Version No: **1**

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Revision date: **Not Applicable**

*Safety Data Sheet (Conforms to Annex II of REACH (1907/2006) - Regulation 2020/878)*

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

### 1.1. Product Identifier

| | |
|---|---|
| **Product name** | BA Binding |
| **Synonyms** | Not Available |
| **Other means of identification** | Not Available |

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

| | |
|---|---|
| **Relevant identified uses** | Laboratory use. |
| **Uses advised against** | Not Applicable |

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

| | |
|---|---|
| **Registered company name** | **CleanNA** |
| **Address** | Coenecoop 75, 2741 PH, Waddinxveen, The Netherlands |
| **Telephone** | +31 (0) 182 22 33 50 |
| **Fax** | +31 (0) 182 22 33 98 |
| **Website** | www.cleanna.com |
| **Email** | info@cleanna.com |

### 1.4. Emergency telephone number

| | |
|---|---|
| **Emergency telephone numbers** | 112 (European emergency number) |

## SECTION 2. Hazards identification

### 2.1. Classification of the substance or mixture

| | |
|---|---|
| **Classification according to regulation (EC) No 1272/2008 [CLP] and amendments** | H302 - Acute Toxicity (Oral) - Category 4,<br>H315 - Skin Corrosion/Irritation - Category 2<br>H318 - Serious Eye damage/Eye irritation - Category 1<br>H411 - Hazardous to the Aquatic Environment Long-Term Hazard – Category 2 |

### 2.2. Label elements

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

### Hazard statement(s)

| | |
|---|---|
| **H302** | Harmful if swallowed. |
| **H315** | Causes skin irritation. |
| **H318** | Causes serious eye damage |
| **H411** | Toxic to aquatic life with long lasting effects |

### Supplementary statement(s)

| | |
|---|---|
| **EUH032** | Contact with acids liberates very toxic gas |

### Precautionary statement(s) Prevention

| | |
|---|---|
| **P264** | Wash all exposed external body areas thoroughly after handling. |
| **P270** | Do not eat, drink or smoke when using this product. |
| **P273** | Avoid release to the environment |
| **P280** | Wear protective gloves, protective clothing, eye protection and face protection. |

### Precautionary statement(s) Response

| | |
|---|---|
| **P305 + P351 + P338** | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| **P310** | Immediately call a POISON CENTRE / doctor / physician / first aider |
| **P391** | Collect spillage |
| **P301 + P312** | IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider if you feel unwell. |
| **P302 + P352** | IF ON SKIN: Wash with plenty of water and soap. |
| **P330** | Rinse mouth. |
| **P332 + P313** | If skin irritation occurs: Get medical advice/attention. |
| **P362 + P364** | Take off contaminated clothing and wash it before reuse. |

### Precautionary statement(s) Storage

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. |

### 2.3. Other hazards

Cumulative effects may results following exposure *.
May produce discomfort of the respiratory system *.
May possibly affect fertility *.
May possibly be harmful to the foetus / embryo *.
Repeated exposure potentially causes skin dryness and cracking *.
Vapours potentially cause drowsiness and dizziness *.

| | |
|---|---|
| **ethanol** | Listed in the Europe Regulation (EC) No 1907/2006 – Annex XVII (restrictions may apply) |
| **ethanol** | In The Netherlands ethanol (CAS 64-17-5) and mixtures including ethanol in > 0.1% need to be classified with the following hazard categories *:<br>- Carcinogenic – Category 1A (H350 – May cause cancer)<br>- Reproductive Toxicity – category 1A (H360 – may damage fertility or the unborn child)<br>* Determined by the Ministry of Social Affairs and Employment in the Working Conditions Decree and SZW list of carcinogenic substances and processes. |

## SECTION 3. Composition / information on ingredients

### 3.1 Substances

See 'Composition on ingredients' in Section 3.2

### 3.2 Mixtures

| **1. CAS No**<br>**2. EC No**<br>**3. Index No**<br>**4. REACH No** | **%[weight]** | **Name** | **Classification according to regulation (EC) No 1272/2008 [CLP] and amendments** | **SCL / M-Factor** | **Nanoform Particle Characteristics** |
|---|---|---|---|---|---|
| 1. 593-84-0<br>2. 209-812-1<br>3. 615-004-00-3<br>4. Not Available | 25 - 50 | guanidine thiocyanate | Acute Toxicity (Oral) - Category 4,<br>Acute Toxicity (Dermal) – Category 4<br>Acute Toxicity (Inhalation) – Category 4<br>Hazardous to the Aquatic Environment Long-Term Hazard – Category 3<br>H302, H312, H332, H412 [2] | Not Availabe | Not Available |
| 1. 64-17-5<br>2. 200-578-6<br>3. 603-002-00-5<br>4. Not Available | 10 - 25 | ethanol | Flammable Liquids – category 2; H225 | Not Available | Not Available |
| 1. Not Available<br>2. Not Available<br>3. Not Available<br>4. Not Available | **25 - 50** | Non-ionic detergent | Acute Toxicity (Oral) – Category 4<br>Skin Corrosion/Irritation – Category 2<br>Serious Eye Damage / Eye Irritation – Category 1<br>Hazardous to the Aquatic Environment Long-Term Hazard – Category 2<br>H302, H315, H318, H411, EUH205 | Not Available | Not Available |
| ***Legend:*** | *2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 3. Classification drawn from C&L; * EU IOELVs available; [e] Substance identified as having endocrine disrupting properties* | | | | |

## SECTION 4. First aid measures

### 4.1. Description of first aid measures

| | |
|---|---|
| **Eye Contact** | If this product comes in contact with the eyes:<br>▸ Immediately hold eyelids apart and flush the eye continuously with running water.<br>▸ 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.<br>▸ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.<br>▸ Transport to hospital or doctor without delay.<br>▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. |

| | |
|---|---|
| **Skin Contact** | If skin contact occurs:<br>▸ Immediately remove all contaminated clothing, including footwear.<br>▸ Flush skin and hair with running water (and soap of available)<br>▸ Seek medical attention in event of irritation. |
| **Inhalation** | ▸ If fumes or combustion products are inhaled remove from contaminated area.<br>▸ Lay patient down. Keep warm and rested.<br>▸ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.<br>▸ 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.<br>▸ Transport to hospital, or doctor, without delay. |
| **Ingestion** | ▸ Immediately give a glass of water<br>▸ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor |

### 4.2 Most important symptoms and effects, both acute and delayed

See Section 11

### 4.3. Indication of any immediate medical attention and special treatment needed

For acute or short term repeated exposures to ethanol:

- Acute ingestion in non-tolerant patients usually responds to supportive care with special attention to prevention of aspiration, replacement of fluid and correction of nutritional deficiencies (magnesium, thiamine pyridoxine, Vitamins C and K)..
- Give 50 % dextrose (50 – 100 mL) IV to obtunded patients following blood draw for glucose determination
- Comatose patients should be treated with initial attention to airway, breathing, circulation and drugs of immediate importance (glucose, thiamine)
- Decontamination is probably unnecessary more than 1 hour after a single observed ingestion. Cathartics and charcoal may be given but are probably not effective in single ingestions
- Fructose administration is contra-indicated due to side effects.

For thiocyanate poisonings haemodialysis is recommended as the treatment of choice. Phenobarbital protects poisoned animals against death. Thiocyanate ion is slowly excreted in the urine and is not decomposed to any appreciable degree to cyanide.
[GOSSELIN, SMITH & HODGE: Clinical Toxicology of Commercial Products 5th Edition]

## SECTION 5. Firefighting measures

### 5.1 Extinguishing media

- Foam
- Dry chemical powder
- BCF (when regulations permit)
- Carbon dioxide
- Water spray or fog – Large fires only

### 5.2 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. |

### 5.3. Advice for firefighters

| | |
|---|---|
| **Fire Fighting** | ▸ Alert Fire Brigade and tell them location and nature of hazard.<br>▸ Wear full body protective clothing with breathing apparatus.<br>▸ Prevent, by any means available, spillage from entering drains or water course.<br>▸ Use water delivered as a fine spray to control fire and cool adjacent area.<br>▸ Avoid spraying water onto liquid pools.<br>▸ **DO NOT** approach containers suspected to be hot.<br>▸ Cool fire exposed containers with water spray from a protected location.<br>▸ If safe to do so, remove containers from path of fire. |
| **Fire/Explosion Hazard** | **WARNING**: In use may form flammable/ explosive vapour-air mixtures<br>▸ Combustible.<br>▸ Slight fire hazard when exposed to heat or flame.<br>▸ Heating may cause expansion or decomposition leading to violent rupture of containers.<br>▸ On combustion, may emit toxic fumes of carbon monoxide (CO).<br>▸ May emit acrid smoke.<br>▸ Mists containing combustible materials may be explosive.<br>Combustion products include:<br>carbon dioxide (CO2)<br>hydrogen chloride<br>phosgene<br>nitrogen oxides (NOx)<br>sulfur oxides (SOx)<br>other pyrolysis products typical of burning organic material.<br>May emit poisonous fumes.<br>May emit corrosive fumes. |

## SECTION 6. Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

See section 8

### 6.2 Environmental precautions

See section 12

### 6.3 Methods and material for containment and cleaning up

| | |
|---|---|
| **Minor Spills** | Environmental hazard – contain spillage<br>▸ Remove all ignition sources.<br>▸ Clean up all spills immediately.<br>▸ Avoid breathing vapours and contact with skin and eyes.<br>▸ Control personal contact with the substance, by using protective equipment.<br>▸ Contain and absorb spill with sand, earth, inert material or vermiculite.<br>▸ Wipe up.<br>▸ Place in a suitable, labelled container for waste disposal. |
| **Major Spills** | ▸ Clear area of personnel and move upwind.<br>▸ Alert Fire Brigade and tell them location and nature of hazard.<br>▸ Wear full body protective clothing with breathing apparatus.<br>▸ Prevent, by any means available, spillage from entering drains or water course.<br>▸ Consider evacuation (or protect in place)<br>▸ No smoking, naked lights or ignition sources.<br>▸ Increase ventilation.<br>▸ Stop leak if safe to do so.<br>▸ Water spray or fog may be used to disperse / absorb vapour<br>▸ Contain or absorb spill with sand, earth or vermiculite.<br>▸ Collect recoverable product into labelled containers for recycling.<br>▸ Collect solid residues and seal in labelled drums for disposal.<br>▸ Wash area and prevent runoff into drains.<br>▸ After cleanup operations, decontaminate and launder all protective clothing and equipment before storing and re-using<br>▸ If contamination of drains or waterways occurs, advise emergency services.<br>Environmental hazard – contain spillage |

### 6.4. Reference to other sections

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

## SECTION 7. Handling and storage

### 7.1. Precautions for safe handling

| | |
|---|---|
| **Safe handling** | ▸ Avoid all personal contact, including inhalation.<br>▸ Wear protective clothing when risk of exposure occurs.<br>▸ Use in a well-ventilated area.<br>▸ Prevent concentration in hollows and sumps.<br>▸ **DO NOT** enter confined spaces until atmosphere has been checked.<br>▸ Avoid smoking, naked lights or ignition sources.<br>▸ Avoid contact with incompatible materials.<br>▸ When handling, **DO NOT** eat, drink or smoke.<br>▸ Keep containers securely sealed when not in use.<br>▸ Avoid physical damage to containers.<br>▸ Always wash hands with soap and water after handling.<br>▸ Work clothes should be laundered separately.<br>▸ Use good occupational work practice.<br>▸ Observe manufacturer's storage and handling recommendations contained within this SDS.<br>▸ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.<br>▸ **DO NOT** allow clothing wet with material to stay in contact with skin |
| **Fire and explosion protection** | See section 5 |
| **Other information** | ▸ Store in original containers.<br>▸ Keep containers securely sealed.<br>▸ No smoking, naked lights or ignition sources.<br>▸ Store in a cool, dry, well-ventilated area.<br>▸ Store away from incompatible materials and foodstuff containers.<br>▸ Protect containers against physical damage and check regularly for leaks.<br>▸ Observe manufacturer's storage and handling recommendations contained within this SDS. |

### 7.2. Conditions for safe storage, including any incompatibilities

| | |
|---|---|
| **Suitable container** | ▸ Metal can or drum<br>▸ Packaging as recommended by manufacturer.<br>▸ Check all containers are clearly labelled and free from leaks. |
| **Storage incompatibility** | ▸ Metal cyanides are readily oxidised and those of some heavy metals show thermal instability<br>▸ Metal cyanide and cyanates are often endothermic. Several numbers of this family of compounds contain heavy metals tend to explosive instability, and most are capable of violent oxidation under certain circumstances<br>▸ Fusion of mixtures of metal cyanides with metal chlorates, perchlorates, nitrates or nitrites cause violent explosion<br>▸ Magnesium reacts with incandescence on heating with several metal cyanides; release of cyanogen by thermal decomposition may cause vigorous reaction with magnesium<br>▸ Addition of one solid component (even in residual amounts) to another molten component is extremely dangerous<br>▸ Avoid oxidising agents, acids, acid chlorides, acid anhydrides, chloroformates<br>▸ Nitriles may polymerise in the presence of metals and some metal compounds<br>▸ Incompatible with acids; mixing nitriles with strong oxidising acids can lead to extremely violent reactions<br>▸ Nitriles are generally incompatible with other oxidising agents such as peroxides and epoxides<br>▸ Combination of bases and nitriles can produce hydrogen cyanide. Nitriles are hydrolysed exothermally in both aqueous acid and base to give carboxylic acids (or salts of carboxylic acids)<br>▸ Nitriles can react vigorously with reducing agents<br>▸ The covalent cyano group is endothermic and many organic nitriles are reactive under certain conditions; N-cyano derivatives are reactive or unstable<br>▸ The majority of endothermic compounds are thermodynamically unstable and may decompose explosively under various circumstances of initiation<br>▸ 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<br>▸ Phenols are incompatible with strong reducing substances such as hydrides, nitrides, alkali metals, and sulfides<br>▸ Avoid use of aluminium, copper and brass alloys in storage and process equipment<br>▸ Heat is generated by the acid-base reaction between phenols and bases<br>▸ Phenols are sulfonated very readily (for example, by concentrated sulfuric acid at room temperature), these reactions generate heat<br>▸ Phenols are nitrated very rapidly, even by dilute nitric acid<br>▸ Nitrated phenols often explode when heated. Many of them form metal salts that tend toward detonation by rather mild shck<br>[BRETHERICK L: handbook of Reactive Chemical Hazards] |
| **Hazard categories in accordance with Regulation (EC) No 1272/2008** | E2: Hazardous to the Aquatic Environment in Category Chronic 2 |
| **Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of** | E2 lower- / Upper-tier requirements: 200 / 500 |

### 7.3. Specific end use(s)

See section 1.2

## SECTION 8. Exposure controls / personal protection

### 8.1. Control parameters

| **Ingredient** | **DNELs**<br>**Exposure Pattern Worker** | | | **PNECs**<br>**Compartment** | |
|---|---|---|---|---|---|
| guanidine thiocyanate | Dermal | 0.31 mg/kg bw/day | (Systemic, Chronic) | 42.4 mcg/L | (Water (Fresh)) |
| | Inhalation | 1.092 mg/m$^3$ | (Systemic, Chronic) | 4.24 mcg/L | (Water – Intermittent release) |
| | Inhalation | 3.28 kg/m$^3$ | (Systemic, Acute) | 424 mcg/L | (Water (Marine)) |
| | *Dermal* | *0.155 mg/kg bw/day* | *(Systemic, Chronic) ** | 165 mcg/kg sediment dw | (Sediment (Fresh Water)) |
| | *Inhalation* | *0.27 mg/m$^3$* | *(Systemic, Chronic) ** | 16.5 mcg/kg sediment dw | (Sediment (Marine)) |
| | *Oral* | *0.155 mg/kg bw/day* | *(Systemic, Chronic) ** | 8.03 mcg/kg soil dw | (Soil) |
| | | | | 20 mg/L | (STP) |
| ethanol | Dermal | 43 mg/kg bw/day | (Systemic, Chronic) | 0.95 mg/L | (Water (Fresh)) |
| | Inhalation | 44 mg/m$^3$ | (Systemic, Chronic) | 0.79 mg/L | (Water – Intermittent release) |
| | Inhalation | 60 mg/m$^3$ | (Local, Chronic) | 2.75 mg/L | (Water (Marine) |
| | Inhalation | 1900 mg/m$^3$ | (Local, Acute) | 3.6 mg/kg sediment dw | (Sediment (Fresh Water)) |
| | *Dermal* | *206 mg/kg bw/day* | *(Systemic, Chronic) ** | 2.9 mg/kg sediment dw | (Sediment (Marine)) |
| | *Inhalation* | *114 mg/m$^3$* | *(Systemic, Chronic) ** | 0.63 mg/kg soil dw | (Soil) |
| | *Oral* | *87 mg/kg bw/day* | *(Systemic, Chronic) ** | 580 mg/L | (STP) |
| | *Inhalation* | *950 mg/m$^3$* | *(Local, Acute)* | 0.38 g/kg food | (Oral) |

* Values for General Population

**Occupational Exposure Limits (OEL)**

**INGREDIENT DATA**

| **Source** | **Ingredient** | **Material name** | **TWA** | **STEL** | **Peak** | **Notes** |
|---|---|---|---|---|---|---|
| Netherlands Occupational Exposure Limits | Ethanol | Ethanol | 260 mg/m$^3$ | 1900 mg/m$^3$ | Not Available | B2 |

**Emergency Limits**

| **Ingredient** | **TEEL-1** | **TEEL-2** | **TEEL-3** |
|---|---|---|---|
| guanidine thiocyanate | 0.98 mg/m$^3$ | 11 mg/m$^3$ | 65 mg/m$^3$ |
| ethanol | Bot Available | Not Available | 15000 * ppm |

| Ingredient | Original IDLH | Revised IDLH |
|---|---|---|
| guanidine thiocyanate | Not Available | Not Available |
| ethanol | 3,300 ppm | Not Available |

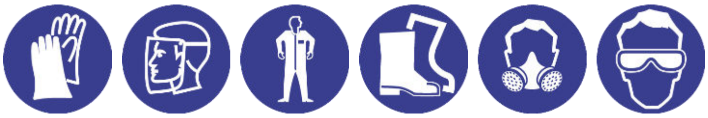
## 8.2. Exposure controls

**8.2.1 Appropriate engineering 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.

- Employees exposed to confirmed human carcinogens should be authorized to do so by the employer, and work in a regulated area.
- Work should be undertaken in an isolated system such as a "glove-box" . Employees should wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.
- Within regulated areas, the carcinogen should be stored in sealed containers, or enclosed in a closed system, including piping systems, with any sample ports or openings closed while the carcinogens are contained within.
- Open-vessel systems are prohibited.
- Each operation should be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation.
- Exhaust air should not be discharged to regulated areas, non-regulated areas or the external environment unless decontaminated. Clean make-up air should be introduced in sufficient volume to maintain correct operation of the local exhaust system.
- For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood. Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.
- Except for outdoor systems, regulated areas should be maintained under negative pressure (with respect to non-regulated areas).
- Local exhaust ventilation requires make-up air be supplied in equal volumes to replaced air.
- Laboratory hoods must be designed and maintained so as to draw air inward at an average linear face velocity of 0.76 m/sec with a minimum of 0.64 m/sec. Design and construction of the fume hood requires that insertion of any portion of the employees body, other than hands and arms, be disallowed.

**8.2.2. Personal protection**



**Eye and face protection**

- 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 adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]

**Skin protection**

See Hand protection below

**Hand / feet protection**

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

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.
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.
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:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity
Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).
· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.
· Contaminated gloves should be replaced.
As defined in ASTM F-739-96 in any application, gloves are rated as:
· Excellent when breakthrough time > 480 min
· Good when breakthrough time > 20 min
· Fair when breakthrough time < 20 min
· Poor when glove material degrades
For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended.
It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.
Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers technical data should always be taken into account to ensure selection of the most appropriate glove for the task.
Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:
· Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.
· Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential

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.

**Body protection** See Other protection below

**Other protection**

- Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area. [AS/NZS ISO 6529:2006 or national equivalent]
- Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted. [AS/NZS 1715 or national equivalent]
- Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely.
- Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood.
- Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.
- Overalls.
- P.V.C apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

**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: BA Binding

| Material | Index | |
|---|---|---|
| BUTYL | A | Best selection |
| NEOPRENE | A | Best selection |
| NITRILE | A | Best selection |
| NITRILE + PVC | A | Best selection |
| PE / EVAL / PE | A | Best selection |
| PVC | B | Satisfactory. May degrade after 4 hrs continuous immersion |
| NATURAL RUBBER | C | Poor to dangerous for other than short immersion |
| NATURAL + NEOPRENE | C | Poor to dangerous for other than short immersion |

**NOTE:** As a series of factors 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**

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

Where the concentration of gas / particulates in the breathing zone, approaches or exceeds the "Exposure Standards" (ES). Respiratory protection is required.

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

| Required Minimum Protection Factor | Half-face Respirator | Full-Face Respirator | Powered Air Respirator |
|---|---|---|---|
| Up to 5 x ES | AB-AUS / Class 1 P2 | - | AB-PAPR-AUS / Class 1 P2 |
| Up to 25 x ES | Air-line * | AB-2 P2 | AB-PAPR-2 P2 |
| Up to 50 x ES | - | AB3-P2 | - |
| 50+ x ES | - | Air-line ** | - |

*Legend* * continuous flow ** continuous flow of positive pressure demand

| | |
|---|---|
| A (All classes) | Organic vapours |
| B AUS or B1 | Acid gasses |
| B2 | Acid gas or hydrogen cyanide (HCN) |
| B3 | Acid gas or hydrogen cyanide (HCN) |
| E | Sulfur dioxide (SO2) |
| G | Agricultural chemicals |
| K | Ammonia (NH3) |
| Hg | Mercury |
| NO | Oxides of Nitrogen |
| MB | Methyl bromide |
| AX | Low boil point organic compounds (< 65 degrC) |

- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content
- Wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- Cartridge performance is affected by humidity. Cartridges should only be change dafter 2 hr of continuous use unless it is determined that the humidity is less than 76%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used.

### 8.2.3. Environmental exposure controls

See section 12

## SECTION 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | |
|---|---|
| **Appearance** | Not Available |

| | | | |
|---|---|---|---|
| **Physical state** | Liquid | **Relative density (Water = 1)** | Not Available |
| **Odour** | Not Available | **Partition coefficient n-octanol / water** | Not Available |
| **Odour threshold** | Not Available | **Auto-ignition temperature (°C)** | Not Available |
| **pH (as supplied)** | Not Available | **Decomposition temperature (°C)** | Not Available |
| **Melting point / freezing point (°C)** | Not Available | **Viscosity (cSt)** | Not Available |
| **Initial boiling point and boiling range (°C)** | Not Available | **Molecular weight (g/mol)** | Not Available |
| **Flash point (°C)** | Not Available | **Taste** | Not Available |
| **Evaporation rate** | Not Available | **Explosive properties** | Not Available |
| **Flammability** | Not Available | **Oxidising properties** | Not Available |
| **Upper Explosive Limit (%)** | Not Available | **Surface Tension (dyn/cm or mN/m)** | Not Available |
| **Lower Explosive Limit (%)** | Not Available | **Volatile Component (%vol)** | Not Available |
| **Vapour pressure (kPa)** | Not Available | **Gas group** | Not Available |
| **Solubility in water** | Immiscible | **pH as a solution (1%)** | Not Available |
| **Vapour density (Air = 1)** | Not Available | **VOC g/L** | Not Available |
| **Nanoform Solubility** | Not Available | **Nanoform Particle Characteristics** | Not Available |
| **Particle Size** | Not Available | | |

### 9.2. Other information

Not Available

## SECTION 10. Stability and reactivity

| | |
|---|---|
| **10.1.Reactivity** | See section 7.2 |
| **10.2. Chemical stability** | ‣ Unstable in the presence of incompatible materials.<br>‣ Product is considered stable.<br>‣ Hazardous polymerisation will not occur. |
| **10.3. Possibility of hazardous reactions** | See section 7.2 |
| **10.4. Conditions to avoid** | See section 7.2 |
| **10.5. Incompatible materials** | See section 7.2 |
| **10.6. Hazardous decomposition products** | See section 5.3 |

## SECTION 11. Toxicological information

### 11.1. Information on toxicological effects

<table>
<tr><td><b>Inhaled</b></td><td>The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.<br>Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.<br>Animal testing shows that the most common signs of inhalation overdose is incoordination and drowsiness.<br>Hydrogen chloride (HCl) vapour or fumes present a hazard from a single acute exposure. Exposures of 1300 to 2000 ppm have been lethal to humans in a few minutes.<br>Inhalation of HCl may cause choking, coughing, burning sensation and may cause ulceration of the nose, throat and larynx. Fluid on the lungs followed by generalised lung damage may follow.<br>Breathing of HCl vapour may aggravate asthma and inflammatory or fibrotic pulmonary disease.<br>High concentrations cause necrosis of the tracheal and bronchial epithelium, pulmonary oedema, atelectasis and emphysema and damage to the pulmonary blood vessels and liver.<br><br>Inhalation of dusts, generated by the material, during the course of normal handling, may be harmful.</td></tr>
<tr><td><b>Ingestion</b></td><td>Ingestion of ethanol (ethyl alcohol, “alcohol” ) may cause nausea, vomiting, bleeding from the digestive tract, abdominal pain, and diarrhoea.<br><br>Effect on the body:
<table>
<tr><td>Blood concentration</td><td>Risk</td><td>Possible effects</td></tr>
<tr><td>< 1.5 g/L</td><td>Mild</td><td>Impaired vision, coordination and reaction time, emotional instability</td></tr>
<tr><td>1.5 – 3.0 g/L</td><td>Moderate</td><td>Slurred speech, confusion, incoordination, emotional instability, disturbances in perception and senses, possible blackouts, and impaired objective performance in standardized tests. Possible double vision, flushing, fast heart rate, sweating and incontinence. Slow breathing may occur rarely and fast breathing may develop in cases of metabolic acidosis, low blood sugar and low potassium. Central nervous system depression may progress to coma.</td></tr>
<tr><td>3.0 -5.0 g/L</td><td>Severe</td><td>Cold clammy skin, low body temperature and low blood pressure. Atrial fibrillation and heart block have been reported. Depression of breathing may occur, respiratory failure may follow serious poisoning, choking on vomit may result in lung inflammation and swelling. Convulsions due to severe low blood sugar may also occur. Acute liver inflammation may develop.</td></tr>
</table>
The material has <b>NOT</b> 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.<br>A number of materials such as cyanamide, calcium cyanamide, cyanates, isocyanates, isonitrile, thiocyanates, ferricyanide and ferrocyanide, and cyanoacetates do not exhibit the same toxic effects as cyanides and nitriles.<br>Probable lethal dose of thiocyanate (rhodanate), in man, is between 15 and 30 gm (ingested at one time). Several acute fatalities are recorded with death coming in 10 to 48 hours.<br>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.<br><br>Non-ionic surfactants may produce localised irritation of the oral or gastrointestinal lining and induce vomiting and mild diarrhoea.</td></tr>
<tr><td><b>Skin Contact</b></td><td>The material may accentuate any pre-existing dermatitis condition<br>Non-ionic surfactants cause less irritation than other surfactants as they have less ability to denature protein in the skin.<br>Open cuts, abraded or irritated skin should not be exposed to this material<br>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.<br>Skin contact with the material may be harmful; systemic effects may result following absorption.<br>There is some evidence to suggest that the material may cause moderate inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.</td></tr>
<tr><td><b>Eye</b></td><td>If applied to the eyes, this material causes severe eye damage.<br>Direct contact of the eye with ethanol (alcohol) may cause an immediate stinging and burning sensation, with reflex closure of the lid, and a temporary, tearing injury to the cornea together with redness of the conjunctiva. Discomfort may last 2 days but usually the injury heals without treatment.<br><br>Non-ionic surfactants can cause numbing of the cornea, which masks discomfort normally caused by other agents and leads to corneal injury. Irritation varies depending on the duration of contact, the nature and concentration of the surfactant.</td></tr>
<tr><td><b>Chronic</b></td><td>Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems.<br>There is sufficient evidence to suggest that this material directly causes cancer in humans.<br>Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.<br>This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects.<br>Ample evidence exists that this material directly causes reduced fertility<br>Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.<br>Prolonged exposure to ethanol may cause damage to the liver and cause scarring. It may also worsen damage caused by other agents.<br>Exposure to alkyl phenolics is associated with reduced sperm count and fertility in males.<br>Chronic minor exposure to hydrogen chloride (HCl) vapour or fume may cause discolouration or erosion of the teeth, bleeding of the nose and gums; and ulceration of the mucous membranes of the nose. Workers exposed to hydrochloric acid suffered from stomach inflammation and a number of cases of chronic bronchitis (airway inflammation) have also been reported. Repeated or prolonged exposure to dilute solutions of hydrogen chloride may cause skin inflammation.<br>Prolonged or repeated skin contact may cause degreasing, followed by drying, cracking and skin inflammation.<br>Subacute or chronic poisonings by thiocyanate produce profuse discharge from the nostrils, skin rashes, weakness, fatigue, spinning sensation, nausea, vomiting, diarrhoea, confusion, disorientation and forgetfulness.<br><br>Guanidine hydrochloride causes decrease in bone marrow activity usually shown as gastrointestinal disturbance and "pins and needles" in the lips, face and extremities. Irritability, tremor, incoordination and seizures can occur, rarely, there is low blood pressure, skin reactions, low blood glucose and increased levels of creatinine.</td></tr>
</table>

| | TOXICITY | IRRITATION |
|---|---|---|
| **BA Binding** | Not Available | Not Available |
| **Guanidine thiocyanate** | Dermal (rabbit) LD50: > 2000 mg/kg [2] | Skin: adverse effect observed (corrosive) [1] |
| | Inhalation(Rat) LC50: > 0.853 mg/l4h [1] | |
| | Oral (Rat) LD50: 474.6 mg/kg [2] | |
| **Ethanol** | Dermal (rabbit) LD50: 17100 mg/kg [2] | Eye (rabbit): 500 mg - SEVERE |
| | Inhalation(Rat) LC50: 64000 mg/l4h [1] | Eye (rabbit): 100 mg/24hr - moderate |
| | Oral (Rat) LD50: 7060 mg/kg [2] | Eye: adverse effect observed (irritating) [1] |
| | | Skin (rabbit): 20 mg/24hr - moderate |
| | | Skin (rabbit) : 400 mg (open) - mild |
| | | Skin: no adverse effect observed (not irritating) [1] |
| ***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* | |

**BA Binding**

Octoxynols:
- Octoxynols of various chain lengths as well as octoxynol salts and organic acids function in cosmetics either as surfactants-emulsifying agents, surfactants-cleansing agents, surfactant-solubilizing agents, or surfactants-hydrotropes in a wide variety of cosmetic products at concentrations ranging from 0.0008% to 25%, with most less than 5.0%.
- The octoxynols are chemically similar to nonoxynols..
- Long-chain nonoxynols (9 and above) were considered safe as used, whereas short-chain nonoxynols (8 and below) were considered safe as used in rinse-off products and safe at concentrations less than 5% in leave-on formulations.
- Acute exposure of hamsters to Octoxynol-9 by bronchopulmonary lavage produced pneumonia, pulmonary edema, and intra-alveolar hemorrhage.
- Octoxynol-9 at doses over 1 g/kg was toxic in rats and in mice in acute oral toxicity studies.
- No significant effects were noted in short-term oral studies of Octoxynol-9 in rats, in subchronic oral studies of Octoxynol-40 in rats and dogs, or in chronic oral studies of Octoxynol-40 in rats.
- The intraperitoneal LD50 of Octoxynol-9 in rats and mice was around 100 mg/kg.
- In skin irritation studies, octoxynols ranged from nonirritating to moderately irritating.
- Octoxynols were not ocular irritants in one rabbit study, but in others there was ocular irritation.
- No immune system toxicity in CF-1 female mice was noted following the intraperitoneal injection of Octoxynol9 followed by subcutaneous immunization with sheep red blood cells (SRBCs).
- Octoxynol-9 produced no humoral and cell-mediated immune responses, or autoimmune response in mice.
- In the Ames test, Octoxynol-1 was not mutagenic with and without metabolic activation nor was Octoxynol-9 clastogenic.
- Results for Octoxynol-9 were negative in the following assays: unscheduled DNA synthesis, hypoxanthine guanine phosphoribosyl transferase mutation assay, malignant transformation assay, DNA alkaline unwinding test, and mouse lymphoma thymidine kinase locus forward mutation assay.
- Ethoxylated alkylphenols are generally considered to be estrogenic in that they mimic the effects of estradiol.
- Dermal exposure at three dose levels of rats to Octoxynol-9 failed to induce any malformations by category (external, visceral, or skeletal) or by individual anatomical location that were different from controls at statistically significant level.
- An increased incidence of a vestigial thoracic rib was observed in all dose groups.
- Octoxynol-9 also did not induce developmental toxicity (number of viable litters, live-born per litter, percentage survival, birth weight per pup, and weight gain per pup) in female specific pathogen-free CD-1 mice dosed daily by gavage on gestation days 6 through 13.
- No reproductive toxicity was seen in male albino rats which received 5% Octoxynol-40 in the diet daily for 3 months; however, in an in vitro test, Octoxynol-9 (0.24 mg/ml) totally immobilized all human spermatozoa within 20 s.
- Women who used Nonoxynol-9 or Octoxynol-9 as spermicides, but who did become pregnant, did not have an increase in the overall risk of fetal malformations.
- In a human skin irritation study, formulations containing 2.0% Octoxynol-9 were classified as moderately irritating and minimally irritating, respectively, in a 24-h single-insult, occlusive patch test.
- Octoxynol-9 (1.0%) was classified as a nonirritant in a clinical study of nine subjects patch tested for 4 consecutive days.
- The skin sensitization potential of Octoxynols-1, -3, -5, -9, and -13 was evaluated using 50 subjects.
- Octoxynol-1 induced sensitization in two subjects; all other results were negative.
- No sensitization was observed in the following studies: 8.0% Octoxynol-9 in 103 subjects, 0.5% Octoxynol-9 in 102 subjects, and 0.1% Octoxynol-9 in 206 subjects.
- Concerns about even trace levels of 1,4-dioxane, ethylene oxide, or unreacted C9 led to the recommendation that levels be limited.
- Concerns about the ocular irritancy of short-chain octoxynols led to a recommendation that they should not be used in products that will be used in the area surrounding the eyes.
- A limitation on the use concentration for short-chain octoxynols (8 and below) arose from consideration of the skin sensitization potential of octoxynols and the recognition that the short-chain octoxynols could be absorbed into the skin more than the long-chain octoxynols.
- Overall, based on the available data, it was concluded that long-chain octoxynols (9 and above) are safe as used, whereas short-chain octoxynols (8 and below) are safe as used in rinse-off products and safe at concentrations less than 5% in leave-on formulations.

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Polyethers, for example, ethoxylated surfactants and polyethylene glycols, are highly susceptible towards air oxidation as the ether oxygens will stabilize intermediary radicals involved. Investigations of a chemically well-defined alcohol (pentaethylene glycol mono-n-dodecyl ether) ethoxylate, 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-hydroperoxy-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.

Goitrogenic:
Goitrogens are substances that suppress the function of the thyroid gland by interfering with iodine uptake, which can, as a result, cause an enlargement of the thyroid (a goitre).

Goitrogens include:
- Vitexin, a flavonoid, which inhibits thyroid peroxidase, contributing to goitre
- Thiocyanate and perchlorate, which decrease iodide uptake by competitive inhibition and consequently increase release of TSH from the pituitary gland
- Lithium, which inhibits thyroid hormone release
- Certain foods, such as soy and millet (containing vitexins) and vegetables in the genus Brassica (which includes broccoli, Brussels sprouts, cabbage, cauliflower and horseradish).
- Caffeine (found in coffee, tea, cola and chocolate), which acts on thyroid function as a suppressant.

Thiocyanate is known to be an important part in the biosynthesis of hypothiocyanite by a lactoperoxidase. Thus the complete absence of thiocyanate or reduced thiocyanate in the human body, (e.g., cystic fibrosis) is damaging to the human host defense system Thiocyanate [SCN-] is a complex anion which is a potent inhibitor of iodide transport (the thyroid sodium-iodide symporter)Iodine is an essential component of thyroxine. Since thiocyanates will decrease iodide transport into the thyroid follicular cell, they will decrease the amount of thyroxine produced by the thyroid gland. As such, foodstuffs containing thiocyanate are best avoided by Iodide deficient hypothyroid patients Thiocyanate is the detoxification product of cyanide and can easily be measured in body fluids.

| | |
|---|---|
| | Consumption of naturally occurring goitrogens, certain environmental toxins and cigarette smoke can significantly increase SCN- concentrations to levels potentially capable of affecting the thyroid gland. Goiter endemics were reported to develop when the critical urinary iodine/ SCN- ratio decreases below 3 microgram iodine per mg SCN-. Iodine supplementation completely reverses the goitrogenic influence of SCN-. SCN- is also generated from cigarette smoking as a detoxifying product of cyanide. During the past two decades many reports dealt with the possible effects of cigarette smoking on thyroid hormone synthesis, thyroid gland size and thyroid autoimmunity including infiltrative ophtalmopathy of Graves' disease.<br>Thiocyanates are derived from the hydrolysis of glucosinolates — sulfur-containing compounds found in cruciferous vegetables. Brassica species such as cabbage, broccoli, cauliflower, rutabaga, mustard, Brussels sprouts, and turnip contain glucosinolates (previously called thioglucosides) which are hydrolyzed to form isothiocyanates, nitriles, and thiocyanates<br>Humans 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 swallowing, inhalation, or contact with the skin or eyes. Studies of acute toxicity show that relatively high volumes would have to occur to produce any toxic response. No death due to poisoning with alcohol ethoxylates has ever been reported. Studies show that alcohol ethoxylates have low toxicity through swallowing and skin contact.<br>Animal studies show these chemicals may produce gastrointestinal irritation, stomach ulcers, hair standing up, diarrhea and lethargy. Slight to severe irritation occurred when undiluted alcohol ethyoxylates were applied to the skin and eyes of animals. These chemicals show no indication of genetic toxicity or potential to cause mutations and cancers. Toxicity is thought to be substantially lower than that of nonylphenol ethoxylates. Some of the oxidation products of this group of substances may have sensitizing properties.<br>As they cause less irritation, nonionic surfactants are often preferred to ionic surfactants in topical products. However, their tendency to auto-oxidise also increases their irritation. Due to their irritating effect it is difficult to diagnose allergic contact dermatitis (ACD) by patch testing. Both laboratory and animal testing has shown that there is no evidence for alcohol ethoxylates (AEs) causing genetic damage, mutations or cancer. No adverse reproductive or developmental effects were observed.<br>Tri-ethylene glycol ethers undergo enzymatic oxidation to toxic alkoxy acids. They may irritate the skin and the eyes. At high oral doses, they may cause depressed reflexes, flaccid muscle tone, breathing difficulty and coma. Death may result in experimental animal. However, repeated exposure may cause dose dependent damage to the kidneys as well as reproductive and developmental defects. |
| Guanidine thiocyanate | The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The material may produce respiratory tract irritation, and result in damage to the lung including reduced lung function. |
| BA Biding & Guanidine thiocyanate | Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production. |
| **Guanidine thiocyanate & ethanol** | 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. |

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

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

### 11.2. Information on other hazards

### 1. Endocrine Disruption Properties

Not Available

### 2. Other Information

See Section 11.1

## SECTION 12. Ecological information

### 12.1 Toxicity

| | Endpoint | Test duration (hr) | Species | Value | Source |
|---|---|---|---|---|---|
| **BA Binding** | Not available | Not available | Not available | *Not available* | *Not available* |
| | **Endpoint** | **Test duration (hr)** | **Species** | **Value** | **Source** |
| **Guanidine hydrochloride** | NOEC(ECx) | 504 | Crustacea | 1.25 mg/l | 2 |
| | EC50 | 72 | Algae or other aquatic plants | 130 mg/l | 2 |
| | LC50 | 96 | Fish | ~ 89.1 mg/l | 2 |
| | EC50 | 48 | Crustacea | 42.4 mg/l | 2 |
| | **Endpoint** | **Test duration (hr)** | **Species** | **Value** | **Source** |
| **Ethanol** | EC50(ECx) | 96 | Algae or other aquatic plants | < 0.001 mg/l | 4 |
| | EC50 | 72 | Algae or other aquatic plants | 275 mg/l | 2 |
| | LC50 | 96 | Fish | 42 mg/l | 4 |
| | EC50 | 96 | Algae or other aquatic plants | < 0.001 mg/l | 4 |
| | EC50 | 48 | Crustacea | 2 mg/l | 4 |
| ***Legend:*** | *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data* | | | | |

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Do **NOT** allow product to come in contact with surface waters or to intertidal areas below the mean high water mark.
Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

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

For Ethanol:
log Kow: -0.31 to -0.32;
Koc 1: Estimated BCF= 3;
Half-life (hr) air: 144;
Half-life (hr) H2O surface water: 144;
Henry's atm m3 /mol: 6.29E-06;
BOD 5 if unstated: 0.93-1.67,63%
COD: 1.99-2.11,97%;
ThOD : 2.1.

Environmental Fate:
- Terrestrial -ethanol quickly biodegrades in soil but may leach into ground water; most is lost by evaporation.
- Ethanol is expected to have very high mobility in soil.
- Volatilization of ethanol from moist soil surfaces is expected to be an important fate process.
- The potential for volatilization of ethanol from dry soil surfaces may exist.
- Biodegradation is expected to be an important fate process for ethanol based on half-lives on the order of a few days for ethanol in sandy soil/groundwater microcosms.

Atmospheric Fate:
- Ethanol is expected to exist solely as a vapour in the ambient atmosphere.
- Vapour-phase ethanol is degraded in the atmosphere by reaction with photochemicallyproduced hydroxyl radicals; the half-life for this reaction in air is estimated to be 5 days.
- Ethanol readily degraded by reaction with photochemically produced hydroxy radicals; release into air will result in photodegradation and wet deposition.

Aquatic Fate:
- When released into water ethanol readily evaporates and is biodegradable.
- Ethanol is not expected to adsorb to suspended solids and sediment.
- Volatilization from water surfaces is expected and volatilization half-lives for a model river and model lake are 3 and 39 days, respectively.
- Bioconcentration in aquatic organisms is considered to be low.
- Hydrolysis and photolysis in sunlit surface waters is not expected to be an important environmental fate process for ethanol and is unlikely to be persistent in aquatic environments.

For Phenols:
Ecotoxicity
- Phenols with log Pow >7.4 are expected to exhibit low toxicity to aquatic organisms however; the toxicity of phenols with a lower log Pow is variable.
- Dinitrophenols are more toxic than predicted from QSAR estimates. Hazard information for these groups is not generally available.

For Surfactants:
- Kow cannot be easily determined due to hydrophilic/hydrophobic properties of the molecules in surfactants. BCF value: 1-350.

Aquatic Fate:
- Surfactants tend to accumulate at the interface of the air with water and are not extracted into one or the other liquid phases.

Terrestrial Fate:
- Anionic surfactants are not appreciably sorbed by inorganic solids.
- Cationic surfactants are strongly sorbed by solids, particularly clays.
- Significant sorption of anionic and non-ionic surfactants has been observed in activated sludge and organic river sediments.
- Surfactants have been shown to improve water infiltration into soils with moderate to severe hydrophobic or water-repellent properties.

Ecotoxicity:
- Some surfactants are known to be toxic to animals, ecosystems and humans, and can increase the diffusion of other environmental contaminants.
- The acute aquatic toxicity generally is considered to be related to the effects of the surfactant properties on the organism and not to direct chemical toxicity.
- Surfactants should be considered to be toxic to aquatic species under conditions that allow contact of the chemicals with the organisms.
- Surfactants are expected to transfer slowly from water into the flesh of fish. During this process, readily biodegradable surfactants are expected to be metabolized rapidly during the process of bioaccumulation.
- Surfactants are not to be considered to show bioaccumulation potential if they are readily biodegradable.

For Thiocyanates:
Terrestrial Fate:
- Soil - At near ambient temperatures (approximately 30 C.) it appears that sorption and volatilization are not significant processes for thiocyanate in soil, with thiocyanate losses due primarily to microbial degradation.
- Thiocyanate is not persistent in soils.
- Thiocyanate may undergo both aerobic and anaerobic microbial degradation; however, the degradation pathway has not been defined.
- Saturated soils treated with thiocyanate were found to emit carbonyl sulfide (COS).
- Microbial degradation is the primary mechanism for thiocyanate disappearance at or below 30 C., with carbonyl sulfide as a possible hydrolysis product.
- Loss of thiocyanate at higher temperatures (50-60 C.) did not appear to result from microbial degradation.

Aquatic Fate:
- Biodegradation is a significant transformation process for thiocyanates in natural waters.
- Thiocyanate is toxic to microorganisms at high concentrations; however, acclimated cultures have increased tolerance to this compound.
- At concentrations up to 1.42 g/L., thiocyanate is completely degraded within 4 days to ammonia and sulfate ion (SO4-2) by an acclimatized co-culture of two bacteria (Acinetobacter johnsonii and Pseudomonas diminuta).

For Alkylphenols and their Ethoxylates, or Propoxylates (APE):
Environmental fate:
- Alkylphenols are found everywhere in the environmental, when released.
- Releases are generally as wastes; they are extensively used throughout industry and in the home.
- Alkylphenol ethoxylates are widely used surfactants in domestic and industrial products, which are commonly found in wastewater discharges and in sewage treatment plant effluents. These substances can load considerably in various environmental compartments.

Atmospheric Fate:
- Alkylphenols released to the atmosphere will exist in the vapor phase and are thought to be degraded by reaction with hydroxyl radicals, with a calculated half-life, for nonylphenol, of 0.3 days. However, emissions to the air will be limited.

Terrestrial Fate:
- These substances will adsorb to organic soil substances.
- Adsorption decreases as certain chains in the chemical get longer and increases if water is present.

Aquatic Fate:
- These substances will partition to the sediment if they are released to water.
- These substances are expected to undergo primary breakdown in oxygenated river water at a relatively fast rate.
- Nonylphenols are susceptible to breakdown by sunlight in water.
- Light breakdown of with ethoxylated nonylphenol in water is much slower and is not expected to be an important fate process.
- The non-biological breakdown of these substances is negligible and biological breakdown of these substances does not readily take place.
- The half-life in surface water may be around 30 days.

Ecotoxicology:
- There is concern that APE metabolites, (NP, OP, NPE1-3), can mimic natural hormones and that the levels of the substances present in the environment may be sufficient to disrupt endocrine function in wildlife and humans.
- Organisms in different levels of the food chain may experience different responses to the natural hormone mimics found in these substances.
- These substances are not expected to be toxic to Daphnia magna water fleas; however, negative impacts on male fathead minnow reproduction have been noted.
- These substances may have a profound negative affect on reproduction in adult fishes.
- Alkylphenols are not readily biodegradable.
- The full breakdown pathway for APES has not yet been determined.

Biodegradation of APEs produces less biodegradable products: alkylphenol mono- and di-ethoxylates, alkylphenoxy acetic/alkylphenoxypolyethoxy acetic acids, and alkylphenols. These metabolites frequently persist through sewage treatment and in rivers. Alkylphenols will accumulate in low oxygen conditions. Metabolites of APES accumulate in organisms and are more toxic than the original compound. Estrogen mimicking effects have been seen in rainbow trout, mice, and chicken embryos. The insecticide chlordecone, (Kepone), shows similar behavior to alkylphenols, accumulating in liver and fat tissue, and eliciting estrogen mimicking activity. Green algae are the most sensitive species

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

### 12.2. Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|---|---|---|
| ethanol | LOW (half-Life = 2.17 days) | LOW (Half-Life = 5.08 days) |

### 12.3. Bio accumulative potential

| Ingredient | Bioaccumulation |
|---|---|
| ethanol | LOW (LogKOW - =0.31) |

### 12.4. Mobility in soil

| Ingredient | Mobility |
|---|---|
| ethanol | HIGH (KOC = 1) |

### 12.5. Results of PBT and vPvB assessment

| | P | B | T |
|---|---|---|---|
| Relevant available data | Not Available | Not Available | Not Available |
| PBT | ✗ | ✗ | ✗ |
| vPvB | ✗ | ✗ | ✗ |

| | |
|---|---|
| PBT Criteria fulfilled? | No |
| vPvB | No |

### 12.6. Endocrine Disruption Properties

Not Available

### 12.7. Other adverse effects

Not Available

## SECTION 13. Disposal considerations

### 13.1. Waste treatment methods

| | |
|---|---|
| **Product / Packaging disposal** | - Containers may still present a chemical hazard/ danger when empty.<br>- Return to supplier for reuse/ recycling if possible.<br>Otherwise:<br>- If container cannot 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 authorized landfill.<br>- Where possible retain label warnings and SDS and observe all notices pertaining to the product.<br>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.<br>A Hierarchy of Controls seems to be common - the user should investigate:<br>- Reduction<br>- Reuse<br>- Recycling<br>- Disposal (if all else fails)<br>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.<br>- **DO NOT** allow wash water from cleaning or process equipment to enter drains.<br>- It may be necessary to collect all wash water for treatment before disposal.<br>- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.<br>- Where in doubt contact the responsible authority.<br>- Recycle wherever possible or consult manufacturer for recycling options<br>- 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.<br>- 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). |
| **Waste treatment options** | Not Available |
| **Sewage disposal options** | Not Available |

## SECTION 14 Transport information

**Labels Required**

| | |
|---|---|
| **Marine Pollutant** |  |

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

| | | |
|---|---|---|
| 14.1. **UN number** | Not Applicable | |
| 14.2. **UN proper shipping name** | Not Applicable | |
| 14.3. **Transport hazard class(es)** | Class | Not Applicable |
| | Sub risk | Not Applicable |
| 14.4. **Packing group** | Not Applicable | |
| 14.5. **Environmental hazard** | Not Applicable | |
| 14.6. **Special precautions for user** | Hazard identification (Kemler) | Not Applicable |
| | Classification code | Not Applicable |
| | Hazard Label | Not Applicable |
| | Special provisions | Not Applicable |
| | Limited quantity | Not Applicable |
| | Tunnel Restriction Code | Not Applicable |

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

| | | |
|---|---|---|
| 14.1. **UN number** | Not Applicable | |
| 14.2. **UN proper shipping name** | Not Applicable | |
| 14.3. **Transport hazard class(es)** | ICAO/IATA Class | Not Applicable |
| | ICAO / IATA Sub risk | Not Applicable |
| | ERG Code | Not Applicable |
| 14.4. **Packing group** | Not Applicable | |
| 14.5. **Environmental hazard** | Not Applicable | |
| 14.6. **Special precautions for user** | Special provisions | Not Applicable |
| | Cargo Only Packing Instructions | Not Applicable |
| | Cargo Only Maximum Qty / Pack | Not Applicable |
| | Passenger and Cargo Packing Instructions | Not Applicable |
| | Passenger and Cargo Maximum Qty / Pack | Not Applicable |
| | Passenger and Cargo Limited Quantity Packing Instructions | Not Applicable |
| | Passenger and Cargo Limited Maximum Qty / Pack | Not Applicable |

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

| | | |
|---|---|---|
| 14.1. **UN number** | Not Applicable | |
| 14.2. **UN proper shipping name** | Not Applicable | |
| 14.3. **Transport hazard class(es)** | IMDG Class | Not Applicable |
| | IMDG Sub risk | Not Applicable |
| 14.4. **Packing group** | Not Applicable | |
| 14.5. **Environmental hazard** | Not Applicable | |
| 14.6. **Special precautions for user** | EMS Number | Not Applicable |
| | Special provisions | Not Applicable |
| | Limited Quantities | Not Applicable |

**Inland waterways transport (ADN): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

| | | |
|---|---|---|
| 14.1. **UN number** | Not Applicable | |
| 14.2. **UN proper shipping name** | Not Applicable | |
| 14.3. **Transport hazard class(es)** | Not applicable | Not Applicable |
| 14.4. **Packing group** | Not applicable | |
| 14.5. **Environmental hazard** | Not applicable | |
| 14.6 **Special precautions for user** | Classification code | Not Applicable |
| | Special provisions | Not Applicable |
| | Limited quantity | Not Applicable |
| | Equipment required | Not Applicable |
| | Fire cones number | Not Applicable |

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

Not Applicable

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

| Product name | Group |
|---|---|
| Guanidine thiocyanate | Not Available |
| Ethanol | Not Available |
| Non-ionic detergent | Not Available |

### 14.9. Transport in bulk in accordance with the ICG Code

| Product name | Ship Type |
|---|---|
| Guanidine thiocyanate | Not Available |
| Ethanol | Not Available |
| Non-ionic detergent | Not Available |

## SECTION 15. Regulatory information

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

**Guanidine thiocyanate is found on the following regulatory lists**

- Europe EC Inventory
- European Union – European Inventory of Existing Commercial Chemical Substances (EINICS)
- European Union (EU) regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures – Annex Vi

**Ethanol is found on the following regulatory lists**

- EU REACH regulation (EC) No 1907/2006 – Annex XVII – Restrictions on the manufacture, plaing on the market and us eof certain dangerous substances, mixtures and articles
- Europe EC Inventory
- European Union – European Inventory of Existing Commercial Chemical Substances (EINICS)
- European Union (EU) regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures – Annex Vi
- Netherlands Occupational Exposure Limits
- Netherlands SZW List Non-exhaustive list of reproductive toxins (Dutch)
- Netherlands SZW List of carcinogenic substances (Dutch)

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2020/878; Regulation (EC) No 1272/2008 as updated through ATPs.

### Information according to 2012/18/EU (Seveso III):

| | |
|---|---|
| **Seveso Category** | E2 |

### 15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

### ECHA SUMMARY

| Ingredient | CAS number | Index No | ECHA Dossier |
|---|---|---|---|
| Guanidine thiocyanate | 593-84-0 | 615-004-00-3 | Not Available |

| Harmonization (C&L Inventory) | Hazard Class and Category Code(s) | Pictograms Signal Word Code(s) | Hazard Statement Code(s) |
|---|---|---|---|
| 1 | Acute Tox. 4; Acute Tox. 4 ; Acute Tox. 4 ; Aquatic Chronic 3 | GHS07; Wng | H302; H312, H332; H412 |
| 2 | Acute Tox. 4; Skin Corr. 1B; Eye Dam. 1; Aquatic Chronic 3 ;Acute Tox. 3 ; Acute Tox. 34; Aquatic Acute 3 ; STOT SE 3 | GHS05; Dgr; GHS06; GHS08 | H301; H312; H314; H318; H331; H335; H402; H412 |

*Harmonization Code 1 = The most prevalent classification. Harmonization Code 2 = The most severe classification.*

| Ingredient | CAS number | Index No | ECHA Dossier |
|---|---|---|---|
| Ethanol | 64-17-5 | 603-002-00-5 | Not Available |

| Harmonization (C&L Inventory) | Hazard Class and Category Code(s) | Pictograms Signal Word Code(s) | Hazard Statement Code(s) |
|---|---|---|---|
| 1 | Flam. Liq. 2 | GHS02; Dgr | H225 |
| 2 | Flam. Liq. 2 ; Carc. 1A ; STOT SE 3 ; STOT RE 1 ; STOT SE 3 ; Muta. 1B ; Repr. 1A ; Met. Corr. 1 ; Skin Corr. 1B ; Aquatic Acute 1; Aquatic Chronic 1; Acute Tox. 3; Acute Tox 3; Acute Tox. 3; STOT SE 1; Eye Dam. 1; Skin Sens. 1 | Dgr; GHS08; GHS01; GHS09; GHS05; GHS06 | H220; H225; H301; H304; H311, H315; H317; H318; H331; H335; H336; H340; H350; H360; H370; H372; H411 |

### National Inventory Status

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

## SECTION 16. Other information

### Full text Risk and Hazard codes

| | |
|---|---|
| **H220** | Extremely flammable gas |
| **H225** | Highly flammable liquid and vapour |
| **H301** | Toxic if swallowed |
| **H304** | May be fatal if swallowed and enters airways |
| **H311** | Toxic in contact with skin |
| **H312** | Harmful in contact with skin |
| **H314** | Causes severe skin burns and eye damage |
| **H317** | May cause an allergic skin reaction |
| **H331** | Toxic if inhaled |
| **H332** | Harmful if inhaled |
| **H335** | May cause respiratory irritation. |
| **H336** | May cause drowsiness or dizziness |
| **H340** | May cause generic defects |
| **H350** | May cause cancer |
| **H360** | May damage fertility or the unborn child |
| **H370** | Causes damage to organs |
| **H372** | Causes damage to organs through prolonged or repeated exposure |
| **H402** | Harmful to aquatic life |
| **H412** | Harmful to aquatic life with long lasting effects |

### Version Summary

| Version | Date of Update | Sections Updated |
|---|---|---|
| 1 | 30/APR/2024 | Initial version |

### Other information

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.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:

EN 166 Personal eye-protection
EN 340 Protective clothing
EN 374 Protective gloves against chemicals and micro-organisms
EN 13832 Footwear protecting against chemicals
EN 133 Respiratory protective devices

### Definitions and abbreviations

| | |
|---|---|
| ACGIH | American Conference of Governmental Industrial Hygienists |
| AIIC | Australian Inventory of Industrial Chemicals |
| BCF: | Bio Concentration Factors |
| BEI | Biological Exposure Index |
| DSL | Domestic Substances List |
| EINECS | European INventory of Existing Commercial chemical Substances |
| ELINCS | European List of Notified Chemical Substances |
| ENCS | Existing and New Chemical Substances Inventory |
| ES | Exposure Standard |
| FBEPH | Russian Register of Potentially Hazardous Chemical and Biological Substances |
| IARC | International Agency for Research on Cancer |
| IECSC | Inventory of Existing Chemical Substance in China |
| IDLH | Immediately Dangerous to Life or Health Concentrations |
| INSQ | Inventario Nacional de Sustancias Químicas |
| KECI: | Korea Existing Chemicals Inventory |
| LOAEL | Lowest Observed Adverse Effect Level |
| LOD | Limit Of Detection |
| NCI | National Chemical Inventory |
| NDSL | Non-Domestic Substances List |
| NLP | No-Longer Polymers |
| NOAEL | No Observed Adverse Effect Level |
| NZIoC: | New Zealand Inventory of Chemicals |
| OSF | Odour Safety Factor |
| OTV | Odour Threshold Value |
| PC | Permissible Concentration |
| PC-STEL | Permissible Concentration Short Term Exposure Limit |
| PICCS | Philippine Inventory of Chemicals and Chemical Substances |
| STEL | Short Term Exposure Limit |
| TCSI | Taiwan Chemical Substance Inventory |
| TEEL | Temporary Emergency Exposure Limit |
| TLV | Threshold Limit Value |
| TSCA | Toxic Substances Control Act |
| TWA | Time Weighted Average |