

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT:

Product Name: ZDDPlus™.
Product Description: Petroleum Product Additive.
Intended Use: Lube oil additive.

COMPANY IDENTIFICATION:

Supplier: ZPlus, LLC
2609 Tucker Street
Burlington, NC 27215

Supplier General Contact: 336-229-5554

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Complex Substance(s):

Distillates (petroleum), solvent-dewaxed heavy paraffinic.
ZINC DIALKYL DITHIOPHOSPHATE (CAS 84605-29-8)

SECTION 3 - HAZARDS IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines.
(see MSDS Section 15).

POTENTIAL PHYSICAL / CHEMICAL EFFECTS:

Contact with hot material can cause thermal burns which may result in permanent damage or blindness.

POTENTIAL HEALTH EFFECTS:

Irritating to eyes. Low order of toxicity. May be irritating to the eyes, nose, throat, and lungs.
Excessive exposure may result in eye, skin, or respiratory irritation.
Target Organs: Eye.

ENVIRONMENTAL HAZARDS:

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

NFPA Hazard ID: Health: 1 Flammability: 1 Reactivity: 0

HMIS Hazard ID: Health: 1 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.

SECTION 4 - 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. For hot product: Immediately immerse in or flush affected area with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze and get prompt medical attention.

EYE CONTACT:

Flush thoroughly with water for at least 15 minutes. Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes.

INGESTION:

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

SECTION 5 - FIRE FIGHTING MEASURES**EXTINGUISHING MEDIA:**

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

FIRE FIGHTING:

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.

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

Hazardous Combustion Products: Carbon monoxide, Hydrogen sulfide, Sulfur oxides, Smoke, Fumes.

FLAMMABILITY PROPERTIES:

Flash Point (open) >180° C per ASTM D-92.

Decomposition Temp: 220° C per SH/T0561.

Auto Ignition Temperature: >300°C.

SECTION 6 - ACCIDENTAL RELEASE MEASURES**NOTIFICATION PROCEDURES:**

In the event of a spill, notify relevant authorities in accordance with all applicable regulations. U.S. regulations require reporting releases of this material to the environment which exceed the reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800) 424-8802.

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 Section 3 for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for Personal Protective Equipment.

SPILL MANAGEMENT:

Land Spill: Stop leak if you can do it without risk. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Water Spill: Stop leak if you can do it without risk. Report spills as required to appropriate authorities. Material will sink. Remove material, as much as possible, using mechanical equipment. 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:

Remove debris in path of spill prior to oiling 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. For Large Spills: Cover spill with plastic sheet or tarpaulin to minimize spreading.

SECTION 7 - HANDLING AND STORAGE**HANDLING:**

Avoid contact with skin. Avoid contact with eyes. Do not heat this product except as described below. This product is temperature sensitive; do not reheat above the maximum recommended temperature. With proper facilities, no heating is required for pumping at ambient temperatures. If extreme cold weather conditions necessitate heating, then tempered water or oil, not exceeding 60 Deg. C, are recommended. Product temperature must never exceed 60 Deg. C (140 Deg. F). If heated, product temperature should be constantly monitored, and product should be agitated to avoid localized temperatures in the container above 60 Deg. C. Product should be stored between 10 and 40 Deg. C (40 to 100 Deg. F). Lower temperatures may result in some crystallization of the product. Higher temperatures will lead to degradation of product quality and eventually to decomposition.

WARNING: If this material is overheated, especially in the presence of water, hydrogen sulfide may be released; this can cause rapid respiratory collapse, coma and death without necessarily any warning odor being sensed. Prevent small spills and leakage to avoid slip hazard.

Loading/Unloading Temperature: $\leq 60^{\circ}\text{C}$ (140°F).

Transport Temperature: $\leq 60^{\circ}\text{C}$ (140°F).

Transport Pressure: [Ambient].

Static Accumulator: This material is not a static accumulator.

STORAGE:

Do not store in open or unlabelled containers. Storage Temperature: $\leq 50^{\circ}\text{C}$ (120°F).

Storage Pressure: Ambient.

Suitable Containers/Packing: Tank Trucks; Drums; Tank Cars.

Suitable Materials and Coatings: Carbon Steel; Stainless Steel; Zinc; Epoxies.

Unsuitable Materials and Coatings: Butyl Rubber; Butadiene Rubber; Rubber; Styrene Rubber.

SECTION 8 - EXPOSURE CONTROLS & PERSONAL PROTECTION**EXPOSURE LIMIT VALUES:**

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

When mists / aerosols can occur, the following are recommended:

5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL, 5 mg/m³ - OSHA PEL.

Exposure limits/standards for materials that can be formed when handling this product:

Stable when used as directed. Avoid contact with strong oxidizers. Irritating or toxic substances may be emitted upon thermal decomposition. Thermal decomposition or burning may produce oxides of carbon, nitrogen, phosphorus and sulfur.

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:

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

Work conditions can greatly effect glove durability; inspect and replace worn or damaged gloves. If prolonged or repeated contact is likely, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves.

Eye Protection:

Chemical goggles and face shields are recommended.

Skin and Body Protection:

If prolonged or repeated contact is likely, chemical, and oil resistant clothing is recommended. If product is hot, thermally protective, chemical resistant apron and long sleeves are 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.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION:

Physical State: Liquid.

Form: Viscous.

Density: 0.990 @ 20° C per ASTM D-1298.

Color: 2.0 per ASTM D-1500.

Flash Point (open): >180° C per ASTM D-92.

Decomposition Temp: 220° C per SH/T0561.

Auto Ignition Temperature: >300°C.

Evaporation Rate (n-butyl acetate = 1): Negligible.

Solubility in Water: Negligible.

Oxidizing Properties: See Sections 3, 15, 16.

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat; Contact of hot product with water; Elevated temperatures. >60 °C (140 F).

MATERIALS TO AVOID: Strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen sulfide.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION**Route of Exposure Conclusion / Remarks:**

Inhalation Toxicity: LC50 > 5 mg/l Minimally Toxic.

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

Ingestion Toxicity: LD50> 2000mQ/kQ Minimally Toxic.

Skin Toxicity: LD50 > 2000 ml/kg Minimally Toxic.

Irritation: No end point data. Moderately irritating to skin with prolonged exposure.

Eye Irritation: No end point data. Severely irritating, and may seriously damage eye tissue.

WARNING: If this material IS overheated, especially in the presence of water, hydrogen sulfide may be released; this can cause rapid respiratory collapse, coma and death without necessarily any warning odor being sensed.

Additional information is available by request.

SECTION 12 - ECOLOGICAL INFORMATION

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

ECOTOXICITY:

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

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.

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:

This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations. 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:

RCRA Information: The unused product is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

PRECAUTIONARY LABEL TEXT:

“WARNING: Avoid eye contact. Extended contact with skin may cause irritation. Contact physician if irritation persists. Wash skin thoroughly after use with soap and water. Launder or discard soiled clothing. Do not reuse empty container. **Keep out of reach of children.**”

SECTION 14 - TRANSPORT INFORMATION

LAND (DOT): Proper Shipping Name: Petroleum Oil, N.O.I.B.N
Not Regulated for Land Transport.

SEA (IMDG): Proper Shipping Name: Petroleum Oil, N.O.I.B.N
Not Regulated for Sea Transport according to IMDG-Code.

AIR (IATA): Proper Shipping Name: Petroleum Oil, N.O.I.B.N.
Not Regulated for Air Transport.

SECTION 15 - REGULATORY INFORMATION**OSHA HAZARD COMMUNICATION STANDARD:**

When used for its intended purpose, this material is classified as hazardous in accordance with OSHA 29CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING:

DSL, EINECS, TSCA.

EPCRA:

This material contains no extremely hazardous substances.

PRECAUTIONARY LABEL TEXT: "WARNING: Avoid eye contact. Extended contact with skin may cause irritation. Contact physician if irritation persists. Wash skin thoroughly after use with soap and water. Launder or discard soiled clothing. Do not reuse empty container. **Keep out of reach of children.**"

PHYSICAL HAZARDS: Contact with hot material can cause thermal burns which may result in permanent damage. Thermal burn hazard; contact with hot material may cause thermal burns.

PRECAUTIONS: Avoid contact with skin. Avoid contact with eyes. Do not heat this product except as described below. This product is temperature sensitive; do not reheat above the maximum recommended temperature. With proper facilities, no heating is required for pumping at ambient temperatures. If extreme cold weather conditions necessitate heating, then tempered water or oil, not exceeding 60 Deg. C, are recommended. Product temperature must never exceed 60 Deg. C (140 Deg. F). If heated, product temperature should be constantly monitored, and product should be agitated to avoid localized temperatures in the container above 60 Deg. C. Product should be stored between 10 and 40 Deg. C (40 to 100 Deg. F). Lower temperatures may result in some crystallization of the product. Higher temperatures will lead to degradation of product quality and eventually to decomposition.

FIRST AID:

Eye: Flush thoroughly with water for at least 15 minutes. Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes.

Skin: Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. For hot product: Immediately immerse in or flush affected area with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze and get prompt medical attention.

FIRE FIGHTING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

SPILL/LEAK:

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

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Do not touch or walk through spilled material.

Water Spill: Stop leak if you can do it without risk. Report spills as required to appropriate authorities. Material will sink. Remove material, as much as possible, using mechanical equipment.

NOTICE:

The information presented in this MSDS is based on data considered to be accurate at the time of its preparation. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

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