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# SAFETY DATA SHEET

# SECTION 1

# PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT

Product Name: MOBIL FORMULA S2 10W-40

Product Description: Base Oil and Additives Product Code: 201510202530, 484154

Intended Use: Engine oil

### COMPANY IDENTIFICATION

Manufacturer/Supplier:

For details contact ExxonMobil International LLC

Taiwan Branch

6th Floor, No 2, Section 1, Tun Hua South Road

IBM Building
Taipei Taiwan

**24 Hour Health Emergency** 00801-863-136 (8:30 am - 16:30 pm) Mon-Fri

Supplier General Contact 886-2-2734-6888

FAX 886-2-2734-6999

### SECTION 2

### HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

# Other hazard information:

# PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

#### HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.



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### ENVIRONMENTAL HAZARDS

No significant hazards.

**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 mixture.

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

Name	CAS#	Concentration*	GHS Hazard Codes
2-PENTANOL, 4-METHYL-, HYDROGEN PHOSPHORODITHIOATE, ZINC	2215-35-2	0.1 - < 1%	Н303, Н315, Н318, Н401,
SALT			H411
ALKARYLAMINE	36878-20-3	1 - < 5%	Н316
HYDROTREATED LIGHT PARAFFINIC DISTILLATES, PETROLEUM	64742-55-8	1 - < 5%	Н304
SEVERELY HYDROTREATED HEAVY PARAFFINIC DISTILLATE	64742-54-7	1 - < 5%	H304
SOLVENT DEWAXED HEAVY PARAFFINIC DISTILLATE	64742-65-0	1 - < 5%	H304
SOLVENT REFINED LIGHT PARAFFINIC DISTILLATE (PETROLEUM)	64741-89-5	1 - < 5%	H304
ZINC ALKYL DITHIOPHOSPHATE	113706-15-3	0.1 - < 1%	Н303, Н315, Н318, Н401,
			H411

TCSCA: Toxic Chemical Substances: None.

### SECTION 4

### FIRST AID MEAUSRES

### 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. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

# EYE CONTACT

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

<sup>\*</sup> All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.



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### INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

### NOTE TO PHYSICIAN

None

### PRECAUTIONS FOR FIRST AID RESPONDERS

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.

### MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Local necrosis as evidenced by delayed onset of pain and tissue damage a few hours after injection.

# SECTION 5

### FIRE FIGHTING MEASURES

### EXTINGUISHING MEDIA

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

Inappropriate Extinguishing Media: Straight Streams of Water

# FIRE FIGHTING

Fire Fighting Instructions: 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.

**Hazardous Combustion Products:** Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulphur oxides

# FLAMMABILITY PROPERTIES

Flash Point [Method]: >235 C (455 F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

### SECTION 6

### ACCIDENTAL RELEASE MEASURES

### NOTIFICATION PROCEDURES

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



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#### PROTECTIVE MEASURES

Avoid contact with spilled 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.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

# SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. 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.

### ENVIRONMENTAL PRECAUTIONS

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

# SECTION 7

# HANDLING AND STORAGE

# HANDLING

Avoid contact with used product. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include



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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).

Static Accumlator: This material is a static accumulator.

### **STORAGE**

The type of container used to store the material may affect static accumulation and dissipation. Do not store in open or unlabelled containers.

# SECTION 8

# EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE LIMIT VALUES

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

Substance Name	Form	Limit /	Standard	Note	Source	Year
HYDROTREATED LIGHT PARAFFINIC	Mist.	STEL	10 mg/m3		Taiwan	2018
DISTILLATES, PETROLEUM					PELs	
HYDROTREATED LIGHT PARAFFINIC	Mist.	TWA	5 mg/m3		Taiwan	2018
DISTILLATES, PETROLEUM					PELs	
HYDROTREATED LIGHT PARAFFINIC		TWA	5 mg/m3		ACGIH	2020
DISTILLATES, PETROLEUM	Inhalabl					
	e					
	fraction					
SEVERELY HYDROTREATED HEAVY	Mist.	STEL	10 mg/m3		Taiwan	2018
PARAFFINIC DISTILLATE					PELs	
SEVERELY HYDROTREATED HEAVY	Mist.	TWA	5 mg/m3		Taiwan	2018
PARAFFINIC DISTILLATE					PELs	
SEVERELY HYDROTREATED HEAVY		TWA	5 mg/m3		ACGIH	2020
PARAFFINIC DISTILLATE	Inhalabl					
	е					
	fraction					
SOLVENT DEWAXED HEAVY	Mist.	STEL	10 mg/m3		Taiwan	2018
PARAFFINIC DISTILLATE					PELs	
SOLVENT DEWAXED HEAVY	Mist.	TWA	5 mg/m3		Taiwan	2018
PARAFFINIC DISTILLATE					PELs	
SOLVENT DEWAXED HEAVY		TWA	5 mg/m3		ACGIH	2020
PARAFFINIC DISTILLATE	Inhalabl					
	е					
	fraction					
SOLVENT REFINED LIGHT	Mist.	STEL	10 mg/m3	 	Taiwan	2018
PARAFFINIC DISTILLATE					PELs	
(PETROLEUM)						



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SOLVENT REFINED LIGHT PARAFFINIC DISTILLATE (PETROLEUM)	Mist.	TWA	5 mg/m3		Taiwan PELs	2018
SOLVENT REFINED LIGHT PARAFFINIC DISTILLATE (PETROLEUM)	Inhalabl e fraction	TWA	5 mg/m3		ACGIH	2020

Exposure limit/standards for materials that can be formed when handling this product: When mists / aerosols can occur the following is recommended: 5 mg/m3 - ACGIH TLV (inhalable fraction).

# Biological limits

No biological limits allocated.

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

#### ENGINEERING CONTROLS

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

No special requirements under ordinary conditions of use and with adequate ventilation.

### PERSONAL PROTECTION

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:

No special requirements under ordinary conditions of use and with adequate ventilation. Particulate

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.

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



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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:

No protection is ordinarily required under normal conditions of use. Nitrile, Viton

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

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:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

**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.

### 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.

#### GENERAL INFORMATION

Physical State: Liquid

Color: Brown

Odor: Characteristic Odor Threshold: N/D

# IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15.6 C): 0.865 [ASTM D4052]

Flammability (Solid, Gas): N/A

Flash Point [Method]: >235 C (455 F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

Boiling Point / Range: > 316 C (600 F)

Decomposition Temperature: N/D

Vapor Density (Air = 1): > 2 at 101 kPa

Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C Evaporation Rate (n-butyl acetate = 1): N/D



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pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): > 3.5

Solubility in Water: Negligible

Viscosity: 102.3 cSt (102.3 mm2/sec) at 40 C | 14.7 cSt (14.7 mm2/sec) at 100 C [ASTM D

445]

Oxidizing Properties: See Hazards Identification Section.

### OTHER INFORMATION

Freezing Point: N/D Melting Point: N/A

**Pour Point:** -30 C (-22 F)

DMSO Extract (mineral oil only), IP-346: < 3 %wt

# SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

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

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

# SECTION 11 TOXICOLOGICAL INFORMATION

### INFORMATION ON TOXICOLOGICAL EFFECTS

<u>Hazard Class</u>	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for	Minimally Toxic. Base on assessment of the components.
material.	
Irritation: No end point data for	Negligible hazard at ambient/normal handling temperatures.
material.	
Ingestion	
Acute Toxicity: No end point data for	Minimally Toxic. Base on assessment of the components.
material.	
Skin	
Acute Toxicity: No end point data for	Minimally Toxic. Base on assessment of the components.
material.	
Skin Corrosion/Irritation: No end point	Negligible irritation to skin at ambient temperatures. Base
data for material.	on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end	May cause mild, short-lasting discomfort to eyes. Base on



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point data for material.	assessment of the components.
Sensitization	
Respiratory Sensitization: No end point	Not expected to be a respiratory sensitizer.
data for material.	
Skin Sensitization: No end point data	Not expected to be a skin sensitizer. Base on assessment of
for material.	the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-
	chemical properties of the material.
Germ Cell Mutagenicity: No end point	Not expected to be a germ cell mutagen. Base on assessment
data for material.	of the components.
Carcinogenicity: No end point data for	Not expected to cause cancer. Base on assessment of the
material.	components.
Reproductive Toxicity: No end point	Not expected to be a reproductive toxicant. Base on
data for material.	assessment of the components.
Lactation: No end point data for	Not expected to cause harm to breast-fed children.
material.	
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for	Not expected to cause organ damage from a single exposure.
material.	
Repeated Exposure: No end point data	Not expected to cause organ damage from prolonged or
for material.	repeated exposure. Base on assessment of the components.

# TOXICITY FOR SUBSTANCES

NAME	ACUTE TOXICITY
2-PENTANOL, 4-METHYL-, HYDROGEN	Oral Lethality: LD50 2230 mg/kg (Rat)
PHOSPHORODITHIOATE, ZINC SALT	

### OTHER INFORMATION

# For the product itself:

Diesel engine oils: Not carcinogenic in animals tests. Used and unused diesel engine oils did not produce any carcinogenic effects in chronic mouse skin painting studies.

Oils that are used in gasoline engines may become hazardous and display the following properties: Carcinogenic in animal tests. Caused mutations in vitro. Possible allergen and photoallergen. Contains polycyclic aromatic compounds (PAC) from combustion products of gasoline and/or thermal degradation products.

# Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

# IARC Classification:



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

-- REGULATORY LISTS SEARCHED--

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.

#### ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

#### MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

# PERSISTENCE AND DEGRADABILITY

### Biodegradation:

Base oil component -- Expected to be inherently biodegradable

### BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

### 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.

### DISPOSAL RECOMMENDATIONS

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.

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

LAND (ADR): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

# SECTION 15 REGULATORY INFORMATION

This material is not considered hazardous according to The Regulations on Labelling and Hazard Communications for Hazardous Materials.

### REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS

Toxic and Concerned Chemical Substances Control Act (TCCSCA): Not Regulated

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

# SECTION 16 OTHER INFORMATION

**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.

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

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

H303: May be harmful if swallowed; Acute Tox Oral, Cat 5

H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1

H315: Causes skin irritation; Skin Corr/Irritation, Cat 2

H316: Causes mild skin irritation; Skin Corr/Irritation, Cat 3

H318: Causes serious eye damage; Serious Eye Damage/Irr, Cat 1

H401: Toxic to aquatic life; Acute Env Tox, Cat 2

H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

#### THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:



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Composition: Component Table information was modified.

Section 01: Company Mailing Address information was modified.

Section 08: Exposure Limits Table information was modified.

Section 09: Boiling Point C(F) information was modified.

Section 09: Colour information was modified.

Section 09: Flash Point C(F) information was modified.

Section 09: Pour Point C(F) information was modified.

Section 09: Relative Density information was modified.

Section 09: Viscosity information was modified.

Section 13: Disposal Considerations - Disposal Recommendations information was modified.

Section 16: HCode Key information was modified.

Section 16: MSN, MAT ID information was modified.

Prepared by: ExxonMobil Biomedical Sciences Inc, Annadale, New Jersey, USA

Local contact: Kuang Shyi-Shin (EMICT), Tel# 886-02-2734 6888

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