

Product Name: NYVAC FR 200D  
Revision Date: 05 Jul 2021  
Page 1 of 13

## MATERIAL SAFETY DATA SHEET

MSDS No.: AA00985-0000000042

### SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

**A. Product Name:** NYVAC FR 200D  
**Product Description:** Water-glycol  
**Product Code:** 201560108020, 602151-89

**B. Recommended Use of Product and Restrictions in Use.**

**Recommended use of the product:** Hydraulic fluids and additives

**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

**Mobil Korea Lube Oil Inc.**  
Level 22, Seoul Square bd., 416  
Hangang-daero, Jung-gu,  
Seoul Republic of Korea

Emergency Response Number	00-308-13-2549 / +1-703-527-3887
Supplier General Contact	82-2-750-8700
FAX	82-2-750-8751

### SECTION 2 HAZARDS IDENTIFICATION

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

**A. Hazard Classification:**

Acute oral toxicant: Category 4.

**B. Label Elements Including Precautionary Statements:**

Hazard Pictogram:



Product Name: NYVAC FR 200D

Revision Date: 05 Jul 2021

Page 2 of 13

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**Signal Word:** Warning

**Hazard Statements:**

Health: H302: Harmful if swallowed.

**Precautionary Statements:**

General: P101: If medical advice is needed, have product container or label at hand. P102: Keep out of reach of children. P103: Read label before use.

Prevention: P264: Wash skin thoroughly after handling. P270: Do not eat, drink or smoke when using this product.

Response: P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P315: Get immediate medical advice/attention. P309 + P311: IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. P330: Rinse mouth.

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**

No significant hazards.

**Health Hazards**

High-pressure injection under skin may cause serious damage. Ingestion may cause serious adverse effects and may be fatal. May cause kidney failure and central nervous system effects. Prolonged exposure to elevated concentrations of mist or liquid may cause irritation of the skin, eyes, and respiratory tract.

**Environmental Hazards**

No significant hazards.

<b>NFPA Hazard ID:</b>	Health: 1	Flammability: 1	Reactivity: 0
<b>HMIS Hazard ID:</b>	Health: 2	Flammability: 1	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.

<b>SECTION 3</b>	<b>COMPOSITION / INFORMATION ON INGREDIENTS</b>
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This material is defined as a mixture.

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

Product Name: NYVAC FR 200D

Revision Date: 05 Jul 2021

Page 3 of 13

Name	Other Name	CAS # or Id. No.	Concentration*	GHS Hazard Codes
ETHANOL, 2,2-OXYBIS-	-	KE-27694	30 - < 40%	H302
MORPHOLINE	-	KE-33492	0.1 - < 1%	H226, H302, H311, H331, H314(1B), H401

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

<b>SECTION 4</b>	<b>FIRST AID MEASURES</b>
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**A. Eye Contact**

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

**B. 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.

**C. Inhalation**

Immediately remove from further exposure. Get immediate medical assistance. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. Give supplemental oxygen, if available. If breathing has stopped, assist ventilation with a mechanical device.

**D. Ingestion**

Seek immediate medical attention.

**E. Other note to physician**

This product contains ethylene glycol and/or diethylene glycol which, if ingested, are metabolized to toxic metabolites by the enzyme alcohol dehydrogenase, for which ethanol and 4-methylpyrazole W{U.S. drug name Fomepizole, trade name AntizolW} are antagonists. Administration of oral or intravenous ethanol or intravenous 4-methylpyrazole may arrest further metabolism of this material and thereby ameliorate the toxicity. Use of ethanol or 4-methylpyrazole does not affect toxic metabolites that are already present and is not a substitute for hemodialysis.

**Acute and Delayed Symptoms/Effects**

See Toxicological Section

**Pre-existing Medical Conditions Which May Be Aggravated By Exposure**

None.

<b>SECTION 5</b>	<b>FIRE FIGHTING MEASURES</b>
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#### Flammability Properties

**Flash Point [Method]:** >101° C (214° F)

**Autoignition Temperature:** 407° C (765° F)

**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 (CO<sub>2</sub>) to extinguish flames.

**Inappropriate Extinguishing Media:** Straight Streams of Water or Regular Foam

#### B. Specific Hazards arising from the Chemical

**Unusual Fire Hazards:** Pressurized mists may form a flammable mixture. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

**Hazardous Combustion Products:** Aldehydes, 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.

<b>SECTION 6</b>	<b>ACCIDENTAL RELEASE MEASURES</b>
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#### 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.

Remove debris in path of spill and remove contaminated debris from shoreline and water surface and dispose of according to local 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:** 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. Seek advice of a specialist. This product emulsifies, disperses or is miscible in water.

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.

<b>SECTION 7</b>	<b>HANDLING AND STORAGE</b>
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**A. Precautions for Safe Handling**

Avoid breathing mists or vapors. Avoid all personal contact. Prevent small spills and leakage to avoid slip hazard. Contains amines. Do not add sodium nitrite or other nitrosating agents which may form cancer causing nitrosamines.

**Static Accumulator:** This material is not a static accumulator.

**B. Conditions for Safe Storage**

Do not store in open or unlabelled containers.

<b>SECTION 8</b>	<b>EXPOSURE CONTROLS AND PERSONAL PROTECTION</b>
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**A. Exposure Limit Values, Biological Limit Values**

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

Substance Name	Form	Limit / Standard			Note	Source	Year
ETHANOL, 2,2-OXYBIS-		TWA	10 mg/m <sup>3</sup>			OARS WEEL	2018
MORPHOLINE		STEL	30 ppm		Skin	Korea OELs	2018
MORPHOLINE		TWA	20 ppm		Skin	Korea OELs	2018
MORPHOLINE		TWA	20 ppm		Skin	ACGIH	2020

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

No biological limits allocated.

**B. Appropriate Engineering Controls**

Product Name: NYVAC FR 200D

Revision Date: 05 Jul 2021

Page 6 of 13

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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.

### 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: No protection is ordinarily required under normal conditions of use and with adequate ventilation. Organic vapor, 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.

**Eye Protection:** If contact is likely, safety glasses with side shields 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:

If prolonged or repeated contact is likely, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves. Nitrile, Viton

**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: If prolonged or repeated contact is likely, chemical, and 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.

### 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

Product Name: NYVAC FR 200D

Revision Date: 05 Jul 2021

Page 7 of 13

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

Color: Red

B. Odor: Characteristic

C. Odor Threshold: N/D

D. pH: 9.5

E. Melting Point: N/D

Freezing Point: N/D

F. Initial Boiling Point / Range: 102° C (216° F)

G. Flash Point [Method]: >101° C (214° F)

H. Evaporation Rate (n-butyl acetate = 1): N/D

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

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

K. Vapor Pressure: 1.756 kPa (13.2 mm Hg) at 20 ° C

L. Solubility in Water: Complete

M. Vapor Density (Air = 1): N/D

N. Relative Density (at 15 ° C): 1.08

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

P. Autoignition Temperature: 407° C (765° F)

Q. Decomposition Temperature: N/D

R. Viscosity: [N/D at 40 ° C]

S. Molecular Weight: N/D

### Other Information

Pour Point: -40° C (-40° F) [ASTM D97]

## SECTION 10 STABILITY AND REACTIVITY

### 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:** Excessive heat. High energy sources of ignition.

**C. Incompatible Materials:** Strong Acids, Strong Bases, Strong oxidizers

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

Product Name: NYVAC FR 200D

Revision Date: 05 Jul 2021

Page 8 of 13

**SECTION 11 TOXICOLOGICAL INFORMATION****A. Information on Likely Routes of Exposure**

No data available

**B. Information on Health Hazards****Acute Toxicity (Inhalation):**

Product

No end point data for material. Minimally Toxic. Based on assessment of the components.

Inhalation Irritation: No end point data for material. Negligible hazard at ambient/normal handling temperatures.

Component

MORPHOLINE Inhalation Lethality: 4 hour(s) LC50 8 mg/l (Rat)

**Acute Toxicity (Ingestion):**

Product

(Human) LDLo 100 ml Moderately toxic. Based on assessment of the components.

Component

MORPHOLINE Oral Lethality: LD50 1900 mg/kg (Rat)

**Acute Toxicity (Dermal)**

Product

No end point data for material. Minimally Toxic. Based on assessment of the components.

Component

MORPHOLINE Dermal Lethality: LD50 500 mg/kg (Rabbit)

**Skin corrosion/irritation**

Product

No end point data for material. Negligible irritation to skin at ambient temperatures. Based on assessment of the components.

**Serious eye damage/irritation**

Product

No end point data for material. May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.

**Respiratory sensitization**

Product

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

**Skin sensitization**

Product

No end point data for material. Not expected to be a skin sensitizer. Based on assessment of the components.

**Carcinogenicity**

Product

No end point data for material. Not expected to cause cancer. Based on assessment of the components.



Product Name: NYVAC FR 200D

Revision Date: 05 Jul 2021

Page 9 of 13

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## Germ cell mutagenicity

Product

No end point data for material. Not expected to be a germ cell mutagen. Based on assessment of the components.

## Reproductive toxicity

Product

No end point data for material. Not expected to be a reproductive toxicant. Based on assessment of the components.

## 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

No end point data for material. Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

## Aspiration hazard

Product

No end point data for material. Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.

## Other Information

### Contains:

DIETHYLENE GLYCOL (DEG): Orally, DEG is more toxic to humans than animal test data indicate. Probable lethal dose for an adult is about 50 ml (2 oz.), or 2 –3 swallows. Smaller amounts may cause kidney degeneration and failure. Benign urinary bladder tumors were observed in rats, no tumors were observed in mice.

### IARC Classification:

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

--REGULATORY LISTS SEARCHED--

1 = IARC 1

2 = IARC 2A

3 = IARC 2B

<b>SECTION 12</b>	<b>ECOLOGICAL INFORMATION</b>
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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 -- Not expected to be harmful to aquatic organisms.

#### B. Persistence and Degradability

##### Biodegradation:

Material -- Expected to be readily biodegradable.

##### Atmospheric Oxidation:

Material -- Expected to degrade rapidly in air

#### C. Bioaccumulation

Material -- Potential to bioaccumulate is low.

#### D. Mobility

Material -- Expected to remain in water or migrate through soil.

#### E. Other adverse effects: Not applicable

### 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

Even though this product is biodegradable, it must not be indiscriminately discarded into the environment. 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. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

**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

Product Name: NYVAC FR 200D

Revision Date: 05 Jul 2021

Page 11 of 13

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

<b>SECTION 15</b>
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<b>REGULATORY INFORMATION</b>
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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**

Product Name: NYVAC FR 200D

Revision Date: 05 Jul 2021

Page 12 of 13

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

**Special Cases:**

Inventory	Status
ENCS	Not determined
ISHL	Not determined
KECI	Restrictions Apply

**SECTION 16**

**OTHER INFORMATION**

**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. The first Issuing date:** 17Nov2006

**C. Revision number and latest revision date**

Revision Number:1

Revision Date: 05 Jul 2021

**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):**

H226: Flammable liquid and vapor; Flammable Liquid, Cat 3

H302: Harmful if swallowed; Acute Tox Oral, Cat 4

H311: Toxic in contact with skin; Acute Tox Dermal, Cat 3

H314(1B): Causes severe skin burns and eye damage; Skin Corr/Irritation, Cat 1B

H331: Toxic if inhaled; Acute Tox Inh, Cat 3

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

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

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and

Product Name: NYVAC FR 200D

Revision Date: 05 Jul 2021

Page 13 of 13

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belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

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