td>
<td>No information available.</td>
</tr>
<tr>
<td>Potential for Dust Explosion</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Fast or Intensely Burning Characteristics</td>
<td>No information available.</td>
</tr>
<tr>
<td>Flame Propagation or Burning Rate of Solid Materials</td>
<td>No information available.</td>
</tr>
<tr>
<td>Non-Flammables That Could Contribute Unusual Hazards to a Fire</td>
<td>No information available.</td>
</tr>
<tr>
<td>Properties That May Initiate or Contribute to Fire Intensity</td>
<td>Combustible; May burn but does not ignite readily.</td>
</tr>
</tbody>
</table>
Reactions That Release Gases or Vapours
Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

Release of Invisible Flammable Vapours and Gases
When heated, vapours may form explosive mixtures with air.

10. STABILITY AND REACTIVITY

General Information
No information available.

Chemical Stability
Material is stable under normal conditions.

Conditions to Avoid
Keep away from heat and sources of ignition.

Materials to Avoid
Incompatible/reactive with oxidising agents.

Hazardous Decomposition Products
Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

Hazardous Polymerisation
Hazardous polymerisation does not occur.

11. TOXICOLOGICAL INFORMATION

General Information
- Acute toxicity: Harmful if swallowed.
- Skin corrosion/irritation: Causes severe skin burns.
- Eye damage/irritation: Causes serious eye damage.
- Respiratory/skin sensitisation: Nonylphenols are not considered to be skin sensitisers.
- Germ cell mutagenicity: Nonylphenols are not considered genotoxic.
- Carcinogenicity: Carcinogenicity (via a genotoxic mechanism) is not expected. 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: Suspected of damaging fertility. Suspected of damaging the unborn child. Neurodevelopmental effects, reproductive effects in males (decreased epididymal sperm density and testicular spermatid head counts), effects on physical maturation and a feminising effect in male pups of dams that received nonylphenol at 50 mg/kg bw/day; and females (increased oestrus cycle length and decreased ovarian weights). The NOAEL for reproductive toxicity was established as 15 mg/kg bw/day in female rats.
- STOT (single exposure): Nonylphenol vapours could cause mild irritation to the respiratory tract at high exposure concentrations.
- STOT (repeated exposure): Nonylphenols are not considered to cause serious damage to health (excluding reproductive and developmental effects) following repeated exposure.
- Aspiration toxicity: No information available.

Acute Ingestion
Acute toxicity (Oral):
LD50, Rats: 1,200 - 2,462 mg/kg bw. (Nonylphenol) [NICNAS].

Carcinogen Category
None

12. ECOLOGICAL INFORMATION

Ecotoxicity
Aquatic toxicity:
- LC50, Fish (freshwater): 0.096 mg/L [ECHA].
- LC50, Fish (marine water): 0.017 mg/L [ECHA].
- EC50/LC50, Invertebrates (freshwater): 0.085 mg/L [ECHA].
- EC50/LC50, Invertebrates (marine water): 0.051 mg/L [ECHA].
- EC50, Algae (freshwater): 0.41 mg/L [ECHA].
- EC50, Algae (marine water): 0.027 mg/L [ECHA].

Persistence/Degradability
Inherently biodegradable (meeting the criteria for ready biodegradability except for the 10-day window) [OECD 301F].
13. DISPOSAL CONSIDERATIONS

**General Information**
Dispose of contents/container to a licensed disposal company and in accordance with local/regional/national regulations.

**Special Precautions for Land Fill**
No information available.

14. TRANSPORT INFORMATION

**Land Transport (Australia)**

<table>
<thead>
<tr>
<th>ADG Code</th>
<th>Proper Shipping Name</th>
<th>Class</th>
<th>Subsidiary Risk(s)</th>
<th>EPG</th>
<th>UN Number</th>
<th>Hazchem</th>
<th>Pack Group</th>
<th>Special Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ALKYLPHENOLS, LIQUID, N.O.S. (including C2-C12 homologues)</td>
<td>8 Corrosive Substances</td>
<td>C2 Combustible Liquids - Flash Point &gt;93°C, Closed Cup, Not Excluded Flammable</td>
<td>36 Toxic And/Or Corrosive Substances Combustible</td>
<td>3145</td>
<td>2X</td>
<td>III</td>
<td>No Data Available</td>
</tr>
</tbody>
</table>

**Land Transport (Malaysia)**

<table>
<thead>
<tr>
<th>ADR Code</th>
<th>Proper Shipping Name</th>
<th>Class</th>
<th>Subsidiary Risk(s)</th>
<th>EPG</th>
<th>UN Number</th>
<th>Hazchem</th>
<th>Pack Group</th>
<th>Special Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ALKYLPHENOLS, LIQUID, N.O.S. (including C2-C12 homologues)</td>
<td>8 Corrosive Substances</td>
<td>No Data Available</td>
<td>36 Toxic And/Or Corrosive Substances Combustible</td>
<td>3145</td>
<td>2X</td>
<td>III</td>
<td>No Data Available</td>
</tr>
</tbody>
</table>

**Land Transport (New Zealand)**

<table>
<thead>
<tr>
<th>NZ55433</th>
<th>Proper Shipping Name</th>
<th>Class</th>
<th>Subsidiary Risk(s)</th>
<th>EPG</th>
<th>UN Number</th>
<th>Hazchem</th>
<th>Pack Group</th>
<th>Special Provision</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>ALKYLPHENOLS, LIQUID, N.O.S. (including C2-C12 homologues)</td>
<td>8 Corrosive Substances</td>
<td>No Data Available</td>
<td>36 Toxic And/Or Corrosive Substances Combustible</td>
<td>3145</td>
<td>2X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Land Transport (United States of America)
US DOT

Proper Shipping Name: ALKYLPHENOLS, LIQUID, N.O.S. (including C2-C12 homologues)
Class: 8 Corrosive Substances
Subsidiary Risk(s): No Data Available
ERG: 153 Substances - Toxic and/or Corrosive (Combustible)
UN Number: 3145
Hazchem: 2X
Pack Group: III
Special Provision: No Data Available

Sea Transport
IMDG Code

Proper Shipping Name: ALKYLPHENOLS, LIQUID, N.O.S. (including C2-C12 homologues)
Class: 8 Corrosive Substances
Subsidiary Risk(s): No Data Available
UN Number: 3145
Hazchem: 2X
Pack Group: III
Special Provision: No Data Available
EMS: F-A, S-B
Marine Pollutant: Yes

Air Transport
IATA DGR

Proper Shipping Name: ALKYLPHENOLS, LIQUID, N.O.S. (including C2-C12 homologues)
Class: 8 Corrosive Substances
Subsidiary Risk(s): No Data Available
UN Number: 3145
Hazchem: 2X
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: 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

Approval Code
*HSR003846 (Revoked)

National/Regional Inventories

Australia (AIIC) Listed
Canada (DSL) Listed
Canada (NDSL) Not Determined
China (IECSC) Listed
Europe (EINECS) 284-325-5
Europe (REACh) Not Determined
Japan (ENCS/METI) Not Determined
Korea (KECI) Listed
Malaysia (EHS Register) Listed
New Zealand (NZIoC) Listed
Philippines (PICCS) Listed
Switzerland (Giftliste 1) Not Determined
Switzerland (Inventory of Notified Substances) Not Determined
Taiwan (NCSR) Not Determined
USA (TSCA) Listed

16. OTHER INFORMATION

Related Product Codes NONPHE1000, NONPHE1001, NONPHE1002, NONPHE1003, NONPHE1004, NONPHE1005, NONPHE1006, NONPHE1007, NONPHE1008, NONPHE1009, NONPHE1010, NONPHE1011, NONPHE1012, NONPHE1013, NONPHE1014, NONPHE2000, NONPHE3000, NONPHE3001, NONPHE3002, NONPHE3100, NONPHE4000, NONPHE5000, NONPHE5001, NONPHE6000, NONPHE6001, NONPHE6002
Revision 3
Revision Date 24 Oct 2019
Reason for Issue Updated SDS
Key/Legend
< Less Than
> Greater Than
AICS Australian Inventory of Chemical Substances
atm Atmosphere
CAS Chemical Abstracts Service (Registry Number)
cm² Square Centimetres
CO2 Carbon Dioxide
COD Chemical Oxygen Demand
deg C (°C) Degrees Celcius
EPA (New Zealand) Environmental Protection Authority of New Zealand
deg F (°F) Degrees Farenheit
g Grams
g/cm³ Grams per Cubic Centimetre
g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
immiscible Liquids are insoluable in each other.
inHg Inch of Mercury
inH2O Inch of Water
K Kelvin
kg Kilogram
kg/m³ 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
m³ Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m³ 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 Health 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
tonne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight