



## TensorGrip TC43 Canister Spray Adhesive

### QUIN GLOBAL ASIA PACIFIC

Chemwatch Hazard Alert Code: 4

Version No: 2.2

Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Issue Date: 26/10/2022

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L.GHS.AUS.EN

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

##### Product Identifier

|                               |  |
|-------------------------------|--|
| Product name                  | TensorGrip TC43 Canister Spray Adhesive                          |
| Synonyms                      | Not Available  |
| Proper shipping name          | CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S. (contains isopentane) |
| Other means of identification | Not Available  |

##### Relevant identified uses of the substance or mixture and uses advised against

|                          |          |
|--------------------------|----------|
| Relevant identified uses | Adhesive |
|--------------------------|----------|

##### Details of the manufacturer or supplier of the safety data sheet

|                         |  |
|-------------------------|--|
| Registered company name | QUIN GLOBAL ASIA PACIFIC                                   |
| Address                 | 63 Hincksman Street Queanbeyan, NSW 2620 Australia         |
| Telephone               | +61 2 6175 0574  |
| Fax                     | Not Available  |
| Website                 | <a href="http://www.quinglobal.com">www.quinglobal.com</a> |
| Email                   | sales@quinglobal.com.au                                    |

##### Emergency telephone number

|                                   |                                     |
|-----------------------------------|-------------------------------------|
| Association / Organisation        | CHEMWATCH EMERGENCY RESPONSE (24/7) |
| Emergency telephone numbers       | +61 1800 951 288                    |
| Other emergency telephone numbers | +61 3 9573 3188                     |

Once connected and if the message is not in your preferred language then please dial 01

#### SECTION 2 Hazards identification

##### Classification of the substance or mixture

|                    |  |
|--------------------|--|
| Poisons Schedule   | Not Applicable   |
| Classification [1] | Serious Eye Damage/Eye Irritation Category 2A, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3, Hazardous to the Aquatic Environment Long-Term Hazard Category 2, Gases Under Pressure (Liquefied Gas), Aspiration Hazard Category 1, Flammable Gases Category 1A |
| Legend:            | 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI  |

##### Label elements

|                     |        |
|---------------------|--------|
| Hazard pictogram(s) |        |
| Signal word         | Danger |

##### Hazard statement(s)

|        |  |
|--------|--|
| H319   | Causes serious eye irritation.                         |
| AUH066 | Repeated exposure may cause skin dryness and cracking. |

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|        |   |
|--------|---|
| H336   | May cause drowsiness or dizziness.                  |
| H411   | Toxic to aquatic life with long lasting effects.    |
| AUH044 | Risk of explosion if heated under confinement.      |
| H280   | Contains gas under pressure; may explode if heated. |
| H304   | May be fatal if swallowed and enters airways.       |
| H220   | Extremely flammable gas.                            |

### Precautionary statement(s) Prevention

|      |  |
|------|--|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P271 | Use only outdoors or in a well-ventilated area.  |
| P261 | Avoid breathing gas.   |
| P273 | Avoid release to the environment.  |
| P280 | Wear protective gloves, protective clothing, eye protection and face protection.               |
| P264 | Wash all exposed external body areas thoroughly after handling.                                |

### Precautionary statement(s) Response

|                |  |
|----------------|--|
| P301+P310      | IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician/first aider.   |
| P331           | Do NOT induce vomiting.  |
| P377           | Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P312           | Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.  |
| P337+P313      | If eye irritation persists: Get medical advice/attention.  |
| P381           | In case of leakage, eliminate all ignition sources.  |
| P391           | Collect spillage.  |
| P304+P340      | IF INHALED: Remove person to fresh air and keep comfortable for breathing.   |

### Precautionary statement(s) Storage

|           |  |
|-----------|--|
| P405      | Store locked up.   |
| P410+P403 | Protect from sunlight. Store in a well-ventilated place.         |
| P403+P233 | Store in a well-ventilated place. Keep container tightly closed. |

### Precautionary statement(s) Disposal

|      |  |
|------|--|
| P501 | Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation. |
|------|--|

## SECTION 3 Composition / information on ingredients

### Substances

See section below for composition of Mixtures

### Mixtures

| CAS No         | %[weight]  | Name           |
|----------------|--|----------------|
| 78-78-4        | 15-35  | isopentane     |
| 67-64-1        | <10  | acetone        |
| 115-10-6       | 30-45  | dimethyl ether |
| <b>Legend:</b> | 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available |                |

## SECTION 4 First aid measures

### Description of first aid measures

|                     |   |
|---------------------|---|
| <b>Eye Contact</b>  | <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Wash out immediately with fresh running water.</li> <li>▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.</li> <li>▶ Seek medical attention without delay; if pain persists or recurs seek medical attention.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul> |
| <b>Skin Contact</b> | <p>If skin contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Immediately remove all contaminated clothing, including footwear.</li> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Seek medical attention in event of irritation.</li> </ul>   |
| <b>Inhalation</b>   | <ul style="list-style-type: none"> <li>▶ If fumes or combustion products are inhaled remove from contaminated area.</li> <li>▶ Lay patient down. Keep warm and rested.</li> <li>▶ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>▶ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.</li> </ul>                        |

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|                  |  |
|------------------|--|
|                  | <ul style="list-style-type: none"> <li>▶ Transport to hospital, or doctor, without delay.</li> </ul>   |
| <b>Ingestion</b> | <ul style="list-style-type: none"> <li>▶ <b>If swallowed do NOT induce vomiting.</b></li> <li>▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> <li>▶ Observe the patient carefully.</li> <li>▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.</li> <li>▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.</li> <li>▶ Seek medical advice.</li> <li>▶ Avoid giving milk or oils.</li> <li>▶ Avoid giving alcohol.</li> <li>▶ If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.</li> </ul> |

**Indication of any immediate medical attention and special treatment needed**

For acute or short term repeated exposures to petroleum distillates or related hydrocarbons:

- ▶ Primary threat to life, from pure petroleum distillate ingestion and/or inhalation, is respiratory failure.
- ▶ Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO<sub>2</sub> 50 mm Hg) should be intubated.
- ▶ Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
- ▶ A chest x-ray should be taken immediately after stabilisation of breathing and circulation to document aspiration and detect the presence of pneumothorax.
- ▶ Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitisation to catecholamines. Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
- ▶ Lavage is indicated in patients who require decontamination; ensure use of cuffed endotracheal tube in adult patients. [Ellenhorn and Barceloux: Medical Toxicology]

for lower alkyl ethers:

**BASIC TREATMENT**

- ▶ Establish a patent airway with suction where necessary.
- ▶ Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- ▶ Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- ▶ A low-stimulus environment must be maintained.
- ▶ Monitor and treat, where necessary, for shock.
- ▶ Anticipate and treat, where necessary, for seizures.
- ▶ **DO NOT use emetics.** Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.

**ADVANCED TREATMENT**

- ▶ Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- ▶ Positive-pressure ventilation using a bag-valve mask might be of use.
- ▶ Monitor and treat, where necessary, for arrhythmias.
- ▶ Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- ▶ Drug therapy should be considered for pulmonary oedema.
- ▶ Hypotension without signs of hypovolaemia may require vasopressors.
- ▶ Treat seizures with diazepam.
- ▶ Proparacaine hydrochloride should be used to assist eye irrigation.

**EMERGENCY DEPARTMENT**

- ▶ Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.
- ▶ Ethers may produce anion gap acidosis. Hyperventilation and bicarbonate therapy might be indicated.
- ▶ Haemodialysis might be considered in patients with impaired renal function.
- ▶ Consult a toxicologist as necessary.

BRONSTEIN, A.C. and CURRANCE, P.L.

EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994

For gas exposures:

**BASIC TREATMENT**

- ▶ Establish a patent airway with suction where necessary.
- ▶ Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- ▶ Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- ▶ Monitor and treat, where necessary, for pulmonary oedema.
- ▶ Monitor and treat, where necessary, for shock.
- ▶ Anticipate seizures.

**ADVANCED TREATMENT**

- ▶ Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- ▶ Positive-pressure ventilation using a bag-valve mask might be of use.
- ▶ Monitor and treat, where necessary, for arrhythmias.
- ▶ Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- ▶ Drug therapy should be considered for pulmonary oedema.
- ▶ Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- ▶ Treat seizures with diazepam.
- ▶ Proparacaine hydrochloride should be used to assist eye irrigation.

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**SECTION 5 Firefighting measures****Extinguishing media**

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- ▶ Water spray or fog.
- ▶ Foam.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.

### Special hazards arising from the substrate or mixture

|                             |  |
|-----------------------------|--|
| <b>Fire Incompatibility</b> | ▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result |
|-----------------------------|--|

### Advice for firefighters

|                              |   |
|------------------------------|---|
| <b>Fire Fighting</b>         | <ul style="list-style-type: none"> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ May be violently or explosively reactive.</li> <li>▶ Wear breathing apparatus plus protective gloves in the event of a fire.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> <li>▶ Consider evacuation (or protect in place).</li> <li>▶ Fight fire from a safe distance, with adequate cover.</li> <li>▶ If safe, switch off electrical equipment until vapour fire hazard removed.</li> <li>▶ Use water delivered as a fine spray to control the fire and cool adjacent area.</li> <li>▶ Avoid spraying water onto liquid pools.</li> <li>▶ <b>Do not approach containers suspected to be hot.</b></li> <li>▶ Cool fire exposed containers with water spray from a protected location.</li> <li>▶ If safe to do so, remove containers from path of fire.</li> </ul> |
| <b>Fire/Explosion Hazard</b> | <p>carbon dioxide (CO<sub>2</sub>)<br/>other pyrolysis products typical of burning organic material.</p> <p><b>Contains low boiling substance:</b> Closed containers may rupture due to pressure buildup under fire conditions.<br/>BEWARE: Empty solvent, paint, lacquer and flammable liquid drums present a severe explosion hazard if cut by flame torch or welded. Even when thoroughly cleaned or reconditioned the drum seams may retain sufficient solvent to generate an explosive atmosphere in the drum.</p>   |
| <b>HAZCHEM</b>               | 2YE   |

## SECTION 6 Accidental release measures

### Personal precautions, protective equipment and emergency procedures

See section 8

### Environmental precautions

See section 12

### Methods and material for containment and cleaning up

|                     |  |
|---------------------|--|
| <b>Minor Spills</b> | <ul style="list-style-type: none"> <li>▶ Remove all ignition sources.</li> <li>▶ Clean up all spills immediately.</li> <li>▶ Avoid breathing vapours and contact with skin and eyes.</li> <li>▶ Control personal contact with the substance, by using protective equipment.</li> <li>▶ Contain and absorb small quantities with vermiculite or other absorbent material.</li> <li>▶ Wipe up.</li> <li>▶ Collect residues in a flammable waste container.</li> </ul>  |
| <b>Major Spills</b> | <ul style="list-style-type: none"> <li>▶ Clear area of personnel and move upwind.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ May be violently or explosively reactive.</li> <li>▶ Wear breathing apparatus plus protective gloves.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> <li>▶ Consider evacuation (or protect in place).</li> <li>▶ No smoking, naked lights or ignition sources.</li> <li>▶ Increase ventilation.</li> <li>▶ Stop leak if safe to do so.</li> <li>▶ Water spray or fog may be used to disperse /absorb vapour.</li> <li>▶ Contain spill with sand, earth or vermiculite.</li> <li>▶ Use only spark-free shovels and explosion proof equipment.</li> <li>▶ Collect recoverable product into labelled containers for recycling.</li> <li>▶ Absorb remaining product with sand, earth or vermiculite.</li> <li>▶ Collect solid residues and seal in labelled drums for disposal.</li> <li>▶ Wash area and prevent runoff into drains.</li> <li>▶ If contamination of drains or waterways occurs, advise emergency services.</li> </ul> |

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## SECTION 7 Handling and storage

### Precautions for safe handling

|                      |   |
|----------------------|---|
| <b>Safe handling</b> | <p>The conductivity of this material may make it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10 000 pS/m., Whether a liquid is nonconductive or semi-conductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid.</p> <p>Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.</p> <ul style="list-style-type: none"> <li>▶ Containers, even those that have been emptied, may contain explosive vapours.</li> <li>▶ Do NOT cut, drill, grind, weld or perform similar operations on or near containers.</li> </ul> |
|----------------------|---|

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**Contains low boiling substance:**

Storage in sealed containers may result in pressure buildup causing violent rupture of containers not rated appropriately.

- ▶ Check for bulging containers.
- ▶ Vent periodically
- ▶ Always release caps or seals slowly to ensure slow dissipation of vapours
- Electrostatic discharge may be generated during pumping - this may result in fire.
- Ensure electrical continuity by bonding and grounding (earthing) all equipment.
- Restrict line velocity during pumping in order to avoid generation of electrostatic discharge ( $\leq 1$  m/sec until fill pipe submerged to twice its diameter, then  $\leq 7$  m/sec).
- Avoid splash filling.
- Do NOT use compressed air for filling discharging or handling operations.
- Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes.
- Wait 30 minutes after tank filling ( for large storage tanks) before opening hatches or manholes. Even with proper
- grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to
- accumulate, electrostatic discharge and ignition of flammable
- air-vapour mixtures can occur. Be aware of handling
- operations that may give rise to additional hazards that result from the accumulation of static charges. These include but are
- not limited to pumping (especially turbulent flow), mixing,
- filtering, splash filling, cleaning and filling of tanks and
- containers, sampling, switch loading, gauging, vacuum truck
- operations, and mechanical movements. These activities may
- lead to static discharge e.g. spark formation. Restrict line
- velocity during pumping in order to avoid generation of
- electrostatic discharge ( $= 1$  m/s until fill pipe submerged to
- twice its diameter, then  $= 7$  m/s). Avoid splash filling.
- Do NOT use compressed air for filling, discharging, or handling operations

**Other information****Conditions for safe storage, including any incompatibilities****Suitable container**

- ▶ Packing as supplied by manufacturer.
- ▶ Plastic containers may only be used if approved for flammable liquid.
- ▶ Check that containers are clearly labelled and free from leaks.
- ▶ For low viscosity materials (i) : Drums and jerry cans must be of the non-removable head type. (ii) : Where a can is to be used as an inner package, the can must have a screwed enclosure.
- ▶ For materials with a viscosity of at least 2680 cSt. (23 deg. C)
- ▶ For manufactured product having a viscosity of at least 250 cSt. (23 deg. C)
- ▶ Manufactured product that requires stirring before use and having a viscosity of at least 20 cSt (25 deg. C): (i) Removable head packaging; (ii) Cans with friction closures and (iii) low pressure tubes and cartridges may be used.
- ▶ Where combination packages are used, and the inner packages are of glass, there must be sufficient inert cushioning material in contact with inner and outer packages
- ▶ In addition, where inner packagings are glass and contain liquids of packing group I there must be sufficient inert absorbent to absorb any spillage, unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic.

**Storage incompatibility**

- Dimethyl ether:
- ▶ is a peroxidisable gas
  - ▶ may be heat and shock sensitive
  - ▶ is able to form unstable peroxides on prolonged exposure to air
  - ▶ reacts violently with oxidisers, aluminium hydride, lithium aluminium hydride
  - ▶ is incompatible with strong acids, metal salts
- n-Pentane
- ▶ reacts violently with strong oxidisers
  - ▶ attacks some plastics, rubber and coatings
  - ▶ may generate static charges on flow or agitation, due to low conductivity
- Ethers
- may react violently with strong oxidising agents and acids.
  - can act as bases.- they form salts with strong acids and addition complexes with Lewis acids; the complex between diethyl ether and boron trifluoride is an example.
  - are generally stable to water under neutral conditions and ambient temperatures.
  - are hydrolysed by heating in the presence of halogen acids, particularly hydrogen iodide
  - are relatively inert in other reactions, which typically involve the breaking of the carbon-oxygen bond
    - ▶ The tendency of many ethers to form explosive peroxides is well documented.
    - ▶ Ethers lacking non-methyl hydrogen atoms adjacent to the ether link are thought to be relatively safe.
    - ▶ When solvents have been freed from peroxides (by percolation through a column of activated alumina for example), the absorbed peroxides must promptly be desorbed by treatment with the polar solvents methanol or water, which should be discarded safely.

**SECTION 8 Exposure controls / personal protection****Control parameters****Occupational Exposure Limits (OEL)****INGREDIENT DATA**

| Source                       | Ingredient     | Material name  | TWA                              | STEL                              | Peak          | Notes         |
|------------------------------|----------------|----------------|----------------------------------|-----------------------------------|---------------|---------------|
| Australia Exposure Standards | acetone        | Acetone        | 500 ppm / 1185 mg/m <sup>3</sup> | 2375 mg/m <sup>3</sup> / 1000 ppm | Not Available | Not Available |
| Australia Exposure Standards | dimethyl ether | Dimethyl ether | 400 ppm / 760 mg/m <sup>3</sup>  | 950 mg/m <sup>3</sup> / 500 ppm   | Not Available | Not Available |

**Emergency Limits**

| Ingredient | TEEL-1 | TEEL-2 | TEEL-3 |
|------------|--------|--------|--------|
|            |        |        |        |

Continued...

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| Ingredient     | TEEL-1        | TEEL-2        | TEEL-3        |
|----------------|---------------|---------------|---------------|
| isopentane     | 3000* ppm     | 33000*** ppm  | 200000*** ppm |
| acetone        | Not Available | Not Available | Not Available |
| dimethyl ether | 3,000 ppm     | 3800* ppm     | 7200* ppm     |

| Ingredient     | Original IDLH | Revised IDLH  |
|----------------|---------------|---------------|
| isopentane     | Not Available | Not Available |
| acetone        | 2,500 ppm     | Not Available |
| dimethyl ether | Not Available | Not Available |

**MATERIAL DATA**

for dimethyl ether:

The no-effect-level for dimethyl ether is somewhere between 2000 ppm (rabbits) and 50,000 ppm (humans) with possible cardiac sensitisation occurring around 200,000 ppm (dogs).

The AIHA has adopted a safety factor of 100 in respect to the 50,000 ppm level in its recommendation for a workplace environmental exposure level (WEEL) which is thought to protect against both narcotic and sensitising effects. This level is consistent with the TLV-TWA of 400 ppm for diethyl ether and should be easily achievable using current technologies. The use of the traditionally allowable excursion of 1.25 to the level of 6.25 ppm is felt to be more than adequate as an upper safe limit of exposure.

Human data:

50,000 ppm (12 mins): Feelings of mild intoxication.

75,000 ppm (12 mins): As above plus slight lack of attenuation.

82,000 ppm (12 mins): Some incoordination, slight blurring of vision

(30 mins): As above plus analgesia of the face and rushing of blood to the face.

100,000 ppm (10-20 mins): Narcotic symptoms; (64 mins): Sickness (assumed to be nausea)

144,000 ppm (36 mins): Unconsciousness

Odour Threshold Value: 3.6 ppm (detection), 699 ppm (recognition)

Saturation vapour concentration: 237000 ppm @ 20 C

NOTE: Detector tubes measuring in excess of 40 ppm, are available.

Exposure at or below the recommended TLV-TWA is thought to protect the worker against mild irritation associated with brief exposures and the bioaccumulation, chronic irritation of the respiratory tract and headaches associated with long-term acetone exposures. The NIOSH REL-TWA is substantially lower and has taken into account slight irritation experienced by volunteer subjects at 300 ppm. Mild irritation to acclimatised workers begins at about 750 ppm - unacclimatised subjects will experience irritation at about 350-500 ppm but acclimatisation can occur rapidly. Disagreement between the peak bodies is based largely on the view by ACGIH that widespread use of acetone, without evidence of significant adverse health effects at higher concentrations, allows acceptance of a higher limit.

Half-life of acetone in blood is 3 hours which means that no adjustment for shift-length has to be made with reference to the standard 8 hour/day, 40 hours per week because body clearance occurs within any shift with low potential for accumulation.

A STEL has been established to prevent excursions of acetone vapours that could cause depression of the central nervous system.

Odour Safety Factor(OSF)

OSF=38 (ACETONE)

**Exposure controls**

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard 'physically' away from the worker and ventilation that strategically 'adds' and 'removes' air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.

Employers may need to use multiple types of controls to prevent employee overexposure.

For flammable liquids and flammable gases, local exhaust ventilation or a process enclosure ventilation system may be required. Ventilation equipment should be explosion-resistant.

Air contaminants generated in the workplace possess varying 'escape' velocities which, in turn, determine the 'capture velocities' of fresh circulating air required to effectively remove the contaminant.

| Type of Contaminant:  | Air Speed:                      |
|---|---------------------------------|
| solvent, vapours, degreasing etc., evaporating from tank (in still air).  | 0.25-0.5 m/s<br>(50-100 f/min.) |
| aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation) | 0.5-1 m/s<br>(100-200 f/min.)   |
| direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)  | 1-2.5 m/s<br>(200-500 f/min.)   |

Within each range the appropriate value depends on:


| Lower end of the range                                     | Upper end of the range           |
|--|----------------------------------|
| 1: Room air currents minimal or favourable to capture      | 1: Disturbing room air currents  |
| 2: Contaminants of low toxicity or of nuisance value only. | 2: Contaminants of high toxicity |
| 3: Intermittent, low production.                           | 3: High production, heavy use    |
| 4: Large hood or large air mass in motion                  | 4: Small hood-local control only |

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

· Adequate ventilation is typically taken to be that which limits the average concentration to no more than 25% of the LEL within the building, room or enclosure containing the dangerous substance.

**Appropriate engineering controls**

## TensorGrip TC43 Canister Spray Adhesive

|   |   |
|---|---|
|   | <ul style="list-style-type: none"> <li>Ventilation for plant and machinery is normally considered adequate if it limits the average concentration of any dangerous substance that might potentially be present to no more than 25% of the LEL. However, an increase up to a maximum 50% LEL can be acceptable where additional safeguards are provided to prevent the formation of a hazardous explosive atmosphere. For example, gas detectors linked to emergency shutdown of the process might be used together with maintaining or increasing the exhaust ventilation on solvent evaporating ovens and gas turbine enclosures.</li> <li>Temporary exhaust ventilation systems may be provided for non-routine higher-risk activities, such as cleaning, repair or maintenance in tanks or other confined spaces or in an emergency after a release. The work procedures for such activities should be carefully considered. The atmosphere should be continuously monitored to ensure that ventilation is adequate and the area remains safe. Where workers will enter the space, the ventilation should ensure that the concentration of the dangerous substance does not exceed 10% of the LEL (irrespective of the provision of suitable breathing apparatus)</li> </ul> |
| Individual protection measures, such as personal protective equipment |    |
| Eye and face protection   | <ul style="list-style-type: none"> <li>Safety glasses with side shields.</li> <li>Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent]</li> <li>Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].</li> </ul>  |
| Skin protection   | See Hand protection below   |
| Hands/feet protection   | <ul style="list-style-type: none"> <li>Insulated gloves:</li> </ul> <p>NOTE: Insulated gloves should be loose fitting so that may be removed quickly if liquid is spilled upon them. Insulated gloves are not made to permit hands to be placed in the liquid; they provide only short-term protection from accidental contact with the liquid.</p>   |
| Body protection   | See Other protection below  |
| Other protection  | <ul style="list-style-type: none"> <li>Overalls.</li> <li>PVC Apron.</li> <li>PVC protective suit may be required if exposure severe.</li> <li>Eyewash unit.</li> <li>Ensure there is ready access to a safety shower.</li> <li>Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.</li> <li>For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets).</li> <li>Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot an shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. Electrical resistance must range between 0 to 500,000 ohms. Conductive shoes should be stored in lockers close to the room in which they are worn. Personnel who have been issued conductive footwear should not wear them from their place of work to their homes and return.</li> </ul>   |

## Recommended material(s)

## GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

**Forsberg Clothing Performance Index**.

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

TensorGrip TC43 Canister Spray Adhesive

| Material         | CPI |
|------------------|-----|
| BUTYL            | A   |
| BUTYL/NEOPRENE   | C   |
| CPE              | C   |
| HYPALON          | C   |
| NATURAL RUBBER   | C   |
| NATURAL+NEOPRENE | C   |
| NEOPRENE         | C   |
| NITRILE          | C   |
| NITRILE+PVC      | C   |
| PE/EVAL/PE       | C   |
| PVA              | C   |
| PVC              | C   |
| PVDC/PE/PVDC     | C   |
| SARANEX-23       | C   |
| SARANEX-23 2-PLY | C   |
| TEFLON           | C   |
| VITON/NEOPRENE   | C   |

\* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

## Respiratory protection

Type AX Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the 'Exposure Standard' (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

| Required Minimum Protection Factor | Half-Face Respirator | Full-Face Respirator | Powered Air Respirator |
|------------------------------------|----------------------|----------------------|------------------------|
| up to 10 x ES                      | Air-line*            | AX-2                 | AX-PAPR-2 ^            |
| up to 20 x ES                      | -                    | AX-3                 | -                      |
| 20+ x ES                           | -                    | Air-line**           | -                      |

\* - Continuous-flow; \*\* - Continuous-flow or positive pressure demand

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.
- The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Continued...

## TensorGrip TC43 Canister Spray Adhesive

C: Poor to Dangerous Choice for other than short term immersion

**NOTE:** As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

\* Where the glove is to be used on a short term, casual or infrequent basis, factors such as 'feel' or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

## Ansell Glove Selection

| Glove — In order of recommendation |
|------------------------------------|
| AlphaTec® 15-554                   |
| AlphaTec® 38-612                   |
| MICROFLEX® 73-847                  |
| MICROFLEX® NeoPro® NPG-888         |
| MICROFLEX® Neogard® C52            |
| BioClean™ Ultimate BUPS            |
| DermaShield™ 73-711                |
| TouchNTuff® DermaShield™ 73-701    |
| TouchNTuff® 73-500                 |
| AlphaTec® 53-001                   |

| Required minimum protection factor | Maximum gas/vapour concentration present in air p.p.m. (by volume) | Half-face Respirator | Full-Face Respirator |
|------------------------------------|--|----------------------|----------------------|
| up to 10                           | 1000   | AX-AUS / Class 1     | -                    |
| up to 50                           | 1000   | -                    | AX-AUS / Class 1     |
| up to 50                           | 5000   | Airline *            | -                    |
| up to 100                          | 5000   | -                    | AX-2                 |
| up to 100                          | 10000  | -                    | AX-3                 |
| 100+                               |  | -                    | Airline**            |

\*\* - Continuous-flow or positive pressure demand.

A(All classes) = Organic vapours, B AUS or B1 = Acid gases, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO<sub>2</sub>), G = Agricultural chemicals, K = Ammonia(NH<sub>3</sub>), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 deg C)

## SECTION 9 Physical and chemical properties

## Information on basic physical and chemical properties

|  |                   |   |               |
|--|-------------------|---|---------------|
| Appearance                                   | Not Available     |   |               |
| Physical state                               | Liquified Gas     | Relative density (Water = 1)            | 0.698         |
| Odour  | Not Available     | Partition coefficient n-octanol / water | Not Available |
| Odour threshold                              | Not Available     | Auto-ignition temperature (°C)          | 350           |
| pH (as supplied)                             | Not Available     | Decomposition temperature (°C)          | Not Available |
| Melting point / freezing point (°C)          | -141.5            | Viscosity (cSt)                         | Not Available |
| Initial boiling point and boiling range (°C) | -24.8             | Molecular weight (g/mol)                | Not Available |
| Flash point (°C)                             | -41.1             | Taste                                   | Not Available |
| Evaporation rate                             | Not Available     | Explosive properties                    | Not Available |
| Flammability                                 | HIGHLY FLAMMABLE. | Oxidising properties                    | Not Available |
| Upper Explosive Limit (%)                    | 18.2              | Surface Tension (dyn/cm or mN/m)        | Not Available |
| Lower Explosive Limit (%)                    | 3.4               | Volatile Component (%vol)               | Not Available |
| Vapour pressure (kPa)                        | 63                | Gas group                               | Not Available |
| Solubility in water                          | Immiscible        | pH as a solution (1%)                   | Not Available |
| Vapour density (Air = 1)                     | 1.6               | VOC g/L                                 | Not Available |

## SECTION 10 Stability and reactivity

|                                    |  |
|------------------------------------|--|
| Reactivity                         | See section 7  |
| Chemical stability                 | <ul style="list-style-type: none"> <li>▶ Unstable in the presence of incompatible materials.</li> <li>▶ Product is considered stable.</li> <li>▶ Hazardous polymerisation will not occur.</li> </ul> |
| Possibility of hazardous reactions | See section 7  |
| Conditions to avoid                | See section 7  |
| Incompatible materials             | See section 7  |
| Hazardous decomposition products   | See section 5  |



## TensorGrip TC43 Canister Spray Adhesive

## SECTION 11 Toxicological information

## Information on toxicological effects

|                     |  |
|---------------------|--|
| <b>Inhaled</b>      | <p>Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system.</p> <p>Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.</p> <p>Acute effects from inhalation of high concentrations of vapour are pulmonary irritation, including coughing, with nausea; central nervous system depression - characterised by headache and dizziness, increased reaction time, fatigue and loss of co-ordination</p> <p>Central nervous system (CNS) depression may include nonspecific discomfort, symptoms of giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness. Serious poisonings may result in respiratory depression and may be fatal.</p> <p>Ethers produce narcosis following inhalation.</p> <p>Inhalation of lower alkyl ethers may result in central nervous system depression or stimulation, intoxication, headache, dizziness, weakness, blurred vision, seizures and possible coma. Cardiovascular involvement may produce hypotension, bradycardia and cardiovascular collapse, whilst respiratory symptoms might include irritation of nose and throat, cough, laryngeal spasm, pharyngitis, irregular respiration, depression, pulmonary oedema and respiratory arrest. Nausea, vomiting and salivation might also indicate overexposure.</p> <p>Convulsions, respiratory distress or paralysis, asphyxia, pneumonitis, and unconsciousness are all serious manifestations of poisoning. Fatalities have been reported. Kidney and liver damage with interstitial cystitis may result from massive exposures.</p> <p>Symptoms of pentane inhalation exposure may include, hyperactivity, anaesthesia and a persistent taste of gasoline. Light anaesthesia occurs in mice after 10 minutes exposure to 70000 ppm n-pentane.</p> <p>Inhalation of high vapour concentrations may result in coughing, headache, mild depression, incoordination, blurred vision, confusion, loss of appetite, nausea, vomiting, irregular heartbeat and unconsciousness.</p> <p>Concentrations of 270 to 400 mg/l isopentane may cause narcosis and cardiac sensitisation .</p> <p>Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. The vapour may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure.</p> <p>The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.</p> |
| <b>Ingestion</b>    | <p>Swallowing of the liquid may cause aspiration of vomit into the lungs with the risk of haemorrhaging, pulmonary oedema, progressing to chemical pneumonitis; serious consequences may result.</p> <p>Signs and symptoms of chemical (aspiration) pneumonitis may include coughing, gasping, choking, burning of the mouth, difficult breathing, and bluish coloured skin (cyanosis).</p> <p>Accidental ingestion of the material may be damaging to the health of the individual.</p> <p>Ingestion of alkyl ethers may produce symptoms similar to those produced following inhalation.</p> <p>Ingestion of pentanes may result in diarrhoea, haemorrhage of the mucous membranes, or when the liquid vapourises in the trachea, asphyxiation leading to brain damage or death. Ingestion may also cause nausea, vomiting and abdominal swelling. Large doses (1 ml/kg) may cause central nervous system depression, ventricular fibrillation and kidney, liver and bone marrow damage.</p> <p>Not normally a hazard due to physical form of product.</p> <p>Considered an unlikely route of entry in commercial/industrial environments</p> <p>Considered an unlikely route of entry in commercial/industrial environments. The liquid may produce gastrointestinal discomfort and may be harmful if swallowed. Ingestion may result in nausea, pain and vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis</p>  |
| <b>Skin Contact</b> | <p>Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.</p> <p>Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.</p> <p>Limited evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.</p> <p>Alkyl ethers may defat and dehydrate the skin producing dermatoses. Absorption may produce headache, dizziness, and central nervous system depression.</p> <p>Symptoms of pentane exposure may include drying, cracking, itching, blistering, redness, pigmentation, swelling, burning and pain.</p> <p>Because pentane boils just below body temperature, absorption is not expected to be a significant route of entry. Toluene by comparison is absorbed through the skin at 20 times the rate of n-pentane</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.</p>  |
| <b>Eye</b>          | <p>Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals.</p> <p>Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.</p> <p>Eye contact with alkyl ethers (vapours or liquid) may produce irritation, redness and lachrymation.</p> <p>Eye-contact with the liquid pentanes may result in inflammation of the iris and mucous membranes resulting in pain and lachrymation. Eye contact with liquid or very high vapour concentrations may result in drying, redness, swelling and pain.</p>   |
| <b>Chronic</b>      | <p>Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical systems.</p> <p>Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.</p> <p>Exposure to the material may cause concerns for human fertility, generally on the basis that results in animal studies provide sufficient evidence to cause a strong suspicion of impaired fertility in the absence of toxic effects, or evidence of impaired fertility occurring at around the same dose levels as other toxic effects, but which are not a secondary non-specific consequence of other toxic effects.</p> <p>Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.</p> <p>Chronic exposure to alkyl ethers may result in loss of appetite, excessive thirst, fatigue, and weight loss</p> <p>Chronic exposure to pentanes may result in chemical pneumonitis, pulmonary oedema or peripheral neuropathy. Prolonged or repeated inhalation may cause dizziness, weakness, weight loss, anaemia, nervousness, pain in the limbs and peripheral numbness ('pins and needles')</p>   |

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|   |  |   |
|---|--|---|
|   | Repeated overexposure of liquid to skin can cause cracking and drying. Rabbits exposed for 15 minute periods, daily, 5 days/week for 13 weeks, showed no changes in haematology, gross pathology or histopathology of the lungs, spleen, liver, kidney, lymph nodes, aorta or testes. Rats and rabbits exposed at 50.000 ppm, 7 hours/day, 5 days/week for 90 days, showed narcosis. |   |
| TensorGrip TC43 Canister Spray Adhesive | <b>TOXICITY</b>  | <b>IRRITATION</b>   |
|   | Not Available  | Not Available   |
| isopentane                              | <b>TOXICITY</b>  | <b>IRRITATION</b>   |
|   | Inhalation(Rat) LC50: >25.3 mg/l4h <sup>[1]</sup><br>Oral (Rat) LD50: >2000 mg/kg <sup>[1]</sup>   | Not Available   |
| acetone                                 | <b>TOXICITY</b>  | <b>IRRITATION</b>   |
|   | Dermal (rabbit) LD50: 20000 mg/kg <sup>[2]</sup>   | Eye (human): 500 ppm - irritant   |
|   | Inhalation(Mouse) LC50; 44 mg/L4h <sup>[2]</sup>   | Eye (rabbit): 20mg/24hr -moderate   |
|   | Oral (Rat) LD50: 5800 mg/kg <sup>[2]</sup>   | Eye (rabbit): 3.95 mg - SEVERE  |
|   |  | Eye: adverse effect observed (irritating) <sup>[1]</sup>  |
|   |  | Skin (rabbit): 500 mg/24hr - mild   |
|   |  | Skin (rabbit):395mg (open) - mild<br>Skin: no adverse effect observed (not irritating) <sup>[1]</sup> |
| dimethyl ether                          | <b>TOXICITY</b>  | <b>IRRITATION</b>   |
|   | Inhalation(Rat) LC50: >20000 ppm4h <sup>[1]</sup>  | Not Available   |
| <b>Legend:</b>                          | 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances  |   |

|   |   |
|---|---|
| TensorGrip TC43 Canister Spray Adhesive | Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production.   |
|   | The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.<br>For acetone:<br>The acute toxicity of acetone is low. Acetone is not a skin irritant or sensitiser but is a defatting agent to the skin. Acetone is an eye irritant. The subchronic toxicity of acetone has been examined in mice and rats that were administered acetone in the drinking water and again in rats treated by oral gavage. Acetone-induced increases in relative kidney weight changes were observed in male and female rats used in the oral 13-week study. Acetone treatment caused increases in the relative liver weight in male and female rats that were not associated with histopathologic effects and the effects may have been associated with microsomal enzyme induction. Haematologic effects consistent with macrocytic anaemia were also noted in male rats along with hyperpigmentation in the spleen. The most notable findings in the mice were increased liver and decreased spleen weights. Overall, the no-observed-effect-levels in the drinking water study were 1% for male rats (900 mg/kg/d) and male mice (2258 mg/kg/d), 2% for female mice (5945 mg/kg/d), and 5% for female rats (3100 mg/kg/d). For developmental effects, a statistically significant reduction in foetal weight, and a slight, but statistically significant increase in the percent incidence of later resorptions were seen in mice at 15,665 mg/m <sup>3</sup> and in rats at 26,100 mg/m <sup>3</sup> . The no-observable-effect level for developmental toxicity was determined to be 5220 mg/m <sup>3</sup> for both rats and mice.<br>Teratogenic effects were not observed in rats and mice tested at 26,110 and 15,665 mg/m <sup>3</sup> , respectively. Lifetime dermal carcinogenicity studies in mice treated with up to 0.2 mL of acetone did not reveal any increase in organ tumor incidence relative to untreated control animals. The scientific literature contains many different studies that have measured either the neurobehavioural performance or neurophysiological response of humans exposed to acetone. Effect levels ranging from about 600 to greater than 2375 mg/m <sup>3</sup> have been reported. Neurobehavioral studies with acetone-exposed employees have recently shown that 8-hr exposures in excess of 2375 mg/m <sup>3</sup> were not associated with any dose-related changes in response time, vigilance, or digit span scores. Clinical case studies, controlled human volunteer studies, animal research, and occupational field evaluations all indicate that the NOAEL for this effect is 2375 mg/m <sup>3</sup> or greater. |

|                                   |   |                          |   |
|-----------------------------------|---|--------------------------|---|
| Acute Toxicity                    | ✗ | Carcinogenicity          | ✗ |
| Skin Irritation/Corrosion         | ✗ | Reproductivity           | ✗ |
| Serious Eye Damage/Irritation     | ✓ | STOT - Single Exposure   | ✓ |
| Respiratory or Skin sensitisation | ✗ | STOT - Repeated Exposure | ✗ |
| Mutagenicity                      | ✗ | Aspiration Hazard        | ✓ |

**Legend:** ✗ – Data either not available or does not fill the criteria for classification  
 ✓ – Data available to make classification

## TensorGrip TC43 Canister Spray Adhesive

## Toxicity

| TensorGrip TC43 Canister Spray Adhesive | Endpoint      | Test Duration (hr) | Species       | Value         | Source        |
|---|---------------|--------------------|---------------|---------------|---------------|
|   | Not Available | Not Available      | Not Available | Not Available | Not Available |

| isopentane | Endpoint  | Test Duration (hr) | Species                       | Value    | Source |
|------------|-----------|--------------------|-------------------------------|----------|--------|
|            | EC50      | 72h                | Algae or other aquatic plants | 1.26mg/l | 2      |
|            | EC50      | 48h                | Crustacea                     | 2.3mg/l  | 1      |
|            | EC50(ECx) | 72h                | Algae or other aquatic plants | 1.26mg/l | 2      |
|            | LC50      | 96h                | Fish                          | 4.26mg/l | 2      |

| acetone | Endpoint  | Test Duration (hr)            | Species                       | Value             | Source |
|---------|-----------|-------------------------------|-------------------------------|-------------------|--------|
|         | LC50      | 96h                           | Fish                          | 3744.6-5000.7mg/L | 4      |
|         | NOEC(ECx) | 12h                           | Fish                          | 0.001mg/L         | 4      |
|         | EC50      | 72h                           | Algae or other aquatic plants | 5600-10000mg/l    | 4      |
|         | EC50      | 48h                           | Crustacea                     | 6098.4mg/L        | 5      |
| EC50    | 96h       | Algae or other aquatic plants | 9.873-27.684mg/l              | 4                 |        |

| dimethyl ether | Endpoint | Test Duration (hr) | Species                       | Value       | Source |
|----------------|----------|--------------------|-------------------------------|-------------|--------|
|                | EC50     | 48h                | Crustacea                     | >4400mg/L   | 2      |
|                | EC50     | 96h                | Algae or other aquatic plants | 154.917mg/l | 2      |
|                | LC50     | 96h                | Fish                          | 1783.04mg/l | 2      |
| NOEC(ECx)      | 48h      | Crustacea          | >4000mg/l                     | 1           |        |

**Legend:** *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

Most ethers are very resistant to hydrolysis, and the rate of cleavage of the carbon-oxygen bond by abiotic processes is expected to be insignificant.

Direct photolysis will not be an important removal process since aliphatic ethers do not absorb light at wavelengths >290 nm

For Ketones: Ketones, unless they are alpha, beta-unsaturated ketones, can be considered as narcosis or baseline toxicity compounds.

Aquatic Fate: Hydrolysis of ketones in water is thermodynamically favourable only for low molecular weight ketones. Reactions with water are reversible with no permanent change in the structure of the ketone substrate. Ketones are stable to water under ambient environmental conditions. When pH levels are greater than 10, condensation reactions can occur which produce higher molecular weight products. Under ambient conditions of temperature, pH, and low concentration, these condensation reactions are unfavourable. Based on its reactions in air, it seems likely that ketones undergo photolysis in water.

Terrestrial Fate: It is probable that ketones will be biodegraded by micro-organisms in soil and water.

Ecotoxicity: Ketones are unlikely to bioconcentrate or biomagnify.

For isopentane:

**Environmental Fate**

**Terrestrial fate:** An estimated Koc value of 520, determined from a water solubility of 48 mg/L indicates that isopentane is expected to have low mobility in soil. Volatilisation of isopentane from moist soil surfaces is expected to be an important fate process given an estimated Henry's Law constant of 1.4 atm-cu m/mole, derived from its estimated vapor pressure, 689 mm Hg, and water solubility. Isopentane is expected to volatilise from dry soil surfaces based upon its vapor pressure. Following a 6.1 day lag period, isopentane was completely degraded under aerobic conditions using an activated sludge over the course of a 20 day incubation period.

**Aquatic fate:** The estimated Koc value indicates that isopentane is expected to adsorb to suspended solids and sediment. Volatilisation from water surfaces is expected to occur rapidly based upon an estimated Henry's Law constant. Using this Henry's Law constant volatilisation half-lives for a model river and model lake are estimated to be 52 minutes and 3 days, respectively. An estimated BCF of 70 suggests the potential for bioconcentration in aquatic organisms is moderate. The biodegradation half-life of a mixture containing isopentane, pentane, and cyclopentane in seawater was 2.4 days, suggesting isopentane may biodegrade in water.

**Atmospheric fate:** According to a model of gas/particle partitioning of semivolatle organic compounds in the atmosphere, isopentane, is expected to exist solely as vapor.

Vapour-phase isopentane is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 4 days, calculated from its rate constant of 3.9x10-12 cu cm/molec-sec at 25 deg C.

**Ecotoxicity:**

Daphnia magna EC50 948 h): 2.3 mg/l

for acetone:

log Kow: -0.24

Half-life (hr) air: 312-1896

Half-life (hr) H2O surface water: 20

Henry's atm m<sup>3</sup> /mol: 3.67E-05

BOD 5: 0.31-1.76,46-55%

COD: 1.12-2.07

ThOD: 2.2

BCF: 0.69

**Environmental fate:**

Acetone preferentially locates in the air compartment when released to the environment. A substantial amount of acetone can also be found in water, which is consistent with the high water to air partition coefficient and its small, but detectable, presence in rain water, sea water, and lake water samples. Very little acetone is expected to reside in soil, biota, or suspended solids. This is entirely consistent with the physical and chemical properties of acetone and with measurements showing a low propensity for soil absorption and a high preference for moving through the soil and into the ground water

In air, acetone is lost by photolysis and reaction with photochemically produced hydroxyl radicals; the estimated half-life of these combined processes is about 22 days. The relatively long half-life allows acetone to be transported long distances from its emission source.

Acetone is highly soluble and slightly persistent in water, with a half-life of about 20 hours; it is minimally toxic to aquatic life.

Acetone released to soil volatilises although some may leach into the ground where it rapidly biodegrades.

Acetone does not concentrate in the food chain.

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Acetone meets the OECD definition of readily biodegradable which requires that the biological oxygen demand (BOD) is at least 70% of the theoretical oxygen demand (THOD) within the 28-day test period

Drinking Water Standard: none available.

Soil Guidelines: none available.

Air Quality Standards: none available.

### Ecotoxicity:

Testing shows that acetone exhibits a low order of toxicity

Fish LC50: brook trout 6070 mg/l; fathead minnow 15000 mg/l

Bird LC0 (5 day): Japanese quail, ring-neck pheasant 40,000 mg/l

Daphnia magna LC50 (48 h): 15800 mg/l; NOEC 8500 mg/l

Aquatic invertebrate 2100 - 16700 mg/l

Aquatic plant NOEC: 5400-7500 mg/l

Daphnia magna chronic NOEC 1660 mg/l

Acetone vapors were shown to be relatively toxic to two types insects and their eggs. The time to 50% lethality (LT50) was found to be 51.2 hr and 67.9 hr when the flour beetle (*Tribolium confusum*) and the flour moth (*Ephesia kuehniella*) were exposed to an airborne acetone concentration of 61.5 mg/m<sup>3</sup>. The LT50 values for the eggs were 30-50% lower than for the adult. The direct application of acetone liquid to the body of the insects or surface of the eggs did not, however, cause any mortality.

The ability of acetone to inhibit cell multiplication has been examined in a wide variety of microorganisms. The results have generally indicated mild to minimal toxicity with NOECs greater than 1700 mg/L for exposures lasting from 6 hr to 4 days. Longer exposure periods of 7 to 8 days with bacteria produced mixed results; but overall the data indicate a low degree of toxicity for acetone. The only exception to these findings were the results obtained with the flagellated protozoa (*Entosiphon sulcatum*) which yielded a 3-day NOEC of 28 mg/L.

**DO NOT** discharge into sewer or waterways.

### Persistence and degradability

| Ingredient     | Persistence: Water/Soil   | Persistence: Air                 |
|----------------|---------------------------|----------------------------------|
| isopentane     | HIGH                      | HIGH                             |
| acetone        | LOW (Half-life = 14 days) | MEDIUM (Half-life = 116.25 days) |
| dimethyl ether | LOW                       | LOW                              |

### Bioaccumulative potential

| Ingredient     | Bioaccumulation       |
|----------------|-----------------------|
| isopentane     | LOW (LogKOW = 2.7234) |
| acetone        | LOW (BCF = 0.69)      |
| dimethyl ether | LOW (LogKOW = 0.1)    |

### Mobility in soil

| Ingredient     | Mobility           |
|----------------|--------------------|
| isopentane     | LOW (KOC = 67.7)   |
| acetone        | HIGH (KOC = 1.981) |
| dimethyl ether | HIGH (KOC = 1.292) |



## SECTION 13 Disposal considerations

### Waste treatment methods

|                              |  |
|------------------------------|--|
| Product / Packaging disposal | <ul style="list-style-type: none"> <li>▶ <b>DO NOT</b> allow wash water from cleaning or process equipment to enter drains.</li> <li>▶ It may be necessary to collect all wash water for treatment before disposal.</li> <li>▶ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.</li> <li>▶ Where in doubt contact the responsible authority.</li> <li>▶ Recycle wherever possible.</li> <li>▶ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.</li> <li>▶ Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apparatus (after admixture with suitable combustible material).</li> <li>▶ Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.</li> </ul> |
|------------------------------|--|

## SECTION 14 Transport information

### Labels Required

|                  |   |
|------------------|---|
|                  |  |
| Marine Pollutant |  |
| HAZCHEM          | 2YE   |

### Land transport (ADG)

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|                                    |  |                |
|------------------------------------|--|----------------|
| 14.1. UN number or ID number       | 3501   |                |
| 14.2. UN proper shipping name      | CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S. (contains isopentane) |                |
| 14.3. Transport hazard class(es)   | Class  | 2.1            |
|                                    | Subsidiary risk  | Not Applicable |
| 14.4. Packing group                | Not Applicable   |                |
| 14.5. Environmental hazard         | Environmentally hazardous  |                |
| 14.6. Special precautions for user | Special provisions   | 274 362        |
|                                    | Limited quantity   | 0              |

## Air transport (ICAO-IATA / DGR)

|                                    |  |                |
|------------------------------------|--|----------------|
| 14.1. UN number                    | 3501   |                |
| 14.2. UN proper shipping name      | Chemical under pressure, flammable, n.o.s. * (contains isopentane) |                |
| 14.3. Transport hazard class(es)   | ICAO/IATA Class  | 2.1            |
|                                    | ICAO / IATA Subsidiary Hazard                                      | Not Applicable |
|                                    | ERG Code   | 10L            |
| 14.4. Packing group                | Not Applicable   |                |
| 14.5. Environmental hazard         | Environmentally hazardous  |                |
| 14.6. Special precautions for user | Special provisions   | A1 A187        |
|                                    | Cargo Only Packing Instructions                                    | 218            |
|                                    | Cargo Only Maximum Qty / Pack                                      | 75 kg          |
|                                    | Passenger and Cargo Packing Instructions                           | Forbidden      |
|                                    | Passenger and Cargo Maximum Qty / Pack                             | Forbidden      |
|                                    | Passenger and Cargo Limited Quantity Packing Instructions          | Forbidden      |
|                                    | Passenger and Cargo Limited Maximum Qty / Pack                     | Forbidden      |

## Sea transport (IMDG-Code / GGVSee)

|                                    |  |                |
|------------------------------------|--|----------------|
| 14.1. UN number                    | 3501   |                |
| 14.2. UN proper shipping name      | CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S. (contains isopentane) |                |
| 14.3. Transport hazard class(es)   | IMDG Class   | 2.1            |
|                                    | IMDG Subrisk   | Not Applicable |
| 14.4. Packing group                | Not Applicable   |                |
| 14.5. Environmental hazard         | Marine Pollutant   |                |
| 14.6. Special precautions for user | EMS Number   | F-D, S-U       |
|                                    | Special provisions   | 274 362        |
|                                    | Limited Quantities   | 0              |

## 14.7.1. Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

## 14.7.2. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

| Product name   | Group         |
|----------------|---------------|
| isopentane     | Not Available |
| acetone        | Not Available |
| dimethyl ether | Not Available |

## 14.7.3. Transport in bulk in accordance with the IGC Code

| Product name   | Ship Type     |
|----------------|---------------|
| isopentane     | Not Available |
| acetone        | Not Available |
| dimethyl ether | Not Available |

## SECTION 15 Regulatory information

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

Continued...

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### isopentane is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals  
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4

Australian Inventory of Industrial Chemicals (AIIC)

### acetone is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals  
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5

Australian Inventory of Industrial Chemicals (AIIC)

### dimethyl ether is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals  
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5

Australian Inventory of Industrial Chemicals (AIIC)

### National Inventory Status

| National Inventory                              | Status  |
|---|---|
| Australia - AIIC / Australia Non-Industrial Use | Yes   |
| Canada - DSL                                    | Yes   |
| Canada - NDSL                                   | No (isopentane; acetone; dimethyl ether)  |
| China - IECSC                                   | Yes   |
| Europe - EINEC / ELINCS / NLP                   | Yes   |
| Japan - ENCS                                    | Yes   |
| Korea - KECI                                    | Yes   |
| New Zealand - NZIoC                             | Yes   |
| Philippines - PICCS                             | Yes   |
| USA - TSCA                                      | Yes   |
| Taiwan - TCSI                                   | Yes   |
| Mexico - INSQ                                   | Yes   |
| Vietnam - NCI                                   | Yes   |
| Russia - FBEPH                                  | Yes   |
| <b>Legend:</b>                                  | Yes = All CAS declared ingredients are on the inventory<br>No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration. |

### SECTION 16 Other information

|                      |            |
|----------------------|------------|
| <b>Revision Date</b> | 26/10/2022 |
| <b>Initial Date</b>  | 16/05/2022 |

### SDS Version Summary

| Version | Date of Update | Sections Updated  |
|---------|----------------|---|
| 1.2     | 26/10/2022     | Toxicological information - Acute Health (skin), Ecological Information - Environmental, Firefighting measures - Fire Fighter (fire/explosion hazard), Composition / information on ingredients - Ingredients |

### Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

### Definitions and abbreviations

PC - TWA: Permissible Concentration-Time Weighted Average  
 PC - STEL: Permissible Concentration-Short Term Exposure Limit  
 IARC: International Agency for Research on Cancer  
 ACGIH: American Conference of Governmental Industrial Hygienists  
 STEL: Short Term Exposure Limit  
 TEEL: Temporary Emergency Exposure Limit,  
 IDLH: Immediately Dangerous to Life or Health Concentrations  
 ES: Exposure Standard  
 OSF: Odour Safety Factor  
 NOAEL :No Observed Adverse Effect Level  
 LOAEL: Lowest Observed Adverse Effect Level  
 TLV: Threshold Limit Value  
 LOD: Limit Of Detection  
 OTV: Odour Threshold Value  
 BCF: BioConcentration Factors  
 BEI: Biological Exposure Index  
 AIIC: Australian Inventory of Industrial Chemicals  
 DSL: Domestic Substances List  
 NDSL: Non-Domestic Substances List  
 IECSC: Inventory of Existing Chemical Substance in China  
 EINECS: European Inventory of Existing Commercial chemical Substances

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ELINCS: European List of Notified Chemical Substances

NLP: No-Longer Polymers

ENCS: Existing and New Chemical Substances Inventory

KECI: Korea Existing Chemicals Inventory

NZIoC: New Zealand Inventory of Chemicals

PICCS: Philippine Inventory of Chemicals and Chemical Substances

TSCA: Toxic Substances Control Act

TCSI: Taiwan Chemical Substance Inventory

INSQ: Inventario Nacional de Sustancias Químicas

NCI: National Chemical Inventory

FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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