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September 2014

Extended safety data sheets under REACH and CLP regulations

These materials are a guide only and are not intended to provide in-depth regulatory or legal review that may be required to properly determine your company's requirements under REACH. Regulatory and legal questions should be raised to an expert in the field and with legal counsel.

Objective

New Safety Data Sheets

- Share our expertise on extended Safety Data Sheets (ext-SDS)
- Enable you to:
  - Be aware of the Safety Data Sheets (SDS) requirements under REACH Annex II
  - Highlight the practical impacts of the REACH/CLP Safety data sheet template requirements
  - Find the crucial info to meet expected queries with FAQ

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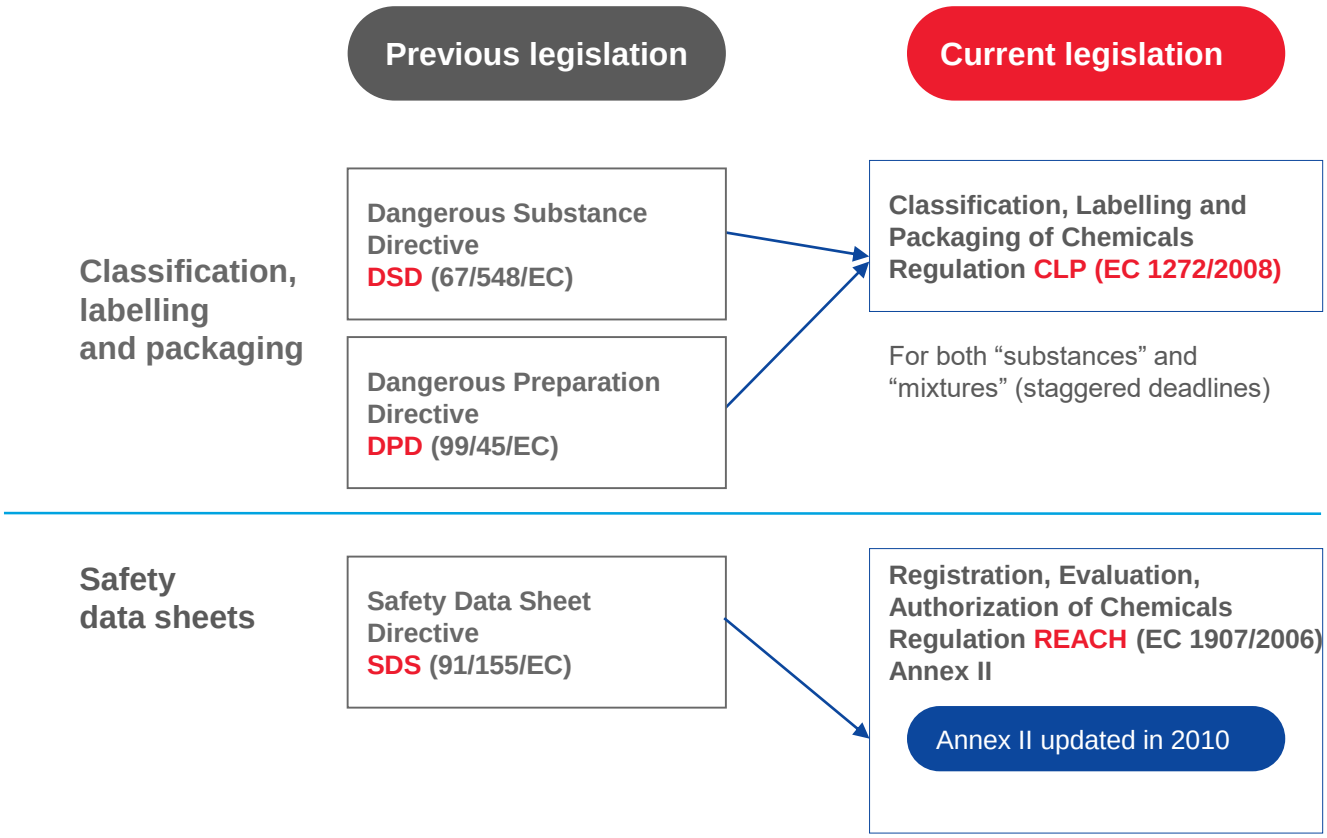
REACH – SDS – CLP

What has changed?



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REACH – SDS – CLP

Timeline

New CLP for substances

DSD / DPD

New CLP mandatory for both substances and mixtures

CLP for both substances and mixtures

1Dec 2010 — **1Dec 2012** — **1Jun 2015**

New SDS requirements in force, making it compulsory to include certain REACH registration data when available.

REACH substances registration (>1 kton/yr)

REACH = Technical Dossier + Chemical Safety Report (CSR) (>10 ton/yr)

DANGEROUS SUBSTANCES
(according to DSD or PBT/vPvB**)**

Exposure Scenario ⟷ uses
+ Risk assessment for supported uses

Extended Safety Data Sheet
Exposure Scenario is in the Annex of the ext-SDS
"ext-SDS should be updated without delay"

NON DANGEROUS SUBSTANCES

No CSR required

No Ext-SDS is required

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REACH impact on Safety Data Sheets

Extended Safety Data Sheets (ext-SDS)

- EU Commission objectives for REACH:
  - Harmonize and streamline current EU legislation on chemicals
  - Improve protection of Human Health and Environment from chemicals
- The SDS is the communication tool between supplier and Downstream User about Health, Safety and Environmental information on the chemicals
- Ext-SDS is a SDS that has the Exposure Scenario information from the REACH registration data including RMM (Risk Management Measurements) in an Annex to the SDS
- For mixtures there is an option to incorporate the information into the SDS instead of attaching an Annex. This option does not exist for Substances, and is not used by ExxonMobil.
  - Dangerous substance as defined by the CLP regulation
  - Dangerous mixture as defined in the Dangerous Preparation Directive (DPD) which applies to “dangerous mixtures” until 31 May 2015

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CLP impact on Safety Data Sheets

Classification, labeling and packaging (CLP)

CLP is a European regulation (EU 1272/2008) that:

- Is based on (but not synonymous with) the United Nations Globally Harmonised System (GHS)
- Defines the criteria for the identification of the hazards of chemical substances and mixtures related to Physical, Health and Environmental hazards
- Sets rules for classification, labelling and packaging, and prescribes the use of:
  - Hazard statements
  - Precautionary statements
  - Pictograms
- Definitely replaces the DSD/DPD directives after entire transition period. See Slide 3 for details

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CLP «» GHS «» DSD

Flammable liquids

GHS				**No pictogram**
CLP				**Not categorized**
	Flash Point < 23°C and IBP ≤ 35°C	**Flash Point < 23°C and IBP > 35°C**	**23°C ≤ FP ≤ 60°C**	**60°C < FP ≤ 93°C**
	Flammable Liquid 1 (H224)	**Flammable Liquid 2 (H225)**	**Flammable Liquid 3 (H226)**	**Flammable Liquid 4 (H227)**
	F+ (R12)	**F (R11)**	**R10**	
DSD/ DPD	**Flash Point < 0°C and IBP ≤ 35°C** 	**Flash Point < 21°C** 	**21°C ≤ FP < 55°C**	

Some Fluids are qualified flammable Liquid 3 with CLP:
Isopar™ H,
Isopar™ J,
Isopar™ K

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Main changes in the updated REACH Annex II SDS requirements

Still 16 section headings

- contains information organized under the 16 section headings required by REACH Annex II

New information, new concepts

- REACH Registration number
- REACH Registration name
- REACH Identifed Uses
- DNELs - PNECs
- PBT/vPvB statement
- Restrictions/Authorizations
- Additional toxicological information

Inclusion of annex

- Exposure Scenarios

Section	*Titles of Sections*	Comparison with current MSDS
Section 1	*Identification of the substance/mixture and of the company/undertaking*	Major Changes
Section 2	*Hazards identification*	Major Changes
Section 3	*Composition/information on ingredients*	Major Changes
Section 4	*First aid measures*	Similar
Section 5	*Fire-fighting measures*	Similar
Section 6	*Accidental release measures*	Similar
Section 7	*Handling and storage*	Similar
Section 8	*Exposure control/personal protection*	Major Changes
Section 9	*Physical and Chemical properties*	Major Changes
Section 10	*Stability and reactivity*	Similar
Section 11	*Toxicological information*	More Data
Section 12	*Ecological information*	More Data
Section 13	*Disposal considerations*	Similar
Section 14	*Transport information*	Changes
Section 15	*Regulatory information*	Major Changes
Section 16	*Other information*	Major Changes
Annex	*Exposure Scenario*	Major Changes

Identification of the substance/mixture
Hazards identification
Composition/information on ingredients
First aid measures
Fire fighting measures
Accidental release measures
Handling and storage
Exposure control/ personal protection
Physical and chemical properties
Stability and reactivity
Toxicological information
Ecological information
Disposal considerations
Transport information
Regulatory information
Other information
Exposure scenario
Glossary

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Section 1

Identification of the substance/mixture

This section provides the **identification** of the product, the **relevant uses**, the uses advised against and the **supplier information**.

1.1 Product identifier

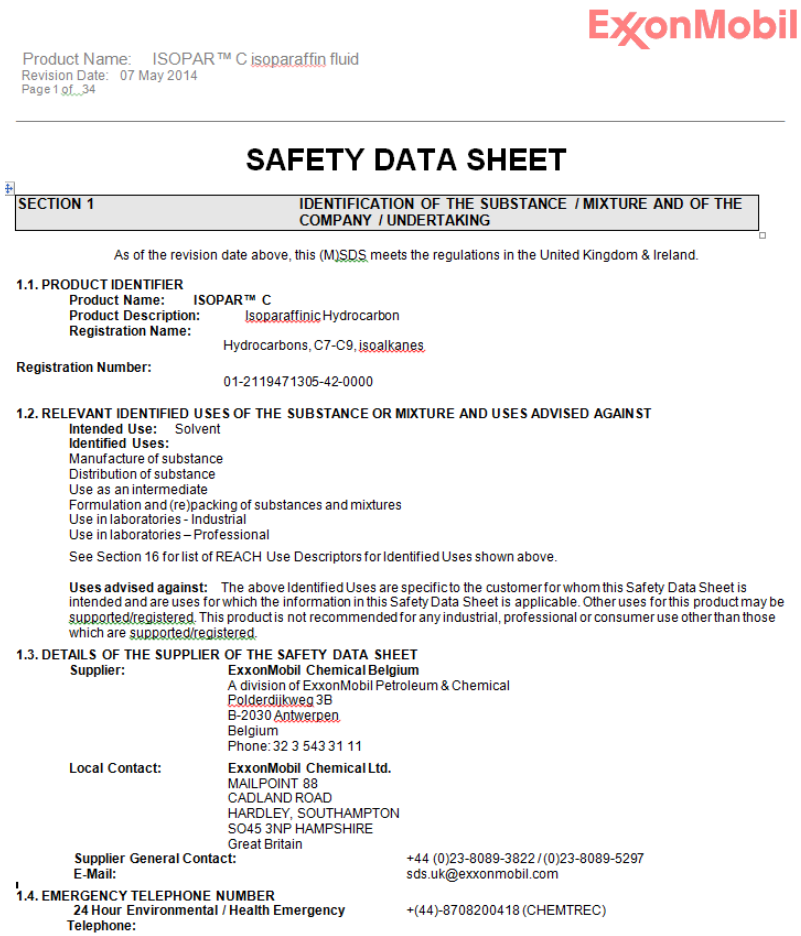
- Product description
- Registration names and numbers

1.2 Relevant uses

- Identified uses and uses advised against of the substance/mixture

1.3 Details of the supplier

1.4 Emergency telephone number



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Product Name: ISOPAR™ C isoparaffin fluid
Revision Date: 07 May 2014
Page 1 of 34

SAFETY DATA SHEET

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

As of the revision date above, this (M)SDS meets the regulations in the United Kingdom & Ireland.

1.1. PRODUCT IDENTIFIER

Product Name: ISOPAR™ C
Product Description: Isoparaffinic Hydrocarbon
Registration Name: Hydrocarbons, C7-C9, isoalkanes
Registration Number: 01-2119471305-42-0000

1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Intended Use: Solvent
Identified Uses:
Manufacture of substance
Distribution of substance
Use as an intermediate
Formulation and (re)packing of substances and mixtures
Use in laboratories - Industrial
Use in laboratories – Professional

See Section 16 for list of REACH Use Descriptors for Identified Uses shown above.

Uses advised against: The above Identified Uses are specific to the customer for whom this Safety Data Sheet is intended and are uses for which the information in this Safety Data Sheet is applicable. Other uses for this product may be supported/registered. This product is not recommended for any industrial, professional or consumer use other than those which are supported/registered.

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Supplier: **ExxonMobil Chemical Belgium**
A division of ExxonMobil Petroleum & Chemical
Polderdijkweg 3B
B-2030 Antwerpen
Belgium
Phone: 32 3 543 31 11

Local Contact: **ExxonMobil Chemical Ltd.**
MAILPOINT 88
CADLAND ROAD
HARDLEY, SOUTHAMPTON
SO45 3NP HAMPSHIRE
Great Britain

Supplier General Contact: +44 (0)23-8089-3822 / (0)23-8089-5297
E-Mail: sds.uk@exxonmobil.com

1.4. EMERGENCY TELEPHONE NUMBER

24 Hour Environmental / Health Emergency Telephone: +(44)-8708200418 (CHEMTREC)

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Section 2

Hazards identification

This section describes the **hazards** of the product and the appropriate **warning information** associated with those hazards.

2.1 Classification of substance or mixture

- Hazard is described using CLP **hazard statements**

SECTION 2 HAZARDS IDENTIFICATION

2.1. CLASSIFICATION OF SUBSTANCE OR MIXTURE

Classification according to Regulation (EC) No 1272/2008
Flammable liquid: Category 2.
Skin irritation: Category 2. Specific target organ toxicant (central nervous system): Category 3. Aspiration toxicant: Category 1.
Chronic aquatic toxicant: Category 2.
H225: Highly flammable liquid and vapor.
H304: May be fatal if swallowed and enters airways. H315: Causes skin irritation. H336: May cause drowsiness or dizziness.
H411: Toxic to aquatic life with long lasting effects.

Classification according to EU Directive 67/548/EEC / 1999/45 EC
F; R11 | Xn; R65 | Xi; R38 | R67 | N; R51/53 |
Highly flammable. Harmful. Irritant. Dangerous for the environment. R11; Highly flammable.
R65; Harmful: may cause lung damage if swallowed. R38; Irritating to skin. R67; Vapours may cause drowsiness and dizziness. R51/53; Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

The classification of this product is based all or in part on test data.

- For **substances/ mixtures**
- Required to classify according to CLP for substances and voluntary for mixtures until June 1 2015.
- DSD/DPD classification shall be disclosed in addition to the CLP classification until June 1 2015.

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Section 2

Hazards identification (2)

2.2 Label elements

According to the CLP regulation

- Hazard pictogram(s)
- Signal word
- Hazard statement(s) and
- Precautionary statement(s)

The label elements disclosed on the SDS provides information which is needed for the creation of the Label itself.

2.2. LABEL ELEMENTS

Label elements according to Regulation (EC) No 1272/2008

Pictograms:

Signal Word: Danger

Hazard Statements:

H225: Highly flammable liquid and vapor.
H304: May be fatal if swallowed and enters airways. H315: Causes skin irritation. H336: May cause drowsiness or dizziness.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statements:

P210: Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. P233: Keep container tightly closed. P240: Ground / bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating, and lighting equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P261: Avoid breathing mist / vapours. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves and eye / face protection.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P331: Do NOT induce vomiting. P332 + P313: If skin irritation occurs: Get medical advice/ attention. P362 + P364: Take off contaminated clothing and wash it before reuse. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish. P391: Collect spillage.
P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up.
P501: Dispose of contents and container in accordance with local regulations.

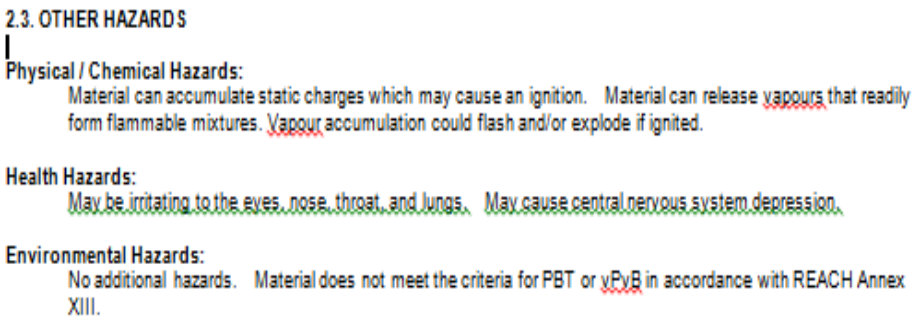
Contains: Hydrocarbons, C7-C9, isoalkanes

Section 2

Hazards identification (3)

2.3 Other hazards

- Physico/chemical hazards: e.g. static charges
- Health hazards: e.g. skin dryness
- **NEW!** Environmental hazards: e.g. Persistent, bio-accumulative and toxic (**PBT**), and very persistent and very bio-accumulative (**vPvB**)



2.3. OTHER HAZARDS

Physical / Chemical Hazards:
Material can accumulate static charges which may cause an ignition. Material can release vapours that readily form flammable mixtures. Vapour accumulation could flash and/or explode if ignited.

Health Hazards:
May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression.

Environmental Hazards:
No additional hazards. Material does not meet the criteria for PBT or vPvB in accordance with REACH Annex XIII.

REACH Annex XIII defines criteria for the identification of substances that are PBT or vPvB and Annex I lays down general provisions for their assessment.

None of the ExxonMobil Chemical hydrocarbon fluids meets the PBT/vPvB criteria

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Section 3

Composition/information on ingredients

This section :

- Indicates if the material is a substance or a mixture
- Describes the chemical identity of the substance (being 100% of an ingredient because constituents are captured by the naming convention) and the relevant hazardous constituents which are part of the **REACH solvent naming convention**, this is the REACH name describing the hydrocarbon fluid
- Describes the ingredients of the mixture.

There is no requirement to give the full composition.

Name	CAS#	EC#	Registration#	Concentration*	GHS/CLP classification
Hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics		927-241-2	01-2119471843-32	100%	Aquatic Chronic 3 H412, Asp. Tox. 1 H304, EUH066, Flam. Liq. 3 H226, STOT SE 3 H336, [Skin Irrit. 3 H316]

new EC#

REACH#

Concentration ranges

Product identifier: Main constituents that are classified and contribute to the classification of the substance are provided

The UVCB hydrocarbon fluids are no longer identified by a CAS Number under REACH. The CAS# still applies in countries not subject to REACH and is displayed in Section 15 ("Regulation Information")

Classification acc to CLP and DSD

Name	CAS#	EC#	Registration#	Concentration*	DSD Symbols/Risk Phrases
Hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics		927-241-2	01-2119471843-32	100%	R10, Xn;R65, R66, R67, R52/53

Section 4

First aid measures

The measures provided in this section are **recommendations for immediate first aid treatment only**.

4.1 Description of first aid measures

- Inhalation
- Skin contact
- Eye Contact
- Ingestion

4.2 Most important symptoms and effects, both acute and delayed

4.3 Indication of any immediate medical attention and special treatment needed

4.1. DESCRIPTION OF FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

Seek immediate medical attention. Do not induce vomiting.

4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Headache, dizziness, drowsiness, nausea and other CNS effects. Itching, pain, redness, swelling of skin.

4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

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Section 5

Fire fighting measures

This section provides general guidance on **fire-fighting** and on **extinguishing agents** to assist the most senior competent individual present at the incident.

5.1 Extinguishing media

- Information is provided on both appropriate and inappropriate extinguishing media

5.2 Special hazards arising from the substance or mixture

5.3 Advice for fire-fighters:

For Fluids, information on flammability properties includes:

- Flash point
- Flammability limits
- Auto-ignition temperature

5.1. EXTINGUISHING MEDIA

Suitable Extinguishing Media: Use foam, dry chemical, or carbon dioxide (CO_2) to extinguish flames.

Unsuitable Extinguishing Media: Straight streams of water

5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Hazardous Combustion Products: Smoke, Fume, Incomplete combustion products, Oxides of carbon

5.3. ADVICE FOR FIRE FIGHTERS

Fire Fighting Instructions: Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapours and to protect personnel attempting to stop a leak. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Highly flammable. Vapour is flammable and heavier than air. Vapour may travel across the ground and reach remote ignition sources, causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

FLAMMABILITY PROPERTIES

Flash Point [Method]: <10°C (50°F) [ASTM D-56]
Upper/Lower Flammable Limits (Approximate volume % in air): UEL: 6.3 LEL: 0.7 [Extrapolated]
Autoignition Temperature: >200°C (392°F) [Extrapolated]

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Section 6

Accidental release measures

This section describes the recommendations on the appropriate response to spills, leaks, or releases, to **prevent or minimize any adverse effects on persons, property and the environment.**

6.1 Personal precautions, protective equipment and emergency procedures

- Specific advice is provided for many areas incl. the wearing of suitable personal protective equipment removal of ignition sources; provision of sufficient ventilation; dust control; emergency evacuation procedures; consultation with experts.

6.2 Environmental precautions

- Prevent entry into waterways, sewers...

6.3 Methods and material for containment and cleaning up

- Advice on containment or clean-up techniques.

6.4 References to other sections

6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

NOTIFICATION PROCEDURES
In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES
Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required, due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

6.2. ENVIRONMENTAL PRECAUTIONS
Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP
Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapour, but may not prevent ignition in enclosed spaces.

Water Spill: Stop leak if you can do so without risk. Eliminate sources of ignition. Warn other shipping. If the Flash Point exceeds the Ambient Temperature by 10 deg C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Air Temperature by at least 10C, use booms as a barrier to protect shorelines and allow material to evaporate. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

6.4. REFERENCES TO OTHER SECTIONS
See Sections 8 and 13.

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Section 7

Handling and storage

This section provides recommendations for **safe handling techniques of products and safe and optimal storage**.

7.1 Precautions for safe handling

- Recommendations are given for safe handling techniques of products and safe and optimal storage

7.2 Conditions for safe storage, incl. any incompatibilities

- Provides general guidance concerning materials and coatings that are suitable or unsuitable for storage and transfer operations

7.3 Specific end uses

- Section 1 informs about identified end-uses

SECTION 7	HANDLING AND STORAGE

7.1. PRECAUTIONS FOR SAFE HANDLING

Avoid contact with skin. Potentially toxic/irritating fumes/vapour may be evolved from heated or agitated material. Use only with adequate ventilation. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Loading/Unloading Temperature: [Ambient]
Transport Temperature: [Ambient]
Transport Pressure: [Ambient]

Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

The container choice, for example storage vessel, may effect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Storage containers should be earthed and bonded. Fixed storage containers, transfer containers and associated equipment should be earthed and bonded to prevent accumulation of static charge.
Storage Temperature: [Ambient]
Storage Pressure: [Ambient]

Suitable Containers/Packing: Tank Cars; Tank Trucks; Railcars; Barges; Drums

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Section 8

Exposure control/personal protection

This section shares **recommendations and data to achieve good industrial hygiene and environmental control practices at work** (e.g., risks for man and the environment arising from emissions of dusts, fumes, gases, vapors, mists and liquids).

8.1 CONTROL PARAMETERS

1. Occupational Exposure Limits (OEL) set-up by national (only disclosed on the country SDS) and international bodies:

No change on the disclosure of OELs

1. NEW! Exposure limits developed as a consequence of REACH

- **Derived No Effect Level (DNEL)**
  Level of exposure above which humans should not be exposed
- **Predicted No Effect Concentrations (PNEC)**
  Addresses range of environmental compartments (water, air, soil and sediments)
  For hydrocarbon UVCBs, no single PNEC value is identified for the overall substance or used in risk assessment calculations.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. CONTROL PARAMETERS

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit/Standard			Note	Source
Hydrocarbons, C7-C9, isoalkanes	Vapour	RCP - TWA	300 ppm	1400 mg/m3	Total Hydrocarbons	ExxonMobil

Note: Information about recommended monitoring procedures can be obtained from the relevant agency(ies)/institute(s):
UK Health and Safety Executive (HSE)

DERIVED NO EFFECT LEVEL (DNEL)/DERIVED MINIMAL EFFECT LEVEL (DMEL)

Worker

Substance Name	Dermal	Inhalation
Hydrocarbons, C7-C9, isoalkanes	773 mg/kg bw/day DNEL, Chronic Exposure, Systemic Effects	2035 mg/m3 DNEL, Chronic Exposure, Systemic Effects

Consumer

Substance Name	Dermal	Inhalation	Oral
Hydrocarbons, C7-C9, isoalkanes	699 mg/kg bw/day DNEL, Chronic Exposure, Systemic Effects	608 mg/m3 DNEL, Chronic Exposure, Systemic Effects	699 mg/kg bw/day DNEL, Chronic Exposure, Systemic Effects

Note: The Derived No Effect Level (DNEL) is an estimated safe level of exposure that is derived from toxicity data in accord with specific guidance within the European REACH regulation. The DNEL may differ from an Occupational Exposure Limit (OEL) for the same chemical. OELs may be recommended by an individual company, a governmental regulatory body or an expert organization, such as the Scientific Committee for Occupational Exposure Limits (SCOEL) or the American Conference of Governmental Industrial Hygienists (ACGIH). OELs are considered to be safe exposure levels for a typical worker in an occupational setting for an 8-hour work shift, 40 hour work week, as a time weighted average (TWA) or a 15 minute short-term exposure limit (STEL). While also considered to be protective of health, OELs are derived by a process different from that of REACH.

PREDICTED NO EFFECT CONCENTRATION (PNEC)

Substance Name	Aqua (fresh water)	Aqua (marine water)	Aqua (intermittent release)	Sewage treatment plant	Sediment	Soil	Oral (secondary poisoning)
Hydrocarbons, C7-C9, isoalkanes	NA	NA	NA	NA	NA	NA	NA

8.2 EXPOSURE CONTROL

- No change

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Section 8

Occupational exposure limits (reminder)

Occupational Exposure Limits (OELs)

- The listed OELs include those set by national and international bodies as well as those recommended by ExxonMobil after professional consideration of all relevant data.
- A number of institutions and countries define OELs:
  - The European Union (EU) publishes OELs under the names Indicative Limit Value (ILV) or Binding Limit Value (BLV).
  - Member States have an obligation to ensure the ILVs are implemented in national health and safety regulations.
- Examples of national OELs include:

Denmark	-	Grænseværdier for Stoffer og Materialer
Finland	-	Haitalliseksi Tunnetut Pitoisuudet, HTP -arvot
France	-	*Valeurs Limites d'Exposition Professionnelle* (**VLEP**)
Germany	-	*Maximale Arbeitsplatzkonzentrationen* (**MAK**) and *Technische Richtkonzentration* (**TRK**)
Italy	-	*Massima Concentrazione Consentita* (**MCC**)
Netherlands	-	*Maximale Aanvaarde Concentratie* (**MAC**)
Norway	-	Administrative normer
Sweden	-	Hygieniska gränsvärden
UK	-	*Maximum Exposure Limits* (**MEL**) and *Occupational Exposure Standards* (**OES**)
US	-	*Permissible Exposure Limits* (**PEL**)

Section 9

Physical and chemical properties

This section describes the empirical **data relating to substances and mixtures**. The information is consistent with that provided in the REACH registration and/or in the chemical safety report and with the classification of the substance or mixture.

9.1 Information on basic physical and chemical properties

- **NEW!** Data consistent with REACH registration dossier
- **NEW!** Ranges are provided rather than typical data – same as substance reference
- **NEW!** Should not be considered as product specifications

9.2 Other information

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Form: Clear
Colour: Colourless
Odour: Sweet
Odour Threshold: No data available
pH: No data available
Melting Point: No data available
Freezing Point: No data available
Initial Boiling Point / and Boiling Range: 90°C (194°F) - 150°C (302°F) [ASTM D1078]
Flash Point [Method]: <10°C (50°F) [ASTM D-56]
Evaporation Rate (n-butyl acetate = 1): 3.4 [In-house method]
Flammability (Solid, Gas): No data available
Upper/Lower Flammable Limits (Approximate volume % in air): UEL: 6.3 LEL: 0.7 [Extrapolated]
Vapour Pressure: [N/D at 20 °C] < 10 kPa (75 mm Hg) at 25°C [Calculated]
Vapour Density (Air = 1): > 1 at 101 kPa [In-house method]
Relative Density (at 15 °C): 0.651 - 0.751 [With respect to water] [Calculated]
Solubility(ies): water Negligible
Partition coefficient (n-Octanol/Water Partition Coefficient): No data available
Autoignition Temperature: >200°C (392°F) [Extrapolated]
Decomposition Temperature: No data available
Viscosity: [N/D at 40 °C] 0.5 cSt (0.5 mm2/sec) at 20°C - 1.2 cSt (1.2 mm2/sec) at 20°C [ASTM D7042]
Explosive Properties: None
Oxidizing Properties: None

9.2. OTHER INFORMATION

Density (at 15 °C): 650 kg/m3 (5.42 lbs/gal, 0.65 kg/dm3) - 750 kg/m3 (6.26 lbs/gal, 0.75 kg/dm3) [ISO 12185]
Pour Point: < -20°C (-4°F) [ASTM D5950]
Molecular Weight: 113
Hygroscopic: No
Coefficient of Thermal Expansion: 0.00122 V/V/DEG C [In-house method]

"This information is based on current knowledge of characteristic values and does not guarantee any specific property of the product"

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Section 10

Stability and reactivity

This section describes the stability of the **substance or mixture and the potential for hazardous reactions** occurring under certain conditions of use and also if released into the environment.

SECTION 10	STABILITY AND REACTIVITY

10.1. REACTIVITY: See sub-sections below.

10.2. CHEMICAL STABILITY: Material is stable under normal conditions.

10.3. POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

10.4. CONDITIONS TO AVOID: Avoid heat, sparks, open flames and other ignition sources.

10.5. INCOMPATIBLE MATERIALS: Strong oxidisers

10.6. HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

10.1 Reactivity

10.2 Chemical stability

10.3 Possibility of hazardous reactions

10.4 Conditions to avoid

10.5 Incompatible materials

10.6 Hazardous decomposition products

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Section 11

Toxicological information (fundamentals)

Principles of toxicology

- Every chemical substance is potentially toxic if the dose is high enough. For most substances there is a dose below which the substance will have no adverse effect.
- Different animal species and the individuals within a species do not necessarily respond in the same way to the same dose of a given substance.

Toxic responses can be categorized as:

- **Acute toxicity**
  - Health effects that result from a single exposure, usually to a relatively large amount of a substance over a short time (hours).
- **Chronic toxicity**
  - Health effects with a delayed onset, resulting from repeated exposure to a chemical over periods often measured in years. Carcinogenicity is the main chronic toxicological end point.
- **Irritation /Corrosion**
  - Reversible (irritation) or irreversible (corrosion) damage to living tissue by chemical action at the site of contact.
- **Sensitization**
  - An allergic reaction to a substance; chemicals that have the potential to cause such an effect are called sensitizers and may cause an allergic response after skin contact or respiratory exposure.

Section 11

Toxicological information

This section provides a more detailed description of the **possible health hazards of the product presented in Section 2**. The toxicological information is derived from animal test programs and/or human experience and covers health hazards that can arise from short-term (acute) or long-term (chronic) exposure to the product by inhalation, skin contact, eye contact or ingestion.

11.1 Information on toxicological effects

- Hazard classes for which data are to be provided are prescribed. Information shall be provided for each of them.

NEW! Extensive new data requirements

SECTION 11	TOXICOLOGICAL INFORMATION
11.1. INFORMATION ON TOXICOLOGICAL EFFECTS	
Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: (Rat) 4 hour(s) LC50 > 4951 mg/m3 (Max attainable vapor conc.) Test scores or other study results do not meet criteria for classification.	May cause central nervous system effects. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 403
Irritation: No end point data.	May be irritating to the respiratory tract. The effects are reversible.
Ingestion	
Acute Toxicity (Rat): LD50 > 5000 mg/kg Test scores or other study results do not meet criteria for classification.	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 401
Skin	
Acute Toxicity (Rabbit): LD50 > 5000 mg/kg Test scores or other study results do not meet criteria for classification.	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 402
Skin Corrosion/Irritation: Data available. Test scores or other study results do not meet criteria for classification.	May dry the skin leading to discomfort and dermatitis. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 404
Eye	
Serious Eye Damage/Irritation: Data available. Test scores or other study results do not meet criteria for classification.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405
Sensitisation	
Respiratory Sensitization: No end point data.	Not expected to be a respiratory sensitizer.
Skin Sensitization: Data available. Test scores or other study results do not meet criteria for classification.	Not expected to be a skin sensitizer. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 406
Aspiration: Data available.	May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: Data available. Test scores or other study results do not meet criteria for classification.	Not expected to be a germ cell mutagen. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 471 473 474 476 478 479
Carcinogenicity: Data available. Test scores or other study results do not meet criteria for classification.	Not expected to cause cancer. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 453
Reproductive Toxicity: Data available. Test scores or other study results do not meet criteria for classification.	Not expected to be a reproductive toxicant. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 414 421 422
Lactation: No end point data.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data.	May cause drowsiness or dizziness.
Repeated Exposure: Data available. Test scores or other study results do not meet criteria for classification.	Not expected to cause organ damage from prolonged or repeated exposure. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 408 413 422

Section 12

Ecological information

This section describes the **possible effects, behavior and environmental fate of the substance or mixture in air, water and/or soil**.

12.1 Toxicity

12.2 Persistence and degradability

12.3 Bioaccumulative potential

12.4 Mobility in soil

12.5 Persistence bioaccumulation and toxicity for substance(s)

- **PBT / vPvB**

12.6 Other adverse effects

Other ecological information

NEW! More detailed ecological data in a table format:

- on Ecotoxicity
- on Persistence, Degradability and Bioaccumulation potential

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

12.1. TOXICITY
Material -- Expected to be harmful to aquatic organisms. May cause longterm adverse effects in the aquatic environment.

12.2. PERSISTENCE AND DEGRADABILITY
Biodegradation:
Material -- Expected to be readily biodegradable.
Hydrolysis:
Material -- Transformation due to hydrolysis not expected to be significant.
Photolysis:
Material -- Transformation due to photolysis not expected to be significant.
Atmospheric Oxidation:
Material -- Expected to degrade rapidly in air

12.3. BIOACCUMULATIVE POTENTIAL Not determined.

12.4. MOBILITY IN SOIL
Material -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

12.5. PERSISTENCE, BIOACCUMULATION AND TOXICITY FOR SUBSTANCE(S)
This product is not, or does not contain, a substance that is a PBT or a vPvB.

12.6. OTHER ADVERSE EFFECTS
No adverse effects are expected.

OTHER ECOLOGICAL INFORMATION
VOC: Yes

ECOLOGICAL DATA

Ecotoxicity

Test	Duration	Organism Type	Test Results
Aquatic - Acute Toxicity	48 hour(s)	Daphnia magna	EL50 >22<46 mg/l: data for similar materials
Aquatic - Acute Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	NOELR <1 mg/l: data for similar materials
Aquatic - Acute Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	EL50 >1000 mg/l: data for similar materials
Aquatic - Acute Toxicity	96 hour(s)	Oncorhynchus mykiss	LL50 >10<30 mg/l: data for similar materials

Persistence, Degradability and Bioaccumulation Potential

Media	Test Type	Duration	Test Results: Basis
Water	Ready Biodegradability	28 day(s)	Percent Degraded 89

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Section 13

Disposal considerations

This section provides **disposal recommendations** based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

13.1 Waste treatment methods

Regulatory disposal information

SECTION 13	DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

13.1. WASTE TREATMENT METHODS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

European Waste Code: 08 XX XX

NOTE: These codes are assigned based upon the most common uses for this material and may not reflect contaminants resulting from actual use. Waste producers need to assess the actual process used when generating the waste and its contaminants in order to assign the proper waste disposal code(s).

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

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Section 14

Transport information

This section describes the **regulations specific to each mode of transport** for the international transport of dangerous goods.

Minor changes, but not triggered by REACH/CLP

Land transport

- By road, European agreement (ADR)

Inland waterways

- European agreement (ADN).

Sea transport

- For packaged dangerous goods (International Maritime Dangerous Goods Code – IMDG)
- For bulk liquids (MARPOL: convention under international laws)

Air transport

- International Air Transport Association (IATA).

SECTION 14 TRANSPORT INFORMATION

LAND (ADR/RID)
14.1. UN Number: 1262
14.2. UN Proper Shipping Name (Technical Name): OCTANES
14.3. Transport Hazard Class(es): 3
14.4. Packing Group: II
14.5. Environmental Hazards: Yes
14.6. Special Precautions for users:
Classification Code: F1
Label(s) / Mark(s): 3, EHS
Hazard ID Number: 33
Hazchem EAC: 3YE

INLAND WATERWAYS (ADNR/ADN)
14.1. UN (or ID) Number: 3295
14.2. UN Proper Shipping Name (Technical Name): HYDROCARBONS, LIQUID, N.O.S. (Isooctanes)
14.3. Transport Hazard Class(es): 3
14.4. Packing Group: II
14.5. Environmental Hazards: Yes
14.6. Special Precautions for users:
Proper Shipping Name Suffix: vp50 <= 110 kPa
Hazard ID Number: 33
Label(s) / Mark(s): 3 (N2), EHS

SEA (IMDG)
14.1. UN Number: 1262
14.2. UN Proper Shipping Name (Technical Name): OCTANES
14.3. Transport Hazard Class(es): 3
14.4. Packing Group: II
14.5. Environmental Hazards: Marine Pollutant
14.6. Special Precautions for users:
Label(s): 3
EMS Number: F-E, S-E
Transport Document Name: UN1262, OCTANES, 3, PG II, (<10°C c.c.), MARINE POLLUTANT

SEA (MARPOL 73/78 Convention - Annex II):
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Substance Name: OCTANE (ALL ISOMERS)
Ship type required: 2
Pollution category: X

AIR (IATA)
14.1. UN Number: 1262
14.2. UN Proper Shipping Name (Technical Name): OCTANES
14.3. Transport Hazard Class(es): 3
14.4. Packing Group: II
14.5. Environmental Hazards: Yes
14.6. Special Precautions for users:

Packing Group:
I for great danger - II for medium danger – III for low danger
Transport Hazard Class:
Class 3 for flammable liquids

Section 15

Regulatory information

This section describes the **regulatory status and applicable laws and regulations**.

- List of national/regional chemical inventory that the product complies with.
- CAS numbers provided in this section for reference to countries not subject to REACH

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

- REACH specific information.
- When a substance is authorised details of: substance name, authorisation number, authorised use and expiration date.
- When a substance is subject to restriction details of: substance name and restricted use.

15.2 Chemical safety assessment

- Whether a REACH Chemical safety assessment has been conducted.

SECTION 15 REGULATORY INFORMATION

REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS

Complies with the following national/regional chemical inventory requirements: AICS, ENCS, IECSC, KECI, PICCS

The following substance(s) in this product is (are) identified by the CAS number(s) shown in countries not subject to the REACH regulation.

Name	CAS
Hydrocarbons, C7-C9, isoalkanes	90622-56-3

15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

Applicable EU Directives and Regulations:

1907/2006 [... on the Registration, Evaluation, Authorisation and Restriction of Chemicals ... and amendments thereto]
2004/42/CE [on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC.]
96/82/EC as extended by 2003/105/EC ... [... on the control of major-accident hazards involving dangerous substances]. Product contains a substance that falls within the criteria defined in Annex I. Refer to Directive for details of requirements taking into account the volume of product stored on site.
98/24/EC [... on the protection of workers from the risk related to chemical agents at work ...]. Refer to Directive for details of requirements.
1272/2008 [on classification, labelling and packaging of substances and mixtures.. and amendments thereto]

Refer to the relevant EU/national regulation for details of any actions or restrictions required by the above Regulation(s)/Directive(s).

15.2. CHEMICAL SAFETY ASSESSMENT

REACH Information: A Chemical Safety Assessment has been carried out for one or more substances present in the material.

ExxonMobil Chemical Fluids are neither subject to authorization nor restriction for any of its intended uses.

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Section 16

Other information

This section provides information that is not covered in the previous sections that may have an effect on or an important relationship to safety, health or the environment, is added here on an ad hoc basis. In particular, this section provides:

- **NEW!** REACH Use descriptors
- the sources of data used to compile this SDS
- a legend with the abbreviations and acronyms used in the Safety Data Sheet
- the list of relevant hazard statements and risk phrases as referenced in section 3
- the references to the sections that have been revised since the last issue of the SDS; this informs the reader in which section specific changes are made

SECTION 16 OTHER INFORMATION

IDENTIFIED USES:
Manufacture of substance (PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, SU10, SU3, SU8, SU9)
Distribution of substance (PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, SU3, SU8, SU9)
Use as an intermediate (PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, SU3, SU8, SU9)
Formulation and (re)packing of substances and mixtures (PROC1, PROC14, PROC15, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, SU10, SU3)
Use in Coatings - Industrial (PROC1, PROC10, PROC13, PROC14, PROC15, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, SU3)
Use in Cleaning Agents - Industrial (PROC1, PROC10, PROC13, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8bSU3,)
(list not complete on this example SDS)

REFERENCES: Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, CONCAWE Product Dossiers, publications from other trade associations, such as the EU Hydrocarbon Solvents REACH Consortium, U.S. HPV Program Robust Summaries, the EU IUCLID Data Base, U.S. NTP publications, and other sources, as appropriate.

List of abbreviations and acronyms that could be (but not necessarily are) used in this safety data sheet:

Acronym	Full text
N/A	Not applicable
N/D	Not determined
NE	Not established
VOC	Volatile Organic Compound
AICS	Australian Inventory of Chemical Substances
AIHA WEEL	American Industrial Hygiene Association Workplace Environmental Exposure Limits
ASTM	ASTM International, originally known as the American Society for Testing and Materials (ASTM)
DSL	Domestic Substance List (Canada)
EINECS	European Inventory of Existing Commercial Substances
ELINCS	European List of Notified Chemical Substances
ENCS	Existing and new Chemical Substances (Japanese inventory)
IECSC	Inventory of Existing Chemical Substances in China
KECI	Korean Existing Chemicals Inventory
NDSL	Non-Domestic Substances List (Canada)
NZIoC	New Zealand Inventory of Chemicals
PICCS	Philippine Inventory of Chemicals and Chemical Substances
TLV	Threshold Limit Value (American Conference of Governmental Industrial Hygienists)
TSCA	Toxic Substances Control Act (U.S. inventory)
UVCB	Substances of Unknown or Variable composition, Complex reaction products or Biological materials
LC	Lethal Concentration
LD	Lethal Dose
LL	Lethal Loading
EC	Effective Concentration
EL	Effective Loading
NOEC	No Observable Effect Concentration
NOELR	No Observable Effect Loading Rate

Annex to Ext-SDS

Exposure scenario

- **The safety data sheets of classified materials are extended with an annex containing the exposure scenarios, when the material is registered as a 'product on the market' under REACH**
- **There is one exposure scenario for each specified use.**
- **Contents of Exposure Scenario**
  - Title
  - Operating conditions and risk management measures
    - Control of worker exposure
    - Control of environmental exposure
  - Exposure estimation
    - Health
    - Environment
  - Guidance to check compliance with ES
- Annex is a significant portion of the ext-SDS depending on the number of uses (2-3 pages per use)

ANNEX

Section 1 Exposure Scenario Title	
Title:	
Manufacture of substance	
Use Descriptor	
Sector(s) of Use	SU3, SU8, SU9
Process Categories	PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b
Environmental Release Categories	ERC1, ERC4
Specific Environmental Release Category	ESVOC 1.1.v1
Processes, tasks, activities covered	
Manufacture of the substance or use as an intermediate, process chemical or extracting agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (ncluding marine vessel/barge, road/rail car and bulk container).	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product Characteristic	
Liquid	
Duration, frequency and amount	
Covers daily exposures up to 8 hours (unless stated differently)[G2] Covers percentage substance in the product up to 100 %[G13]	
Other given operational conditions affecting workers exposure	
Assumes a good basic standard of occupational hygiene is implemented [G1] Assumes use at not more than 20°C above ambient temperature[G15]	
Contributing Scenarios/Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)	
General exposures (closed systems) PROC1 No specific measures identified. **General exposures (closed systems) PROC2** No specific measures identified. **General exposures (closed systems) PROC3** No specific measures identified. **General exposures (open systems) PROC4** No specific measures identified. **Process sampling PROC8b** No specific measures identified. **Laboratory activities PROC15** No specific measures identified. **Bulk transfers (open systems) PROC8b** No specific measures identified. **Bulk transfers (closed systems) PROC8b** No specific measures identified. **Equipment cleaning and maintenance PROC8a** No specific measures identified.	

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Back-up

Glossary

Terms and abbreviations (1)

- **REACH Annex II: "Guide to the compilation of safety data sheets"**
  "Commission Regulation (EC) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)"

  REACH Annex II sets out the requirements that the supplier shall fulfil for the compilation of a safety data sheet that is provided for a substance or a mixture in accordance with Article 31.

  Pre- December 1st 2010 Annex II refers to the Dangerous Substances Directive (DSD) and Dangerous Preparations Directives (DPD) and has no requirements for inclusions of REACH registration data.

- **CLP: classification, labelling and packaging of substances and mixtures**
  Regulation (EC) No 1272/2008 of 16 December 2008.

- **DPD: Dangerous Preparation Directive**
  Directive 1999/45/EC of 31 May 1999 relating to the classification, packaging and labelling of dangerous preparations.

- **DSD: Dangerous Substance Directive**
  Council Directive 67/548/EC of 27 June 1967 relating to the classification, packaging and labelling of dangerous substances.

- **ECHA: European Chemical Agency**

Terms and abbreviations (2)

- **Exposure Scenario (ES)**
  The Exposure Scenario represents the output of the Chemical Safety Assessment (CSA) for the substance that is part of the Registration package for that substance. ES means the set of conditions, including operational conditions and risk management measures, that describe how the substance is manufactured or used during its life-cycle and how the manufacturer or importer controls, or recommends downstream users to control, exposures of humans and the environment. These ES may cover one specific process or use or several processes or uses as appropriate. It is written in standard sentences (in order to facilitate ready translation into other languages).

- **REACH solvent naming convention / HSPA naming convention**
  The Hydrocarbon Solvents Producers Association (HSPA), a sector group of CEFIC (European Council of the Chemical Industry) has defined a naming system to characterize hydrocarbon solvents as a substance in order to properly identify similar substances in accordance with the REACH regulation. Full text can be found here.

- **Mixture**
  Mixtures are blends of substances. Mixtures replace the term “preparation” that was used according to the DPD.

- **PBT/vPvB**
  Persistent Bioaccumulative Toxic, very Persistent, very Bioaccumulative substances.REACH Annex XIII defines criteria for the identification of substances.

Use descriptor system

The use descriptor system developed by ECHA is aimed at standardizing the description of the uses of the substance. It is based on five separate descriptor-lists. The combination of items selected from different lists form a brief description of the life cycle of the substance.

Sector of Use (SU)	describes the minimum level of detail a registrant is expected to provide in describing the sector of use, and they are important to the assessor as they help in directing the exposure assessment (e.g. selecting the appropriate tools). **e.g. SU10 = Formulation Formulation [mixing] of preparations and/or repackaging**
Process Category (PROC)	describes the application techniques or process types defined from an occupational perspective. Each PROC has a direct impact on the exposure to be expected and on the Risk Management Measures needed. **e.g.: PROC2 = Use in closed, continuous process with occasional controlled exposure.**
Product Category (PC)	describes the use of a substance by the type of end-use product (e.g. lubricant, cleaner, adhesive) in which the substance is known to be used. **e.g.: PC1 = Adhesives, Sealants - PC12 = Fertilizers**
Environmental Release Category (ERC)	describes the broad conditions of use from an environmental perspective. This is based on those characteristics that give a first indication of the potential of the substance to be released to the environment **e.g.: ERC2 = Formulation of preparations, ERC4 = Industrial use of processing aids**
Article Category (AC)	describes the type of article into which the substance has eventually been processed. This also includes mixtures in their dried or cured form (e.g. dried printing ink in newspapers; dried coatings on various surfaces). *Does not apply for ExxonMobil Chemical as supplier of fluids*

Complete list of use descriptors available in ECHA guidance