

Paraffinic Raffinate

ONGC MANGALORE PETROCHEMICALS LTD

Version No: 1.2

Safety Data Sheet (Conforms to Regulation (EU) No 2015/830)

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S.REACH.GBR.EN

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

1.1. Product Identifier

Product name	Paraffinic Raffinate
Synonyms	Paraffinic Raffinate obtained from extraction process on Catalytic Reformer stream.
Proper shipping name	FLAMMABLE LIQUID, N.O.S. (vapour pressure at 50 °C not more than 110 kPa)
Other means of identification	CAS NO: 68513-03-1

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

Relevant identified uses	Raw material for use in the chemical industry.
Uses advised against	Not Applicable

1.3. Details of the supplier of the safety data sheet

Registered company name	ONGC MANGALORE PETROCHEMICALS LTD
Address	MSEZ (Mangalore Special Economy Zone), Permude, Mangalore-574 509 India
Telephone	+91 (824) 2872000
Fax	+91 (824) 2872005
Website	Ompl.co.in
Email	omplmlr@omplindia.com

1.4. Emergency telephone number

Association / Organisation	ONGC MANGALORE PETROCHEMICALS LTD
Emergency telephone numbers	+91 (824) 2872000
Other emergency telephone numbers	Not Available

SECTION 2 HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Considered a hazardous mixture according to Reg. (EC) No 1272/2008 and their amendments. Classified as Dangerous Goods for transport purposes.

Classification according to regulation (EC) No 1272/2008 [CLP] [1]	H336 - Specific target organ toxicity - single exposure Category 3 (narcotic effects), H411 - Chronic Aquatic Hazard Category 2, H373 - Specific target organ toxicity - repeated exposure Category 2, H225 - Flammable Liquid Category 2, H340 - Germ cell mutagenicity Category 1B, H315 - Skin Corrosion/Irritation Category 2, H350 - Carcinogenicity Category 1A, H361 - Reproductive Toxicity Category 2, H304 - Aspiration Hazard Category 1
Legend:	1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI

2.2. Label elements

Hazard pictogram(s)	
SIGNAL WORD	DANGER

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Hazard statement(s)

H336	May cause drowsiness or dizziness.
H411	Toxic to aquatic life with long lasting effects.
H373	May cause damage to organs through prolonged or repeated exposure. (Respiratory system)
H225	Highly flammable liquid and vapour.
H340	May cause genetic defects.
H315	Causes skin irritation.
H350	May cause cancer.
H361	Suspected of damaging fertility or the unborn child.
H304	May be fatal if swallowed and enters airways.

Supplementary statement(s)

Not Applicable

CLP classification (additional)

Not Applicable

Precautionary statement(s) Prevention

P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Precautionary statement(s) Response

P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician/first aider.
P308+P313	IF exposed or concerned: Get medical advice/ attention.

Precautionary statement(s) Storage

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

Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.
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2.3. Other hazards

Cumulative effects may result following exposure*.

May produce discomfort of the eyes*.

isopentane	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
n-pentane	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
n-hexane	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
2-methylpentane	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
3-methylpentane	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
n-heptane	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
benzene	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
toluene	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
butane	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

3.1. Substances

See 'Composition on ingredients' in Section 3.

3.2. Mixtures

1.CAS No	%[weight]Name	Classification according to regulation (EC) No 1272/2008 [CLP]
2.EC No		
3.Index No		

Continued...

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4.REACH No			
1.78-78-4 2.201-142-8 3.601-085-00-2 4.01-2119475602-38-XXXX 01-2119548407-34-XXXX	25	<u>isopentane</u> *	Specific target organ toxicity - single exposure Category 3 (narcotic effects), Chronic Aquatic Hazard Category 2, Aspiration Hazard Category 1, Flammable Liquid Category 1; H336, H411, H304, H224, EUH066 [2]
1.93924-37-9 2.300-230-4 3.Not Available 4.Not Available	22	<u>hydrocarbons, C7</u>	Flammable Liquid Category 2, Aspiration Hazard Category 1, Skin Corrosion/Irritation Category 2, Specific target organ toxicity - single exposure Category 3, Chronic Aquatic Hazard Category 2; H225, H304, H315, H336, H411 [3]
1.109-66-0 2.203-692-4 3.601-006-00-1 4.01-2119459286-30-XXXX	15	<u>n-pentane</u> *	Chronic Aquatic Hazard Category 2, Flammable Liquid Category 2, Specific target organ toxicity - single exposure Category 3 (narcotic effects), Aspiration Hazard Category 1; H411, H225, H336, H304, EUH066 [2]
1.110-54-3 2.203-777-6 3.601-037-00-0 4.01-2119480412-44-XXXX	10	<u>n-hexane</u> *	Flammable Liquid Category 2, Skin Corrosion/Irritation Category 2, Specific target organ toxicity - single exposure Category 3 (narcotic effects), Chronic Aquatic Hazard Category 2, Aspiration Hazard Category 1, Reproductive Toxicity Category 2, Specific target organ toxicity - repeated exposure Category 2; H225, H315, H336, H411, H304, H361f, H373 [2]
1.107-83-5 2.203-523-4 3.601-007-00-7 4.01-2120768140-61-XXXX	10	<u>2-methylpentane</u>	Aspiration Hazard Category 1, Skin Corrosion/Irritation Category 2, Chronic Aquatic Hazard Category 2, Specific target organ toxicity - single exposure Category 3 (narcotic effects), Flammable Liquid Category 2; H304, H315, H411, H336, H225 [2]
1.96-14-0 2.202-481-4 3.601-007-00-7 4.01-2120768139-44-XXXX	10	<u>3-methylpentane</u>	Aspiration Hazard Category 1, Flammable Liquid Category 2, Skin Corrosion/Irritation Category 2, Chronic Aquatic Hazard Category 2, Specific target organ toxicity - single exposure Category 3 (narcotic effects); H304, H225, H315, H411, H336 [2]
1.142-82-5 2.205-563-8 3.601-008-00-2 4.01-2119457603-38-XXXX	5	<u>n-heptane</u> *	Specific target organ toxicity - single exposure Category 3 (narcotic effects), Chronic Aquatic Hazard Category 1, Skin Corrosion/Irritation Category 2, Acute Aquatic Hazard Category 1, Aspiration Hazard Category 1, Flammable Liquid Category 2; H336, H410, H315, H400, H304, H225 [2]
1.71-43-2* 2.200-753-7 3.601-020-00-8 4.01-2119447106-44-XXXX 01-2119456975-22-XXXX	<0.5	<u>benzene</u>	Aspiration Hazard Category 1, Carcinogenicity Category 1A, Flammable Liquid Category 2, Eye Irritation Category 2, Skin Corrosion/Irritation Category 2, Specific target organ toxicity - repeated exposure Category 1, Germ cell mutagenicity Category 1B; H304, H350, H225, H319, H315, H372 **, H340 [2]
1.108-88-3 2.203-625-9 3.601-021-00-3 4.01-2119471310-51-XXXX 01-2120766415-50-XXXX	<0.5	<u>toluene</u> *	Flammable Liquid Category 2, Reproductive Toxicity Category 2, Specific target organ toxicity - single exposure Category 3 (narcotic effects), Specific target organ toxicity - repeated exposure Category 2, Skin Corrosion/Irritation Category 2, Aspiration Hazard Category 1; H225, H361d ***, H336, H373 **, H315, H304 [2]
1.106-97-8. 2.203-448-7 3.601-004-00-0 601-004-01-8 4.01-2119474691-32-XXXX	<1.0	<u>butane</u>	Gas under Pressure (Liquefied gas), Flammable Gas Category 1; H280, H220, EUH044 [1]
1.68647-60-9 2.271-960-8 3.Not Available 4.Not Available	3	<u>hydrocarbons, C5</u> <u>(naphtha)</u>	Specific target organ toxicity - single exposure Category 3 (narcotic effects), Flammable Liquid Category 1, Aspiration Hazard Category 1; H336, H224, H304 [1]

Legend: 1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 3. Classification drawn from C&L; * EU IOELVs available

SECTION 4 FIRST AID MEASURES

4.1. Description of first aid measures

Eye Contact	<p>If this product comes in contact with eyes:</p> <ul style="list-style-type: none"> ▶ Wash out immediately with water. ▶ If irritation continues, seek medical attention. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	<p>If skin contact occurs:</p> <ul style="list-style-type: none"> ▶ Immediately remove all contaminated clothing, including footwear. ▶ Flush skin and hair with running water (and soap if available). ▶ Seek medical attention in event of irritation.
Inhalation	<ul style="list-style-type: none"> ▶ If fumes, aerosols or combustion products are inhaled remove from contaminated area. ▶ Other measures are usually unnecessary.

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Ingestion

- ▶ If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.
- ▶ If swallowed do **NOT** induce vomiting.
- ▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- ▶ Observe the patient carefully.
- ▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- ▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- ▶ Seek medical advice.
- ▶ Avoid giving milk or oils.
- ▶ Avoid giving alcohol.

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

Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours. For petroleum distillates

- In case of ingestion, gastric lavage with activated charcoal can be used promptly to prevent absorption - decontamination (induced emesis or lavage) is controversial and should be considered on the merits of each individual case; of course the usual precautions of an endotracheal tube should be considered prior to lavage, to prevent aspiration.
- Individuals intoxicated by petroleum distillates should be hospitalized immediately, with acute and continuing attention to neurologic and cardiopulmonary function.
- Positive pressure ventilation may be necessary.
- Acute central nervous system signs and symptoms may result from large ingestions of aspiration-induced hypoxia.
- After the initial episode, individuals should be followed for changes in blood variables and the delayed appearance of pulmonary oedema and chemical pneumonitis. Such patients should be followed for several days or weeks for delayed effects, including bone marrow toxicity, hepatic and renal impairment. Individuals with chronic pulmonary disease will be more seriously impaired, and recovery from inhalation exposure may be complicated.
- Gastrointestinal symptoms are usually minor and pathological changes of the liver and kidneys are reported to be uncommon in acute intoxications.
- Chlorinated and non-chlorinated hydrocarbons may sensitize the heart to epinephrine and other circulating catecholamines so that arrhythmias may occur. Careful consideration of this potential adverse effect should precede administration of epinephrine or other cardiac stimulants and the selection of bronchodilators.

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SECTION 5 FIREFIGHTING MEASURES

5.1. Extinguishing media

- ▶ Foam.
- ▶ Dry chemical powder.

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.
- ▶ May be violently or explosively reactive.

Fire/Explosion Hazard

- ▶ Liquid and vapour are highly flammable.
Severe fire hazard when exposed to heat, flame and/or oxidisers.
Combustion products include:
 - carbon dioxide (CO₂)
 - other pyrolysis products typical of burning organic material.
- Contains low boiling substance:** Closed containers may rupture due to pressure buildup under fire conditions.
May emit clouds of acrid smoke

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

See section 8

6.2. Environmental precautions

See section 12

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6.3. Methods and material for containment and cleaning up

Minor Spills	<ul style="list-style-type: none"> Remove all ignition sources. Clean up all spills immediately.
Major Spills	<ul style="list-style-type: none"> Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard.

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	<p>The conductivity of this material may make it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10 000 pS/m., Whether a liquid is nonconductive or semi-conductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid.</p> <p>Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.</p> <ul style="list-style-type: none"> Containers, even those that have been emptied, may contain explosive vapours. Do NOT cut, drill, grind, weld or perform similar operations on or near containers. <p>Contains low boiling substance:</p> <p>Storage in sealed containers may result in pressure buildup causing violent rupture of containers not rated appropriately.</p> <ul style="list-style-type: none"> Check for bulging containers. Electrostatic discharge may be generated during pumping - this may result in fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs.
Fire and explosion protection	See section 5
Other information	<ul style="list-style-type: none"> Store in original containers in approved flame-proof area. No smoking, naked lights, heat or ignition sources.

7.2. Conditions for safe storage, including any incompatibilities

Suitable container	<ul style="list-style-type: none"> Packing as supplied by manufacturer. Plastic containers may only be used if approved for flammable liquid. For low viscosity materials (i) : Drums and jerry cans must be of the non-removable head type. (ii) : Where a can is to be used as an inner package, the can must have a screwed enclosure.
Storage incompatibility	<p>Methylpentane:</p> <ul style="list-style-type: none"> reacts violently with strong oxidisers is incompatible with nitric acid, sulfuric acid may generate electrostatic charges due to low conductivity <p>Low molecular weight alkanes:</p> <ul style="list-style-type: none"> May react violently with strong oxidisers, chlorine, chlorine dioxide, dioxygenyl tetrafluoroborate. May react with oxidising materials, nickel carbonyl in the presence of oxygen, heat. <p>n-Pentane</p> <ul style="list-style-type: none"> reacts violently with strong oxidisers attacks some plastics, rubber and coatings may generate static charges o flow or agitation, due to low conductivity Avoid reaction with oxidising agents

7.3. Specific end use(s)

See section 1.2

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

Ingredient	DNELs Exposure Pattern Worker	PNECs Compartment
isopentane	Dermal 432 mg/kg bw/day (Systemic, Chronic) Inhalation 3 000 mg/m ³ (Systemic, Chronic) <i>Dermal 214 mg/kg bw/day (Systemic, Chronic) *</i> <i>Inhalation 643 mg/m³ (Systemic, Chronic) *</i> <i>Oral 214 mg/kg bw/day (Systemic, Chronic) *</i>	Not Available

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n-pentane	Dermal 432 mg/kg bw/day (Systemic, Chronic) Inhalation 3 000 mg/m ³ (Systemic, Chronic) <i>Dermal 214 mg/kg bw/day (Systemic, Chronic) *</i> <i>Inhalation 643 mg/m³ (Systemic, Chronic) *</i> <i>Oral 214 mg/kg bw/day (Systemic, Chronic) *</i>	Not Available
n-hexane	Dermal 11 mg/kg bw/day (Systemic, Chronic) Inhalation 75 mg/m ³ (Systemic, Chronic) <i>Dermal 5.3 mg/kg bw/day (Systemic, Chronic) *</i> <i>Inhalation 16 mg/m³ (Systemic, Chronic) *</i> <i>Oral 4 mg/kg bw/day (Systemic, Chronic) *</i>	Not Available
2-methylpentane	Dermal 13 mg/kg bw/day (Systemic, Chronic) Inhalation 5 306 mg/m ³ (Systemic, Chronic) <i>Dermal 1 377 mg/kg bw/day (Systemic, Chronic) *</i> <i>Inhalation 1 131 mg/m³ (Systemic, Chronic) *</i> <i>Oral 1 301 mg/kg bw/day (Systemic, Chronic) *</i>	Not Available
3-methylpentane	Dermal 13 mg/kg bw/day (Systemic, Chronic) Inhalation 5 306 mg/m ³ (Systemic, Chronic) <i>Dermal 1 377 mg/kg bw/day (Systemic, Chronic) *</i> <i>Inhalation 1 131 mg/m³ (Systemic, Chronic) *</i> <i>Oral 1 301 mg/kg bw/day (Systemic, Chronic) *</i>	Not Available
n-heptane	Dermal 300 mg/kg bw/day (Systemic, Chronic) Inhalation 2 085 mg/m ³ (Systemic, Chronic) <i>Dermal 149 mg/kg bw/day (Systemic, Chronic) *</i> <i>Inhalation 447 mg/m³ (Systemic, Chronic) *</i> <i>Oral 149 mg/kg bw/day (Systemic, Chronic) *</i>	Not Available
benzene	Not Available	0.08 mg/L (Water (Fresh)) 0.08 mg/L (Water - Intermittent release) 1.9 mg/L (Water (Marine)) 33 mg/kg sediment dw (Sediment (Fresh Water)) 4.8 mg/kg soil dw (Soil) 39 mg/L (STP)
toluene	Dermal 384 mg/kg bw/day (Systemic, Chronic) Inhalation 192 mg/m ³ (Systemic, Chronic) Inhalation 192 mg/m ³ (Local, Chronic) Inhalation 384 mg/m ³ (Systemic, Acute) Inhalation 384 mg/m ³ (Local, Acute) <i>Dermal 226 mg/kg bw/day (Systemic, Chronic) *</i> <i>Inhalation 56.5 mg/m³ (Systemic, Chronic) *</i> <i>Oral 8.13 mg/kg bw/day (Systemic, Chronic) *</i> <i>Inhalation 56.5 mg/m³ (Local, Chronic) *</i> <i>Inhalation 226 mg/m³ (Systemic, Acute) *</i> <i>Inhalation 226 mg/m³ (Local, Acute) *</i>	0.68 mg/L (Water (Fresh)) 0.68 mg/L (Water - Intermittent release) 0.68 mg/L (Water (Marine)) 16.39 mg/kg sediment dw (Sediment (Fresh Water)) 16.39 mg/kg sediment dw (Sediment (Marine)) 2.89 mg/kg soil dw (Soil) 13.61 mg/L (STP)

* Values for General Population

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
UK Workplace Exposure Limits (WELs)	isopentane	Isopentane	600 ppm / 1800 mg/m ³	Not Available	Not Available	Not Available
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	isopentane	Isopentane	1000 ppm / 3000 mg/m ³	Not Available	Not Available	Not Available
UK Workplace Exposure Limits (WELs)	n-pentane	Pentane	600 ppm / 1800 mg/m ³	Not Available	Not Available	Not Available
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	n-pentane	Pentane	1000 ppm / 3000 mg/m ³	Not Available	Not Available	Not Available
UK Workplace Exposure Limits (WELs)	n-hexane	n-Hexane	20 ppm / 72 mg/m ³	Not Available	Not Available	Not Available
EU Consolidated List of Indicative Occupational Exposure Limit Values	n-hexane	n-Hexane	20 ppm / 72 mg/m ³	Not Available	Not Available	Not Available

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(IOELVs)						
UK Workplace Exposure Limits (WELs)	n-heptane	n-Heptane	500 ppm / 2085 mg/m3	Not Available	Not Available	Not Available
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	n-heptane	n-Heptane	500 ppm / 2085 mg/m3	Not Available	Not Available	Not Available
European Union Directive (EU) 2017/2398 amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work	benzene	Not Available	1 ppm / 3,25 mg/m3	Not Available	Not Available	(Notation (9) Substantial contribution to the total body burden via dermal exposure possible.)
UK Workplace Exposure Limits (WELs)	benzene	Benzene	1 ppm / 3.25 mg/m3	Not Available	Not Available	Carc, Sk
Europe ECHA Occupational exposure limits - Activity list	benzene	Not Available	Not Available	Not Available	Not Available	Not Available
UK Workplace Exposure Limits (WELs)	toluene	Toluene	50 ppm / 191 mg/m3	384 mg/m3 / 100 ppm	Not Available	Sk
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	toluene	Toluene	50 ppm / 192 mg/m3	384 mg/m3 / 100 ppm	Not Available	Skin
UK Workplace Exposure Limits (WELs)	butane	Butane	600 ppm / 1450 mg/m3	1810 mg/m3 / 750 ppm	Not Available	Carc, (only applies if Butane contains more than 0.1% of buta-1,3-diene)

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
isopentane	Isopentane; (Ethylidimethylmethane; 2-Methylbutane)	3000* ppm	33000*** ppm	200000*** ppm
n-pentane	Pentane, n-	3000* ppm	33000*** ppm	200000*** ppm
n-hexane	Hexane	260 ppm	Not Available	Not Available
2-methylpentane	Methylpentane, 2-; (Isohexane)	1,000 ppm	11000** ppm	66000*** ppm
3-methylpentane	Methylpentane, 3-	1,000 ppm	11000** ppm	66000*** ppm
n-heptane	Heptane	500 ppm	830 ppm	5000* ppm
benzene	Benzene	Not Available	Not Available	Not Available
toluene	Toluene	Not Available	Not Available	Not Available
butane	Butane	Not Available	Not Available	Not Available

Ingredient	Original IDLH	Revised IDLH
isopentane	Not Available	Not Available
hydrocarbons, C7	Not Available	Not Available
n-pentane	1,500 ppm	Not Available
n-hexane	1,100 ppm	Not Available
2-methylpentane	Not Available	Not Available
3-methylpentane	Not Available	Not Available
n-heptane	750 ppm	Not Available
benzene	500 ppm	Not Available
toluene	500 ppm	Not Available
butane	Not Available	1,600 ppm
hydrocarbons, C5 (naphtha)	Not Available	Not Available

OCCUPATIONAL EXPOSURE BANDING


Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
hydrocarbons, C7	E	≤ 0.1 ppm
2-methylpentane	E	≤ 0.1 ppm
3-methylpentane	E	≤ 0.1 ppm

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Notes:

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

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.
8.2.2. Personal protection	
Eye and face protection	<ul style="list-style-type: none"> ▸ Safety glasses with side shields. ▸ Chemical goggles.
Skin protection	See Hand protection below
Hands/feet protection	<ul style="list-style-type: none"> ▸ Wear chemical protective gloves, e.g. PVC. ▸ Wear safety footwear or safety gumboots, e.g. Rubber
Body protection	See Other protection below
Other protection	<ul style="list-style-type: none"> ▸ 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. ▸ 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. ▸ Overalls. ▸ PVC Apron. ▸ Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity. ▸ For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets).

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

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Material	CPI
BUTYL	C
CPE	C
HYPALON	C
NATURAL RUBBER	C
NEOPRENE	C
NEOPRENE/NATURAL	C
NITRILE	C
NITRILE+PVC	C
PE/EVAL/PE	C
PVA	C
PVC	C
SARANEX-23	C
SARANEX-23 2-PLY	C
TEFLON	C
VITON	C
VITON/CHLOROBUTYL	C
VITON/NEOPRENE	C

Respiratory protection

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

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	AX-AUS	-	AX-PAPR-AUS / Class 1
up to 50 x ES	-	AX-AUS / Class 1	-
up to 100 x ES	-	AX-2	AX-PAPR-2 ^

^ - Full-face

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 boiling point organic compounds(below 65 degC)

* CPI - Chemwatch Performance Index

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A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

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	Colourless		
Physical state	Liquid	Relative density (Water = 1)	0.68
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	280-470
pH (as supplied)	Not Available	Decomposition temperature	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	35-140	Molecular weight (g/mol)	Not Available
Flash point (°C)	- 40	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Flammable.	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	100	Gas group	Not Available
Solubility in water	Not Available	pH as a solution (1%)	Not Available
Vapour density (Air = 1)	Not Available	VOC g/L	Not Available

9.2. Other information

Not Available

SECTION 10 STABILITY AND REACTIVITY

10.1. Reactivity	See section 7.2
10.2. Chemical stability	<ul style="list-style-type: none"> ▸ Unstable in the presence of incompatible materials. ▸ Product is considered stable.
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

Continued...

Paraffinic Raffinate

Inhaled	<p>The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.</p> <p>Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.</p> <p>2-methylpentane has not shown to damage the nervous system (unlike n-hexane).</p> <p>Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.</p> <p>Central nervous system (CNS) depression may include general discomfort, symptoms of giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness. Serious poisonings may result in respiratory depression and may be fatal.</p> <p>Nerve damage can be caused by some non-ring hydrocarbons. Symptoms are temporary, and include weakness, tremors, increased saliva, some convulsions, excessive tears with discolouration and inco-ordination lasting up to 24 hours.</p> <p>Symptoms of pentane inhalation exposure may include hyperactivity, numbness and a persistent taste of gasoline. Inhalation of high vapour concentrations may result in coughing, headache, mild depression, inco-ordination, blurred vision, confusion, loss of appetite, nausea, vomiting, irregular heartbeat and unconsciousness.</p> <p>Inhaling high concentrations of mixed hydrocarbons can cause narcosis, with nausea, vomiting and lightheadedness. Low molecular weight (C2-C12) hydrocarbons can irritate mucous membranes and cause incoordination, giddiness, nausea, vertigo, confusion, headache, appetite loss, drowsiness, tremors and stupor.</p> <p>Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. The vapour may displace and replace air in breathing zone, acting as a simple asphyxiant.</p> <p>The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.</p>
Ingestion	<p>Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733)</p> <p>The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.</p> <p>Isoparaffinic hydrocarbons cause temporary lethargy, weakness, inco-ordination and diarrhoea.</p> <p>Ingestion of pentanes may result in nausea, vomiting, abdominal distension, diarrhoea, bleeding in the mucous membranes and suffocation leading to brain damage and death, while large doses may cause central nervous system depression and irregular heart rhythm.</p> <p>Ingestion of petroleum hydrocarbons can irritate the pharynx, oesophagus, stomach and small intestine, and cause swellings and ulcers of the mucous. Symptoms include a burning mouth and throat; larger amounts can cause nausea and vomiting, narcosis, weakness, dizziness, slow and shallow breathing, abdominal swelling, unconsciousness and convulsions.</p> <p>Chronic inhalation or skin exposure to n-hexane may cause damage to nerve ends in extremities, e.g. finger, toes with loss of sensation.</p>
Skin Contact	<p>This material can cause inflammation of the skin on contact in some persons.</p> <p>The material may accentuate any pre-existing dermatitis condition</p> <p>Skin absorption of 2-methylpentane from laboratory studies is slower compared to toluene.</p> <p>Skin exposure to isoparaffins may produce slight to moderate irritation in animals and humans. Rare sensitisation reactions in humans have occurred.</p> <p>Symptoms of pentane exposure may include drying, cracking, itching, blistering, redness, pigmentation, swelling, burning and pain. Body absorption is not expected to be a significant route of entry because its boiling point is less than body temperature.</p> <p>Toxic effects may result from skin absorption</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.</p> <p>Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.</p> <p>The liquid may be able to be mixed with fats or oils and may degrease the skin, producing a skin reaction described as non-allergic contact dermatitis. The material is unlikely to produce an irritant dermatitis as described in EC Directives.</p>
Eye	<p>Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn). Instillation of isoparaffins into rabbit eyes produces only slight irritation.</p> <p>Eye-contact with the liquid pentanes may cause irritation of the eye and mucous membranes resulting in pain, drying, redness, swelling and excessive secretion of tears.</p> <p>Direct eye contact with petroleum hydrocarbons can be painful, and the corneal epithelium may be temporarily damaged.</p> <p>Aromatic species can cause irritation and excessive tear secretion.</p>
Chronic	<p>Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical systems.</p> <p>There is ample evidence that this material can be regarded as being able to cause cancer in humans based on experiments and other information.</p> <p>Based on experiments and other information, there is ample evidence to presume that exposure to this material can cause genetic defects that can be inherited.</p> <p>Ample evidence from experiments exists that there is a suspicion this material directly reduces fertility.</p> <p>Chronic or repeated exposure to pentanes may cause lung inflammation, fluid in the lungs and nerve damage. It may manifest with dizziness, weight loss, anaemia, nervousness, pain in the limbs and numbness ("pins and needles sensation").</p> <p>Constant or exposure over long periods to mixed hydrocarbons may produce stupor with dizziness, weakness and visual disturbance, weight loss and anaemia, and reduced liver and kidney function. Skin exposure may result in drying and cracking and redness of the skin.</p>

Continued...

Paraffinic Raffinate

Chronic inhalation or skin exposure to n-hexane may cause damage to nerve ends in extremities, e.g. finger, toes with loss of sensation.
Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.

Paraffinic Raffinate	TOXICITY	IRRITATION
	Not Available	Not Available
isopentane	TOXICITY	IRRITATION
	Inhalation (rat) LC50: 280 mg/l/4h ^[2]	Not Available
hydrocarbons, C7	TOXICITY	IRRITATION
	Not Available	Not Available
n-pentane	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: =3000 mg/kg ^[2]	Not Available
n-hexane	TOXICITY	IRRITATION
	Inhalation (rat) LC50: 364 mg/l/4H ^[2]	
2-methylpentane	TOXICITY	IRRITATION
	Oral (rat) LD50: >2000 mg/kg ^[1]	
3-methylpentane	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: =3000 mg/kg ^[2]	Eye(rabbit): 10 mg - mild
n-heptane	TOXICITY	IRRITATION
	Inhalation (rat) LC50: 47945.232 mg/l/4H ^[2]	
benzene	TOXICITY	IRRITATION
	Oral (rat) LD50: 15840 mg/kg ^[2]	
toluene	TOXICITY	IRRITATION
	Not Available	Not Available
butane	TOXICITY	IRRITATION
	Not Available	Not Available
hydrocarbons, C5 (naphtha)	TOXICITY	IRRITATION
	Not Available	Not Available
n-heptane	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: >2000 mg/kg ^[1]	Eye: no adverse effect observed (not irritating) ^[1]
benzene	TOXICITY	IRRITATION
	Inhalation (rat) LC50: 103 mg/l/4H ^[2]	Skin: no adverse effect observed (not irritating) ^[1]
toluene	TOXICITY	IRRITATION
	Oral (rat) LD50: >5000 mg/kg ^[1]	
benzene	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: >8260 mg/kg ^[2]	Eye: adverse effect observed (irritating) ^[1]
toluene	TOXICITY	IRRITATION
	Inhalation (rat) LC50: 17480.0325 mg/l/7h ^[2]	Skin: adverse effect observed (irritating) ^[1]
butane	TOXICITY	IRRITATION
	Oral (rat) LD50: 690-1230 mg/kg ^[2]	
toluene	TOXICITY	IRRITATION
	dermal (rat) LD50: >2000 mg/kg ^[1]	Eye (rabbit): 2mg/24h - SEVERE
butane	TOXICITY	IRRITATION
	Inhalation (rat) LC50: 49 mg/l/4H ^[2]	Eye (rabbit):0.87 mg - mild
hydrocarbons, C5 (naphtha)	TOXICITY	IRRITATION
	Oral (rat) LD50: 636 mg/kg ^[2]	Eye (rabbit):100 mg/30sec - mild
hydrocarbons, C5 (naphtha)	TOXICITY	IRRITATION
	5000 mg/kg ^[2]	Eye: adverse effect observed (irritating) ^[1]
hydrocarbons, C5 (naphtha)	TOXICITY	IRRITATION
	5000 mg/kg ^[2]	Skin (rabbit):20 mg/24h-moderate
hydrocarbons, C5 (naphtha)	TOXICITY	IRRITATION
	5000 mg/kg ^[2]	Skin (rabbit):500 mg - moderate
hydrocarbons, C5 (naphtha)	TOXICITY	IRRITATION
	5000 mg/kg ^[2]	Skin: adverse effect observed (irritating) ^[1]
hydrocarbons, C5 (naphtha)	TOXICITY	IRRITATION
	5000 mg/kg ^[2]	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.

Continued...

Paraffinic Raffinate

Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

N-PENTANE	[GENIUM and CCINFO, V.W.&R.]
N-HEXANE	The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
TOLUENE	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. For toluene: Acute toxicity: Humans exposed to high levels of toluene for short periods of time experience adverse central nervous system effects ranging from headaches to intoxication, convulsions, narcosis (sleepiness) and death. When inhaled or swallowed, toluene can cause severe central nervous system depression, and in large doses has a narcotic effect.
HYDROCARBONS, C5 (NAPHTHA)	Oral (unspec.) LD50: 5000 - 15000 mg/kg* [CHRIS]* For isopentane, SAX refers to pentane.
Paraffinic Raffinate & HYDROCARBONS, C7	Animal studies indicate that normal, branched and cyclic paraffins are absorbed from the gastrointestinal tract and that the absorption of n-paraffins is inversely proportional to the carbon chain length, with little absorption above C30. With respect to the carbon chain lengths likely to be present in mineral oil, n-paraffins may be absorbed to a greater extent than iso- or cyclo-paraffins. The major classes of hydrocarbons are well absorbed into the gastrointestinal tract in various species.
HYDROCARBONS, C7 & 2-METHYLPENTANE	No significant acute toxicological data identified in literature search.

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

SECTION 12 ECOLOGICAL INFORMATION

12.1. Toxicity

Paraffinic Raffinate	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available
isopentane	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	3.653mg/L	3
	EC50	48	Crustacea	2.3mg/L	2
	EC50	72	Algae or other aquatic plants	1.26mg/L	2
	NOEC	72	Algae or other aquatic plants	7.51mg/L	2
hydrocarbons, C7	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available
n-pentane	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	3.193mg/L	3
	EC50	48	Crustacea	2.7mg/L	2
	EC50	72	Algae or other aquatic plants	1.26mg/L	2
	NOEC	72	Algae or other aquatic plants	4.549mg/L	2
n-hexane	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	1.674mg/L	3
	EC50	48	Crustacea	21.85mg/L	2
	EC50	96	Algae or other aquatic plants	3.089mg/L	3

Continued...

Paraffinic Raffinate

2-methylpentane	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	1.915mg/L	3
	EC50	96	Algae or other aquatic plants	3.635mg/L	3
3-methylpentane	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	1.915mg/L	3
	EC50	96	Algae or other aquatic plants	3.635mg/L	3
n-heptane	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.854mg/L	3
	EC50	48	Crustacea	0.64mg/L	2
	EC50	96	Algae or other aquatic plants	1.323mg/L	3
	NOEC	504	Crustacea	0.17mg/L	2
benzene	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.00528mg/L	4
	EC50	48	Crustacea	9.23mg/L	4
	EC50	96	Algae or other aquatic plants	>1-360mg/L	2
	BCF	24	Algae or other aquatic plants	10mg/L	4
	EC10	Not Available	Fish	0.0035mg/L	2
NOEC	480	Crustacea	ca.0.17mg/L	1	
toluene	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.0073mg/L	4
	EC50	48	Crustacea	3.78mg/L	5
	EC50	72	Algae or other aquatic plants	12.5mg/L	4
	BCF	24	Algae or other aquatic plants	10mg/L	4
NOEC	168	Crustacea	0.74mg/L	5	
butane	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	5.862mg/L	3
	EC50	96	Algae or other aquatic plants	7.71mg/L	2
hydrocarbons, C5 (naphtha)	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available
Legend:	Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data				

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.

When released in the environment, alkanes don't undergo rapid biodegradation, because they have no functional groups (like hydroxyl or carbonyl) that are needed by most organisms in order to metabolize the compound.

However, some bacteria can metabolise some alkanes (especially those linear and short), by oxidizing the terminal carbon atom.

For petroleum distillates:

Environmental fate:

When petroleum substances are released into the environment, four major fate processes will take place: dissolution in water, volatilization, biodegradation and adsorption. These processes will cause changes in the composition of these UVCB substances.

For n-Heptane: Log Kow: 4.66; Koc: 2400-8100; Half-life (hr) Air: 52.8; Half-life (hr) Surface Water: 2.9-312; Henry's atm m³/mol: 2.06; BOD 5 (if unstated): 1.92; COD: 0.06; BCF: 340-2000; Log BCF: 2.53-3.31.

Atmospheric Fate: Breakdown of n-heptane by sunlight is not expected to be an important fate process.

For n-Hexane: Log Kow: 3.17-3.94; Henry's Law Constant: 1.69 atm-m³/mol; Vapor Pressure: 150 mm Hg @ 25 C; Log Koc: 2.90 to 3.61. BOD 5, (if unstated): 2.21; COD: 0.04; ThOD: 3.52.

For Isopentane: Koc ~520; Henry's Law Constant: 1.4 atm-cu m/mole; Water Solubility: 48mg/L; Vapor pressure ~689 mm Hg.

Atmospheric Fate: Isopentane is expected to exist only as vapor in the atmosphere.

Environmental Fate: n-Pentane may be released into the environment through various waste streams as a result of its production and use as a general laboratory solvent, solvent for polymerization reactions, and as a raw material in the synthesis of olefins and other industrial chemicals.

Terrestrial Fate: If released to soil, n-pentane is expected to volatilize from moist and dry soil surfaces based upon its physico-chemical properties.

Continued...

Paraffinic Raffinate

DO NOT discharge into sewer or waterways.

12.2. Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
isopentane	HIGH	HIGH
n-pentane	LOW	LOW
n-hexane	LOW	LOW
2-methylpentane	LOW	LOW
3-methylpentane	LOW	LOW
n-heptane	LOW	LOW
benzene	HIGH (Half-life = 720 days)	LOW (Half-life = 20.88 days)
toluene	LOW (Half-life = 28 days)	LOW (Half-life = 4.33 days)
butane	LOW	LOW

12.3. Bioaccumulative potential

Ingredient	Bioaccumulation
isopentane	LOW (LogKOW = 2.7234)
n-pentane	LOW (BCF = 2.35)
n-hexane	MEDIUM (LogKOW = 3.9)
2-methylpentane	LOW (LogKOW = 3.2145)
3-methylpentane	LOW (LogKOW = 3.6)
n-heptane	HIGH (LogKOW = 4.66)
benzene	HIGH (BCF = 4360)
toluene	LOW (BCF = 90)
butane	LOW (LogKOW = 2.89)

12.4. Mobility in soil

Ingredient	Mobility
isopentane	LOW (KOC = 67.7)
n-pentane	LOW (KOC = 80.77)
n-hexane	LOW (KOC = 149)
2-methylpentane	LOW (KOC = 124.9)
3-methylpentane	LOW (KOC = 130.8)
n-heptane	LOW (KOC = 274.7)
benzene	LOW (KOC = 165.5)
toluene	LOW (KOC = 268)
butane	LOW (KOC = 43.79)

12.5. Results of PBT and vPvB assessment

	P	B	T
Relevant available data	Not Applicable	Not Applicable	Not Applicable
PBT Criteria fulfilled?	Not Applicable	Not Applicable	Not Applicable

12.6. Other adverse effects

No data available

SECTION 13 DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Product / Packaging disposal	<ul style="list-style-type: none"> Containers may still present a chemical hazard/ danger when empty. Return to supplier for reuse/ recycling if possible. DO NOT allow wash water from cleaning or process equipment to enter drains.
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Continued...

Paraffinic Raffinate

	<ul style="list-style-type: none"> It may be necessary to collect all wash water for treatment before disposal. Recycle wherever possible. Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
Waste treatment options	Not Available
Sewage disposal options	Not Available

SECTION 14 TRANSPORT INFORMATION

Labels Required

	
Marine Pollutant	
HAZCHEM	*3YE

Land transport (ADR)

14.1. UN number	1993												
14.2. UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (vapour pressure at 50 °C not more than 110 kPa)												
14.3. Transport hazard class(es)	<table> <tr> <td>Class</td><td>3</td></tr> <tr> <td>Subrisk</td><td>Not Applicable</td></tr> </table>	Class	3	Subrisk	Not Applicable								
Class	3												
Subrisk	Not Applicable												
14.4. Packing group	II												
14.5. Environmental hazard	Environmentally hazardous												
14.6. Special precautions for user	<table> <tr> <td>Hazard identification (Kemler)</td><td>33</td></tr> <tr> <td>Classification code</td><td>F1</td></tr> <tr> <td>Hazard Label</td><td>3</td></tr> <tr> <td>Special provisions</td><td>274 601 640D</td></tr> <tr> <td>Limited quantity</td><td>1 L</td></tr> <tr> <td>Tunnel Restriction Code</td><td>2 (D/E)</td></tr> </table>	Hazard identification (Kemler)	33	Classification code	F1	Hazard Label	3	Special provisions	274 601 640D	Limited quantity	1 L	Tunnel Restriction Code	2 (D/E)
Hazard identification (Kemler)	33												
Classification code	F1												
Hazard Label	3												
Special provisions	274 601 640D												
Limited quantity	1 L												
Tunnel Restriction Code	2 (D/E)												

Air transport (ICAO-IATA / DGR)

14.1. UN number	1993												
14.2. UN proper shipping name	Flammable liquid, n.o.s. *												
14.3. Transport hazard class(es)	<table> <tr> <td>ICAO/IATA Class</td><td>3</td></tr> <tr> <td>ICAO / IATA Subrisk</td><td>Not Applicable</td></tr> <tr> <td>ERG Code</td><td>3H</td></tr> </table>	ICAO/IATA Class	3	ICAO / IATA Subrisk	Not Applicable	ERG Code	3H						
ICAO/IATA Class	3												
ICAO / IATA Subrisk	Not Applicable												
ERG Code	3H												
14.4. Packing group	II												
14.5. Environmental hazard	Environmentally hazardous												
14.6. Special precautions for user	<table> <tr> <td>Special provisions</td><td>A3</td></tr> <tr> <td>Cargo Only Packing Instructions</td><td>364</td></tr> <tr> <td>Cargo Only Maximum Qty / Pack</td><td>60 L</td></tr> <tr> <td>Passenger and Cargo Packing Instructions</td><td>353</td></tr> <tr> <td>Passenger and Cargo Maximum Qty / Pack</td><td>5 L</td></tr> <tr> <td>Passenger and Cargo Limited Quantity Packing Instructions</td><td>Y341</td></tr> </table>	Special provisions	A3	Cargo Only Packing Instructions	364	Cargo Only Maximum Qty / Pack	60 L	Passenger and Cargo Packing Instructions	353	Passenger and Cargo Maximum Qty / Pack	5 L	Passenger and Cargo Limited Quantity Packing Instructions	Y341
Special provisions	A3												
Cargo Only Packing Instructions	364												
Cargo Only Maximum Qty / Pack	60 L												
Passenger and Cargo Packing Instructions	353												
Passenger and Cargo Maximum Qty / Pack	5 L												
Passenger and Cargo Limited Quantity Packing Instructions	Y341												

Paraffinic Raffinate

Passenger and Cargo Limited Maximum Qty / Pack

1 L

Sea transport (IMDG-Code / GGVSee)

14.1. UN number	1993
14.2. UN proper shipping name	FLAMMABLE LIQUID, N.O.S.
14.3. Transport hazard class(es)	IMDG Class 3 IMDG Subrisk Not Applicable
14.4. Packing group	II
14.5. Environmental hazard	Marine Pollutant
14.6. Special precautions for user	EMS Number F-E , S-E Special provisions 274 Limited Quantities 1 L

Inland waterways transport (ADN)

14.1. UN number	1993
14.2. UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (vapour pressure at 50 °C not more than 110 kPa)
14.3. Transport hazard class(es)	3 Not Applicable
14.4. Packing group	II
14.5. Environmental hazard	Environmentally hazardous
14.6. Special precautions for user	Classification code F1 Special provisions 274; 601; 640D Limited quantity 1 L Equipment required PP, EX, A Fire cones number 1

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

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

ISOPENTANE IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Europe EC Inventory

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI
UK Workplace Exposure Limits (WELs)

HYDROCARBONS, C7 IS FOUND ON THE FOLLOWING REGULATORY LISTS

Europe EC Inventory

N-PENTANE IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Europe EC Inventory

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI
UK Workplace Exposure Limits (WELs)

N-HEXANE IS FOUND ON THE FOLLOWING REGULATORY LISTS

Continued...

Paraffinic Raffinate

Chemical Footprint Project - Chemicals of High Concern List

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)

EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

2-METHYLPENTANE IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Europe EC Inventory

3-METHYLPENTANE IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Europe EC Inventory

N-HEPTANE IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Europe EC Inventory

BENZENE IS FOUND ON THE FOLLOWING REGULATORY LISTS

Chemical Footprint Project - Chemicals of High Concern List

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 1) Carcinogens: category 1A (Table 3.1)/category 1 (Table 3.2)

EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 12) Restricted substances and maximum concentration limits by weight in homogeneous materials

EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 4) Mutagens: category 1B (Table 3.1)/category 2 (Table 3.2)

Europe EC Inventory

TOLUENE IS FOUND ON THE FOLLOWING REGULATORY LISTS

Chemical Footprint Project - Chemicals of High Concern List

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)

EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

BUTANE IS FOUND ON THE FOLLOWING REGULATORY LISTS

Chemical Footprint Project - Chemicals of High Concern List

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 1) Carcinogens: category 1A (Table 3.1)/category 1 (Table 3.2)

EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 4) Mutagens: category 1B (Table 3.1)/category 2 (Table 3.2)

HYDROCARBONS, C5 (NAPHTHA) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Europe EC Inventory

Europe EC Inventory

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

UK Workplace Exposure Limits (WELs)

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

UK Workplace Exposure Limits (WELs)

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

European Union Directive (EU) 2017/2398 amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 1 : Carcinogenic to humans

UK Workplace Exposure Limits (WELs)

Europe EC Inventory

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

UK Workplace Exposure Limits (WELs)

Europe EC Inventory

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

UK Workplace Exposure Limits (WELs)

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) 2015/830; Regulation (EC) No 1272/2008 as updated through ATPs.

Continued...

Paraffinic Raffinate

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
isopentane	78-78-4	601-085-00-2	01-2119475602-38-XXXX 01-2119548407-34-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Flam. Liq. 1; Asp. Tox. 1; STOT SE 3; Aquatic Chronic 2	GHS02; GHS09; GHS08; Dgr	H224; H304; H336; H411

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
hydrocarbons, C7	93924-37-9	Not Available	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Flam. Liq. 2; Asp. Tox. 1; Skin Irrit. 2; STOT SE 3; Aquatic Chronic 2	GHS02; GHS09; GHS08; Dgr	H225; H304; H315; H336; H411

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
n-pentane	109-66-0	601-006-00-1	01-2119459286-30-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Flam. Liq. 2; Asp. Tox. 1; STOT SE 3; Aquatic Chronic 2	GHS02; GHS09; GHS08; Dgr	H225; H304; H336; H411

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
n-hexane	110-54-3	601-037-00-0	01-2119480412-44-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Flam. Liq. 2; Asp. Tox. 1; Skin Irrit. 2; STOT SE 3; Repr. 2; STOT RE 2; Aquatic Chronic 2	GHS02; GHS09; GHS08; Dgr	H225; H304; H315; H336; H411
1	Flam. Liq. 2; Asp. Tox. 1; Skin Irrit. 2; STOT SE 3; Repr. 2; STOT RE 2; Aquatic Chronic 2	GHS02; GHS09; GHS08; Dgr	H225; H304; H315; H336; H361; H373; H411
1	Flam. Liq. 2; Asp. Tox. 1; Skin Irrit. 2; STOT SE 3; Repr. 2; STOT RE 2; Aquatic Chronic 2	GHS02; GHS09; GHS08; Dgr	H225; H304; H315; H336; H361; H373; H411
1	Flam. Liq. 2; Asp. Tox. 1; Skin Irrit. 2; STOT SE 3; Repr. 2; STOT RE 2; Aquatic Chronic 2	GHS02; GHS09; GHS08; Dgr	H225; H304; H315; H336; H361; H373; H411

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
2-methylpentane	107-83-5	601-007-00-7	01-2120768140-61-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Flam. Liq. 2; Asp. Tox. 1; Skin Irrit. 2; STOT SE 3; Aquatic Chronic 2	GHS02; GHS09; GHS08; Dgr	H225; H304; H315; H336; H411

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
3-methylpentane	96-14-0	601-007-00-7	01-2120768139-44-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
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Paraffinic Raffinate

1	Flam. Liq. 2; Asp. Tox. 1; STOT SE 3; Aquatic Chronic 2	GHS02; GHS09; GHS08; Dgr	H225; H304; H315; H336; H411
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Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
n-heptane	142-82-5	601-008-00-2	01-2119457603-38-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Flam. Liq. 2; Asp. Tox. 1; Skin Irrit. 2; STOT SE 3; Aquatic Acute 1; Aquatic Chronic 1	GHS02; GHS09; GHS08; Dgr	H225; H304; H315; H336; H410

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
benzene	71-43-2*	601-020-00-8	01-2119447106-44-XXXX 01-2119456975-22-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Flam. Liq. 2; Asp. Tox. 1; Skin Irrit. 2; Eye Irrit. 2; Muta. 1B; Carc. 1A; STOT RE 1	GHS02; GHS08; Dgr	H225; H304; H315; H319; H340; H350; H372

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
toluene	108-88-3	601-021-00-3	01-2119471310-51-XXXX 01-2120766415-50-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Flam. Liq. 2; Asp. Tox. 1; Skin Irrit. 2; STOT SE 3; Repr. 2; STOT RE 2	GHS02; GHS08; Dgr	H225; H304; H315; H336; H361d; H373
1	Aquatic Chronic 4		H413
1	Flam. Liq. 2; Asp. Tox. 1; Skin Irrit. 2; STOT SE 3; Repr. 2; STOT RE 2	GHS02; GHS08; Dgr	H225; H304; H315; H336; H361; H373

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
butane	106-97-8.	601-004-00-0 601-004-01-8	01-2119474691-32-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Flam. Gas 1	GHS02; GHS04; Dgr	H220
1	Flam. Gas 1	GHS02; GHS04; Dgr	H220

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

National Inventory Status

National Inventory	Status
Australia - AICS	No (hydrocarbons, C7)
Canada - DSL	No (hydrocarbons, C7)
Canada - NDSL	No (isopentane; hydrocarbons, C7; n-pentane; n-hexane; 2-methylpentane; 3-methylpentane; n-heptane; benzene; toluene; butane; hydrocarbons, C5 (naphtha))
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (hydrocarbons, C7; hydrocarbons, C5 (naphtha))
Korea - KECI	No (hydrocarbons, C7; hydrocarbons, C5 (naphtha))
New Zealand - NZIoC	No (hydrocarbons, C7; hydrocarbons, C5 (naphtha))
Philippines - PICCS	Yes
USA - TSCA	No (hydrocarbons, C7)
Taiwan - TCSI	No (hydrocarbons, C7)

Paraffinic Raffinate

Mexico - INSQ	No (hydrocarbons, C7; hydrocarbons, C5 (naphtha))
Vietnam - NCI	No (hydrocarbons, C7; hydrocarbons, C5 (naphtha))
Russia - ARIPS	No (hydrocarbons, C7; hydrocarbons, C5 (naphtha))
Legend:	<p><i>Yes = All CAS declared ingredients are on the inventory</i></p> <p><i>No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)</i></p>

SECTION 16 OTHER INFORMATION

Revision Date	04/06/2020
Initial Date	04/06/2020

Full text Risk and Hazard codes

H220	Extremely flammable gas.
H224	Extremely flammable liquid and vapour.
H280	Contains gas under pressure; may explode if heated.
H319	Causes serious eye irritation.
H361d	Suspected of damaging the unborn child.
H361d	Suspected of damaging the unborn child.
H361f	Suspected of damaging fertility.
H372	Causes damage to organs through prolonged or repeated exposure.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H413	May cause long lasting harmful effects to aquatic life.

SDS Version Summary

Version	Issue Date	Sections Updated
0.2.1.1.1	04/06/2020	Classification, Ingredients

Other information

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

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

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

PC—TWA: Permissible Concentration-Time Weighted Average
 PC—STEL: Permissible Concentration-Short Term Exposure Limit
 IARC: International Agency for Research on Cancer
 ACGIH: American Conference of Governmental Industrial Hygienists
 STEL: Short Term Exposure Limit
 TEEL: Temporary Emergency Exposure Limit.
 IDLH: Immediately Dangerous to Life or Health Concentrations
 OSF: Odour Safety Factor
 NOAEL :No Observed Adverse Effect Level
 LOAEL: Lowest Observed Adverse Effect Level
 TLV: Threshold Limit Value
 LOD: Limit Of Detection
 OTV: Odour Threshold Value
 BCF: BioConcentration Factors

Paraffinic Raffinate

BEI: Biological Exposure Index

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