

## SAFETY DATA SHEET



## Aspen 4

The safety data sheet is in accordance with Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

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

Date issued	10.07.2018
Revision date	10.06.2020

### 1.1. Product identifier

Product name	Aspen 4
Article no.	UK
Extended SDS with ES incorporated	Yes
Extended SDS with ES incorporated, comments	Relevant information from component Exposure Scenarios has been incorporated into Sections 4 - 13 of this SDS.

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

Function	Description: Fuel
Use of the substance / preparation	Fuel for 4-stroke motors.
Relevant identified uses	SU0-2 Other activities related to manufacture and services SU1 Agriculture, forestry, fishery SU19 Building and construction work SU21 Consumer uses: Private households (= general public = consumers) SU22 Professional uses: publicly accessible (administration, education, entertainment, services, craftsmen) PC13 Fuels PROC16 Using material as fuel sources, limited exposure to unburned product to be expected. Industrial or non-industrial setting; AC03 Machinery and related mechanical appliances
Industrial use	Yes
Professional use	Yes
Consumer use	Yes

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

#### Distributor

Company name	Anglo American Oil Company Ltd
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Office address	58 Holton Road
Postal address	Holton Heath Trading Park
Postcode	BH16 6LT
City	Poole
Country	United Kingdom
Telephone number	+44 1929 551557
Fax	+44 1929 551567
Email	<a href="mailto:anders@aaoil.co.uk">anders@aaoil.co.uk</a>
Website	<a href="http://www.aaoil.co.uk">www.aaoil.co.uk</a>

**Producer**

Company name	Lantmännen Aspen AB
Postal address	Iberovägen 2
Postcode	SE-438 54
City	Hindås
Country	Sweden
Telephone number	+46 (0)301-23 00 00, (08:00-16.30 CET)
Email	<a href="mailto:aspensds@lantmannen.com">aspensds@lantmannen.com</a>
Website	<a href="http://www.aspenfuels.com/">http://www.aspenfuels.com/</a>

**1.4. Emergency telephone number**

Emergency telephone	<p>Telephone number: 112 Description: SOS</p> <p>Telephone number: 0845 46 47 (England Wales) 08454 24 24 24 (Scotland) Description: NHS - Emergency medical conditions.</p> <p>Telephone number: 111 Description: NHS - National Poisons Information Service</p>
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**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [CLP / GHS]	<p>Flam. Liq. 1; H224</p> <p>Asp. Tox. 1; H304</p> <p>Skin Irrit. 2; H315</p> <p>STOT SE 3; H336</p> <p>Aquatic Chronic 4; H413</p>
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**2.2. Label elements**

## Hazard pictograms (CLP)



Signal word	Danger
Hazard statements	H224 Extremely flammable liquid and vapour. H304 May be fatal if swallowed and enters airways. H315 Causes skin irritation. H336 May cause drowsiness or dizziness. H413 May cause long lasting harmful effects to aquatic life.
Precautionary statements	P102 Keep out of reach of children. P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P260 Do not breathe dust / fume / gas / mist / vapours / spray. P262 Do not get in eyes, on skin, or on clothing. P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor / physician. P331 Do NOT induce vomiting. P501 Dispose of contents / container to approved waste recipient in an open container.
Tactile warnings	Yes
Child-protection	Yes

### 2.3. Other hazards

Health effect	May cause nausea, headache, dizziness and poisoning. Narcosis in high concentrations. In high concentrations, vapours may irritate throat and respiratory system and cause coughing. Prolonged skin contact may cause redness, irritation and dry skin.
Other hazards	Vapours are heavier than air and may travel along the floor and in the bottom of containers. Vapours may be ignited by a spark, a hot surface or an ember.

## SECTION 3: Composition / information on ingredients

### 3.2. Mixtures

Substance	Identification	Classification	Contents	Notes
Alkylate (EU)	CAS No.: 68527-27-5, 64741-64-6 EC No.: 271-267-0, 265-066-7 REACH Reg. No.: 01-2119471477-29-xxxx, 01-2119485026-38-xxxx	Flam. Liq. 1; H224 Asp. tox. 1; H304 Skin Irrit. 2; H315 STOT SE 3; H336 Aquatic Chronic 2; H411	80 - 95 %	1
Isomerat (EU)	CAS No.: 64741-70-4 EC No.: 265-073-5 REACH Reg. No.: 01-2119480399-24	Flam. Liq. 1; H224 Asp. tox. 1; H304 Aquatic Chronic 2; H411 Skin Irrit. 2; H315 STOT SE 3; H336	5 - 15 %	1
n- Butane (UK)	CAS No.: 106-97-8 EC No.: 203-448-7	Flam. Gas 1; H220 Press. Gas; H280	0 - 4 %	2

	REACH Reg. No.: 01-211947469 1-31			
Isopentane (UK)	CAS No.: 78-78-4	Flam. Liq. 1; H224	< 2.5 %	1,2
	EC No.: 201-142-8	Asp. tox. 1; H304		
	REACH Reg. No.: 01-2119475602-38-0004	STOT SE 1; H336 Aquatic Chronic 2; H411		

<sup>1</sup>Substance classified with a health or environmental hazard

<sup>2</sup>Substance with a workplace exposure limit

Remarks, substance	Benzene < 0,1% n-Hexane <3%. Ingredients' environmental classification is not supported by tests on the mixture.
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## SECTION 4: First aid measures

### 4.1. Description of first aid measures

General	Fire and explosion: Leave the zone of danger immediately and evacuate unnecessary personnel. Bring injured persons out of the zone of danger immediately. Beware of danger of shock in seemingly not-injured persons. If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
Inhalation	Fresh air and rest. Get medical attention if any discomfort continues.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water.
Eye contact	Immediately rinse with water for several minutes. Make sure to remove any contact lenses from the eyes before rinsing.
Ingestion	DO NOT induce vomiting. Get medical attention immediately. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs. Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia. A doctor should decide if gastric lavage is needed.

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

Acute symptoms and effects	Acts as a defatting agent on skin. May cause cracking of skin, and eczema. Risk of chemical pneumonia after aspiration. Vapour may irritate respiratory system or lungs.
Delayed symptoms and effects	Warning! This product is harmful to health. The product may be aspirated and cause chemical pneumonia that can be fatal.

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

Medical treatment	Treat Symptomatically.
Medical monitoring for delayed effects	Central nervous system depression including narcotic effects such as drowsiness, narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.
Other information	DO NOT INDUCE VOMITING! Intrusion into the lungs after ingestion or vomiting may cause chemical pneumonitis.

## SECTION 5: Firefighting measures

## 5.1. Extinguishing media

Suitable extinguishing media	Extinguish with foam, carbon dioxide, dry powder or water fog.
Improper extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

## 5.2. Special hazards arising from the substance or mixture

Fire and explosion hazards	Highly flammable liquid and vapour. Eliminate all ignition sources if safe to do so. Severe explosion hazard when vapours are exposed to flames.
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## 5.3. Advice for firefighters

Personal protective equipment	In case of inadequate ventilation wear respiratory protection. Use personal protective equipment as required.
Fire fighting procedures	Containers close to fire should be removed immediately or cooled with water. Avoid water in straight hose stream; will scatter and spread fire. Be aware of risk of fire re-starting, and risk of explosion.
Other information	Vapours are heavier than air and may travel along the floor and in the bottom of containers. Vapours may be ignited by a spark, a hot surface or an ember.

## SECTION 6: Accidental release measures

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

Personal protection measures	Do not smoke or use open fire, or other sources of ignition. Ventilate well. In case of inadequate ventilation use suitable respirator. Take precautionary measures against static discharges.
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### 6.2. Environmental precautions

Environmental precautionary measures	Avoid discharge into drains, water courses or onto the ground. Contain spillages with sand, earth or any suitable adsorbent material. Contact local authorities in case of spillage to drain/aquatic environment.
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### 6.3. Methods and material for containment and cleaning up

Clean up	Absorb in vermiculite, dry sand or earth and place into containers. Cover large spillages with foam.
Other information	Remove sources of ignition. Beware of the explosion danger.

### 6.4. Reference to other sections

Other instructions	For waste disposal, see section 13. For personal protection, see section 8.
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## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Handling	Flammable/combustible - Keep away from oxidisers, heat and flames. Take precautionary measures against static discharges.
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### Protective safety measures

Safety measures to prevent fire	Store in a well-ventilated place. Keep cool.
Preventitive measures to prevent aerosol and dust generation	Well-ventilated area.
Preventitive measures to protect the environment	Prevent entry into drains.

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

Storage	Store in tightly closed original container in a well-ventilated place. Store at temperature below 50°C. Flammable liquid storage.
Conditions to avoid	Keep away from heat, sparks and open flame.

## Conditions for safe storage

Technical measures and storage conditions	Protect electric equipment against sparking in case of risk of explosion.
Advice on storage compatibility	Keep flammable liquids away from flammable gas and highly flammable goods. Flammability class: 1
Additional information on storage conditions	Large amounts and storages should be stored in accordance with national regulation on storage of flammable liquids.

## 7.3. Specific end use(s)

Specific use(s)	The identified uses for this product are detailed in Section 1.2.
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# SECTION 8: Exposure controls / personal protection

## 8.1. Control parameters

Substance	Identification	Exposure limits	TWA Year
n- Butane (UK)	CAS No.: 106-97-8	Country of origin: GB Limit value type: WEL Limit value (8 h) : 600 ppm Limit value (8 h) : 1450 mg/m <sup>3</sup> <b>Limit value (short term)</b> Value: 750 ppm <b>Limit value (short term)</b> Value: 1810 mg/m <sup>3</sup>	
Isopentane (UK)	CAS No.: 78-78-4	Country of origin: EU Limit value (8 h) : 1000 ppm Limit value (8 h) : 3000 mg/m <sup>3</sup> Country of origin: UK Limit value (8 h) : 600 ppm Limit value (8 h) : 1800 mg/m <sup>3</sup>	
Petroleum (UK)			
n-Hexane (UK)	CAS No.: 110-54-3	Country of origin: UK Limit value (8 h) : 20 ppm Limit value (8 h) : 72 mg/m <sup>3</sup> Source: EH40/2005,	

Benzene (UK)	CAS No.: 71-43-2	Workplace exposure limits, Third edition 2018 Country of origin: UK Limit value (8 h) : 1 ppm Limit value (8 h) : 3,25 mg/ m <sup>3</sup> <b>Exposure limit letter</b> Letter code: Carc, Sk Source: EH40/2005, Workplace exposure limits, Third edition 2018
Toluene (UK)	CAS No.: 108-88-3	Country of origin: UK Limit value (8 h) : 50 ppm Limit value (8 h) : 191 mg/ m <sup>3</sup> <b>Limit value (short term)</b> Value: 100 ppm <b>Limit value (short term)</b> Value: 384 mg/m <sup>3</sup> <b>Limit value (short term)</b> Appraisal period: 15 min <b>Exposure limit letter</b> Letter code: Sk Source: EH40/2005, Workplace exposure limits, Third edition 2018
Other Information about threshold limit values	Petroleum Work Exposure Limits applies to both Alkylate and Isomerate.	

## DNEL / PNEC

Substance	Alkylate (EU)
DNEL	<p><b>Group:</b> Professional  <b>Route of exposure:</b> Acute inhalation (systemic)  <b>Value:</b> 1300 mg/m<sup>3</sup>  <b>Reference:</b> 15 min  <b>Comments:</b> 68527-27-5</p> <p><b>Group:</b> Professional  <b>Route of exposure:</b> Acute inhalation (local)  <b>Value:</b> 1100 mg/m<sup>3</sup>  <b>Reference:</b> 15 min  <b>Comments:</b> 68527-27-5</p> <p><b>Group:</b> Professional  <b>Route of exposure:</b> Long-term inhalation (local)  <b>Value:</b> 840 mg/m<sup>3</sup>  <b>Reference:</b> 8 h  <b>Comments:</b> 68527-27-5</p> <p><b>Group:</b> Consumer  <b>Route of exposure:</b> Acute inhalation (systemic)  <b>Value:</b> 1200 mg/m<sup>3</sup>  <b>Reference:</b> 15 min</p>

	<p><b>Comments:</b> 68527-27-5</p> <p><b>Group:</b> Consumer  <b>Route of exposure:</b> Acute inhalation (local)  <b>Value:</b> 640 mg/m<sup>3</sup>  <b>Reference:</b> 15 min  <b>Comments:</b> 68527-27-5</p> <p><b>Group:</b> Consumer  <b>Route of exposure:</b> Long-term inhalation (local)  <b>Value:</b> 180 mg/m<sup>3</sup>  <b>Reference:</b> 24 h  <b>Comments:</b> 68527-27-5</p>
Substance	Isomerat (EU)
DNEL	<p><b>Group:</b> Professional  <b>Route of exposure:</b> Acute inhalation (systemic)  <b>Value:</b> 1300 mg/m<sup>3</sup>  <b>Reference:</b> 15 min</p> <p><b>Group:</b> Professional  <b>Route of exposure:</b> Acute inhalation (local)  <b>Value:</b> 1100 mg/m<sup>3</sup>  <b>Reference:</b> 15 min</p> <p><b>Group:</b> Professional  <b>Route of exposure:</b> Long-term inhalation (local)  <b>Value:</b> 840 mg/m<sup>3</sup>  <b>Reference:</b> 8 h</p> <p><b>Group:</b> Consumer  <b>Route of exposure:</b> Acute inhalation (systemic)  <b>Value:</b> 1200 mg/m<sup>3</sup>  <b>Reference:</b> 15 min</p> <p><b>Group:</b> Consumer  <b>Route of exposure:</b> Acute inhalation (local)  <b>Value:</b> 640 mg/m<sup>3</sup>  <b>Reference:</b> 15 min</p> <p><b>Group:</b> Consumer  <b>Route of exposure:</b> Long-term inhalation (systemic)  <b>Value:</b> 180 mg/m<sup>3</sup>  <b>Reference:</b> (24 h)</p>
Substance	Isopentane (UK)
DNEL	<p><b>Group:</b> Professional  <b>Route of exposure:</b> Long-term dermal (systemic)  <b>Value:</b> 432 mg/kg bw/day</p> <p><b>Group:</b> Consumer  <b>Route of exposure:</b> Long-term dermal (systemic)  <b>Value:</b> 214 mg/kg bw/day</p> <p><b>Group:</b> Professional</p>



PNEC

**Route of exposure:** Long-term inhalation (systemic)**Value:** 3000 mg/m<sup>3</sup>**Group:** Consumer**Route of exposure:** Long-term inhalation (systemic)**Value:** 643 mg/m<sup>3</sup>**Route of exposure:** Long-term oral (systemic)**Value:** 214 mg/kg bw/day**Value:** 1296 mg/kg bw/day**Comments:** NOAEL**Value:** 1070 mg/kg bw/day**Comments:** NOAEL**Value:** 9000 mg/m<sup>3</sup>**Comments:** NOAEC**Value:** 3215 mg/m<sup>3</sup>**Comments:** NOAEC**Value:** 1070 mg/kg bw/day**Comments:** NOAEL DNELs are derived from the Indicative Occupational Exposure Limit (IOEL) for Pentane, Isopentane, and Neopentane**Route of exposure:** Freshwater**Reference:** 2.6 x 10<sup>(-6)</sup> mg/l**Route of exposure:** Saltwater**Value:** 0.0000055 µg/l**Reference:** 5.5 x 10<sup>(-9)</sup> mg/l**Route of exposure:** Freshwater sediments**Value:** 0.0036 µg/l**Reference:** 3.6 x 10<sup>(-6)</sup> mg/kg**Route of exposure:** Saltwater sediments**Reference:** 6.7 x 10<sup>(-9)</sup> mg/l**Route of exposure:** Soil**Reference:** 1.6 x 10<sup>(-8)</sup> mg/kg**Comments:** Natural**Route of exposure:** Soil**Reference:** 3.5 x 10<sup>(-8)</sup> mg/kg**Comments:** Agricultural.**Route of exposure:** Water**Reference:** 1.3 x 10<sup>(-6)</sup> mg/l**Route of exposure:** Air**Reference:** 9.2 x 10<sup>(-5)</sup> mg/m<sup>3</sup>**Comments:** PNEC for isopentane has been derived using the HC5 statistical extrapolation method and the target lipid model.

## 8.2. Exposure controls

## Safety signs



## Precautionary measures to prevent exposure

Appropriate engineering controls	Do not handle near food and drink. Provide access to washing facilities incl. soap, skin cleanser and fatty cream. Observe occupational exposure limits and minimise the risk of inhalation of vapours and mist.
Technical measures to prevent exposure	Provide adequate general and local exhaust ventilation.

## Eye / face protection

Additional eye protection measures	Contact lenses should not be worn when working with this chemical!
Eye protection, comments	Wear approved chemical safety goggles where eye exposure is reasonably probable.

## Hand protection

Suitable materials	Nitrile.
Required properties for hand protection	Skyddsklass: 6 EN 374. EN 420
Breakthrough time	Value: > 8 hour(s)
Thickness of glove material	Value: $\geq 0.4$ mm
Hand protection, comments	Protective gloves should be used if there is a risk of direct contact or splash. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

## Skin protection

Suitable protective clothing	Wear appropriate clothing to prevent reasonably probable skin contact.
Additional skin protection measures	Wash promptly with soap & water if skin becomes contaminated.
Skin protection remark	Remove contaminated clothing and wash the skin thoroughly with soap and water after work. Please note that contaminated clothing may present a risk of fire and / or explosion. Personal protection must be kept separate from other clothes.

## Respiratory protection

Respiratory protection necessary at	Under normal conditions of use respiration protection should not be required.
Tasks needing respiratory protection	Respiratory protection must be used if air contamination exceeds acceptable level.
Recommended type of equipment	Use respiratory equipment with gas filter, type AX.
Additional respiratory protection measures	All handling to take place in well-ventilated area.

Respiratory protection, comments	Filter with half mask. Filter equipment may be used for a maximum of 2 hours per time.
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## Hygiene / environmental

Specific hygiene measures	Promptly remove non-impervious clothing that becomes wet. DO NOT SMOKE IN WORK AREA!
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## Appropriate environmental exposure control

Environmental exposure controls	Should be prevented from entering drains. Inform Authorities if large amounts are involved.
Environmental exposure controls, comments	VOC.

## Exposure controls

Safety measures for consumer use of the chemical	This product is not to be used under conditions of poor ventilation. Remove contaminated clothing and wash the skin thoroughly with soap and water after work. Good personal hygiene is necessary. Wash hands and contaminated areas with water and soap before leaving the work site. Do not store tobacco, food or beverage in work rooms or areas where the product is used.
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## SECTION 9: Physical and chemical properties

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

Physical state	Coloured liquid.
Colour	Tan.
Odour	Kerosene.
pH	Status: In delivery state Comments: Not relevant.  Status: In aqueous solution Comments: Not relevant.
Melting point / melting range	Comments: Not relevant.
Boiling point / boiling range	Value: 30 -205 °C Method: EN ISO 3405  Value: 75 °C Method: NFPA®30 (USA)
Flash point	Value: < 0 °C
Evaporation rate	Value: > 1000 Method: BuAc=100
Lower explosion limit with unit of measurement	Value: 1 vol%
Upper explosion limit with units of measurement	Value: 8 vol%

Vapour pressure	Value: 55 - 65 kPa Method: EN 13016-1 Temperature: = 37.8 °C
Vapour density	Value: > 1 Reference gas: Air.
Relative density	Value: 690 - 720 kg/m <sup>3</sup> Method: EN ISO 12185
Solubility	Comments: Very soluble in: Hydrocarbons.  Comments: Solubility: > 1 - 6 mg/l
Partition coefficient: n-octanol/ water	Value: 4,3 - 4,8 Comments: Calculated value for mixture.
Spontaneous combustability	Value: > 300 °C
Viscosity	Value: < 1 mm <sup>2</sup> /s Temperature: = 40 °C

## 9.2. Other information

### Physical hazards

Flammable liquids	Classification: H224 Extremely flammable liquid and vapour.
Conductivity	Value: < 0.0002 µS/m Method: EN 15938 Comments: (200 pS/m) Temperature: = 20 °C
Gas group	Comments: IIA.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Reactivity	There are no known reactivity hazards associated with this product.
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### 10.2. Chemical stability

Stability	Stable under normal temperature conditions and recommended use.
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### 10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Contains a volatile component. Vapours may form explosive mixtures with air.
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### 10.4. Conditions to avoid

Conditions to avoid	Avoid heat, flames and other sources of ignition.
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### 10.5. Incompatible materials

Materials to avoid	Avoid contact with oxidising agents.
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### 10.6. Hazardous decomposition products

Hazardous decomposition products

None under normal conditions.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Substance	Alkylate (EU)
Acute toxicity	<p><b>Type of toxicity:</b> Acute  <b>Effect tested:</b> LD50  <b>Route of exposure:</b> Oral  <b>Method:</b> OECD 401  <b>Value:</b> &gt; 5000 mg/kg  <b>Animal test species:</b> Rat  <b>Comments:</b> 68527-27-5</p> <p><b>Type of toxicity:</b> Acute  <b>Effect tested:</b> LC50  <b>Route of exposure:</b> Inhalation.  <b>Method:</b> OECD 403  <b>Value:</b> &gt; 5610 mg/m<sup>3</sup>  <b>Animal test species:</b> Rat  <b>Comments:</b> 68527-27-5</p> <p><b>Effect tested:</b> LD50  <b>Route of exposure:</b> Dermal  <b>Method:</b> OECD 402  <b>Value:</b> &gt; 2000 mg/kg bw  <b>Animal test species:</b> Rabbit  <b>Comments:</b> 68527-27-5</p> <p><b>Effect tested:</b> LD50  <b>Route of exposure:</b> Oral  <b>Value:</b> &gt; 5000 mg/kg  <b>Animal test species:</b> Rat  <b>Comments:</b> 64741-64-6</p> <p><b>Effect tested:</b> LD50  <b>Route of exposure:</b> Dermal  <b>Value:</b> &gt; 2000 mg/kg  <b>Animal test species:</b> Rabbit  <b>Comments:</b> 64741-64-6</p> <p><b>Effect tested:</b> LC50  <b>Route of exposure:</b> Inhalation.  <b>Value:</b> &gt; 5.2 mg/l  <b>Animal test species:</b> Rat  <b>Test reference:</b> 4 hr  <b>Comments:</b> 64741-64-6</p>
Substance	Isomerat (EU)
Acute toxicity	<p><b>Effect tested:</b> LD50  <b>Route of exposure:</b> Oral  <b>Method:</b> OECD 401  <b>Value:</b> &gt; 5000 mg/kg</p>

	<p><b>Animal test species:</b> Rat</p> <p><b>Effect tested:</b> LD50</p> <p><b>Route of exposure:</b> Dermal</p> <p><b>Method:</b> OECD 402</p> <p><b>Value:</b> &gt; 5000 mg/kg</p> <p><b>Animal test species:</b> Rabbit</p> <p><b>Effect tested:</b> LC50</p> <p><b>Route of exposure:</b> Inhalation.</p> <p><b>Method:</b> OECD TG 403</p> <p><b>Value:</b> &gt; 5610 mg/m<sup>3</sup></p> <p><b>Animal test species:</b> Rat</p>
Substance	n- Butane (UK)
Acute toxicity	<p><b>Effect tested:</b> LC50</p> <p><b>Route of exposure:</b> Inhalation.</p> <p><b>Method:</b> Calculated.</p> <p><b>Value:</b> &gt; 20 mg/l</p>
Substance	Isopentane (UK)
Acute toxicity	<p><b>Type of toxicity:</b> Acute</p> <p><b>Route of exposure:</b> Oral</p> <p><b>Method:</b> Read-across: n-pentane.</p> <p><b>Value:</b> &gt; 2000 mg/kg</p> <p><b>Animal test species:</b> Rat</p> <p><b>Type of toxicity:</b> Acute</p> <p><b>Route of exposure:</b> Oral</p> <p><b>Method:</b> Read-across: cyclopentane.</p> <p><b>Value:</b> &gt; 5000 mg/kg</p> <p><b>Animal test species:</b> Rat</p> <p><b>Type of toxicity:</b> Acute</p> <p><b>Route of exposure:</b> Inhalation.</p> <p><b>Method:</b> Read-across: cyclopentane.</p> <p><b>Value:</b> &gt; 25.3 mg/l</p> <p><b>Animal test species:</b> Rat</p> <p><b>Type of toxicity:</b> Subchronic</p> <p><b>Effect tested:</b> NOEC</p> <p><b>Route of exposure:</b> Inhalation.</p> <p><b>Value:</b> &gt; 2220 ppm</p> <p><b>Animal test species:</b> Rat</p> <p><b>Comments:</b> Organ.</p> <p><b>Type of toxicity:</b> Chronic</p> <p><b>Effect tested:</b> NOEC</p> <p><b>Route of exposure:</b> Inhalation.</p> <p><b>Value:</b> &gt; 6646 ppm</p> <p><b>Animal test species:</b> Rat</p> <p><b>Comments:</b> Neurologisk.</p>

## Other information regarding health hazards

Substance	Alkylate (EU)
Skin corrosion / irritation test result	<p><b>Toxicity type:</b> Skin corrosion  <b>Method:</b> OECD 404  <b>Evaluation result:</b> Prolonged contact may cause redness, irritation and cracking. 64741-64-6  <b>Comments:</b> Irritating to respiratory system. The product causes irritation of mucous membranes and may cause abdominal discomfort if swallowed. 68527-27-5</p>
Skin corrosion / irritation, other information	Irritating to skin. Gas or vapour may irritate respiratory system. Liquid irritates mucous membranes and may cause abdominal pain if swallowed.
Inhalation	In high concentrations, vapours are narcotic and may cause headache, fatigue, dizziness and nausea.
Skin contact	Product has a defatting effect on skin. Prolonged or repeated contact leads to drying of skin.
Ingestion	Harmful: may cause lung damage if swallowed.
Germ cell mutagenicity	Comments: Contains <0.1% benzene. The product does not need to be classified as Carcinogen, Mutagen or Reproductions toxic (CMR) due to low concentrations of components suspected or known to be CMR.
Carcinogenicity	Comments: Contains <0.1% benzene and therefore is not classified as a carcinogen.
Reproductive toxicity	Comments: Contains <0.1% benzene. The product does not need to be classified as Carcinogen, Mutagen or Reproductions toxic (CMR) due to low concentrations of components suspected or known to be CMR.
Substance	Alkylate (EU)
Specific target organ toxicity - single exposure, test results	<p><b>Toxicity type:</b> Acute  <b>Specific effect:</b> Central nervous system depression including narcotic effects such as drowsiness, narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.</p> <p><b>Toxicity type:</b> Chronic  <b>Evaluation result:</b> Based on available data the classification criteria are not met.  <b>Test reference:</b> OECD 410 OECD 412 OECD 453 EPA OPPTS 870.3465</p>
Assessment of specific target organ toxicity - single exposure, classification	Central nervous system depression including narcotic effects such as drowsiness, narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.
Substance	Alkylate (EU)
Aspiration hazard, test results	<p><b>Comments:</b> Pneumonia may be the result if vomited material containing solvents reaches the lungs. DO NOT induce vomiting if swallowed chemical is dissolved in petroleum-based material. Danger of aspiration and development of chemical pneumonia.  Ingestion of even small quantities may be fatal.</p>
Aspiration hazard due to hydrocarbon content, comments	Ingestion may cause severe irritation of the mouth, the oesophagus and the gastrointestinal tract. H304 May be fatal if swallowed and enters airways.
Aspiration hazard, comments	Risk of chemical pneumonia after aspiration.

## Symptoms of exposure

In case of ingestion	Ingestion may cause severe irritation of the mouth, the oesophagus and the gastrointestinal tract. Pneumonia may be the result if vomited material containing solvents reaches the lungs.
In case of skin contact	Defatting, drying and cracking of skin.
In case of inhalation	Inhalation of oil mist or vapours formed during heating of the product will irritate the respiratory system and provoke coughing.
Other information	In case of overexposure, organic solvents may depress the central nervous system causing dizziness and intoxication, and at very high concentrations unconsciousness and death.

## SECTION 12: Ecological information

### 12.1. Toxicity

Aquatic toxicity, fish	Value: > 100 mg/l Test duration: 96h Species: Danio rerio Method: OECD TG no. 203 (2004) Test reference: Test report 046/13. Comments: LL50.Results for the mixture.
Substance	Isopentane (UK)
Aquatic toxicity, fish	<b>Toxicity type:</b> Acute <b>Value:</b> 34.05 mg/l <b>Effect dose concentration :</b> LL50 <b>Exposure time:</b> 96 hour(s) <b>Method:</b> QSAR  <b>Toxicity type:</b> Acute <b>Value:</b> 4.26 mg/l <b>Effect dose concentration :</b> LC50 <b>Exposure time:</b> 96 hour(s) <b>Method:</b> Study.  <b>Toxicity type:</b> Chronic <b>Value:</b> 7.618 mg/l <b>Exposure time:</b> 28 day(s) <b>Method:</b> NOELR QSAR.
Aquatic toxicity, algae	Value: > 100 mg/l Test duration: 72h Species: Raphidoceles subcapitata Method: OECD TG no. 202 Test reference: Test report 182/06. Comments: EL50. Results for mixture.
Substance	Isopentane (UK)
Aquatic toxicity, algae	<b>Value:</b> 5.2 mg/l <b>Effect dose concentration :</b> EC50 <b>Exposure time:</b> 96 hour(s) <b>Species:</b> green algae <b>Method:</b> QSAR.



	<p><b>Value:</b> 10.7 mg/l  <b>Effect dose concentration :</b> EC50  <b>Exposure time:</b> 72 hour(s)  <b>Species:</b> Scenedesmus capricornutum  <b>Method:</b> (Growth rate.) Read across.</p> <p><b>Value:</b> 7.51 mg/l  <b>Effect dose concentration :</b> EC50  <b>Exposure time:</b> 72 hour(s)  <b>Species:</b> Scenedesmus capricornutum  <b>Method:</b> (Biomass.) Read across.</p> <p><b>Value:</b> 1.26 mg/l  <b>Effect dose concentration :</b> EC50  <b>Exposure time:</b> 72 hour(s)  <b>Species:</b> Scenedesmus capricornutum  <b>Method:</b> (Biomass.) Read across.</p> <p><b>Value:</b> 7.51 mg/l  <b>Effect dose concentration :</b> NOEC  <b>Exposure time:</b> 72 hour(s)  <b>Species:</b> Scenedesmus capricornutum  <b>Method:</b> (Growth rate.) Read across.  <b>Comments:</b> Based on key study.  The toxicity of 2-methylbutane to algae has been read across within the category from n-pentane.:  EC 50 growth rate = 10.7 mg/l, and NOEC growth rate = 2.04 mg/L.</p>
Aquatic toxicity, crustacean	<p>Value: &gt; 1000 mg/l  Test duration: 48h  Species: Daphnia Magna  Method: OECD Tg no. 201  Test reference: Test report 31/04.  Comments: EL50. Data applies to formulation mixture.</p>
Substance	Isopentane (UK)
Aquatic toxicity, crustacean	<p><b>Toxicity type:</b> Acute  <b>Value:</b> 2.3 mg/l  <b>Effect dose concentration :</b> EC50  <b>Exposure time:</b> 48 hour(s)  <b>Method:</b> Study.</p> <p><b>Toxicity type:</b> Acute  <b>Value:</b> 4.2 mg/l  <b>Effect dose concentration :</b> EC50  <b>Exposure time:</b> 48 hour(s)  <b>Method:</b> Study.</p> <p><b>Toxicity type:</b> Acute  <b>Value:</b> 59.44 mg/l  <b>Effect dose concentration :</b> EL50  <b>Exposure time:</b> 48 hour(s)  <b>Method:</b> QSAR.</p> <p><b>Toxicity type:</b> Chronic</p>

Substance	<b>Value:</b> 13.29 mg/l <b>Exposure time:</b> 21 day(s) <b>Method:</b> NOELR QSAR.
Toxicity to bacteria	Alkylate (EU) <b>Value:</b> > 15.41 mg/l <b>Effect dose concentration :</b> LL50 <b>Exposure time:</b> 72 hour(s) <b>Species:</b> Tetrahymena pyriformis <b>Method:</b> QSAR Petrotox <b>Comments:</b> 64741-64-6

## 12.2. Persistence and degradability

Persistence and degradability description/evaluation	Volatile substances are degraded in the atmosphere within a few days. The product is degraded completely by photochemical oxidation. The product has not proven to be degradable under anaerobic conditions.
Chemical oxygen demand (COD)	Comments: Not known.
Biological oxygen demand (BOD)	Comments: Not known.

## 12.3. Bioaccumulative potential

Bioconcentration factor (BCF)	Value: 4,3 - 4,8 Method: Log Kow Comments: Calculated value for mixture.
Bioaccumulation, evaluation	Bioaccumulation is unlikely to be significant because of the low water solubility of this product.

## 12.4. Mobility in soil

Mobility	The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces. The product is insoluble in water and will spread on the water surface.
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## 12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment	This product does not contain any PBT or vPvB substances.
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## 12.6. Other adverse effects

# SECTION 13: Disposal considerations

## 13.1. Waste treatment methods

Appropriate methods of disposal for the chemical	Make sure containers are empty before discarding (explosion risk). Vent to atmosphere. Disposal to licensed waste disposal site in accordance with local Waste Disposal Authority.
Appropriate methods of disposal for the contaminated packaging	If container is completely emptied, well-vented and free from product residues that can pose hazardous properties - the following EWC codes can be used depending on package material:

	15 01 02 plastic packaging, 15 01 04 metallic packaging.
EWC waste code	EWC waste code: 130702 petrol Classified as hazardous waste: Yes
EWL packing	EWC waste code: 150110 packaging containing residues of or contaminated by dangerous substances Classified as hazardous waste: Yes
EU Regulations	2008/98/EG
National regulations	The Waste (England and Wales) Regulations 2011 No. 988
Other information	Disposal to licensed waste disposal site in accordance with local Waste Disposal Authority. The packaging must be empty (drop-free, when inverted).

## SECTION 14: Transport information

### 14.1. UN number

ADR/RID/ADN	1203
IMDG	1203
ICAO/IATA	1203

### 14.2. UN proper shipping name

ADR/RID/ADN	PETROL
IMDG	PETROL
ICAO/IATA	PETROL

### 14.3. Transport hazard class(es)

ADR/RID/ADN	3
IMDG	3
ICAO/IATA	3

### 14.4. Packing group

ADR/RID/ADN	II
IMDG	II
ICAO/IATA	II

### 14.5. Environmental hazards

### 14.6. Special precautions for user

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

#### ADR/RID Other information

Hazard No.	33
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Other applicable information ADR/ RID	(D/E)
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### IMDG Other information

Additional information IMDG	-18 C, c.c.
EmS	F-E, S-E

## SECTION 15: Regulatory information

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

References (laws/regulations)	<p>Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.</p> <p>Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 with amendments.</p> <p>Directive 2008/98 / EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain directives.</p> <p>EH40/2005, Workplace exposure limits 2005, with amendments.</p> <p>The Control of Substances Hazardous to Health Regulations 2002 (S.I 2002 No. 2677) with amendments.</p>
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### 15.2. Chemical safety assessment

Chemical safety assessment performed	No
Exposure scenarios for mixture	No
Exposure scenario comments	Relevant information from component Exposure Scenarios has been incorporated into Sections 4 - 13 of this SDS.

## SECTION 16: Other information

Supplier's notes	The information on this data sheet represents our current data and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product which involves using the product in combination with any other product or any other process is the responsibility of the user.
List of relevant H-phrases (Section 2 and 3)	<p>H220 Extremely flammable gas.</p> <p>H224 Extremely flammable liquid and vapour.</p> <p>H225 Highly flammable liquid and vapour.</p> <p>H280 Contains gas under pressure; may explode if heated.</p> <p>H304 May be fatal if swallowed and enters airways.</p> <p>H315 Causes skin irritation.</p>

	<p>H336 May cause drowsiness or dizziness.  H361d Suspected of damaging the unborn child.  H373 May cause damage to organs through prolonged or repeated exposure  H411 Toxic to aquatic life with long lasting effects.  H412 Harmful to aquatic life with long lasting effects.  H413 May cause long lasting harmful effects to aquatic life.</p>
Key literature references and sources for data	<p>Test report 31/04. Aspen 4T, Daphnia magna immobilisation test. Toxicon AB (2004).  Test report 182/06. Toxicity testing of Aspen 4T, Algae growth inhibition test. Toxicon AB (2007).  Test report 07-25. Evaluation of the aerobic biodegradability of organic compounds 182/06 (Aspen 4T). AnoxKaldnes AB (2007).  Test report 046/13. Aspen 4. Fish, acute toxicity test. Toxicon AB (2013).  Examination essay. Diffusion of alkylate petrol during discharge in the environment. Gunilla Henriksson, Annalena Tåmt (2004).  Kemiska Ämnen. Prevent AB (2013).  GESTIS International Limit Values, IFA.</p>
Revision justification	Other.
Information added, deleted or revised	Change to Sections: 1, 3, 13
Last update date	10.06.2020
Version	1
Prepared by	Lantmännen Aspen AB
URL for technical data	<a href="http://www.aspen.se">http://www.aspen.se</a>