



## Dy-Mark Spray Ink All Colours

### Dy-Mark

Chemwatch: 02-0895

Version No: 14.1

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

Chemwatch Hazard Alert Code: 4

Issue Date: 10/12/2021

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S.GHS.AUS.EN.E

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

### Product Identifier

|                               |   |
|-------------------------------|---|
| Product name                  | Dy-Mark Spray Ink All Colours   |
| Chemical Name                 | Not Applicable  |
| Synonyms                      | 39013501 Black, 39013502 Red, 39013503 Blue, 39013504 Green,; 39013505 Yellow, 39013506 Orange, 39013507 Brown, 39013511 White; 39013514 Covers Over Tan, 39013534 Army Green, 39013544 Forest Green; 39013584 Camouflage Green |
| Proper shipping name          | AEROSOLS  |
| Chemical formula              | Not Applicable  |
| Other means of identification | Not Available   |

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

|                          |  |
|--------------------------|--|
| Relevant identified uses | Spray ink.<br>Application is by spray atomisation from a hand held aerosol pack<br>Use according to manufacturer's directions. |
|--------------------------|--|

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

|                         |   |
|-------------------------|---|
| Registered company name | Dy-Mark   |
| Address                 | 89 Formation Street Wacol QLD 4076 Australia                    |
| Telephone               | +61 7 3327 3004   |
| Fax                     | +61 7 3327 3009   |
| Website                 | <a href="http://www.dymark.com.au">http://www.dymark.com.au</a> |
| Email                   | info@dymark.com.au  |

### Emergency telephone number

|                                   |                 |
|-----------------------------------|-----------------|
| Association / Organisation        | Dy-Mark         |
| Emergency telephone numbers       | +61 7 3327 3099 |
| Other emergency telephone numbers | Not Available   |

## SECTION 2 Hazards identification

### Classification of the substance or mixture

**HAZARDOUS CHEMICAL. DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.**

#### ChemWatch Hazard Ratings



|              | Min | Max |
|--------------|-----|-----|
| Flammability | 4   |     |
| Toxicity     | 1   |     |
| Body Contact | 2   |     |
| Reactivity   | 1   |     |
| Chronic      | 0   |     |

0 = Minimum  
1 = Low  
2 = Moderate  
3 = High  
4 = Extreme

|                    |  |
|--------------------|--|
| Poisons Schedule   | Not Applicable   |
| Classification [1] | Aerosols Category 1, Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2A, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3 |
| Legend:            | 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI  |

### Label elements

## Dy-Mark Spray Ink All Colours

|                     |   |
|---------------------|---|
| Hazard pictogram(s) |   |
|---------------------|---|

|             |        |
|-------------|--------|
| Signal word | Danger |
|-------------|--------|

## Hazard statement(s)

|           |  |
|-----------|--|
| AUH044    | Risk of explosion if heated under confinement.                           |
| H222+H229 | Extremely flammable aerosol. Pressurized container: may burst if heated. |
| H315      | Causes skin irritation.  |
| H319      | Causes serious eye irritation.   |
| H336      | May cause drowsiness or dizziness.                                       |

## Precautionary statement(s) Prevention

|      |  |
|------|--|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P211 | Do not spray on an open flame or other ignition source.  |
| P251 | Do not pierce or burn, even after use.   |
| P271 | Use only outdoors or in a well-ventilated area.  |
| P261 | Avoid breathing mist/vapours/spray.  |
| 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

|                |  |
|----------------|--|
| 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.  |
| P302+P352      | IF ON SKIN: Wash with plenty of water and soap.  |
| P304+P340      | IF INHALED: Remove person to fresh air and keep comfortable for breathing.   |
| P332+P313      | If skin irritation occurs: Get medical advice/attention.   |
| P362+P364      | Take off contaminated clothing and wash it before reuse.   |

## Precautionary statement(s) Storage

|           |  |
|-----------|--|
| P405      | Store locked up.   |
| P410+P412 | Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F. |
| 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   |
|----------------|-----------|--|
| 67-64-1        | 30-60     | <u>acetone</u>   |
| 107-98-2       | 1-10      | <u>propylene glycol monomethyl ether - alpha isomer</u>  |
| 115-10-6       | 10-30     | <u>dimethyl ether</u>  |
| 68476-85-7.    | 10-30     | <u>hydrocarbon propellant</u>  |
| <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

|             |   |
|-------------|---|
| Eye Contact | <p>If aerosols come in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Immediately hold the eyelids apart and flush the eye continuously for at least 15 minutes 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>▶ Transport to hospital or doctor without delay.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul> |
|-------------|---|

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|                     |   |
|---------------------|---|
| <b>Skin Contact</b> | <p>If solids or aerosol mists are deposited upon the skin:</p> <ul style="list-style-type: none"> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Remove any adhering solids with industrial skin cleansing cream.</li> <li>▶ <b>DO NOT use solvents.</b></li> <li>▶ Seek medical attention in the event of irritation.</li> </ul>   |
| <b>Inhalation</b>   | <p>If aerosols, fumes or combustion products are inhaled:</p> <ul style="list-style-type: none"> <li>▶ Remove to fresh air.</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>▶ If breathing is shallow or has stopped, ensure clear airway and apply resuscitation, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.</li> <li>▶ Transport to hospital, or doctor.</li> </ul> |
| <b>Ingestion</b>    | <ul style="list-style-type: none"> <li>▶ Avoid giving milk or oils.</li> <li>▶ Avoid giving alcohol.</li> </ul> <p>Not considered a normal route of entry.</p> <p>If conscious, give water to drink.</p>  |

**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]

Treat symptomatically.

For acute or short term repeated exposures to acetone:

- ▶ Symptoms of acetone exposure approximate ethanol intoxication.
- ▶ About 20% is expired by the lungs and the rest is metabolised. Alveolar air half-life is about 4 hours following two hour inhalation at levels near the Exposure Standard; in overdose, saturable metabolism and limited clearance, prolong the elimination half-life to 25-30 hours.
- ▶ There are no known antidotes and treatment should involve the usual methods of decontamination followed by supportive care.

[Ellenhorn and Barceloux: Medical Toxicology]

Management:

Measurement of serum and urine acetone concentrations may be useful to monitor the severity of ingestion or inhalation.

Inhalation Management:

- ▶ Maintain a clear airway, give humidified oxygen and ventilate if necessary.
- ▶ If respiratory irritation occurs, assess respiratory function and, if necessary, perform chest X-rays to check for chemical pneumonitis.
- ▶ Consider the use of steroids to reduce the inflammatory response.
- ▶ Treat pulmonary oedema with PEEP or CPAP ventilation.

Dermal Management:

- ▶ Remove any remaining contaminated clothing, place in double sealed, clear bags, label and store in secure area away from patients and staff.
- ▶ Irrigate with copious amounts of water.
- ▶ An emollient may be required.

Eye Management:

- ▶ Irrigate thoroughly with running water or saline for 15 minutes.
- ▶ Stain with fluorescein and refer to an ophthalmologist if there is any uptake of the stain.

Oral Management:

- ▶ No **GASTRIC LAVAGE OR EMETIC**
- ▶ Encourage oral fluids.

Systemic Management:

- ▶ Monitor blood glucose and arterial pH.
- ▶ Ventilate if respiratory depression occurs.
- ▶ If patient unconscious, monitor renal function.
- ▶ Symptomatic and supportive care.

The Chemical Incident Management Handbook:

Guy's and St. Thomas' Hospital Trust, 2000

BIOLOGICAL EXPOSURE INDEX

These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

| Determinant      | Sampling Time | Index   | Comments |
|------------------|---------------|---------|----------|
| Acetone in urine | End of shift  | 50 mg/L | NS       |

NS: Non-specific determinant; also observed after exposure to other material

**SECTION 5 Firefighting measures****Extinguishing media****SMALL FIRE:**

- ▶ Water spray, dry chemical or CO<sub>2</sub>

**LARGE FIRE:**

- ▶ Water spray or fog.

**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.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> </ul> |
|----------------------|---|

Continued...

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|                       |   |
|-----------------------|---|
|                       | <ul style="list-style-type: none"> <li>▸ If safe, switch off electrical equipment until vapour fire hazard removed.</li> <li>▸ Use water delivered as a fine spray to control fire and cool adjacent area.</li> <li>▸ <b>DO NOT</b> approach containers suspected to be hot.</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> <li>▸ Equipment should be thoroughly decontaminated after use.</li> </ul>   |
| Fire/Explosion Hazard | <ul style="list-style-type: none"> <li>▸ Liquid and vapour are highly flammable.</li> <li>▸ Severe fire hazard when exposed to heat or flame.</li> <li>▸ Vapour forms an explosive mixture with air.</li> <li>▸ Severe explosion hazard, in the form of vapour, when exposed to flame or spark.</li> <li>▸ Vapour may travel a considerable distance to source of ignition.</li> <li>▸ Heating may cause expansion or decomposition with violent container rupture.</li> <li>▸ Aerosol cans may explode on exposure to naked flames.</li> <li>▸ Rupturing containers may rocket and scatter burning materials.</li> <li>▸ Hazards may not be restricted to pressure effects.</li> <li>▸ May emit acrid, poisonous or corrosive fumes.</li> <li>▸ On combustion, may emit toxic fumes of carbon monoxide (CO).</li> </ul> <p>Combustion products include:<br/>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.</p> |
| HAZCHEM               | Not Applicable  |

## 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

|              |   |
|--------------|---|
| Minor Spills | <ul style="list-style-type: none"> <li>▸ Clean up all spills immediately.</li> <li>▸ Avoid breathing vapours and contact with skin and eyes.</li> <li>▸ Wear protective clothing, impervious gloves and safety glasses.</li> <li>▸ Shut off all possible sources of ignition and increase ventilation.</li> <li>▸ Wipe up.</li> <li>▸ If safe, damaged cans should be placed in a container outdoors, away from all ignition sources, until pressure has dissipated.</li> <li>▸ Undamaged cans should be gathered and stowed safely.</li> </ul>   |
| Major Spills | <ul style="list-style-type: none"> <li>▸ <b>DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve.</b></li> <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 courses</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>▸ Absorb or cover spill with sand, earth, inert materials or vermiculite.</li> <li>▸ If safe, damaged cans should be placed in a container outdoors, away from ignition sources, until pressure has dissipated.</li> <li>▸ Undamaged cans should be gathered and stowed safely.</li> <li>▸ Collect residues and seal in labelled drums for disposal.</li> <li>▸ Remove leaking cylinders to a safe place if possible.</li> <li>▸ Release pressure under safe, controlled conditions by opening the valve.</li> </ul> |

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

## SECTION 7 Handling and storage

## Precautions for safe handling

|                   |  |
|-------------------|--|
| Safe handling     | <ul style="list-style-type: none"> <li>▸ <b>DO NOT allow clothing wet with material to stay in contact with skin</b></li> <li>▸ Avoid all personal contact, including inhalation.</li> <li>▸ Wear protective clothing when risk of exposure occurs.</li> <li>▸ Use in a well-ventilated area.</li> <li>▸ Prevent concentration in hollows and sumps.</li> <li>▸ <b>DO NOT enter confined spaces until atmosphere has been checked.</b></li> <li>▸ Avoid smoking, naked lights or ignition sources.</li> <li>▸ Avoid contact with incompatible materials.</li> <li>▸ <b>When handling, DO NOT eat, drink or smoke.</b></li> <li>▸ <b>DO NOT incinerate or puncture aerosol cans.</b></li> <li>▸ <b>DO NOT spray directly on humans, exposed food or food utensils.</b></li> <li>▸ Avoid physical damage to containers.</li> <li>▸ Always wash hands with soap and water after handling.</li> <li>▸ Work clothes should be laundered separately.</li> <li>▸ Use good occupational work practice.</li> <li>▸ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> <li>▸ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.</li> </ul> |
| Other information | <ul style="list-style-type: none"> <li>▸ Keep dry to avoid corrosion of cans. Corrosion may result in container perforation and internal pressure may eject contents of can</li> <li>▸ Store in original containers in approved flammable liquid storage area.</li> <li>▸ <b>DO NOT store in pits, depressions, basements or areas where vapours may be trapped.</b></li> </ul>  |

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## Dy-Mark Spray Ink All Colours

- ▶ No smoking, naked lights, heat or ignition sources.
- ▶ Keep containers securely sealed. Contents under pressure.
- ▶ Store away from incompatible materials.
- ▶ Store in a cool, dry, well ventilated area.
- ▶ Avoid storage at temperatures higher than 40 deg C.
- ▶ Store in an upright position.
- ▶ Protect containers against physical damage.
- ▶ Check regularly for spills and leaks.
- ▶ Observe manufacturer's storage and handling recommendations contained within this SDS.

## Conditions for safe storage, including any incompatibilities

|                         |   |
|-------------------------|---|
| Suitable container      | <ul style="list-style-type: none"> <li>▶ Aerosol dispenser.</li> <li>▶ Check that containers are clearly labelled.</li> </ul> |
| Storage incompatibility | <ul style="list-style-type: none"> <li>▶ Avoid reaction with oxidising agents</li> </ul>                                      |



X — Must not be stored together

O — May be stored together with specific preventions

+ — May be stored together

Note: Depending on other risk factors, compatibility assessment based on the table above may not be relevant to storage situations, particularly where large volumes of dangerous goods are stored and handled. Reference should be made to the Safety Data Sheets for each substance or article and risks assessed accordingly.

## 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/m3  | 2375 mg/m3 / 1000 ppm | Not Available | Not Available |
| Australia Exposure Standards | propylene glycol monomethyl ether - alpha isomer | Propylene glycol monomethyl ether | 100 ppm / 369 mg/m3   | 553 mg/m3 / 150 ppm   | Not Available | Not Available |
| Australia Exposure Standards | dimethyl ether                                   | Dimethyl ether                    | 400 ppm / 760 mg/m3   | 950 mg/m3 / 500 ppm   | Not Available | Not Available |
| Australia Exposure Standards | hydrocarbon propellant                           | LPG (liquified petroleum gas)     | 1000 ppm / 1800 mg/m3 | Not Available         | Not Available | Not Available |

## Emergency Limits


| Ingredient                                       | TEEL-1        | TEEL-2        | TEEL-3        |
|--|---------------|---------------|---------------|
| acetone  | Not Available | Not Available | Not Available |
| propylene glycol monomethyl ether - alpha isomer | 100 ppm       | 160 ppm       | 660 ppm       |
| dimethyl ether                                   | 3,000 ppm     | 3800* ppm     | 7200* ppm     |
| hydrocarbon propellant                           | 65,000 ppm    | 2.30E+05 ppm  | 4.00E+05 ppm  |

| Ingredient                                       | Original IDLH | Revised IDLH  |
|--|---------------|---------------|
| acetone  | 2,500 ppm     | Not Available |
| propylene glycol monomethyl ether - alpha isomer | Not Available | Not Available |
| dimethyl ether                                   | Not Available | Not Available |
| hydrocarbon propellant                           | 2,000 ppm     | Not Available |

## Exposure controls

|                                  |   |
|----------------------------------|---|
| Appropriate engineering controls | <p>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.</p> <p>The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>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.</p> <p>Employers may need to use multiple types of controls to prevent employee overexposure.</p> <p>General exhaust is adequate under normal conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection.</p> <p>Provide adequate ventilation in warehouse or closed storage areas.</p> <p>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.</p> <p>Type of Contaminant: _____ Speed: _____</p> |
|----------------------------------|---|

## Dy-Mark Spray Ink All Colours

|  |   |                                  |
|--|---|----------------------------------|
|  | aerosols, (released at low velocity into zone of active generation)   | 0.5-1 m/s                        |
|  | direct spray, spray painting in shallow booths, gas discharge (active generation into zone of rapid air motion)   | 1-2.5 m/s (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. |   |                                  |
| Personal protection  |    |                                  |
| Eye and face protection  | <ul style="list-style-type: none"><li>▶ Safety glasses with side shields.</li><li>▶ Chemical goggles.</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], [AS/NZS 1336 or national equivalent]</li></ul> |                                  |
| Skin protection  | See Hand protection below   |                                  |
| Hands/feet protection  | <ul style="list-style-type: none"><li>▶ No special equipment needed when handling small quantities.</li><li>▶ <b>OTHERWISE:</b></li><li>▶ For potentially moderate exposures:</li><li>▶ Wear general protective gloves, eg. light weight rubber gloves.</li><li>▶ For potentially heavy exposures:</li><li>▶ Wear chemical protective gloves, eg. PVC. and safety footwear.</li></ul>   |                                  |
| Body protection  | See Other protection below  |                                  |
| Other protection   | <p>No special equipment needed when handling small quantities.</p> <p><b>OTHERWISE:</b></p> <ul style="list-style-type: none"><li>▶ Overalls.</li><li>▶ Skin cleansing cream.</li><li>▶ Eyewash unit.</li><li>▶ Do not spray on hot surfaces.</li><li>▶ The clothing worn by process operators insulated from earth may develop static charges far higher (up to 100 times) than the minimum ignition energies for various flammable gas-air mixtures. This holds true for a wide range of clothing materials including cotton.</li><li>▶ Avoid dangerous levels of charge by ensuring a low resistivity of the surface material worn outermost.</li></ul> <p>BRETHERRICK: Handbook of Reactive Chemical Hazards.</p>   |                                  |

## 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:

Dy-Mark Spray Ink All Colours

| 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   |

## 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                      | AX-AUS / Class 1     | -                    | AX-PAPR-AUS / Class 1  |
| up to 50 x ES                      | Air-line*            | -                    | -                      |
| up to 100 x ES                     | -                    | AX-3                 | -                      |
| 100+ x ES                          | -                    | Air-line**           | -                      |

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

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(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 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.

Continued...

## Dy-Mark Spray Ink All Colours

|                |   |
|----------------|---|
| TEFLON         | C |
| VITON/NEOPRENE | C |

- 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

\* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

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.

## SECTION 9 Physical and chemical properties

## Information on basic physical and chemical properties

| Appearance                                   | Coloured flammable liquid; not miscible with water.<br>Supplied as an aerosol pack. Contents under <b>PRESSURE</b> . Contains highly flammable hydrocarbon propellant. |   |                |
|--|--|---|----------------|
| Physical state                               | Liquid   | Relative density (Water = 1)            | Not Available  |
| Odour  | Not Available  | Partition coefficient n-octanol / water | Not Available  |
| Odour threshold                              | Not Available  | Auto-ignition temperature (°C)          | Not Available  |
| pH (as supplied)                             | Not Applicable   | Decomposition temperature               | Not Available  |
| Melting point / freezing point (°C)          | Not Available  | Viscosity (cSt)                         | Not Available  |
| Initial boiling point and boiling range (°C) | Not Available  | Molecular weight (g/mol)                | Not Applicable |
| Flash point (°C)                             | -81(propellant)  | Taste                                   | Not Available  |
| Evaporation rate                             | Not Available  | Explosive properties                    | Not Available  |
| Flammability                                 | HIGHLY FLAMMABLE.  | Oxidising properties                    | Not Available  |
| Upper Explosive Limit (%)                    | Not Available  | Surface Tension (dyn/cm or mN/m)        | Not Available  |
| Lower Explosive Limit (%)                    | Not Available  | Volatile Component (%vol)               | Not Available  |
| Vapour pressure (kPa)                        | Not Available  | Gas group                               | Not Available  |
| Solubility in water                          | Immiscible   | pH as a solution (Not Available%)       | Not Applicable |
| Vapour density (Air = 1)                     | Not Available  | VOC g/L                                 | Not Available  |

## SECTION 10 Stability and reactivity

|                                    |  |
|------------------------------------|--|
| Reactivity                         | See section 7  |
| Chemical stability                 | <ul style="list-style-type: none"> <li>► Elevated temperatures.</li> <li>► Presence of open flame.</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  |

## SECTION 11 Toxicological information

## Information on toxicological effects

|         |   |
|---------|---|
| Inhaled | <p>Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.</p> <p>Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.</p> <p>There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.</p> <p>Inhalation of toxic gases may cause:</p> <ul style="list-style-type: none"> <li>► Central Nervous System effects including depression, headache, confusion, dizziness, stupor, coma and seizures;</li> <li>► respiratory: acute lung swellings, shortness of breath, wheezing, rapid breathing, other symptoms and respiratory arrest;</li> <li>► heart: collapse, irregular heartbeats and cardiac arrest;</li> <li>► gastrointestinal: irritation, ulcers, nausea and vomiting (may be bloody), and abdominal pain.</li> </ul> <p>Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.</p> <p>Central nervous system (CNS) depression may include general 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>Following inhalation, ethers cause lethargy and stupor. Inhaling lower alkyl ethers results in headache, dizziness, weakness, blurred vision,</p> |
|---------|---|



## Dy-Mark Spray Ink All Colours

|              |  |
|--------------|--|
|              | <p>seizures and possible coma.</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><b>WARNING: Intentional misuse by concentrating/inhaling contents may be lethal.</b></p> <p>Effects of exposure to acetone by inhalation include central nervous system depression, light-headedness, unintelligible speech, inco-ordination, stupor, low blood pressure, fast heart rate, metabolic acidosis, high blood sugar and ketosis. Rarely, there may be convulsions and death of kidney tubules.</p>   |
| Ingestion    | <p>Accidental ingestion of the material may be damaging to the health of the individual.</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>Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733)</p> <p>Ingestion of alkyl ethers may produce stupor, blurred vision, headache, dizziness and irritation of the nose and throat. Respiratory distress and asphyxia may result.</p>  |
| Skin Contact | <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>There is some evidence to suggest that the material may cause mild but significant inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.</p> <p>Spray mist may produce discomfort</p> <p>Alkyl ethers may defat and dehydrate the skin producing dermatoses. Absorption may produce headache, dizziness, and central nervous system depression.</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> |
| Eye          | <p>Not considered to be a risk because of the extreme volatility of the gas. Eye contact with alkyl ethers (vapour or liquid) may produce irritation, redness and tears.</p> <p>There is evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Severe inflammation may be expected with pain.</p>  |
| Chronic      | <p>Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.</p> <p>Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.</p> <p>Main route of exposure to the gas in the workplace is by inhalation.</p> <p>Chronic exposure to alkyl ethers may result in loss of appetite, excessive thirst, fatigue, and weight loss.</p> <p>Workers exposed to acetone for long periods showed inflammation of the airways, stomach and small bowel, attacks of giddiness and loss of strength. Exposure to acetone may enhance the liver toxicity of chlorinated solvents.</p>   |

|  |   |  |
|--|---|--|
| Dy-Mark Spray Ink All Colours                    | <b>TOXICITY</b>   | <b>IRRITATION</b>  |
|  | Not Available   | 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                        |
| propylene glycol monomethyl ether - alpha isomer | <b>TOXICITY</b>   | <b>IRRITATION</b>  |
|  | dermal (rat) LD50: >2000 mg/kg <sup>[1]</sup>   | Eye (rabbit) 230 mg mild                                 |
|  | Inhalation(Rat) LC50; >6 mg/l4h <sup>[2]</sup>  | Eye (rabbit) 500 mg/24 h. - mild                         |
|  | Oral (Rat) LD50; 3739 mg/kg <sup>[1]</sup>  | Eye (rabbit): 100 mg SEVERE                              |
| dimethyl ether                                   | <b>TOXICITY</b>   | <b>IRRITATION</b>  |
|  | Inhalation(Rat) LC50; >20000 ppm4h <sup>[1]</sup>   | Not Available  |
| hydrocarbon propellant                           | <b>TOXICITY</b>   | <b>IRRITATION</b>  |
|  | Inhalation(Rat) LC50; 658 mg/l4h <sup>[2]</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 |  |

|  |  |
|--|--|
| PROPYLENE GLYCOL MONOMETHYL ETHER - ALPHA ISOMER                                 | NOTE: For PGE - mixed isomers: Exposure of pregnant rats and rabbits to the substance did not give rise to teratogenic effects at concentrations up to 3000 ppm. Foetotoxic effects were seen in rats but not in rabbits at this concentration; maternal toxicity was noted in both species.   |
| Dy-Mark Spray Ink All Colours & PROPYLENE GLYCOL MONOMETHYL ETHER - ALPHA ISOMER | <p>For propylene glycol ethers (PGEs):</p> <p>Typical propylene glycol ethers include propylene glycol n-butyl ether (PnB); dipropylene glycol n-butyl ether (DPnB); dipropylene glycol methyl ether acetate (DPMA) and tripropylene glycol methyl ether (TPM).</p> <p>Testing of a wide variety of propylene glycol ethers has shown that propylene glycol-based ethers are less toxic than some ethers of the ethylene series. The common toxicities associated with the lower molecular weight homologues of the ethylene series, such as adverse effects on the reproductive organs, the developing embryo and foetus, blood or thymus gland, are not seen with the commercial-grade propylene glycol ethers. In the ethylene series, metabolism of the terminal hydroxyl group produces and alkoxyacetic acid. The reproductive and developmental toxicities of the lower molecular weight homologues in the ethylene series are due specifically to the formation of methoxyacetic and ethoxyacetic acids. Longer chain homologues in the ethylene series are not associated with reproductive toxicity, but can cause haemolysis in sensitive species, also</p> |



## Dy-Mark Spray Ink All Colours

|   |   |
|---|---|
|   | <p>through formation of an alkoxyacetic acid. The predominant alpha isomer of all the PGEs (which is thermodynamically favoured during manufacture of PGEs) is a secondary alcohol incapable of forming an alkoxypropionic acid. In contrast, beta-isomers are able to form the alkoxypropionic acids and these are linked to birth defects (and possibly, haemolytic effects). The alpha isomer comprises more than 95% of the isomeric mixture in the commercial product, and therefore PGEs show relatively little toxicity. One of the main metabolites of the propylene glycol ethers is propylene glycol, which is of low toxicity and completely metabolized in the body.</p> <p>As a class, PGEs have low acute toxicity via swallowing, skin exposure and inhalation. PnB and TPM are moderately irritating to the eyes, in animal testing, while the remaining members of this category caused little or no eye irritation. None caused skin sensitization.</p> <p>Animal testing showed that repeat dosing caused few adverse effects. Animal testing also shows that PGEs do not cause skin effects or reproductive toxicity. Commercially available PGEs have not been shown to cause birth defects. Available instance indicates that propylene glycol ethers are unlikely to possess genetic toxicity.</p> |
| <b>Dy-Mark Spray Ink All Colours &amp; HYDROCARBON PROPELLANT</b> | No significant acute toxicological data identified in literature search. inhalation of the gas  |
| <b>Dy-Mark Spray Ink All Colours &amp; ACETONE</b>                | <p>The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.</p> <p>For acetone:<br/>The acute toxicity of acetone is low. Acetone is not a skin irritant or sensitizer, but it removes fat from the skin, and it also irritates the eye. Animal testing shows acetone may cause macrocytic anaemia. Studies in humans have shown that exposure to acetone at a level of 2375 mg/cubic metre has not caused neurobehavioural deficits.</p>   |

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

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

## SECTION 12 Ecological information

## Toxicity

| Dy-Mark Spray Ink All Colours                    | Endpoint   | Test Duration (hr) | Species                       | Value             | Source        |
|--|--|--------------------|-------------------------------|-------------------|---------------|
|  | Not Available  | Not Available      | Not Available                 | Not Available     | Not Available |
| acetone  | Endpoint   | Test Duration (hr) | Species                       | Value             | Source        |
|  | NOEC(ECx)  | 12h                | Fish                          | 0.001mg/L         | 4             |
|  | LC50   | 96h                | Fish                          | 3744.6-5000.7mg/L | 4             |
|  | EC50   | 48h                | Crustacea                     | 6098.4mg/L        | 5             |
|  | EC50   | 96h                | Algae or other aquatic plants | 9.873-27.684mg/l  | 4             |
| propylene glycol monomethyl ether - alpha isomer | Endpoint   | Test Duration (hr) | Species                       | Value             | Source        |
|  | EC50(ECx)  | 168h               | Algae or other aquatic plants | >1000mg/l         | 1             |
|  | LC50   | 96h                | Fish                          | >=1000mg/l        | 2             |
|  | EC50   | 72h                | Algae or other aquatic plants | >500mg/l          | 2             |
|  | EC50   | 48h                | Crustacea                     | 23300mg/l         | 1             |
|  | EC50   | 96h                | Algae or other aquatic plants | >1000mg/l         | 2             |
| dimethyl ether                                   | Endpoint   | Test Duration (hr) | Species                       | Value             | Source        |
|  | NOEC(ECx)  | 48h                | Crustacea                     | >4000mg/l         | 1             |
|  | LC50   | 96h                | Fish                          | 1783.04mg/l       | 2             |
|  | EC50   | 48h                | Crustacea                     | >4400mg/L         | 2             |
|  | EC50   | 96h                | Algae or other aquatic plants | 154.917mg/l       | 2             |
| hydrocarbon propellant                           | Endpoint   | Test Duration (hr) | Species                       | Value             | Source        |
|  | EC50(ECx)  | 96h                | Algae or other aquatic plants | 7.71mg/l          | 2             |
|  | LC50   | 96h                | Fish                          | 24.11mg/l         | 2             |
|  | EC50   | 96h                | Algae or other aquatic plants | 7.71mg/l          | 2             |
|  | EC50(ECx)  | 96h                | Algae or other aquatic plants | 7.71mg/l          | 2             |
|  | LC50   | 96h                | Fish                          | 24.11mg/l         | 2             |
|  | EC50   | 96h                | Algae or other aquatic plants | 7.71mg/l          | 2             |
| <b>Legend:</b>                                   | 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 |                    |                               |                   |               |

When spilled this product may act as a typical oil, causing a film, sheen, emulsion or sludge at or beneath the surface of the body of water. The oil film on water surface may physically affect the aquatic organisms, due to the interruption of the oxygen transfer between the air and the water

Continued...

## Dy-Mark Spray Ink All Colours

Oils of any kind can cause:

- ▶ drowning of water-fowl due to lack of buoyancy, loss of insulating capacity of feathers, starvation and vulnerability to predators due to lack of mobility
- ▶ lethal effects on fish by coating gill surfaces, preventing respiration
- ▶ asphyxiation of benthic life forms when floating masses become engaged with surface debris and settle on the bottom and
- ▶ adverse aesthetic effects of fouled shoreline and beaches

In case of accidental releases on the soil, a fine film is formed on the soil, which prevents the plant respiration process and the soil particle saturation. It may cause deep water infestation.

For Propylene Glycol Ethers: log Kow's range from 0.309 for TPM to 1.523 for DPnB. Calculated BCFs range from 1.47 for DPnB to 3.16 for DPMA and TPM, indicating low bioaccumulation. Henry's Law Constants are low for all category members, ranging from  $5.7 \times 10^{-9}$  atm-m<sup>3</sup>/mole for TPM to  $2.7 \times 10^{-9}$  atm-m<sup>3</sup>/mole for PnB.

Environmental Fate: Most are liquids at room temperature and all are water-soluble.

Atmospheric Fate: In air, the half-life due to direct reactions with photochemically generated hydroxyl radicals, range from 2.0 hours for TPM to 4.6 hours for PnB.

Aquatic/Terrestrial Fate: Most propylene glycol ethers are likely to partition roughly equally into the soil and water compartments in the environment with small to negligible amounts remaining in other environmental compartments (air, sediment, and aquatic biota). In water, most members of this family are "readily biodegradable" under aerobic conditions. In soil, biodegradation is rapid for PM and PMA.

Ecotoxicity: Propylene glycol ethers are unlikely to persist in the environment. Acute aquatic toxicity testing indicates low toxicity for both ethers and acetates.

For Petroleum Hydrocarbon Gases:

Environmental Fate: Petroleum hydrocarbon gases are primarily produced in petroleum refineries, or in gas plants that separate natural gas and natural gas liquids. This category contains 99 petroleum hydrocarbon gas substances, the majority of which never reach the consumer. Petroleum hydrocarbon gases do not contain inorganic compounds, (e.g. hydrogen sulfide, ammonia, and carbon monoxide), other than asphyxiant gases; the low molecular weight hydrocarbon molecules are primarily responsible for the hazard associated with these gases.

Atmospheric Fate: All components of these gases will evaporate to the air where interaction with hydroxyl radicals is an important fate process. Substances in refinery gases that evaporate to air may undergo indirect, gas-phase oxidation reaction with hydroxyl radicals and this is an important fate process for these substances. Half-lives for refinery gases range from 960 days, (methane), to 0.16 days, (butadiene). The constituents of the C5- C6 hydrocarbon gases have light breakdown half-lives of approximately two days. The inorganic gases are chemically stable and may be lost to the atmosphere or simply become involved in the environmental recycling of their atoms.

Terrestrial Fate: Biological breakdown of these organisms is not expected to be an important fate process since they tend to evaporate to the air, however; some of the higher weight components may become available for microbial attack. Naphtha gases are also considered to be inherently biodegradable.

Aquatic Fate: The solubilities of these substances in water vary, ranging from approximately 22 parts per million to several hundred parts per million. Some of these gasses have substantial water solubility, but they will eventually evaporate to the atmosphere. Refinery gases are not broken down by water but, they will be broken down by microbes. Gaseous hydrocarbons are widespread in nature and numerous types of microbes have evolved which are capable of oxidizing these substances as their sole energy source.

Ecotoxicity: These substances vary in their toxicities to aquatic organisms from slightly toxic to moderately toxic. They are not expected to persist long enough in the environment to elicit toxicity. Emissions of petroleum hydrocarbon gases to the atmosphere would not likely result in acutely toxic concentrations in adjacent water bodies because such emissions will tend to remain in the atmosphere. Several of the constituents in refinery gases were shown to be highly hazardous to aquatic organisms in laboratory toxicity tests where exposure concentrations can be maintained over time. Hydrogen sulfide was shown to be the most toxic constituent to fish, and invertebrates.

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.

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 Isobutene (Refrigerant Gas): Koc: 35, (estimated); Henry's Law Constant:  $4.08 \text{ atm-cu m/mole}$ ; Vapor Pressure: 2611 mm Hg @ 25 deg C; BCF: 74, (estimated).

Atmospheric Fate: Isobutene is a gas at ordinary temperatures. The substance is highly flammable and explosive. It is degraded in the atmosphere by reactions with hydroxyl radicals; the half-life for this reaction in air is 6.9 days. The loss of these substances via wet/dry deposition is thought to be of minor importance. It is thought that the substance will evaporate upon leaving the atmosphere in precipitation then reemitted to the atmosphere after deposition to the land. Isobutane is a contributor to the production of PAN, (peroxyacyl nitrates), under photochemical smog conditions.

Terrestrial Fate: Isobutane will have very high mobility in soil and low adsorption potential. Evaporation from dry/moist soil surfaces is an important fate process for this substance.

Isobutane is biodegradable, especially under acclimated conditions, and may biodegrade in soil. The substance is not expected to contaminate the soil.

Aquatic Fate: Isobutane is not expected to not adsorb to sediment/particulate matter in the water column. Isobutane will readily evaporate from water with an estimated half-life of 2.2 hours, for a model river and 3.0 days. If the gas is introduced to water, it will float and boil, producing a flammable, and visible, vapor cloud. Isobutane will not concentrate in aquatic organisms and will be broken down by microorganisms in water, however; the substance will not contaminate the water.

Ecotoxicity: Isobutane has slight acute toxicity to aquatic life. Short-term effects include death of animals, fish, and birds and low growth rate in plants. Long term, (chronic), effects include shortened life-spans, reproductive problems, lowered fertility, and appearance/behavioral changes in animals.

For Propane: Koc 460. log

Kow 2.36.

Henry's Law constant of  $7.07 \times 10^{-1} \text{ atm-cu m/mole}$ , derived from its vapour pressure, 7150 mm Hg, and water solubility, 62.4 mg/L. Estimated BCF: 13.1.

Terrestrial Fate: Propane is expected to have moderate mobility in soil. Volatilization from moist soil surfaces is expected to be an important fate process. Volatilization from dry soil surfaces is based vapor pressure. Biodegradation may be an important fate process in soil and sediment.

Aquatic Fate: Propane is expected to adsorb to suspended solids and sediment. Volatilization from water surfaces is expected and half-lives for a model river and model lake are estimated to be 41 minutes and 2.6 days, respectively. Biodegradation may not be an important fate process in water.

Ecotoxicity: The potential for bioconcentration in aquatic organisms is low.

Atmospheric Fate: Propane is expected to exist solely as a gas in the ambient atmosphere. Gas-phase propane is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 14 days and is not expected to be susceptible to direct photolysis by sunlight.

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

For Acetone:

log Kow : -0.24;

Half-life (hr) air : 312-1896;

Half-life (hr) H<sub>2</sub>O surface water : 20;

Henry's atm m<sup>3</sup> /mol :  $3.67 \times 10^{-5}$

BOD 5: 0.31-1.76, 46-55%

COD: 1.12-2.07

ThOD: 2.2BCF: 0.69.

Environmental Fate: The relatively long half-life allows acetone to be transported long distances from its emission source.

Atmospheric Fate: Acetone preferentially locates in the air compartment when released to the environment. 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. Air Quality Standards: none available.

Terrestrial Fate: Very little acetone is expected to reside in soil, biota, or suspended solids and has low propensity for soil absorption and a high preference for moving through the soil and into the ground water. Acetone released to soil volatilizes although some may leach into the ground where it rapidly biodegrades. Soil Guidelines: none available.

Aquatic Fate: A substantial amount of acetone can also be found in water. Acetone is highly soluble and slightly persistent in water, with a half-life of about 20 hours Drinking Water Standard: none available.

Ecotoxicity: Acetone does not concentrate in the food chain, is minimally toxic to aquatic life and is considered to be readily biodegradable. Testing shows that acetone exhibits a low order of toxicity for brook trout, fathead minnow, Japanese quail, ring-neck pheasant and water fleas. Low toxicity for aquatic invertebrates. For aquatic plants, NOEC: 5400-7500 mg/L. Acetone vapours were shown to be relatively toxic to flour beetle and flour moths and their eggs. 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. Mild to moderate toxicity occurred in bacteria exposed to acetone for 6-4 days however, overall data indicates a low degree of toxicity for acetone. The only exception to these findings was the results obtained with the flagellated protozoa (Entosiphon sulcatum).

## Dy-Mark Spray Ink All Colours

## Persistence and degradability

| Ingredient                                       | Persistence: Water/Soil   | Persistence: Air                 |
|--|---------------------------|----------------------------------|
| acetone  | LOW (Half-life = 14 days) | MEDIUM (Half-life = 116.25 days) |
| propylene glycol monomethyl ether - alpha isomer | LOW (Half-life = 56 days) | LOW (Half-life = 1.7 days)       |
| dimethyl ether                                   | LOW                       | LOW                              |

## Bioaccumulative potential

| Ingredient                                       | Bioaccumulation    |
|--|--------------------|
| acetone  | LOW (BCF = 0.69)   |
| propylene glycol monomethyl ether - alpha isomer | LOW (BCF = 2)      |
| dimethyl ether                                   | LOW (LogKOW = 0.1) |

## Mobility in soil

| Ingredient                                       | Mobility           |
|--|--------------------|
| acetone  | HIGH (KOC = 1.981) |
| propylene glycol monomethyl ether - alpha isomer | HIGH (KOC = 1)     |
| dimethyl ether                                   | HIGH (KOC = 1.292) |

## SECTION 13 Disposal considerations

## Waste treatment methods

|                              |   |
|------------------------------|---|
| Product / Packaging disposal | <p>Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.</p> <p>A Hierarchy of Controls seems to be common - the user should investigate:</p> <ul style="list-style-type: none"> <li>▶ Reduction</li> <li>▶ Reuse</li> <li>▶ Recycling</li> <li>▶ Disposal (if all else fails)</li> </ul> <p>This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.</p> <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>▶ Consult State Land Waste Management Authority for disposal.</li> <li>▶ Discharge contents of damaged aerosol cans at an approved site.</li> <li>▶ Allow small quantities to evaporate.</li> <li>▶ <b>DO NOT</b> incinerate or puncture aerosol cans.</li> <li>▶ Bury residues and emptied aerosol cans at an approved site.</li> </ul> |
|------------------------------|---|

## SECTION 14 Transport information

## Labels Required

|                  |   |
|------------------|---|
|                  |  |
| Marine Pollutant | NO  |
| HAZCHEM          | Not Applicable  |

## Land transport (ADG)

|                              |  |                    |                        |                  |                |
|------------------------------|--|--------------------|------------------------|------------------|----------------|
| UN number                    | 1950   |                    |                        |                  |                |
| UN proper shipping name      | AEROSOLS   |                    |                        |                  |                |
| Transport hazard class(es)   | <table> <tr> <td>Class</td><td>2.1</td></tr> <tr> <td>Subrisk</td><td>Not Applicable</td></tr> </table>                                  | Class              | 2.1                    | Subrisk          | Not Applicable |
| Class                        | 2.1  |                    |                        |                  |                |
| Subrisk                      | Not Applicable   |                    |                        |                  |                |
| Packing group                | Not Applicable   |                    |                        |                  |                |
| Environmental hazard         | Not Applicable   |                    |                        |                  |                |
| Special precautions for user | <table> <tr> <td>Special provisions</td><td>63 190 277 327 344 381</td></tr> <tr> <td>Limited quantity</td><td>1000ml</td></tr> </table> | Special provisions | 63 190 277 327 344 381 | Limited quantity | 1000ml         |
| Special provisions           | 63 190 277 327 344 381   |                    |                        |                  |                |
| Limited quantity             | 1000ml   |                    |                        |                  |                |

## Dy-Mark Spray Ink All Colours

## Air transport (ICAO-IATA / DGR)

|                              |   |                |
|------------------------------|---|----------------|
| UN number                    | 1950  |                |
| UN proper shipping name      | Aerosols, flammable                                       |                |
| Transport hazard class(es)   | ICAO/IATA Class   | 2.1            |
|                              | ICAO / IATA Subrisk                                       | Not Applicable |
|                              | ERG Code  | 10L            |
| Packing group                | Not Applicable  |                |
| Environmental hazard         | Not Applicable  |                |
| Special precautions for user | Special provisions  | A145 A167 A802 |
|                              | Cargo Only Packing Instructions                           | 203            |
|                              | Cargo Only Maximum Qty / Pack                             | 150 kg         |
|                              | Passenger and Cargo Packing Instructions                  | 203            |
|                              | Passenger and Cargo Maximum Qty / Pack                    | 75 kg          |
|                              | Passenger and Cargo Limited Quantity Packing Instructions | Y203           |
|                              | Passenger and Cargo Limited Maximum Qty / Pack            | 30 kg G        |

## Sea transport (IMDG-Code / GGVSee)

|                              |                    |                            |
|------------------------------|--------------------|----------------------------|
| UN number                    | 1950               |                            |
| UN proper shipping name      | AEROSOLS           |                            |
| Transport hazard class(es)   | IMDG Class         | 2.1                        |
|                              | IMDG Subrisk       | Not Applicable             |
| Packing group                | Not Applicable     |                            |
| Environmental hazard         | Not Applicable     |                            |
| Special precautions for user | EMS Number         | F-D , S-U                  |
|                              | Special provisions | 63 190 277 327 344 381 959 |
|                              | Limited Quantities | 1000 ml                    |

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

Not Applicable

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

| Product name                                     | Group         |
|--|---------------|
| acetone  | Not Available |
| propylene glycol monomethyl ether - alpha isomer | Not Available |
| dimethyl ether                                   | Not Available |
| hydrocarbon propellant                           | Not Available |

## Transport in bulk in accordance with the ICG Code

| Product name                                     | Ship Type     |
|--|---------------|
| acetone  | Not Available |
| propylene glycol monomethyl ether - alpha isomer | Not Available |
| dimethyl ether                                   | Not Available |
| hydrocarbon propellant                           | Not Available |

## SECTION 15 Regulatory information

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

## 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)

## propylene glycol monomethyl ether - alpha isomer is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

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)

Continued...

## Dy-Mark Spray Ink All Colours

## hydrocarbon propellant is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals  
Australian Inventory of Industrial Chemicals (AIIC)

Chemical Footprint Project - Chemicals of High Concern List

## National Inventory Status

| National Inventory                              | Status  |
|---|---|
| Australia - AIIC / Australia Non-Industrial Use | Yes   |
| Canada - DSL                                    | Yes   |
| Canada - NDSL                                   | No (acetone; propylene glycol monomethyl ether - alpha isomer; dimethyl ether; hydrocarbon propellant)  |
| 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>                                  | <i>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.</i> |

## SECTION 16 Other information

|               |            |
|---------------|------------|
| Revision Date | 10/12/2021 |
| Initial Date  | 01/02/2008 |

## SDS Version Summary

| Version | Date of Update | Sections Updated  |
|---------|----------------|---|
| 13.1    | 20/08/2021     | Classification change due to full database hazard calculation/update. |
| 14.1    | 10/12/2021     | Classification change due to full database hazard calculation/update. |

## 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

**Dy-Mark Spray Ink All Colours**

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  
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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