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

#### Product Identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>Forbo Monel Floorcare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Name</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Synonyms</td>
<td>818 Forbo Monel</td>
</tr>
<tr>
<td>Chemical formula</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other means of identification</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

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

| Relevant identified uses | Floor maintenance product. Use according to manufacturer's directions. |

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

<table>
<thead>
<tr>
<th>Registered company name</th>
<th>Forbo Flooring Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>23 Ormsby Place Wetherill Park NSW 2164 Australia</td>
</tr>
<tr>
<td>Telephone</td>
<td>+61 2 9828 0200</td>
</tr>
<tr>
<td>Fax</td>
<td>+61 2 9725 3456</td>
</tr>
<tr>
<td>Website</td>
<td><a href="http://www.forbo-flooring.com.au">www.forbo-flooring.com.au</a></td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:Technical.au@forbo.com">Technical.au@forbo.com</a></td>
</tr>
</tbody>
</table>

#### Emergency telephone number

<table>
<thead>
<tr>
<th>Association / Organisation</th>
<th>National Poison Information Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency telephone numbers</td>
<td>13 11 26</td>
</tr>
<tr>
<td>Other emergency telephone numbers</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

### SECTION 2 Hazards identification

#### Classification of the substance or mixture

| Poisons Schedule | Not Applicable |
| Classification [1] | Sensitisation (Skin) Category 1, Serious Eye Damage/Eye Irritation Category 2 A, Hazardous to the Aquatic Environment Acute Hazard Category 2 |

#### Legend:


#### Label elements

<table>
<thead>
<tr>
<th>Hazard pictogram(s)</th>
<th>!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal word</td>
<td>Warning</td>
</tr>
</tbody>
</table>

#### Hazard statement(s)

- **H317** May cause an allergic skin reaction.
- **H319** Causes serious eye irritation.
- **H401** Toxic to aquatic life.

#### Precautionary statement(s) Prevention

- **P280** Wear protective gloves, protective clothing, eye protection and face protection.
- **P261** Avoid breathing mist/vapours/spray.
- **P273** Avoid release to the environment.
- **P264** Wash all exposed external body areas thoroughly after handling.
- **P272** Contaminated work clothing should not be allowed out of the workplace.
Precautionary statement(s) Response

P302+P352 IF ON SKIN: Wash with plenty of water.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.

Precautionary statement(s) Storage
Not Applicable

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

<table>
<thead>
<tr>
<th>CAS No</th>
<th>%[weight]</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>169107-21-5</td>
<td>1:5</td>
<td>alcohols C9-11-branched ethoxylated</td>
</tr>
<tr>
<td>Not Available</td>
<td>balance</td>
<td>Ingredients determined not to be hazardous</td>
</tr>
</tbody>
</table>

Legend:

SECTION 4 First aid measures

Description of first aid measures

**Eye Contact**
If this product comes in contact with the eyes:
- Wash out immediately with fresh running water.
- 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.
- Seek medical attention without delay; if pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

**Skin Contact**
If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

**Inhalation**
If fumes, aerosols or combustion products are inhaled remove from contaminated area.
- Other measures are usually unnecessary.

**Ingestion**
Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

SECTION 5 Firefighting measures

Extinguishing media
- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

Special hazards arising from the substrate or mixture

**Fire Incompatibility**
- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

Advice for firefighters

**Fire Fighting**
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves in the event of a fire.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use fire fighting procedures suitable for surrounding area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

**Fire/Explosion Hazard**
- carbon dioxide (CO2)
- Other pyrolysis products typical of burning organic material.
- May emit poisonous fumes.
- May emit corrosive fumes.
- Decomposes on heating and produces toxic fumes of:

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 | Slippery when spilt. Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. Control personal contact with the substance by using protective equipment. Contain and absorb spill with sand, earth, inert material or vermiculite. Wipe up. Place in a suitable, labelled container for waste disposal. |
| Major Spills | Slippery when spilt. Moderate hazard. Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water course. Stop leak if safe to do so. Contain spill with sand, earth or vermiculite. Collect recoverable product into labelled containers for recycling. Neutralise/decontaminate residue (see Section 13 for specific agent). Collect solid residues and seal in labelled drums for disposal. Wash area and prevent runoff into drains. After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using. |

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

SECTION 7 Handling and storage

Precautions for safe handling

| Safe handling | ✦ DO NOT allow clothing wet with material to stay in contact with skin ✦ Avoid all personal contact, including inhalation. ✦ Wear protective clothing when risk of exposure occurs. ✦ Use in a well-ventilated area. ✦ Avoid contact with moisture. ✦ Avoid contact with incompatible materials. ✦ When handling, DO NOT eat, drink or smoke. ✦ Keep containers securely sealed when not in use. ✦ Avoid physical damage to containers. ✦ Always wash hands with soap and water after handling. ✦ Work clothes should be laundered separately. Launder contaminated clothing before re-use. ✦ Use good occupational work practice. ✦ Observe manufacturer’s storage and handling recommendations contained within this SDS. ✦ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained. |
| Other information | ✦ Store in original containers. ✦ Keep containers securely sealed. ✦ No smoking, naked lights or ignition sources. ✦ Store in a cool, dry, well-ventilated area. ✦ Store away from incompatible materials and foodstuff containers. ✦ Protect containers against physical damage and check regularly for leaks. ✦ Observe manufacturer’s storage and handling recommendations contained within this SDS. |

Conditions for safe storage, including any incompatibilities

| Suitable container | Polyethylene or polypropylene container. ✦ Packing as recommended by manufacturer. ✦ Check all containers are clearly labelled and free from leaks. |
| Storage incompatibility | ✦ Avoid reaction with oxidising agents |

SECTION 8 Exposure controls / personal protection

Control parameters

| OCCUPATIONAL EXPOSURE LIMITS (OEL) | INGREDIENT DATA |
| Not Available |

| EMERGENCY LIMITS |
| Ingredient | TEEL-1 | TEEL-2 | TEEL-3 |
| Forbo Monel Floorcare | Not Available | Not Available | Not Available |

| INGREDIENT | ORIGINAL IDLH | REVISED IDLH |
| alcohol C9-11-branched | Not Available | Not Available |

Continued...
### Occupational Exposure Banding

**Ingredient** | **Original IDLH** | **Revised IDLH**
--- | --- | ---
ethoxylated & alcohols C9-11-branched ethoxylated &

**Occupational Exposure Band Rating** | **Occupational Exposure Limit**
--- | ---
E | ≤ 0.1 ppm

**Notes:** Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical’s potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.

### MATERIAL DATA

**Exposure controls**

- Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
- The basic types of engineering controls are:
  - Process controls which involve changing the way a job activity or process is done to reduce the risk.
  - Enclosure and/or isolation of emission source which keeps a selected hazard “physically” away from the worker and ventilation that strategically “adds” and “removes” air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.
  - Employers may need to use multiple types of controls to prevent employee overexposure.
  - General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. 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.

<table>
<thead>
<tr>
<th>Type of Contaminant</th>
<th>Air Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>solvent, vapours, degreasing etc., evaporating from tank (in still air)</td>
<td>0.25-0.5 m/s (50-100 f/min)</td>
</tr>
<tr>
<td>aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)</td>
<td>0.5-1 m/s (100-200 f/min.)</td>
</tr>
<tr>
<td>direct spray, spray painting in shallow booths, drum filling, conveyor loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)</td>
<td>1-2.5 m/s (200-500 f/min.)</td>
</tr>
<tr>
<td>grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion)</td>
<td>2.5-10 m/s (500-2000 f/min.)</td>
</tr>
</tbody>
</table>

**Appropriate engineering controls**

- 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.

### Individual protection measures, such as personal protective equipment

- Safety glasses with side shields.
- Chemical goggles.
- 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 adorption 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]

### Eye and face protection

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber

**NOTE:**
- The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
- Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.

### Skin protection

See Hand protection below

### Hands/feet protection

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber

**NOTE:**
- 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.
- Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended. Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:
**SECTION 9 Physical and chemical properties**

<table>
<thead>
<tr>
<th>Information on basic physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
</tr>
<tr>
<td><strong>Physical state</strong></td>
</tr>
<tr>
<td><strong>Odour</strong></td>
</tr>
<tr>
<td><strong>Odour threshold</strong></td>
</tr>
<tr>
<td><strong>pH (as supplied)</strong></td>
</tr>
<tr>
<td><strong>Melting point / freezing point (°C)</strong></td>
</tr>
<tr>
<td><strong>Initial boiling point and boiling range (°C)</strong></td>
</tr>
<tr>
<td><strong>Flash point (°C)</strong></td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
</tr>
<tr>
<td><strong>Relative density (Water = 1)</strong></td>
</tr>
<tr>
<td><strong>Partition coefficient n-octanol / water</strong></td>
</tr>
<tr>
<td><strong>Auto-ignition temperature (°C)</strong></td>
</tr>
<tr>
<td><strong>Decomposition temperature (°C)</strong></td>
</tr>
<tr>
<td><strong>Viscosity (cSt)</strong></td>
</tr>
<tr>
<td><strong>Molecular weight (g/mol)</strong></td>
</tr>
<tr>
<td><strong>Explosive properties</strong></td>
</tr>
</tbody>
</table>
### SECTION 10 Stability and reactivity

**Reactivity**
- See section 7

**Chemical stability**
- Unstable in the presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

**Possibility of hazardous reactions**
- See section 7

**Conditions to avoid**
- See section 7

**Incompatible materials**
- See section 7

**Hazardous decomposition**
- See section 5

### SECTION 11 Toxicological information

#### Information on toxicological effects

**Inhaled**
- The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

**Ingestion**
- The material has **NOT** been classified by EC Directives or other classification systems as “harmful by ingestion”. This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g. liver, kidneys) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

**Skin Contact**
- Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.

**Eye**
- The material may produce mild skin irritation; limited evidence or practical experience suggests, that the material either:
  - produces mild inflammation of the skin in a substantial number of individuals following direct contact, and/or
  - produces significant, but mild, inflammation when applied to the healthy intact skin of animals (for up to four hours), such inflammation being present twenty-four hours or more after the end of the exposure period.

Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (non allergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.

Open cuts, abraded or irritated skin should not be exposed to this material.

Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

**Chronic**
- Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals.

Substances that can cause occupational asthma (also known as asthmagens and respiratory sensitisers) can induce a state of specific airway hyper-responsiveness via an immunological, irritant or other mechanism. Once the airways have become hyper-responsive, further exposure to the substance, sometimes even to tiny quantities, may cause respiratory symptoms. These symptoms can range in severity from a runny nose to asthma. Not all workers who are exposed to a sensitiser will become hyper-responsive and it is impossible to identify in advance who are likely to become hyper-responsive.

Substances than can cause occupational asthma should be distinguished from substances which may trigger the symptoms of asthma in people with pre-existing air-way hyper-responsiveness. The latter substances are not classified as asthmagens or respiratory sensitisers.

Wherever it is reasonably practicable, exposure to substances that can cause occupational asthma should be prevented. Where this is not possible the primary aim is to apply adequate standards of control to prevent workers from becoming hyper-responsive.

Activities giving rise to short-term peak concentrations should receive particular attention when risk management is being considered. Health surveillance is appropriate for all employees exposed or liable to be exposed to a substance which may cause occupational asthma and there should be appropriate consultation with an occupational health professional over the degree of risk and level of surveillance.

Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

---

**Forbo Monel Floorcare**

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

**alcohols C9-11-branched ethoxylated**

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral (Rat) LD50: 1378 mg/kg[^2]</td>
<td>Skin: SEVERE * [SHELL CCINFO 1441905]</td>
</tr>
</tbody>
</table>

---

[^2]: The values are based on experimental data. Further research may be required to confirm these findings.

*Continued...*
Data for alcohols C9-11 ethoxylated

The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergy can only be determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic reaction in more than 1% of the persons tested. Polyethyleneglycols (PEGs), for example, ethoxylated surfactants and polyethylene glycol ethers as the other ethylene oxides can stabilize intermediary radicals involved. Investigations of a chemically well-defined alcohol (pentaethylene glycol mono-n-dodecyl ether) showed that polyethers form complex mixtures of oxidation products when exposed to air. Sensitization studies in guinea pigs revealed that the pure nonoxidized surfactant itself is nonsensitizing but that many of the investigated oxidation products are sensitizers. Two hydroperoxides were identified (16-hydroxyperoxy-3,6,9,12,15-pentaoxaheptacosan-1-ol) was stable enough to be isolated. It was found to be a strong sensitizer in LLNA (local lymph node assay for detection of sensitization capacity). The formation of other hydroperoxides was indicated by the detection of their corresponding aldehydes in the oxidation mixture. On the basis of the lower irritancy, nonionic surfactants are often preferred to ionic surfactants in topical products. However, their susceptibility towards autoxidation also increases the irritation. Because of their irritating effect, it is difficult to diagnose ACD to these compounds by patch testing. (Ann-Theresje Karlberg et al; Chem. Res. Toxicol.2008,21,53-69

Polyethylene glycols (PEGs) have a wide variety of PEG-derived mixtures due to their readily linkable terminal primary hydroxyl groups in combination with many possible compounds and complexes such as ethers, fatty acids, castor oils, amines, propylene glycols, among other derivatives. PEGs and their derivatives are broadly utilized in cosmetic products as surfactants, emulsifiers, cleansing agents, humectants, and skin conditioners. PEGs and PEG derivatives were generally regulated as safe for use in cosmetics, with the conditions that impurities and by-products, such as ethylene oxides and 1,4-dioxane, which are known carcinogenic materials, should be removed before they are mixed in cosmetic formulations. Most PEGs are commercially available as mixtures of different ethylene oxide (EO) units. The low molecular weight (MW) ranges. For instance, PEG-10,000 typically designates a mixture of PEG molecules (n = 195 to 265) having an average MW of 10,000. PEG is also known as polyethylene oxide (POE) or polyoxyethylene (POE), with the three names being chemical synonyms. However, PEGs mainly refer to oligomers and polymers with molecular masses below 20,000 g/mol, while PEOs are polymers with molecular masses above 20,000 g/mol, and POEs are polyols and polyglycols of any molecular mass. Relatively small molecular weight PEGs are produced by the chemical reaction between ethylene oxide and water or ethylene glycol (or other ethylene glycol oligomers), as catalyzed by acidic or basic catalysts. To produce PEO or high-molecular-weight PEGs, synthesis is performed by suspension polymerization. It is necessary to hold the growing polymer chain in solution during the course of the poly-condensation process. The reaction is catalyzed by magnesium-, aluminum-, or calcium-organoelement compounds. To prevent coagulation of polymer chains in the solution, chelating additives such as dimethylglyoxime are used. Safety Evaluation of Polyethylene Glycol (PEG) Compounds for Cosmetic Use: Toxicol Res 2015; 31:105-136 The Korean Society of Toxicology http://doi.org/10.5487/TR.2015.31.2.105

Human beings have regular contact with alcohol ethoxylates through a variety of industrial and consumer products such as soaps, detergents, and other cleaning products. Exposure to these chemicals can occur through ingestion, inhalation, or contact with the skin or eyes. Studies of acute toxicity show that volumes well above a reasonable intake level would have to occur to produce any toxic response. Moreover, no fatal case of poisoning with alcohol ethoxylates has ever been reported. Multiple studies investigating the acute toxicity of alcohol ethoxylates have shown that the use of these compounds is of low concern in terms of oral and dermal toxicity. Clinical animal studies indicate these chemicals may produce gastrointestinal irritation such as ulcerations of the stomach, pilo-erection, diarrhea, and lethargy. Similarly, slight to severe irritation of the skin or eye was generated when undiluted alcohol ethoxylates were applied to the skin and eyes of rabbits and rats. The chemical shows no indication of being a genotoxic, carcinogen, or mutagen (HERA 2007). No information was available on levels at which human toxicity is thought to occur, though toxicity is thought to occur at concentrations of 10% of nonylphenol ethoxylates. Polyethyleneglycols (PEGs), for example, ethoxylated surfactants and polyethylene glycol ethers, are highly susceptible towards air oxidation as the ether oxgens will stabilize intermediary radicals involved. Investigations of a chemically well-defined alcohol (pentaethylene glycol mono-n-dodecyl ether) showed that polyethers form complex mixtures of oxidation products when exposed to air. Sensitization studies in guinea pigs revealed that the pure nonoxidized surfactant itself is nonsensitizing but that many of the investigated oxidation products are sensitizers. Two hydroperoxides were identified in the oxidation mixture, but only one (16-hydroxyperoxy-3,6,9,12,15-pentaoxaheptacosan-1-ol) was stable enough to be isolated. It was found to be a strong sensitizer in LLNA (local lymph node assay for detection of sensitization capacity). The formation of other hydroperoxides was indicated by the detection of their corresponding aldehydes in the oxidation mixture. On the basis of the lower irritancy, nonionic surfactants are often preferred to ionic surfactants in topical products. However, their susceptibility towards autoxidation also increases the irritation. Because of their irritating effect, it is difficult to diagnose ACD to these compounds by patch testing. Altogether, alcohols C9-11 branched ethoxylated (Forbo Monel Floorcare)
values after oral administration to rats range from about 1-15 g/kg body weight indicating a low to moderate acute toxicity.

The ability of nonionic surfactants to cause a swelling of the stratum corneum of guinea pig skin has been studied. The swelling mechanism of the skin involves a combination of ionic binding of the hydrophilic glycol ether to the skin substrate. One of the mechanisms of skin irritation caused by surfactants is considered to be denaturation of the proteins of skin. It has also been established that there is a connection between the potential of surfactants to denature protein in vitro and their effect on the skin. Nonionic surfactants do not carry any net charge and, therefore, they can only form hydrophobic bonds with proteins. For this reason, proteins are not deactivated by nonionic surfactants, and proteins with poor solubility in water have a substantial amount of toxicological data and information in vivo and in vitro demonstrates that there is no evidence for alcohol ethoxylates (AEs) being genotoxic, mutagenic or carcinogenic. No adverse reproductive or developmental effects were observed. The majority of available toxicity studies revealed NOAELs in excess of 100 mg/kg bw/d but the lowest NOAEL for an individual AE was established to be 50 mg/kg bw/day. This value was subsequently considered to be a conservative, representative value in the calculation of chronic NOAEL for organ weights with no histopathological organ changes with the exception of liver hypertrophy (indicative of an adaptive response to metabolism rather than a toxic effect). It is noteworthy that there was practically no difference in the NOAEL in oral studies of 90-day or 2 years of duration in rats. A comparison of the aggregate consumer exposure and the systemic NOAEL (taking into account an oral absorption value of 75%) results in a Margin of Exposure of 5,800. Taking into account the conservatism in the exposure assessment and the assigned systemic NOAEL, this margin of exposure is considered more than adequate to account for the inherent uncertainty and variability of the hazard database and inter and intra-species extrapolations.

AEs are not contact sensitizers. Neat AE are irritating to eyes and skin. The irritation potential of aqueous solutions of AEs depends on concentrations. Local dermal effects due to direct or indirect skin contact in certain use scenarios where the products are diluted are not of concern as AEs are not expected to be irritating to the skin in in-use concentrations. Potential irritation of the respiratory tract is not a concern given the very low levels of airborne AE generated as a consequence of spray cleaner aerosols or laundry powder detergent dust.

In summary, the human health assessment has demonstrated that the use of AE in household laundry and cleaning detergents is safe and does not cause concern with regard to consumer use. For high boiling ethylene glycol ethers (typically triethylene- and tetraethylene glycol ethers) in skin absorption: Available skin absorption data for triethylene glycol ether (TGBE), triethylene glycol methyl ether (TGME), and triethylene glycol ethyl ether (TGE) suggest that the rate of absorption in skin of these three glycol ethers is 22 to 34 micrograms/cm²/hr, with the methyl ether having the highest permeation constant and the butyl ether having the lowest. The rates of absorption of TGBE, TGE and TGME are at least 100-fold lower than for diethylene glycol monomethyl ether (EGME). EGEE, and EGBE, their ethylene absorption rates that range from 214 to 2890 micrograms/cm²/hr. Therefore, an increase in either the chain length of the alkyl substituent or the number of ethylene glycol moieties appears to lead to a decreased rate of percutaneous absorption. However, since the ratio of the change in values of the ethylene glycol to the diethylene glycol is series is larger than than of the diethylene glycol to triethylene glycol series, the effect of the length of the chain number of ethylene glycol moieties on absorption diminishes with an increased number of ethylene glycol moieties. Therefore, although triethylene glycol methyl ether; (TetaME) and tetraethylene glycol butyl ether (TetraBE) are expected to be less permeable to skin than TGME and TGBE, the differences in permeation between these molecules may only be slight.

Metabolism: The main metabolic pathway for metabolism of ethylene glycol monomethyl ethers (EGME, EGEE, and EGBE) is oxidation via alcohol and aldehyde dehydrogenases (ALD/ADH) that leads to the formation of an alkyl alcohol. Alkyl alcohols are the only toxicologically significant metabolites of glycol ethers that have been detected in vivo. The principal metabolite of TGME is believed to be 2-[2-(methyl ether)-ethoxy]ethanol (OMC), an alkoxy acid. Although ethylene glycol, a known kidney toxicant, has been identified as an impurity in a minor metabolite of glycol ethers in animal studies it does not appear to contribute to the toxicity of glycol ethers. The metabolites of category members are not likely to be metabolized to any large extent to toxic molecules such as ethylene glycol or the mono alkyl alcohols because metabolic breakdown of the ether linkages also has to occur.

Acute toxicity: Category members generally display low acute toxicity by the oral, inhalation and dermal routes of exposure. Signs of toxicity in the blood of rats receiving lethal oral doses of TGBE included loss of righting reflex and flaccid muscle tone, coma, and heavy breathing. Animals administered lethal oral doses of TGBE exhibited lethargy, ataxia, blood in the urogenital area and piloerection before death.

Irritation: The data indicate that the glycol ethers may cause mild to moderate skin irritation. TGBE and TGEE are highly irritating to the eyes. Other category members show low eye irritation.

Repeat dose toxicity: Results of these studies suggest that repeated exposure to moderate to high doses of the glycol ethers in this category is required to produce systemic toxicity.

In a 21-day dermal study, TGME, TGBE, and TGEE were administered to rabbits at 1,000 mg/kg/day. Erythema and oedema were observed. In addition, testicular degeneration (scored as trace in severity) was observed in the rabbit group TGEE and one rabbit given TGBE. Testicular effects included increased cytoplasmic vacuolisation. Due to a high incidence of similar spontaneous changes in normal New Zealand White rabbits, the testicular effects were considered not to be related to treatment. Thus, the NOAELs for TGME, TGBE and TGEE were established at 1000 mg/kg/day. Findings from this report were considered unremarkable. A 2-week dermal study was conducted in rats administered TGME at doses of 1,000, 2,500, and 4,000 mg/kg/day. This study, significantly increased red blood cells at 4,000 mg/kg/day and significantly increased area concentrations in the urine at 2,500 mg/kg/day were observed. A few of the rats given 2,500 or 4,000 mg/kg/day had watery caecal contents and/or haemorrhased blood in the stomach. These gross pathologic observations were not associated with any histologic abnormalities in these tissues or alterations in haematologic and clinical chemistry parameters. A few males and females treated with either 1,000 or 2,500 mg/kg/day had a few small scabs or crusts at the test site. These alterations were slight in degree and did not adversely affect the rats.

In a 13-week drinking water study, TGME was administered to rats at doses of 400, 1,200, and 4,000 mg/kg/day. Statistically significant changes in relative liver weight were observed at 1,200 mg/kg/day and higher. Histopathological effects included hepatic cellular cytoplasmic vacuolisation (minimal to mild in most animals) and hypertrophy (minimal to mild) in males at all doses and hepatocellular hypertrophy (minimal to mild) in high dose females. These effects were statistically significant at 4,000 mg/kg/day. Cholangiostasis was observed in 7/15 high-dose males; this effect was observed in a small number of bile ducts and was of mild severity. Significant, small decreases in total test session motor activity were observed in the high-dose animals, but no other neurological effects were observed. The changes in motor activity were secondary to systemic toxicity.

Mutagenicity: Mutagenicity studies have been conducted for several category members. All in vitro and in vivo studies were negative at concentrations up to 5,000 micrograms/plate and 5,000 mg/kg, respectively, indicating that the category members are not genotoxic at the concentrations used in these studies. The uniformly negative outcomes of various mutagenicity studies performed on category members lessen the concern for carcinogenicity.

Reproductive toxicity: Although mating studies with either the category members or surrogates have not been performed, several of the repeated dose toxicity tests with the surrogates have included examination of reproductive organs. A lower molecular weight glycol ether, ethylene glycol methyl ether (EGME), has been shown to be a testicular toxicant. In addition, results of repeated dose toxicity tests with TGME clearly show testicular toxicity at an oral dose of 4,000 mg/kg/day four times greater that the limit dose of 1,000 mg/kg/day recommended for repeat dose studies. It should be noted that TGME is 350 times less toxic for testicular effects than EGME. TGME is not associated with testicular toxicity, TetaME is not likely to be metabolised by any large extent to 2-MEA (the toxic metabolite of EGME), and a mixture containing predominantly methylated glycol ethers in the CS-C11 range does not produce testicular toxicity (even when administered intravenously at 1,000 mg/kg/day).

Developmental toxicity: The bulk of the evidence shows that effects on the foetus are not noted in treatments with 1,000 mg/kg/day during gestation. At 1,250 to 1,650 mg/kg/day TGME (in the rat) and 1,500 mg/kg/day (in the rabbit), the developmental effects observed included skeletal variants and decreased body weight gain.
The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) thickening of the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.

### SECTION 12 Ecological information

#### Toxicity

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Forbo Monel Floorcare</th>
<th>Test Duration (hr)</th>
<th>Species</th>
<th>Value</th>
<th>Source</th>
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<td>STOT - Single Exposure</td>
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### Persistence and degradability

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<tr>
<th>Ingredient</th>
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<th>Persistence: Air</th>
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### Bioaccumulative potential

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<th>Ingredient</th>
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</thead>
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<tr>
<td>No Data available for all ingredients</td>
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</tr>
</tbody>
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### Mobility in soil

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<thead>
<tr>
<th>Ingredient</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Data available for all ingredients</td>
<td></td>
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</tbody>
</table>

### SECTION 13 Disposal considerations

#### Waste treatment methods

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. A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

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.

- DO NOT allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible.
- 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.
- 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).
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

#### Product / Packaging disposal

- 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.
- A Hierarchy of Controls seems to be common - the user should investigate:
  - Reduction
  - Reuse
  - Recycling
  - Disposal (if all else fails)

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.

- DO NOT allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
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- Where in doubt contact the responsible authority.
- Recycle wherever possible.
- 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.
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- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

### SECTION 14 Transport information

Continued...
Labels Required

<table>
<thead>
<tr>
<th>Marine Pollutant</th>
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</thead>
<tbody>
<tr>
<td>HAZCHEM</td>
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</tr>
</tbody>
</table>

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

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

Not Applicable

Transport in bulk according to Annex V of MARPOL and the IMSBC Code

Product name | Group
---|---
alcohols C9-11-branched ethoxylated | Not Available

Transport in bulk in accordance with the IGC Code

Product name | Ship Type
---|---
alcohols C9-11-branched ethoxylated | Not Available

SECTION 15 Regulatory information

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

alcohols C9-11-branched ethoxylated is found on the following regulatory lists

Not Applicable

National Inventory Status

<table>
<thead>
<tr>
<th>National Inventory</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia - AIIC / Australia Non-Industrial Use</td>
<td>No (alcohols C9-11-branched ethoxylated)</td>
</tr>
<tr>
<td>Canada - DSL</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada - NDSL</td>
<td>No (alcohols C9-11-branched ethoxylated)</td>
</tr>
<tr>
<td>China - IECSC</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe - EINEC / ELINCS / NLP</td>
<td>No (alcohols C9-11-branched ethoxylated)</td>
</tr>
<tr>
<td>Japan - ENCS</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea - KECI</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand - NZIoC</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines - PICCS</td>
<td>No (alcohols C9-11-branched ethoxylated)</td>
</tr>
<tr>
<td>USA - TSCA</td>
<td>Yes</td>
</tr>
<tr>
<td>Taiwan - TCSI</td>
<td>Yes</td>
</tr>
<tr>
<td>Mexico - INSQ</td>
<td>No (alcohols C9-11-branched ethoxylated)</td>
</tr>
<tr>
<td>Vietnam - NCI</td>
<td>Yes</td>
</tr>
<tr>
<td>Russia - FBEPH</td>
<td>No (alcohols C9-11-branched ethoxylated)</td>
</tr>
</tbody>
</table>

Legend:

- Yes = All CAS declared ingredients are on the inventory
- No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

SECTION 16 Other information

| Revision Date | 01/06/2023 |
| Initial Date  | 21/07/2009 |

SDS Version Summary

<table>
<thead>
<tr>
<th>Version</th>
<th>Date of Update</th>
<th>Sections Updated</th>
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<tr>
<td>8.1</td>
<td>23/12/2022</td>
<td>Classification review due to GHS Revision change.</td>
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<tr>
<td>9.1</td>
<td>01/06/2023</td>
<td>Toxicological information - Acute Health (eye), Toxicological information - Acute Health (skin), Physical and chemical properties - Appearance, Toxicological information - Chronic Health, Hazards identification - Classification, Disposal considerations - Disposal, Exposure controls / personal protection - Engineering Control, Ecological Information - Environmental, Firefighting measures - Fire Fighter (fire/explosion hazard), Firefighting measures - Fire Fighter (fire incompatibility), Handling and storage - Handling Procedure, Composition / information on ingredients - Ingredients, Stability and reactivity - Instability Condition, Exposure controls / personal protection - Personal Protection (other), Exposure controls / personal protection - Personal Protection (Respirator), Exposure controls / personal protection - Personal Protection (eye), Exposure controls / personal protection - Personal Protection (hands/feet), Accidental release measures - Spills (major), Handling and storage - Storage (storage incompatibility), Handling and storage - Storage (storage requirement), Identification of the substance / mixture and of the company / undertaking - Synonyms, Identification of the substance / mixture and of the company / undertaking - Use, Name</td>
</tr>
</tbody>
</table>

Continued...
Other information

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

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

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit,
IDLH: Immediately Dangerous to Life or Health Concentrations
ES: Exposure Standard
OSF: Odour Safety Factor
NOAEL: No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
L0D: 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
PICCS: Philippine Inventory of Chemicals and Chemical Substances
TSCA: Toxic Substances Control Act
TCSI: Taiwan Chemical Substance Inventory
INSQ: Inventario Nacional de Sustancias Quimicas
NCI: National Chemical Inventory
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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