

Product Name: EXXAL™ 8

Revision Date: 10 Feb 2022

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MATERIAL SAFETY DATA SHEET

MSDS No.: N/A

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION**A. Product Name:** EXXAL™ 8**Product Description:** Alcohol**B. Recommended Use of Product and Restrictions in Use.****Recommended use of the product:** Chemical feedstock**Restrictions in Use:** This product is not recommended for any industrial, professional or consumer use other than the identified uses above.**C. Manufacturer/Supplier information:****For details contact**

ExxonMobil Chemical Asia Pacific (Regn. No. 52893724C)

1 HarbourFront Place

#06-00 HarbourFront Tower One

098633 Singapore

Emergency Response Number	080-880-0468 / +1 703-741-5970 (CHEMTREC International)
Supplier General Contact	+65 6885 8000

Note: The above Manufacturer/Supplier is not the importer of this product.

SECTION 2 HAZARDS IDENTIFICATION

This material is hazardous according to regulatory guidelines (see (M)SDS Section 15).

A. Hazard Classification:

Skin irritation: Category 2. Eye irritation: Category 2A. Aspiration toxicant: Category 2.

Chronic aquatic toxicant: Category 3.

B. Label Elements Including Precautionary Statements:**Hazard Pictogram:****Signal Word:** Warning**Hazard Statements:**

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Health: H305: May be harmful if swallowed and enters airways. H315: Causes skin irritation. H319: Causes serious eye irritation.

Environmental: H412: Harmful to aquatic life with long lasting effects.

Precautionary Statements:

Prevention: P264: Wash skin thoroughly after handling. P273: Avoid release to the environment.

Response: P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P302 +

P352: IF ON SKIN: Wash with plenty of soap and water. P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing. P331: Do NOT induce vomiting. P332 + P313: If skin irritation occurs: Get

medical advice/ attention. P337 + P313: If eye irritation persists: Get medical advice/attention.

P362 + P364: Take off contaminated clothing and wash it before reuse.

Storage: P405: Store locked up.

Disposal: P501: Dispose of contents and container in accordance with local regulations.

C. Other Hazards Which Are Not Included In The Classification Criteria

Physical / Chemical Hazards

Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited. Combustible.

Health Hazards

May be irritating to nose, throat, and lungs. If swallowed, may be aspirated and cause lung damage.

Environmental Hazards

No additional hazards.

NFPA Hazard ID: Health: 2 Flammability: 2 Reactivity: 0

HMIS Hazard ID: Health: 2 Flammability: 2 Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3

COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a complex substance.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	Other Name	CAS # or Id. No.	Concentration*	GHS Hazard Codes
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ALCOHOLS, C7-9-ISO, C8-RICH	-	KE-00445	100 %	H227, H305, H315, H319(2A), H402, H412
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* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

SECTION 4	FIRST AID MEASURES
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A. Eye Contact

Flush thoroughly with water for at least 15 minutes. Get medical assistance.

B. Skin Contact

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

C. 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.

D. Ingestion

Seek immediate medical attention. Do not induce vomiting.

E. Other note to physician

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

Acute and Delayed Symptoms/Effects

See Toxicological Section

Pre-existing Medical Conditions Which May Be Aggravated By Exposure

None.

SECTION 5	FIRE FIGHTING MEASURES
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Flammability Properties

Flash Point [Method]: 76° C (169° F) [ASTM D-93]

Autoignition Temperature: N/D

Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D

A. Suitable (and Unsuitable) Extinguishing Media

Appropriate Extinguishing Media: Use water fog, alcohol-resistant foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water or Regular Foam

B. Specific Hazards arising from the Chemical

Unusual Fire Hazards: Combustible. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

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

C. Special Protective Equipment and Precautions for Fire-fighters

Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters 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.

SECTION 6

ACCIDENTAL RELEASE MEASURES

A. Personal Precautions and Protective Equipment

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.

B. Environmental Precautions and Protective Procedure

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

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

C. Methods and Materials 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 it 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 vapor suppressing foam may be used to reduce vapors. 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 vapor; but may not prevent ignition in closed spaces. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. 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.

SECTION 7 HANDLING AND STORAGE

A. Precautions for Safe Handling

Avoid contact with skin. Avoid contact with eyes. Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Prevent small spills and leakage to avoid slip hazard. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight.

Loading/Unloading Temperature: [Ambient]

Transport Temperature: [Ambient]

Transport Pressure: [Ambient]

Static Accumulator: This material is not a static accumulator.

B. Conditions for Safe Storage

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 grounded and bonded. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.

Storage Temperature: [Ambient]

Storage Pressure: [Ambient]

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

Suitable Materials and Coatings (Chemical Compatibility): Carbon Steel; Stainless Steel; Polyethylene; Polypropylene; Aluminum; Epoxy Phenolic; Zinc

Unsuitable Materials and Coatings: Butyl Rubber; Natural Rubber; Vinyls

SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

A. Exposure Limit Values, Biological Limit Values

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

Substance Name	Form	Limit / Standard			Note	Source	Year
ALCOHOLS, C7-9-ISO, C8-RICH		STEL	200 mg/m3			ExxonMobil	2021

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

B. Appropriate Engineering Controls

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment.

C. Personal Protective Equipment

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include: Half-face filter respirator Type A filter material.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Eye Protection: Chemical goggles are recommended.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:
Chemical resistant gloves are recommended. Nitrile

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:
Chemical/oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

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Environmental Controls

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

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.

A. Appearance

Physical State: Liquid

Form: Clear

Color: Colorless

B. Odor: Alcohol

C. Odor Threshold: N/D

D. pH: N/D

E. Melting Point: N/A

Freezing Point: -54° C (-65° F)

F. Initial Boiling Point / Range: 185° C (365° F) – 193° C (379° F)

G. Flash Point [Method]: 76° C (169° F) [ASTM D-93]

H. Evaporation Rate (n-butyl acetate = 1): < 0.2

Density (at 20 °C): 832 kg/m³ (6.94 lbs/gal, 0.83 kg/dm³)

I. Flammability (Solid, Gas): N/A

J. Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D

K. Vapor Pressure: 0.013 kPa (0.1 mm Hg) at 20 ° C | 0.168 kPa (1.26 mm Hg) at 50° C | 3.49 kPa (26.18 mm Hg) at 100° C

L. Solubility in Water: Negligible

M. Vapor Density (Air = 1): > 1 at 101 kPa

N. Relative Density: N/D

O. Log Pow (n-Octanol/Water Partition Coefficient): 3

P. Autoignition Temperature: N/D

Q. Decomposition Temperature: N/D

R. Viscosity: [N/D at 40 ° C] | 13 cSt (13 mm²/sec) at 20° C

S. Molecular Weight: 130

Other Information

Hygroscopic: No

Coefficient of Thermal Expansion: 0.00085 per Deg C

SECTION 10

STABILITY AND REACTIVITY

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A. Chemical Stability and Possibility of Hazard Reactions

Chemical Stability: Material is stable under normal conditions.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

B. Conditions to Avoid: Open flames and high energy ignition sources.

C. Incompatible Materials: Acid Anhydrides, Aldehydes, Alkylene Oxides, Halogens, Inorganic acids, Monomers, Polymerizable esters, Strong oxidizers

D. Hazardous Decomposition Products: Material does not decompose at ambient temperatures.

SECTION 11

TOXICOLOGICAL INFORMATION

A. Information on Likely Routes of Exposure

No data available

B. Information on Health Hazards

Acute Toxicity (Inhalation):

Product

(Rat) 6 hour(s) LC50 > 0.024 mg/l (Max attainable vapor conc.) Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 403

Inhalation Irritation: No end point data for material. Elevated temperatures or mechanical action may form vapors, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.

Acute Toxicity (Ingestion):

Product

(Rat) LD50 > 2000 mg/kg Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 420

Acute Toxicity (Dermal)

Product

(Rabbit) LD50 > 2632 mg/kg Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 402

Skin corrosion/irritation

Product

Data available. Irritating to the skin. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 404 439

Serious eye damage/irritation

Product

Data available. Irritating and will injure eye tissue. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405

Respiratory sensitization

Product

No end point data for material. Not expected to be a respiratory sensitizer.

Skin sensitization

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Product

Data available. Not expected to be a skin sensitizer. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 406

Carcinogenicity

Product

No end point data for material. Not expected to cause cancer.

Germ cell mutagenicity

Product

Data available. Not expected to be a germ cell mutagen. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 471 473 476

Reproductive toxicity

Product

Data available. Not expected to be a reproductive toxicant. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 414

Specific target organ toxicity – single exposure

Product

No end point data for material. Not expected to cause organ damage from a single exposure.

Specific target organ toxicity – repeat exposure

Product

Data available. Not expected to cause organ damage from prolonged or repeated exposure. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 410

Aspiration hazard

Product

Data available. May be harmful if swallowed and enters airways. Based on physico-chemical properties of the material.

Other Information

For the product itself:

Vapor concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

IARC Classification:

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

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1 = IARC 1

2 = IARC 2A

3 = IARC 2B

SECTION 12**ECOLOGICAL INFORMATION**

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

A. Ecotoxicity

Material -- Expected to be harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

B. 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

C. Bioaccumulation

Not determined.

D. Mobility

Material -- Expected to partition to water. Not expected to partition to sediment and wastewater solids. Moderately volatile.

E. Other adverse effects: Not applicable**ECOLOGICAL DATA****Ecotoxicity**

Test	Duration	Organism Type	Test Results
Aquatic - Acute Toxicity	48 hour(s)	Daphnia magna	LC50 31.8 mg/l: data for the material
Aquatic - Acute Toxicity	96 hour(s)	Pimephales promelas	LC50 14 mg/l: data for the material
Aquatic - Acute Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	ErC50 23 mg/l: data for the material

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Aquatic – Chronic Toxicity	6 day(s)	Ceriodaphnia dubia	EC10 0.28 mg/l: data for the material
Aquatic – Chronic Toxicity	33 day(s)	Pimephales promelas	EC10 >0.28 mg/l: data for the material
Aquatic – Chronic Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	ErC10 10 mg/l: data for the material

Persistence, Degradability and Bioaccumulation Potential

Media	Test Type	Duration	Test Results
Water	Bioaccumulation	16 day(s)	BCF 21 L/kg: similar material
Water	Ready Biodegradability	28 day(s)	Percent Degraded 82 : material
Feed	Dietary Bioaccumulation	22 day(s)	BMF 0.016 : similar material

SECTION 13 DISPOSAL CONSIDERATIONS

A. Disposal methods

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.

B. Disposal precautions

Suitable routes of disposal are supervised incineration, preferentially with energy recovery, or appropriate recycling methods in accordance with applicable regulations and material characteristics at the time of disposal.

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.

SECTION 14 TRANSPORT INFORMATION

REGULATION ON SHIP-TRANSPORTATION AND STORAGE OF DANGEROUS SUBSTANCES (SEA (IMDG)) Not Regulated for Sea Transport according to IMDG-Code

- A. UN Number: Not applicable
- B. Proper Shipping Name: Not applicable
- C. Hazard Class & Division: Not applicable
- D. Packing Group: Not applicable

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E. Marine Pollutant: Not applicable

F. Special Precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance: Not applicable

LAND (ADR/RID) Not Regulated for Land Transport

A. UN Number: Not applicable

B. Proper Shipping Name: Not applicable

C. Hazard Class & Division: Not applicable

D. Packing Group: Not applicable

E. Marine pollutants: Only applicable for sea transport

F. Special Precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance: Not applicable

AIR (IATA) Not Regulated for Air Transport

A. UN Number: Not applicable

B. Proper Shipping Name: Not applicable

C. Hazard Class & Division: Not applicable

D. Packing Group: Not applicable

E. Marine pollutants: Only applicable for sea transport

F. Special Precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance: Not applicable

SECTION 15	REGULATORY INFORMATION
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This material is considered hazardous according to Korean GHS classification criteria.

Regulatory Status and Applicable Laws and Regulations

A. Industrial Safety & Health Act : Prohibited, Subject to an Approval for Manufacturing and Controlled Hazardous Substances: None.

B. Chemicals Control Act : Toxic, Banned and Restricted Toxic Chemicals, Authorization substances, Accidental Release Prevention Substances and Priority Existing Chemicals to Registration: None.

C. ACT ON THE SAFETY CONTROL OF HAZARDOUS SUBSTANCES: Category 4. Class 3 petroleum chemicals–water insoluble liquids

D. Waste Control Act: Waste Oil is a designated waste.

E. Other requirements in domestic and other countries

Listed or exempt from listing/notification on the following chemical inventories : AIIC, DSL, ENCS, IECSC, KECI, PICCS, TCSI, TSCA

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SECTION 16	OTHER INFORMATION
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A. Information sources and 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.

B.

C. Revision number and latest revision date

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D. Others

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):

H227: Combustible liquid; Flammable Liquid, Cat 4
H305: May be harmful if swallowed and enters airways; Aspiration, Cat 2
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A
H402: Harmful to aquatic life; Acute Env Tox, Cat 3
H412: Harmful to aquatic life with long lasting effects; Chronic Env Tox, Cat 3

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:MSDS reformatted and Implementation of new GHS adoption according to regulation requirements.

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