

**Permethrin Liquid Formulation**

|         |                |                |                                 |
|---------|----------------|----------------|---------------------------------|
| Version | Revision Date: | SDS Number:    | Date of last issue: 2023/09/30  |
| 3.0     | 2025/04/14     | 10831067-00004 | Date of first issue: 2022/08/15 |

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**1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : Permethrin Liquid Formulation

**Manufacturer or supplier's details**

Company : MSD

Address : 126 E. Lincoln Avenue  
Rahway, New Jersey U.S.A. 07065

Telephone : +1-908-740-4000

Emergency telephone number : +1-908-423-6000

E-mail address : EHSDATASTEWARD@msd.com

**Recommended use of the chemical and restrictions on use**

Recommended use : Veterinary product

Restrictions on use : Not applicable

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**2. HAZARDS IDENTIFICATION****GHS Classification**

Flammable liquids : Category 3

Acute toxicity (Oral) : Category 4

Skin sensitisation : Category 1

Germ cell mutagenicity : Category 1B

Carcinogenicity : Category 1B

Specific target organ toxicity - : Category 3  
single exposure

Aspiration hazard : Category 1

Short-term (acute) aquatic : Category 1  
hazard

Long-term (chronic) aquatic : Category 1  
hazard

**GHS label elements**

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Hazard pictograms :    

Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.  
H302 Harmful if swallowed.  
H304 May be fatal if swallowed and enters airways.  
H317 May cause an allergic skin reaction.  
H336 May cause drowsiness or dizziness.  
H340 May cause genetic defects.  
H350 May cause cancer.  
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.  
P233 Keep container tightly closed.  
P241 Use explosion-proof electrical/ ventilating/ lighting equipment.  
P242 Use only non-sparking tools.  
P243 Take precautionary measures against static discharge.  
P261 Avoid breathing mist or vapours.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**  
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P331 Do NOT induce vomiting.  
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
P362 + P364 Take off contaminated clothing and wash it before reuse.  
P391 Collect spillage.

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**Storage:**

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

**Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

**Other hazards which do not result in classification**

Cutaneous sensations may occur, such as burning or stinging on the face and mucosae. However, these sensations cause no lesions and are of a transitory nature (max. 24 hours).  
Vapours may form explosive mixture with air.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Components**

| Chemical name                                 | CAS-No.    | Concentration (% w/w) |
|-----------------------------------------------|------------|-----------------------|
| White mineral oil (petroleum)                 | 8042-47-5  | >= 30 -< 60           |
| Permethrin (ISO)                              | 52645-53-1 | >= 25 -< 30           |
| Hydrocarbons, C10, aromatics, <1% naphthalene | 64742-94-5 | >= 10 -< 20           |
| Solvent naphtha (petroleum), light aromatic   | 64742-95-6 | >= 2.5 -< 10          |

**4. FIRST AID MEASURES**

|                                                             |                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General advice                                              | : In the case of accident or if you feel unwell, seek medical advice immediately.<br>When symptoms persist or in all cases of doubt seek medical advice.                                                                                          |
| If inhaled                                                  | : If inhaled, remove to fresh air.<br>Get medical attention.                                                                                                                                                                                      |
| In case of skin contact                                     | : In case of contact, immediately flush skin with plenty of water.<br>Remove contaminated clothing and shoes.<br>Get medical attention.<br>Wash clothing before reuse.<br>Thoroughly clean shoes before reuse.                                    |
| In case of eye contact                                      | : Flush eyes with water as a precaution.<br>Get medical attention if irritation develops and persists.                                                                                                                                            |
| If swallowed                                                | : If swallowed, DO NOT induce vomiting.<br>If vomiting occurs have person lean forward.<br>Call a physician or poison control centre immediately.<br>Rinse mouth thoroughly with water.<br>Never give anything by mouth to an unconscious person. |
| Most important symptoms and effects, both acute and delayed | : This product contains a pyrethroid.<br>Pyrethroid poisoning should not be confused with carbamate or organophosphate poisoning.<br>Harmful if swallowed.<br>May be fatal if swallowed and enters airways.                                       |

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May cause an allergic skin reaction.  
May cause drowsiness or dizziness.  
May cause genetic defects.  
May cause cancer.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).

Notes to physician : Treat symptomatically and supportively.

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**5. FIREFIGHTING MEASURES**

Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical

Unsuitable extinguishing media : High volume water jet

Specific hazards during fire-fighting : Do not use a solid water stream as it may scatter and spread fire.  
Flash back possible over considerable distance.  
Vapours may form explosive mixtures with air.  
Exposure to combustion products may be a hazard to health.

Hazardous combustion products : Chlorine compounds  
Carbon oxides

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Use water spray to cool unopened containers.  
Remove undamaged containers from fire area if it is safe to do so.  
Evacuate area.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.  
Use personal protective equipment.

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**6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Remove all sources of ignition.  
Use personal protective equipment.  
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

Environmental precautions : Avoid release to the environment.  
Prevent further leakage or spillage if safe to do so.  
Prevent spreading over a wide area (e.g. by containment or oil barriers).  
Retain and dispose of contaminated wash water.  
Local authorities should be advised if significant spillages cannot be contained.

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Methods and materials for containment and cleaning up : Non-sparking tools should be used.  
Soak up with inert absorbent material.  
Suppress (knock down) gases/vapours/mists with a water spray jet.  
For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container.  
Clean up remaining materials from spill with suitable absorbent.  
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.  
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

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**7. HANDLING AND STORAGE**

|                             |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical measures          | : | See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local/Total ventilation     | : | If sufficient ventilation is unavailable, use with local exhaust ventilation.<br>Use explosion-proof electrical, ventilating and lighting equipment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Advice on safe handling     | : | Do not get on skin or clothing.<br>Avoid breathing mist or vapours.<br>Do not swallow.<br>Avoid contact with eyes.<br>Wash skin thoroughly after handling.<br>Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment<br>Non-sparking tools should be used.<br>Keep container tightly closed.<br>Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.<br>Take precautionary measures against static discharges.<br>Do not eat, drink or smoke when using this product.<br>Take care to prevent spills, waste and minimize release to the environment. |
| Conditions for safe storage | : | Keep in properly labelled containers.<br>Store locked up.<br>Keep tightly closed.<br>Keep in a cool, well-ventilated place.<br>Store in accordance with the particular national regulations.<br>Keep away from heat and sources of ignition.                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Materials to avoid          | : | Do not store with the following product types:<br>Self-reactive substances and mixtures<br>Organic peroxides<br>Oxidizing agents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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Flammable gases  
 Pyrophoric liquids  
 Pyrophoric solids  
 Self-heating substances and mixtures  
 Poisonous gases  
 Explosives

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

| Components                                    | CAS-No.    | Value type<br>(Form of exposure)   | Control parameters / Permissible concentration  | Basis    |
|-----------------------------------------------|------------|------------------------------------|-------------------------------------------------|----------|
| White mineral oil (petroleum)                 | 8042-47-5  | NAB (Mist)                         | 5 mg/m <sup>3</sup>                             | ID OEL   |
|                                               |            | PSD (Mist)                         | 10 mg/m <sup>3</sup>                            | ID OEL   |
|                                               |            | TWA (Inhalable particulate matter) | 5 mg/m <sup>3</sup>                             | ACGIH    |
| Permethrin (ISO)                              | 52645-53-1 | TWA                                | 80 µg/m <sup>3</sup> (OEB 3)                    | Internal |
|                                               |            | Wipe limit                         | 800 µg/100 cm <sup>2</sup>                      | Internal |
| Hydrocarbons, C10, aromatics, <1% naphthalene | 64742-94-5 | NAB (Mist)                         | 5 mg/m <sup>3</sup>                             | ID OEL   |
|                                               |            | PSD (Mist)                         | 10 mg/m <sup>3</sup>                            | ID OEL   |
|                                               |            | TWA (Inhalable particulate matter) | 5 mg/m <sup>3</sup>                             | ACGIH    |
| Solvent naphtha (petroleum), light aromatic   | 64742-95-6 | TWA                                | 200 mg/m <sup>3</sup> (total hydrocarbon vapor) | ACGIH    |

**Engineering measures** : Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip-less quick connections).  
 All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.  
 Containment technologies suitable for controlling compounds are required to control at source and to prevent migration of the compound to uncontrolled areas (e.g., open-face containment devices).  
 Minimize open handling.  
 Use explosion-proof electrical, ventilating and lighting equipment.

#### Personal protective equipment

Respiratory protection : If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.

Filter type : Combined particulates and organic vapour type

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## Hand protection

Material : Chemical-resistant gloves

Remarks : Consider double gloving. Take note that the product is flammable, which may impact the selection of hand protection.

Eye protection : Wear safety glasses with side shields or goggles.  
If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.  
Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.

Skin and body protection : Work uniform or laboratory coat.  
Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces.  
Use appropriate degowning techniques to remove potentially contaminated clothing.

Hygiene measures : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.  
When using do not eat, drink or smoke.  
Contaminated work clothing should not be allowed out of the workplace.  
Wash contaminated clothing before re-use.  
The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : amber

Odour : aromatic

Odour Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling range : No data available

Flash point : 46 °C

Evaporation rate : No data available

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|                                                  |                                                            |
|--------------------------------------------------|------------------------------------------------------------|
| Flammability (solid, gas)                        | : Not applicable                                           |
| Flammability (liquids)                           | : Ignitable (see flash point)                              |
| Upper explosion limit / Upper flammability limit | : No data available                                        |
| Lower explosion limit / Lower flammability limit | : No data available                                        |
| Vapour pressure                                  | : No data available                                        |
| Relative vapour density                          | : No data available                                        |
| Relative density                                 | : No data available                                        |
| Density                                          | : No data available                                        |
| Solubility(ies)<br>Water solubility              | : No data available                                        |
| Partition coefficient: n-octanol/water           | : Not applicable                                           |
| Auto-ignition temperature                        | : No data available                                        |
| Decomposition temperature                        | : No data available                                        |
| Viscosity<br>Viscosity, kinematic                | : No data available                                        |
| Explosive properties                             | : Not explosive                                            |
| Oxidizing properties                             | : The substance or mixture is not classified as oxidizing. |
| Molecular weight                                 | : No data available                                        |
| Particle characteristics<br>Particle size        | : Not applicable                                           |

### 10. STABILITY AND REACTIVITY

|                                    |                                                                                                                           |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Reactivity                         | : Not classified as a reactivity hazard.                                                                                  |
| Chemical stability                 | : Stable under normal conditions.                                                                                         |
| Possibility of hazardous reactions | : Flammable liquid and vapour.<br>Vapours may form explosive mixture with air.<br>Can react with strong oxidizing agents. |
| Conditions to avoid                | : Heat, flames and sparks.                                                                                                |
| Incompatible materials             | : Oxidizing agents                                                                                                        |
| Hazardous decomposition            | : No hazardous decomposition products are known.                                                                          |



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products

## 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation  
Skin contact  
Ingestion  
Eye contact

**Acute toxicity**

Harmful if swallowed.

**Product:**

Acute oral toxicity : Acute toxicity estimate: 1,965 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: > 5 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

**Components:****White mineral oil (petroleum):**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 5 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

**Permethrin (ISO):**

Acute oral toxicity : LD50 (Rat): 480 - 554 mg/kg

Acute inhalation toxicity : LC50 (Rat): 2.3 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

**Hydrocarbons, C10, aromatics, <1% naphthalene:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg  
Method: OECD Test Guideline 420  
Remarks: Based on data from similar materials

Acute inhalation toxicity : LC50 (Rat): > 4.778 mg/l

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|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
|                       | Exposure time: 4 h                                                |
|                       | Test atmosphere: dust/mist                                        |
|                       | Method: OECD Test Guideline 403                                   |
|                       | Remarks: Based on data from similar materials                     |
| Acute dermal toxicity | : LD50 (Rabbit): > 2,000 mg/kg                                    |
|                       | Method: OECD Test Guideline 402                                   |
|                       | Assessment: The substance or mixture has no acute dermal toxicity |
|                       | Remarks: Based on data from similar materials                     |

**Solvent naphtha (petroleum), light aromatic:**

|                           |                                |
|---------------------------|--------------------------------|
| Acute oral toxicity       | : LD50 (Rat): > 5,000 mg/kg    |
| Acute inhalation toxicity | : LC50 (Rat): > 5.61 mg/l      |
|                           | Exposure time: 4 h             |
|                           | Test atmosphere: vapour        |
| Acute dermal toxicity     | : LD50 (Rabbit): > 2,000 mg/kg |

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****White mineral oil (petroleum):**

|         |                      |
|---------|----------------------|
| Species | : Rabbit             |
| Result  | : No skin irritation |

**Permethrin (ISO):**

|         |                      |
|---------|----------------------|
| Species | : Rabbit             |
| Result  | : No skin irritation |

**Hydrocarbons, C10, aromatics, <1% naphthalene:**

|            |                                                         |
|------------|---------------------------------------------------------|
| Assessment | : Repeated exposure may cause skin dryness or cracking. |
|------------|---------------------------------------------------------|

**Solvent naphtha (petroleum), light aromatic:**

|         |                           |
|---------|---------------------------|
| Species | : Rabbit                  |
| Method  | : OECD Test Guideline 404 |
| Result  | : Skin irritation         |

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****White mineral oil (petroleum):**

|         |                     |
|---------|---------------------|
| Species | : Rabbit            |
| Result  | : No eye irritation |

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**Permethrin (ISO):**

|         |                     |
|---------|---------------------|
| Species | : Rabbit            |
| Result  | : No eye irritation |

**Hydrocarbons, C10, aromatics, <1% naphthalene:**

|         |                                        |
|---------|----------------------------------------|
| Species | : Rabbit                               |
| Result  | : No eye irritation                    |
| Remarks | : Based on data from similar materials |

**Solvent naphtha (petroleum), light aromatic:**

|         |                           |
|---------|---------------------------|
| Species | : Rabbit                  |
| Result  | : No eye irritation       |
| Method  | : OECD Test Guideline 405 |

**Respiratory or skin sensitisation****Skin sensitisation**

May cause an allergic skin reaction.

**Respiratory sensitisation**

Not classified based on available information.

**Components:****White mineral oil (petroleum):**

|                 |                |
|-----------------|----------------|
| Test Type       | : Buehler Test |
| Exposure routes | : Skin contact |
| Species         | : Guinea pig   |
| Result          | : negative     |

**Permethrin (ISO):**

|                 |                |
|-----------------|----------------|
| Test Type       | : Buehler Test |
| Exposure routes | : Skin contact |
| Species         | : Guinea pig   |
| Result          | : positive     |

|            |                                                           |
|------------|-----------------------------------------------------------|
| Assessment | : Probability or evidence of skin sensitisation in humans |
|------------|-----------------------------------------------------------|

**Hydrocarbons, C10, aromatics, <1% naphthalene:**

|                 |                                        |
|-----------------|----------------------------------------|
| Test Type       | : Maximisation Test                    |
| Exposure routes | : Skin contact                         |
| Species         | : Guinea pig                           |
| Result          | : negative                             |
| Remarks         | : Based on data from similar materials |

**Solvent naphtha (petroleum), light aromatic:**

|           |                |
|-----------|----------------|
| Test Type | : Buehler Test |
|-----------|----------------|

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|-----------------|----------------|
| Exposure routes | : Skin contact |
| Species         | : Guinea pig   |
| Result          | : negative     |

**Germ cell mutagenicity**

May cause genetic defects.

**Components:****White mineral oil (petroleum):**

|                       |                                                                                                                                                                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Genotoxicity in vitro | : Test Type: In vitro mammalian cell gene mutation test<br>Result: negative                                                                                                                                                                                |
| Genotoxicity in vivo  | : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)<br>Species: Mouse<br>Application Route: Intraperitoneal injection<br>Method: OECD Test Guideline 474<br>Result: negative<br>Remarks: Based on data from similar materials |

**Permethrin (ISO):**

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Genotoxicity in vitro | : Test Type: Bacterial reverse mutation assay (AMES)<br>Result: negative<br><br>Test Type: In vitro mammalian cell gene mutation test<br>Result: negative<br><br>Test Type: Chromosome aberration test in vitro<br>Result: negative<br><br>Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)<br>Result: negative<br><br>Test Type: Chromosome aberration test in vitro<br>Result: positive |
| Genotoxicity in vivo  | : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)<br>Species: Mouse<br>Result: negative<br><br>Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)<br>Species: Mouse<br>Result: negative<br><br>Test Type: Rodent dominant lethal test (germ cell) (in vivo)<br>Species: Mouse<br>Result: negative                                                       |

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|                                     |                                                                                                |
|-------------------------------------|------------------------------------------------------------------------------------------------|
|                                     | Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)                 |
|                                     | Species: Rat                                                                                   |
|                                     | Application Route: Intraperitoneal injection                                                   |
|                                     | Result: negative                                                                               |
|                                     | Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis) |
|                                     | Species: Mouse                                                                                 |
|                                     | Application Route: Ingestion                                                                   |
|                                     | Result: positive                                                                               |
| Germ cell mutagenicity - Assessment | : Weight of evidence does not support classification as a germ cell mutagen.                   |

### Hydrocarbons, C10, aromatics, <1% naphthalene:

|                       |                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------|
| Genotoxicity in vitro | : Test Type: In vitro sister chromatid exchange assay in mammalian cells                         |
|                       | Result: negative                                                                                 |
|                       | Remarks: Based on data from similar materials                                                    |
| Genotoxicity in vivo  | : Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis) |
|                       | Species: Rat                                                                                     |
|                       | Application Route: inhalation (vapour)                                                           |
|                       | Result: negative                                                                                 |
|                       | Remarks: Based on data from similar materials                                                    |

### Solvent naphtha (petroleum), light aromatic:

|                                     |                                                                                     |
|-------------------------------------|-------------------------------------------------------------------------------------|
| Genotoxicity in vitro               | : Test Type: Bacterial reverse mutation assay (AMES)                                |
|                                     | Result: negative                                                                    |
|                                     | Test Type: In vitro mammalian cell gene mutation test                               |
|                                     | Result: positive                                                                    |
| Genotoxicity in vivo                | : Test Type: Sister chromatid exchange analysis in spermatogonia                    |
|                                     | Species: Mouse                                                                      |
|                                     | Application Route: Intraperitoneal injection                                        |
|                                     | Result: positive                                                                    |
| Germ cell mutagenicity - Assessment | : Positive result(s) from in vivo heritable germ cell mutagenicity tests in mammals |

### Carcinogenicity

May cause cancer.

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**Components:****White mineral oil (petroleum):**

|                   |             |
|-------------------|-------------|
| Species           | : Rat       |
| Application Route | : Ingestion |
| Exposure time     | : 24 Months |
| Result            | : negative  |

**Permethrin (ISO):**

|         |            |
|---------|------------|
| Species | : Rat      |
| Result  | : negative |

|         |            |
|---------|------------|
| Species | : Mouse    |
| Result  | : negative |

**Solvent naphtha (petroleum), light aromatic:**

|                   |                |
|-------------------|----------------|
| Species           | : Mouse        |
| Application Route | : Skin contact |
| Exposure time     | : 2 Years      |
| Result            | : positive     |

|                              |                                                                |
|------------------------------|----------------------------------------------------------------|
| Carcinogenicity - Assessment | : Sufficient evidence of carcinogenicity in animal experiments |
|------------------------------|----------------------------------------------------------------|

**Reproductive toxicity**

Not classified based on available information.

**Components:****White mineral oil (petroleum):**

|                      |                                                                                                                                |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Effects on fertility | : Test Type: One-generation reproduction toxicity study<br>Species: Rat<br>Application Route: Skin contact<br>Result: negative |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------|

|                               |                                                                                                            |
|-------------------------------|------------------------------------------------------------------------------------------------------------|
| Effects on foetal development | : Test Type: Embryo-foetal development<br>Species: Rat<br>Application Route: Ingestion<br>Result: negative |
|-------------------------------|------------------------------------------------------------------------------------------------------------|

**Permethrin (ISO):**

|                      |                                                                                                                             |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Effects on fertility | : Test Type: Two-generation reproduction toxicity study<br>Species: Rat<br>Application Route: Ingestion<br>Result: negative |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------|

|                               |                                                                                                                                                                                    |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Effects on foetal development | : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test<br>Species: Rat<br>Application Route: Ingestion<br>Result: negative |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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**Hydrocarbons, C10, aromatics, <1% naphthalene:**

|                      |   |                                                                                                                                                                                        |
|----------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Effects on fertility | : | Test Type: Three-generation reproduction toxicity study<br>Species: Rat<br>Application Route: inhalation (vapour)<br>Result: negative<br>Remarks: Based on data from similar materials |
|----------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                               |   |                                                                                                                                                           |
|-------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Effects on foetal development | : | Test Type: Embryo-foetal development<br>Species: Rat<br>Application Route: Ingestion<br>Result: negative<br>Remarks: Based on data from similar materials |
|-------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------|

**Solvent naphtha (petroleum), light aromatic:**

|                      |   |                                                                                                                                             |
|----------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------|
| Effects on fertility | : | Test Type: Reproduction/Developmental toxicity screening test<br>Species: Rat<br>Application Route: inhalation (vapour)<br>Result: negative |
|----------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------|

|                               |   |                                                                                                                    |
|-------------------------------|---|--------------------------------------------------------------------------------------------------------------------|
| Effects on foetal development | : | Test Type: Embryo-foetal development<br>Species: Rat<br>Application Route: inhalation (vapour)<br>Result: negative |
|-------------------------------|---|--------------------------------------------------------------------------------------------------------------------|

**STOT - single exposure**

May cause drowsiness or dizziness.

**Components:****Hydrocarbons, C10, aromatics, <1% naphthalene:**

|            |   |                                      |
|------------|---|--------------------------------------|
| Assessment | : | May cause drowsiness or dizziness.   |
| Remarks    | : | Based on data from similar materials |

**Solvent naphtha (petroleum), light aromatic:**

|            |   |                                    |
|------------|---|------------------------------------|
| Assessment | : | May cause drowsiness or dizziness. |
|------------|---|------------------------------------|

**STOT - repeated exposure**

Not classified based on available information.

**Repeated dose toxicity****Components:****White mineral oil (petroleum):**

|                   |   |           |
|-------------------|---|-----------|
| Species           | : | Rat       |
| LOAEL             | : | 160 mg/kg |
| Application Route | : | Ingestion |
| Exposure time     | : | 90 Days   |

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|                   |                               |
|-------------------|-------------------------------|
| Species           | : Rat                         |
| LOAEL             | : $\geq 1$ mg/l               |
| Application Route | : inhalation (dust/mist/fume) |
| Exposure time     | : 4 Weeks                     |
| Method            | : OECD Test Guideline 412     |

**Permethrin (ISO):**

|                   |               |
|-------------------|---------------|
| Species           | : Rat         |
| NOAEL             | : 0.2201 mg/l |
| Application Route | : Inhalation  |
| Exposure time     | : 90 Days     |

|                   |             |
|-------------------|-------------|
| Species           | : Rat       |
| NOAEL             | : 175 mg/kg |
| Application Route | : Ingestion |
| Exposure time     | : 90 Days   |

**Hydrocarbons, C10, aromatics, <1% naphthalene:**

|                   |                                        |
|-------------------|----------------------------------------|
| Species           | : Rat                                  |
| NOAEL             | : 300 mg/kg                            |
| Application Route | : Ingestion                            |
| Exposure time     | : 13 Weeks                             |
| Remarks           | : Based on data from similar materials |

**Solvent naphtha (petroleum), light aromatic:**

|                   |             |
|-------------------|-------------|
| Species           | : Rat       |
| LOAEL             | : 500 mg/kg |
| Application Route | : Ingestion |
| Exposure time     | : 28 Days   |

**Aspiration toxicity**

May be fatal if swallowed and enters airways.

**Components:****Hydrocarbons, C10, aromatics, <1% naphthalene:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

**Solvent naphtha (petroleum), light aromatic:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.



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**12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:****White mineral oil (petroleum):**

|                                                                        |                                                                                                                            |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                                       | : LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l<br>Exposure time: 96 h<br>Method: OECD Test Guideline 203         |
| Toxicity to daphnia and other aquatic invertebrates                    | : EC50 (Daphnia magna (Water flea)): > 100 mg/l<br>Exposure time: 48 h<br>Method: OECD Test Guideline 202                  |
| Toxicity to algae/aquatic plants                                       | : NOEC (Pseudokirchneriella subcapitata (green algae)): 100 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201 |
| Toxicity to fish (Chronic toxicity)                                    | : NOEC (Oncorhynchus mykiss (rainbow trout)): 1,000 mg/l<br>Exposure time: 28 d                                            |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : NOEC (Daphnia magna (Water flea)): 1,000 mg/l<br>Exposure time: 21 d                                                     |

**Permethrin (ISO):**

|                                                                        |                                                                                                                                                                                             |
|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                                       | : LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.00079 mg/l<br>Exposure time: 96 h                                                                                                        |
| Toxicity to daphnia and other aquatic invertebrates                    | : EC50 (Daphnia magna (Water flea)): 0.0001 mg/l<br>Exposure time: 48 h                                                                                                                     |
| Toxicity to algae/aquatic plants                                       | : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 1.13 mg/l<br>Exposure time: 72 h<br><br>EC10 (Pseudokirchneriella subcapitata (green algae)): 0.0023 mg/l<br>Exposure time: 72 h |
| M-Factor (Acute aquatic toxicity)                                      | : 10,000                                                                                                                                                                                    |
| Toxicity to fish (Chronic toxicity)                                    | : NOEC (Danio rerio (zebra fish)): 0.00041 mg/l<br>Exposure time: 35 d<br>Method: OECD Test Guideline 210                                                                                   |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : NOEC (Daphnia magna (Water flea)): 0.0047 µg/l<br>Exposure time: 21 d<br>Method: OECD Test Guideline 211                                                                                  |

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|                                     |   |                                          |
|-------------------------------------|---|------------------------------------------|
| M-Factor (Chronic aquatic toxicity) | : | 10,000                                   |
| Toxicity to microorganisms          | : | EC50: > 1,000 mg/l<br>Exposure time: 3 h |

**Hydrocarbons, C10, aromatics, <1% naphthalene:**

|                                                     |   |                                                                                                                                                                                                                              |
|-----------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                    | : | LL50 (Oncorhynchus mykiss (rainbow trout)): 2 - 5 mg/l<br>Exposure time: 96 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 203<br>Remarks: Based on data from similar materials             |
| Toxicity to daphnia and other aquatic invertebrates | : | EL50 (Daphnia magna (Water flea)): 3 - 10 mg/l<br>Exposure time: 48 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 202<br>Remarks: Based on data from similar materials                     |
| Toxicity to algae/aquatic plants                    | : | EL50 (Pseudokirchneriella subcapitata (green algae)): > 1 - 3 mg/l<br>Exposure time: 72 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 201<br>Remarks: Based on data from similar materials |

**Solvent naphtha (petroleum), light aromatic:**

|                                                                        |   |                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                                       | : | LC50 (Pimephales promelas (fathead minnow)): 8.2 mg/l<br>Exposure time: 96 h<br>Test substance: Water Accommodated Fraction                                                                                                                                                                                                                           |
| Toxicity to daphnia and other aquatic invertebrates                    | : | EL50 (Daphnia magna (Water flea)): 4.5 mg/l<br>Exposure time: 48 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 202                                                                                                                                                                                                  |
| Toxicity to algae/aquatic plants                                       | : | EL50 (Pseudokirchneriella subcapitata (microalgae)): 3.1 mg/l<br>Exposure time: 96 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 201<br><br>NOELR (Pseudokirchneriella subcapitata (microalgae)): 0.5 mg/l<br>Exposure time: 96 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 201 |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | NOELR (Daphnia magna (Water flea)): 2.6 mg/l<br>Exposure time: 21 d<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 211                                                                                                                                                                                                 |

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**Persistence and degradability****Components:****White mineral oil (petroleum):**

|                  |   |                                    |
|------------------|---|------------------------------------|
| Biodegradability | : | Result: Not readily biodegradable. |
|                  |   | Biodegradation: 31 %               |
|                  |   | Exposure time: 28 d                |

**Permethrin (ISO):**

|                  |   |                                    |
|------------------|---|------------------------------------|
| Biodegradability | : | Result: Not readily biodegradable. |
|                  |   | Method: OECD Test Guideline 301F   |

**Hydrocarbons, C10, aromatics, <1% naphthalene:**

|                  |   |                                    |
|------------------|---|------------------------------------|
| Biodegradability | : | Result: Not readily biodegradable. |
|                  |   | Biodegradation: 49.56 %            |
|                  |   | Exposure time: 28 d                |
|                  |   | Method: OECD Test Guideline 301F   |

**Solvent naphtha (petroleum), light aromatic:**

|                  |   |                                   |
|------------------|---|-----------------------------------|
| Biodegradability | : | Result: Inherently biodegradable. |
|                  |   | Biodegradation: 94 %              |
|                  |   | Exposure time: 25 d               |

**Bioaccumulative potential****Components:****Permethrin (ISO):**

|                 |   |                                                 |
|-----------------|---|-------------------------------------------------|
| Bioaccumulation | : | Species: Lepomis macrochirus (Bluegill sunfish) |
|                 |   | Bioconcentration factor (BCF): 570              |

|                                        |   |               |
|----------------------------------------|---|---------------|
| Partition coefficient: n-octanol/water | : | log Pow: 4.67 |
|----------------------------------------|---|---------------|

**Mobility in soil**

No data available

**Other adverse effects**

No data available

---

**13. DISPOSAL CONSIDERATIONS****Disposal methods**

|                        |   |                                                                                                |
|------------------------|---|------------------------------------------------------------------------------------------------|
| Waste from residues    | : | Do not dispose of waste into sewer.                                                            |
|                        |   | Dispose of in accordance with local regulations.                                               |
| Contaminated packaging | : | Empty containers should be taken to an approved waste handling site for recycling or disposal. |
|                        |   | Empty containers retain residue and can be dangerous.                                          |
|                        |   | Do not pressurize, cut, weld, braze, solder, drill, grind, or ex-                              |

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pose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. If not otherwise specified: Dispose of as unused product.

**14. TRANSPORT INFORMATION****International Regulations****UNRTDG**

|                           |                                                                             |
|---------------------------|-----------------------------------------------------------------------------|
| UN number                 | : UN 1993                                                                   |
| Proper shipping name      | : FLAMMABLE LIQUID, N.O.S.<br>(Solvent naphtha (petroleum), light aromatic) |
| Class                     | : 3                                                                         |
| Packing group             | : III                                                                       |
| Labels                    | : 3                                                                         |
| Environmentally hazardous | : no                                                                        |

**IATA-DGR**

|                                          |                                                                             |
|------------------------------------------|-----------------------------------------------------------------------------|
| UN/ID No.                                | : UN 1993                                                                   |
| Proper shipping name                     | : Flammable liquid, n.o.s.<br>(Solvent naphtha (petroleum), light aromatic) |
| Class                                    | : 3                                                                         |
| Packing group                            | : III                                                                       |
| Labels                                   | : Flammable Liquids                                                         |
| Packing instruction (cargo aircraft)     | : 366                                                                       |
| Packing instruction (passenger aircraft) | : 355                                                                       |

**IMDG-Code**

|                      |                                                                                               |
|----------------------|-----------------------------------------------------------------------------------------------|
| UN number            | : UN 1993                                                                                     |
| Proper shipping name | : FLAMMABLE LIQUID, N.O.S.<br>(Solvent naphtha (petroleum), light aromatic, Permethrin (ISO)) |
| Class                | : 3                                                                                           |
| Packing group        | : III                                                                                         |
| Labels               | : 3                                                                                           |
| EmS Code             | : F-E, <u>S-E</u>                                                                             |
| Marine pollutant     | : yes                                                                                         |

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**Special precautions for user**

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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15. REGULATORY INFORMATION

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

**Minister of Industry Regulation No. 23/M-IND/PER/4/2013 concerning the Revision of Minister of Industry Regulation No. 87/M-IND/PER/9/2009 concerning Globally Harmonized System of Classification and Labelling of Chemicals.**

**Regulation of the Minister of Health No. 472 of 1996 on the Safeguarding of Substances Hazardous to Health**

Hazardous substances that must be registered : Not applicable

**Government Regulation No. 74 of 2001 on the Management of Hazardous and Toxic Substances**

Hazardous substances approved for use : Not applicable

Prohibited substances : Not applicable

Restricted substances : Not applicable

**Regulation of the Ministry of Trade No. 7 of 2022 on Distribution and Control of Hazardous Materials**

Type of hazardous materials subject to distribution and control, Annex I : Not applicable

Type of hazardous materials subject to distribution and control, Annex II : Not applicable

**The components of this product are reported in the following inventories:**

AICS : not determined

DSL : not determined

IECSC : not determined

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16. OTHER INFORMATION

Revision Date : 2025/04/14

**Further information**

Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Date format : yyyy/mm/dd

**Full text of other abbreviations**

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

ID OEL : Indonesia. Occupational Exposure Limits

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|              |   |                               |
|--------------|---|-------------------------------|
| ACGIH / TWA  | : | 8-hour, time-weighted average |
| ID OEL / NAB | : | Long term exposure limit      |
| ID OEL / PSD | : | Short term exposure limit     |

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

ID / EN