

## 6-Acetylmorphine-D6

Novachem Pty Ltd

Chemwatch Hazard Alert Code: 3

Version No: 1.1

Issue Date: 07/03/2018

Safety Data Sheet according to WHS and ADG requirements

Print Date: 07/03/2018

S.GHS.AUS.EN

### SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

#### Product Identifier

|                               |                     |
|-------------------------------|---------------------|
| Product name                  | 6-Acetylmorphine-D6 |
| Chemical Name                 | 6-ACETYLMORPHINE-D6 |
| Synonyms                      | A-027               |
| Proper shipping name          | ACETONITRILE        |
| Other means of identification | Not Available       |
| CAS number                    | 152477-90-2*        |

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

|                          |   |
|--------------------------|---|
| Relevant identified uses | Laboratory chemicals, Manufacture of substances |
|--------------------------|---|

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

|                         |   |
|-------------------------|---|
| Registered company name | Novachem Pty Ltd  |
| Address                 | 25 Crissane Road, Heidelberg West Victoria 3081 Australia |
| Telephone               | +61384151255  |
| Fax                     | +61386250088  |
| Website                 | www.novachem.com.au                                       |
| Email                   | novachem@novachem.com.au                                  |

#### Emergency telephone number


|                                   |                                      |
|-----------------------------------|--------------------------------------|
| Association / Organisation        | Victorian Poisons Information Centre |
| Emergency telephone numbers       | 13 11 26                             |
| Other emergency telephone numbers | Not Available                        |

### SECTION 2 HAZARDS IDENTIFICATION

#### Classification of the substance or mixture

|                    |   |
|--------------------|---|
| Poisons Schedule   | Not Applicable  |
| Classification [1] | Flammable Liquid Category 2, Acute Toxicity (Oral) Category 4, Acute Toxicity (Dermal) Category 4, Acute Toxicity (Inhalation) Category 3, Eye Irritation Category 2A |
| Legend:            | 1. Classified by Chemwatch; 2. Classification drawn from HSIS ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI  |

#### Label elements

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

SIGNAL WORD **DANGER**

#### Hazard statement(s)

|      |                                     |
|------|-------------------------------------|
| H225 | Highly flammable liquid and vapour. |
| H302 | Harmful if swallowed.               |
| H312 | Harmful in contact with skin.       |
| H331 | Toxic if inhaled.                   |
| H319 | Causes serious eye irritation.      |

**Precautionary statement(s) Prevention**

|      |   |
|------|---|
| P210 | Keep away from heat/sparks/open flames/hot surfaces. - No smoking.                |
| P271 | Use only outdoors or in a well-ventilated area.                                   |
| P240 | Ground/bond container and receiving equipment.                                    |
| P241 | Use explosion-proof electrical/ventilating/lighting/intrinsically safe equipment. |

**Precautionary statement(s) Response**

|                |  |
|----------------|--|
| P363           | Wash contaminated clothing before reuse.   |
| P370+P378      | In case of fire: Use water spray/fog for extinction.   |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P304+P340      | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.                                 |

**Precautionary statement(s) Storage**

|           |  |
|-----------|--|
| P403+P235 | Store in a well-ventilated place. Keep cool. |
| P405      | Store locked up.                             |

**Precautionary statement(s) Disposal**

|      |   |
|------|---|
| P501 | Dispose of contents/container in accordance with local regulations. |
|------|---|

**SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS****Substances**

| CAS No       | %[weight] | Name                |
|--------------|-----------|---------------------|
| 75-05-8      | 99.9      | acetonitrile        |
| 152477-90-2* | 0.1       | 6-Acetylmorphine-D6 |

**Mixtures**

See section above for composition of Substances

**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>▶ Immediately hold eyelids apart and flush the eye continuously with 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>▶ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.</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>  |
| <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> <li>▶ Transport to hospital, or doctor, without delay.</li> </ul>  |
| <b>Ingestion</b>    | <ul style="list-style-type: none"> <li>▶ <b>IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.</b></li> <li>▶ For advice, contact a Poisons Information Centre or a doctor.</li> <li>▶ Urgent hospital treatment is likely to be needed.</li> <li>▶ In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.</li> <li>▶ If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist.</li> <li>▶ If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS.</li> </ul> <p><b>Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:</b></p> <ul style="list-style-type: none"> <li>▶ <b>INDUCE</b> vomiting with fingers down the back of the throat, <b>ONLY IF CONSCIOUS</b>. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> </ul> <p><b>NOTE:</b> Wear a protective glove when inducing vomiting by mechanical means.</p> |

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

For cyanide intoxication (and for certain nitriles which produce cyanide ion)

- ▶ Signs symptoms of acute cyanide poisoning reflect cellular hypoxia and are often non-specific.
- ▶ Cyanosis may be a late finding.
- ▶ A *bradycardic*, hypertensive and tachypneic patient suggests poisoning especially if CNS and cardiovascular depression subsequently occurs.

- ▶ Immediate attention should be directed towards assisted ventilation, administration of 100% oxygen, insertion of intravenous lines and institution of cardiac monitoring.
- ▶ Obtain an arterial blood gas immediately and correct any severe metabolic acidosis (pH below 7.15).
- ▶ Mildly symptomatic patients generally require supportive care alone. Nitrites should not be given indiscriminately - in all cases of moderate to severe poisoning, they should be given in conjunction with thiosulfate. As a temporizing measure supply amyl nitrite perles (0.2ml inhaled 30 seconds every minute) until intravenous lines for sodium nitrite are established. 10 ml of a 3% solution is administered over 4 minutes to produce 20% methaemoglobin in adults. Follow directly with 50 ml of 25% sodium thiosulfate, at the same rate, IV. If symptoms reappear or persist within 1/2-1 hour, repeat nitrite and thiosulfate at 50% of initial dose. As the mode of action involves the metabolic conversion of the thiosulfate to thiocyanate, renal failure may enhance thiocyanate toxicity.
- ▶ Methylene blue is not an antidote. [Ellenhorn and Barceloux: Medical Toxicology]

If amyl nitrite intervention is employed then Medical Treatment Kits should contain the following:

- ▶ One box containing one dozen amyl nitrite ampoules
- ▶ Two sterile ampoules of sodium nitrite solution (10 mL of a 3% solution in each)
- ▶ Two sterile ampoules of sodium thiosulfate solution (50 mL of a 25% solution in each)
- ▶ One 10 mL sterile syringe. One 50 mL sterile syringe. Two sterile intravenous needles. One tourniquet.
- ▶ One dozen gauze pads.
- ▶ Latex gloves
- ▶ A "Biohazard" bag for disposal of bloody/contaminated equipment.
- ▶ A set of cyanide instructions on first aid and medical treatment.

- Notes on the use of amyl nitrite:-

- ▶ AN is highly volatile and flammable - do not smoke or use around a source of ignition.
- ▶ If treating patient in a windy or draughty area provide some shelter or protection (shirt, wall, drum, cupped hand etc.) to prevent amyl nitrite vapour from being blown away. Keep ampoule upwind from the nose, the objective is to get amyl nitrite into the patients lungs.
- ▶ Rescuers should avoid AN inhalation to avoid becoming dizzy and losing competence.
- ▶ Lay the patient down. Since AN dilates blood vessels and lowers blood pressure, lying down will help keep patient conscious.
- ▶ **DO NOT overuse - excessive use might put the patient into shock.** Experience at DuPont plants has not shown any serious after-effects from treatment with amyl nitrite.

#### ADDITIONAL NOTES:

- ▶ Major medical treatment procedures may vary e.g. US (FDA method as recommended by DuPont) uses amyl nitrite as a methaemoglobin generator, followed by treatment with sodium nitrite and then sodium thiosulfate.

**MODES OF ACTION:** Amyl nitrite (AN) reacts with haemoglobin (HB) to form about 5% methaemoglobin (MHB). Sodium nitrite (NaNO<sub>2</sub>) reacts with haemoglobin to form approximately 20-30% methaemoglobin. Methaemoglobin attracts cyanide ions (CN) from tissue and binds with them to become cyanmethaemoglobin (CNMHB). Sodium thiosulfate (Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>) converts cyanmethaemoglobin to thiocyanate (HSCN) which is excreted by the kidneys. i.e. AN + HB = MHB NaNO<sub>2</sub> + HB = MHB CN + MHB = CNMHB Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> + CNMHB + O<sub>2</sub> = HSCN

- ▶ The administration of the antidote salts is intravenous in normal saline, Ringers lactate or other available IV fluid.
- ▶ European practice may use 4-dimethylaminophenol (DMAP) as a methaemoglobin generator. Also hydroxycobalamin (Vitamin B12a) is used. Hydroxycobalamin works by reacting with cyanide to form cyanocobalamin (Vitamin B12) which is excreted in the urine.
- ▶ European and Australian NOHSC (ASCC) propose dicobalt edetate (Kelocyanor) as antidote. This acts by chelating cyanide to form stable cobaltcyanide, which is excreted in the urine. In all cases hyperbaric therapy may increase the efficiency of a cyanide antidote kit.

## SECTION 5 FIREFIGHTING MEASURES

### Extinguishing media

- ▶ 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 full body protective clothing with breathing apparatus.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> </ul>  |
| <b>Fire/Explosion Hazard</b> | <ul style="list-style-type: none"> <li>▶ Liquid and vapour are highly flammable.</li> <li>▶ Severe fire hazard when exposed to heat, flame and/or oxidisers.</li> <li>▶ Vapour may travel a considerable distance to source of ignition.</li> <li>▶ Heating may cause expansion or decomposition leading to violent rupture of containers.</li> </ul> Combustion products include:<br>carbon dioxide (CO <sub>2</sub> )<br>nitrogen oxides (NO <sub>x</sub> )<br>other pyrolysis products typical of burning organic material. |
| <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> </ul> |
|---------------------|--|

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|                     |  |
|---------------------|--|
| <b>Major Spills</b> | <ul style="list-style-type: none"> <li>▶ <b>DO NOT touch the spill material</b></li> </ul> For alkyl nitriles:<br>For residue: <ul style="list-style-type: none"> <li>▶ Add alkaline hypochlorite solution to spill to produce cyanate.</li> <li>▶ Neutralise liquid, and absorb with sawdust.</li> <li>▶ Collect solid residues and seal in drums for disposal.</li> <li>▶ Wash spill area with large quantities of water.</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 full body protective clothing with breathing apparatus.</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>     | <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> <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> </ul> |
| <b>Other information</b> | <ul style="list-style-type: none"> <li>▶ Store in original containers in approved flame-proof area.</li> <li>▶ No smoking, naked lights, heat or ignition sources.</li> <li>▶ <b>DO NOT store in pits, depressions, basements or areas where vapours may be trapped.</b></li> <li>▶ Keep containers securely sealed.</li> </ul>  |

## Conditions for safe storage, including any incompatibilities

|                                |   |
|--------------------------------|---|
| <b>Suitable container</b>      | <ul style="list-style-type: none"> <li>▶ Glass container is suitable for laboratory quantities</li> <li>▶ Packing as supplied by manufacturer.</li> <li>▶ Plastic containers may only be used if approved for flammable liquid.</li> <li>▶ Check that containers are clearly labelled and free from leaks.</li> <li>▶ 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.</li> <li>▶ For materials with a viscosity of at least 2680 cSt. (23 deg. C)</li> <li>▶ For manufactured product having a viscosity of at least 250 cSt.</li> </ul>  |
| <b>Storage incompatibility</b> | Acetonitrile <ul style="list-style-type: none"> <li>▶ forms cyanide gas on contact with steam</li> <li>▶ reacts violently with oxidisers such as chlorine, bromine, fluorine; with chlorosulfonic acid, oleum or sulfuric acid</li> <li>▶ is incompatible with water (especially if acid or alkaline), acids, caustics, nitrating agents, indium, nitrogen tetroxide , sulfur trioxide, iron(III) salts of perchlorate, nitrogen fluoride compounds</li> <li>▶ attacks most rubber and plastics</li> <li>▶ may accumulate electrical charges, causing ignition of vapours</li> <li>▶ Contact with acids produces toxic fumes</li> <li>▶ Nitriles may polymerise in the presence of metals and some metal compounds.</li> <li>▶ They are incompatible with acids; mixing nitriles with strong oxidising acids can lead to extremely violent reactions.</li> <li>▶ Nitriles are generally incompatible with other oxidising agents such as peroxides and epoxides.</li> <li>▶ The combination of bases and nitriles can produce hydrogen cyanide.</li> <li>▶ The covalent cyano group is endothermic and many organic nitriles are reactive under certain conditions; N-cyano derivatives are reactive or unstable.</li> <li>▶ The majority of endothermic compounds are thermodynamically unstable and may decompose explosively under various circumstances of initiation.</li> <li>▶ Many but not all endothermic compounds have been involved in decompositions, reactions and explosions and, in general, compounds with significantly positive values of standard heats of formation, may be considered suspect on stability grounds.</li> </ul> BRETHERICK L.: Handbook of Reactive Chemical Hazards<br><b>WARNING:</b> <ul style="list-style-type: none"> <li>▶ May decompose violently or explosively on contact with other substances.</li> <li>▶ This substance, or one of its components, is one of the relatively few compounds which are described as "endothermic" i.e. heat is absorbed into the compound, rather than released from it, during its formation.</li> <li>▶ The majority of endothermic compounds are thermodynamically unstable and may decompose explosively under various circumstances of initiation.</li> <li>▶ Many but not all endothermic compounds have been involved in decompositions, reactions and explosions and, in general, compounds with significantly positive values of standard heats of formation, may be considered suspect on stability grounds.</li> <li>▶ Avoid reaction with oxidising agents</li> </ul> |

## 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 | acetonitrile | Acetonitrile  | 67 mg/m <sup>3</sup> / 40 ppm | 101 mg/m <sup>3</sup> / 60 ppm | Not Available | Not Available |


## EMERGENCY LIMITS

| Ingredient   | Material name | TEEL-1        | TEEL-2        | TEEL-3        |
|--------------|---------------|---------------|---------------|---------------|
| acetonitrile | Acetonitrile  | Not Available | Not Available | Not Available |

| Ingredient   | Original IDLH | Revised IDLH |
|--------------|---------------|--------------|
| acetonitrile | 500 ppm       | 137 ppm      |

|                     |               |               |
|---------------------|---------------|---------------|
| 6-Acetylmorphine-D6 | Not Available | Not Available |
|---------------------|---------------|---------------|

## Exposure controls

|   |   |
|---|---|
| <b>Appropriate engineering controls</b> | 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.<br>The basic types of engineering controls are:<br>Process controls which involve changing the way a job activity or process is done to reduce the risk.<br>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.   |
| <b>Personal protection</b>              |    |
| <b>Eye and face protection</b>          | <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.</li> </ul>   |
| <b>Skin protection</b>                  | See Hand protection below   |
| <b>Hands/feet protection</b>            | <ul style="list-style-type: none"> <li>▶ Wear chemical protective gloves, e.g. PVC.</li> <li>▶ Wear safety footwear or safety gumboots, e.g. Rubber</li> </ul> <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.</p> <p>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.</p> <p>Personal hygiene is a key element of effective hand care.</p> <p>for acetonitrile:<br/>Butyl rubber, PVAL, Teflon, Saranex, Silvershield, Viton/ chlorobutyl are all highly resistant to permeation</p> |
| <b>Body protection</b>                  | See Other protection below  |
| <b>Other protection</b>                 | <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. <ul style="list-style-type: none"> <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 and shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds.</li> </ul> </li> </ul>       |
| <b>Thermal hazards</b>                  | Not Available   |

## 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:

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| Material         | CPI |
|------------------|-----|
| BUTYL            | A   |
| BUTYL/NEOPRENE   | A   |
| CPE              | A   |
| PE/EVAL/PE       | A   |
| PVA              | A   |
| SARANEX-23       | A   |
| NEOPRENE         | B   |
| TEFLON           | B   |
| NATURAL RUBBER   | C   |
| NATURAL+NEOPRENE | C   |
| NITRILE          | C   |
| VITON/NEOPRENE   | C   |

\* 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.

## Respiratory protection

**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.**

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.

| 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   | A-AUS / Class - 1    | -                    |
| up to 50                           | 1000   | -                    | A-AUS / Class 1      |
| up to 50                           | 5000   | Airline *            | -                    |
| up to 100                          | 5000   | -                    | A-2                  |
| up to 100                          | 10000  | -                    | A-3                  |
| 100+                               | -  | -                    | Airline**            |

\* - Continuous Flow

\*\* - 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                               | Liquid            | Relative density (Water = 1)            | 0.782         |
| 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) | 81-82             | Molecular weight (g/mol)                | Not Available |
| Flash point (°C)                             | 2 (CC)            | Taste                                   | Not Available |
| Evaporation rate                             | Not Available     | Explosive properties                    | Not Available |
| Flammability                                 | HIGHLY FLAMMABLE. | Oxidising properties                    | Not Available |
| Upper Explosive Limit (%)                    | 16.0              | Surface Tension (dyn/cm or mN/m)        | Not Available |
| Lower Explosive Limit (%)                    | 4.4               | Volatile Component (%vol)               | Not Available |
| Vapour pressure (kPa)                        | Not Available     | Gas group                               | Not Available |
| Solubility in water (g/L)                    | Miscible          | pH as a solution (1%)                   | Not Available |
| 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>▶ Presence of elevated temperatures.</li> <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  |

## SECTION 11 TOXICOLOGICAL INFORMATION

### Information on toxicological effects

|                     |  |               |
|---------------------|--|---------------|
| Inhaled             | <p>Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects. The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of vapours, fumes or aerosols, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress. The smell of acetonitrile does not give enough warning of exposure. The gas is highly toxic, and inhaling it can cause loss of consciousness.</p>  |               |
| Ingestion           | <p>Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. Nitrile poisoning exhibits similar symptoms to poisoning due to hydrogen cyanide. The substances irritate the eyes and skin, and are absorbed quickly and completely through the skin. Cyanide poisoning can cause increased saliva output, nausea without vomiting, anxiety, confusion, vertigo, dizziness, stiffness of the lower jaw, convulsions, spasm, paralysis, coma and irregular heartbeat, and stimulation of breathing followed by failure. Often the skin becomes cyanosed (blue-grey), and this is often delayed.</p> |               |
| Skin Contact        | <p>Skin contact with the material may be harmful; systemic effects may result following absorption. The material is not thought to be a skin irritant (as classified by EC Directives using animal models). Temporary discomfort, however, may result from prolonged dermal exposures. Open cuts, abraded or irritated skin should not be exposed to this material. Entry into the blood-stream, through, for example, cuts, abrasions 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>  |               |
| Eye                 | <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>Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course. Chronic exposure to cyanides and certain nitriles may result in interference to iodine uptake by thyroid gland and its consequent enlargement. This occurs following metabolic conversion of the cyanide moiety to thiocyanate.</p>  |               |
| 6-Acetylmorphine-D6 | TOXICITY   | IRRITATION    |
|                     | Not Available  | Not Available |

| acetonitrile | TOXICITY  |  | IRRITATION                       |  |
|--------------|---|--|----------------------------------|--|
|              | Dermal (rabbit) LD50: 980 mg/kg <sup>[2]</sup>          |  | Eye (rabbit):20 mg (open)-SEVERE |  |
|              | Inhalation (rat) LC50: 17080.4889 mg/4 h <sup>[1]</sup> |  | Skin (rabbit):500 mg (open)-mild |  |
|              | Oral (rat) LD50: <2000 mg/kg <sup>[1]</sup>             |  |                                  |  |

| 6-Acetylmorphine-D6 | TOXICITY      |  | IRRITATION    |  |
|---------------------|---------------|--|---------------|--|
|                     | Not Available |  | Not Available |  |

**Legend:** 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

| ACETONITRILE | Description  |
|--------------|--|
|              | The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.<br>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.<br>Absorption of acetonitrile occurs after oral, skin, or inhalation exposure. The liquid or vapour is irritating to the skin, eyes, and airways. At high enough doses, death can occur quickly from respiratory failure. Lower doses cause typical symptoms of cyanide poisoning such as salivation, nausea, vomiting, anxiety, confusion, rapid and difficult breathing, rapid pulse, unconsciousness, and convulsions. |

|                                   |   |                          |   |
|-----------------------------------|---|--------------------------|---|
| 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 available but does not fill the criteria for classification  
 ✓ - Data available to make classification  
 ⊘ - Data Not Available to make classification

## SECTION 12 ECOLOGICAL INFORMATION

### Toxicity

| 6-Acetylmorphine-D6 | ENDPOINT      | TEST DURATION (HR) | SPECIES       | VALUE         | SOURCE        |
|---------------------|---------------|--------------------|---------------|---------------|---------------|
|                     | Not Available | Not Available      | Not Available | Not Available | Not Available |

| acetonitrile | ENDPOINT | TEST DURATION (HR) | SPECIES   | VALUE       | SOURCE |
|--------------|----------|--------------------|-----------|-------------|--------|
|              | LC50     | 96                 | Fish      | >100mg/L    | 4      |
|              | NOEC     | 24                 | Crustacea | 0.00001mg/L | 4      |

| 6-Acetylmorphine-D6 | ENDPOINT      | TEST DURATION (HR) | SPECIES       | VALUE         | SOURCE        |
|---------------------|---------------|--------------------|---------------|---------------|---------------|
|                     | Not Available | Not Available      | Not Available | Not Available | Not Available |

**Legend:** Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 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

Soil Guidelines: Dutch Criteria:  
 free cyanide: 1 mg/kg (target)  
 20 mg/kg (intervention)  
 complex cyanide (pH 5): 5 mg/kg (target)  
 50 mg/kg (intervention)

Air Quality Standards: no safe guidelines recommended due to carcinogenic properties.

On the basis of available evidence concerning either toxicity, persistence, potential to accumulate and/or observed environmental fate and behaviour, the material may present a danger, immediate or long-term and/or delayed, to the structure and/or functioning of natural ecosystems.

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

Abiotic Effects: Acetonitrile is a volatile organic compound (VOC) substance, thus it is a contributor to the formation of photochemical smog in the presence of other VOCs.

Transport: Acetonitrile is primarily removed by volatilization and leaching into groundwater. It has low adsorption potential to soils. Air - Acetonitrile may persist in the troposphere and can be transported over long distances.

### Persistence and degradability

| Ingredient   | Persistence: Water/Soil     | Persistence: Air               |
|--------------|-----------------------------|--------------------------------|
| acetonitrile | HIGH (Half-life = 360 days) | HIGH (Half-life = 541.29 days) |

### Bioaccumulative potential

| Ingredient | Bioaccumulation |
|------------|-----------------|
|            |                 |

|              |                 |
|--------------|-----------------|
| acetonitrile | LOW (BCF = 0.4) |
|--------------|-----------------|


**Mobility in soil**

| Ingredient   | Mobility        |
|--------------|-----------------|
| acetonitrile | LOW (KOC = 4.5) |

**SECTION 13 DISPOSAL CONSIDERATIONS****Waste treatment methods**

|                                     |  |
|-------------------------------------|--|
| <b>Product / Packaging disposal</b> | <ul style="list-style-type: none"> <li>▶ Containers may still present a chemical hazard/ danger when empty.</li> <li>▶ Return to supplier for reuse/ recycling if possible.</li> </ul> <p>Otherwise:</p> <ul style="list-style-type: none"> <li>▶ If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.</li> <li>▶ Where possible retain label warnings and SDS and observe all notices pertaining to the product.</li> </ul> <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.</p> <ul style="list-style-type: none"> <li>▶ <b>DO NOT allow wash water from cleaning or process equipment to enter drains.</b></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.</li> </ul> |
|-------------------------------------|--|

**SECTION 14 TRANSPORT INFORMATION****Labels Required**

|                         |   |
|-------------------------|---|
|                         |  |
| <b>Marine Pollutant</b> | NO  |
| <b>HAZCHEM</b>          | •2YE  |

**Land transport (ADG)**

|                                     |  |                    |                |                  |                |
|-------------------------------------|--|--------------------|----------------|------------------|----------------|
| <b>UN number</b>                    | 1648   |                    |                |                  |                |
| <b>UN proper shipping name</b>      | ACETONITRILE   |                    |                |                  |                |
| <b>Transport hazard class(es)</b>   | <table border="1"> <tr> <td>Class</td> <td>3</td> </tr> <tr> <td>Subrisk</td> <td>Not Applicable</td> </tr> </table>                         | Class              | 3              | Subrisk          | Not Applicable |
| Class                               | 3  |                    |                |                  |                |
| Subrisk                             | Not Applicable   |                    |                |                  |                |
| <b>Packing group</b>                | II   |                    |                |                  |                |
| <b>Environmental hazard</b>         | Not Applicable   |                    |                |                  |                |
| <b>Special precautions for user</b> | <table border="1"> <tr> <td>Special provisions</td> <td>Not Applicable</td> </tr> <tr> <td>Limited quantity</td> <td>1 L</td> </tr> </table> | Special provisions | Not Applicable | Limited quantity | 1 L            |
| Special provisions                  | Not Applicable   |                    |                |                  |                |
| Limited quantity                    | 1 L  |                    |                |                  |                |

**Air transport (ICAO-IATA / DGR)**

|                                   |   |                 |   |                     |                |          |    |
|-----------------------------------|---|-----------------|---|---------------------|----------------|----------|----|
| <b>UN number</b>                  | 1648  |                 |   |                     |                |          |    |
| <b>UN proper shipping name</b>    | Acetonitrile  |                 |   |                     |                |          |    |
| <b>Transport hazard class(es)</b> | <table border="1"> <tr> <td>ICAO/IATA Class</td> <td>3</td> </tr> <tr> <td>ICAO / IATA Subrisk</td> <td>Not Applicable</td> </tr> <tr> <td>ERG Code</td> <td>3L</td> </tr> </table> | ICAO/IATA Class | 3 | ICAO / IATA Subrisk | Not Applicable | ERG Code | 3L |
| ICAO/IATA Class                   | 3   |                 |   |                     |                |          |    |
| ICAO / IATA Subrisk               | Not Applicable  |                 |   |                     |                |          |    |
| ERG Code                          | 3L  |                 |   |                     |                |          |    |
| <b>Packing group</b>              | II  |                 |   |                     |                |          |    |
| <b>Environmental hazard</b>       | Not Applicable  |                 |   |                     |                |          |    |



## 6-Acetylmorphine-D6

|                                     |   |                |
|-------------------------------------|---|----------------|
| <b>Special precautions for user</b> | Special provisions  | Not Applicable |
|                                     | Cargo Only Packing Instructions                           | 364            |
|                                     | Cargo Only Maximum Qty / Pack                             | 60 L           |
|                                     | Passenger and Cargo Packing Instructions                  | 353            |
|                                     | Passenger and Cargo Maximum Qty / Pack                    | 5 L            |
|                                     | Passenger and Cargo Limited Quantity Packing Instructions | Y341           |
|                                     | Passenger and Cargo Limited Maximum Qty / Pack            | 1 L            |

**Sea transport (IMDG-Code / GGVSee)**

|                                     |                    |                |
|-------------------------------------|--------------------|----------------|
| <b>UN number</b>                    | 1648               |                |
| <b>UN proper shipping name</b>      | ACETONITRILE       |                |
| <b>Transport hazard class(es)</b>   | IMDG Class         | 3              |
|                                     | IMDG Subrisk       | Not Applicable |
| <b>Packing group</b>                | II                 |                |
| <b>Environmental hazard</b>         | Not Applicable     |                |
| <b>Special precautions for user</b> | EMS Number         | F-E , S-D      |
|                                     | Special provisions | Not Applicable |
|                                     | Limited Quantities | 1 L            |

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

Not Applicable

**SECTION 15 REGULATORY INFORMATION****Safety, health and environmental regulations / legislation specific for the substance or mixture****ACETONITRILE(75-05-8) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

Australia Exposure Standards

Australia Inventory of Chemical Substances (AICS)

Australia Hazardous Substances Information System - Consolidated Lists

**6-ACETYLMORPHINE-D6(152477-90-2\*) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

Not Applicable

| National Inventory            | Status   |
|-------------------------------|--|
| Australia - AICS              | N (6-Acetylmorphine-D6)  |
| Canada - DSL                  | N (6-Acetylmorphine-D6)  |
| Canada - NDSL                 | N (acetonitrile; 6-Acetylmorphine-D6)  |
| China - IECSC                 | N (6-Acetylmorphine-D6)  |
| Europe - EINEC / ELINCS / NLP | N (6-Acetylmorphine-D6)  |
| Japan - ENCS                  | N (6-Acetylmorphine-D6)  |
| Korea - KECI                  | N (6-Acetylmorphine-D6)  |
| New Zealand - NZIoC           | N (6-Acetylmorphine-D6)  |
| Philippines - PICCS           | N (6-Acetylmorphine-D6)  |
| USA - TSCA                    | N (6-Acetylmorphine-D6)  |
| <b>Legend:</b>                | Y = All ingredients are on the inventory<br>N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets) |

**SECTION 16 OTHER INFORMATION****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

Continued...

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

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