

Material Safety Data Sheet

Doosan Infracore Portable Power
1293 Glenway Drive
Statesville, NC 28625

Doosan Premium Hydraulic Fluid

Product Description: This premium multi-grade, anti-wear oil is formulated for use in Doosan hydraulic/hydrostatic and chain case systems. This special blend of high quality lubricant will provide optimum flow at sub-zero temperatures yet maintain excellent stability during periods of high temperature use. This fluid shall also provide high resistance to shearing and viscosity loss while minimizing internal pump leakage at high operating temperatures and pressures. Additives are provided for excellent oxidation stability, anti-rust, demulsibility, anti-wear and anti-foam characteristics.

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (202) 483-7616
Doosan Portable Power: (800) 633-5206

Description	Doosan Part Number
5 gal	54758321
55 gal drum	54758339
270 gal tote	54758347

SECTION 1 COMPOSITION/ INFORMATION ON INGREDIENTS

Chemical names and synonyms: Pet. Hydrocarbons and additives.
Globally reportable MSDS ingredients: None.

SECTION 2 HAZARDS IDENTIFICATION

Under normal conditions of use, this product is not considered hazardous according to regulatory guidelines (See section 15).

Emergency Overview: Dark Amber Liquid. Note: Pressurized mists may form a flammable mixture.

DOT ERG No.: NA

Potential Health Effects: Under normal conditions of intended use, this product does not pose a risk to health. Excessive exposure may result in eye, skin or respiratory irritation.

For further health effects/toxicological data, see Section 11.

SECTION 3 FIRST AID MEASURES

Eye Contact: Flush thoroughly with water. If irritation occurs, call a physician.

Skin Contact: Wash contact areas with soap and water. Remove and clean oil soaked clothing daily and wash affected area.

Injection Injury Warning: 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.

Inhalation: Not expected to be a problem. However, if respiratory irritation, dizziness, nausea, or unconsciousness occurs due to excessive vapor or mist exposure, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or mouth-to-mouth resuscitation.

Ingestion: Not expected to be a problem. Seek medical attention if discomfort occurs. Do not induce vomiting.

SECTION 4 FIRE-FIGHTING MEASURES

Extinguishing Media: Carbon dioxide, foam, dry chemical and water fog.

SPECIAL FIRE FIGHTING PROCEDURES: Water or foam may cause frothing. Use water to keep fire exposed containers cool. Water spray may be used to flush spills away from exposure. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

Special Protective Equipment: For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Note: Pressurized mists may form a flammable mixture.

Combustion Products: Fumes, smoke, carbon monoxide, sulfur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.

Flash Point C(F): >200 (392) (ASTM D-92)

Flammable Limits (approx.% vol. in air) – LEL: 0.9%, UEL: 7.0%

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

SECTION 5 ACCIDENTAL RELEASE MEASURES

Notification Procedures: Report spills/releases as required to appropriate authorities. U.S. Coast Guard and EPA regulations require immediate reporting of spills/releases that could reach any waterway including intermittent dry creeks. Report spill/release to Coast Guard National Response Center toll free number (800) 424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.

Procedures if Material is Released or Spilled:

Land Spill: Shut off source taking normal safety precautions. Take measures to minimize the effects on ground water. Recover by pumping or contain spilled material with sand or other suitable absorbent and remove mechanically into containers. If necessary, dispose of adsorbed residues as directed in Section 11.

Water Spill: Confine the spill immediately with booms. Warn other ships in the vicinity. Notify port and other relevant authorities. Remove from the surface by skimming or with suitable absorbents. If permitted by regulatory authorities the use of suitable dispersants should be considered where recommended in local oil spill procedures.

Environmental Precautions: Prevent material from entering sewers, water sources or low lying areas; advise the relevant authorities if it has, or if it contaminates soil/vegetation.

Personal Precautions: See Section 8

SECTION 6 HANDLING AND STORAGE

Handling: High-pressure injection under the skin may occur due to the rupture of pressurized lines. Always seek medical attention. No special precautions are necessary beyond normal good hygiene practices. See section 8 for additional personal protection advice when handling this product.

Storage: Keep containers closed when not in use. Do not store in open or unlabelled containers. Store away from strong oxidizing agents and combustible materials. Do not store near heat, sparks, flame or strong oxidants.

Special Precautions: Prevent small spills and leakages to avoid slip hazard.

Empty Container Warning: Empty containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, 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. So not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

SECTION 7 EXPOSURE CONTROL/PERSONAL PROTECTION

Occupational Exposure Limits: When mists/aerosols can occur, the following are recommended: 5 mg/m³ (as oil mist) - ACGIH Threshold Limit Value (TLV), 10 mg/m³ (as oil mist) - ACGIH Short Term Exposure Limit (STEL), 5 mg/m³ (as oil mist) - OSHA Permissible Exposure Limit (PEL).

Ventilation: If mists are generated, use adequate ventilation, local exhaust or enclosures to control below exposure limits.

Respiratory Protection: If mists are generated, and/or when ventilation is not adequate, wear approved respirator.

Eye Protection: if eye contact is likely, safety glasses with side shields or chemical type goggles should be worn.

Skin Protection: Not normally required. When splashing or liquid contact can occur frequently, wear oil resistant gloves and/or other protective clothing. Good personal hygiene practices should always be followed.

SECTION 8 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical properties are given below. Consult Product Data Sheet for specific details.

Appearance:	Liquid	
Color:	Dark Amber	
Odor:	Mild	
Odor Threshold-ppm:	NE	
pH:	NA	
Boiling Point C(F):	>316 (600)	
Melting Point C(F):	NA	
Flash Point C(F):	>200 (392) (ASTM D-92)	
Flammability (solids):	NE	
Auto Flammability C(F):	NA	
Explosive Properties:	NA	
Oxidizing Properties:	NA	
Vapor Pressure—mmHg 20 c:	< 0.1	
Vapor Density:	> 2.0	
Evaporation Rate:	NE	
Realative Density, 15/4 C:	0.876	
Solubility In Water:	Negligible	
Partition Coefficient:	> 3.5	
Viscosity at 40 C, cSt:	44.2	
Viscosity at 100 C, cSt:	6.6	
Pour Point C(F):	< -18 (0)	
Fressing Point C(F):	NE	
Volatile Organic Compound:	NE	
DMSO Extract, IP-346 (WT.%):	< 3, for mineral oil only	
NA=Not Applicable	NE=Not Established	D= Decomposes

For further technical information, contact your Marketing Representative.

SECTION 9 STABILITY AND REACTIVITY

Stability (THERMAL, LIGHT, ETC.):	Stable.
Conditions to Avoid:	Extreme heat and high-energy sources of ignition
Incompatability (Materials to Avoid):	Strong oxidizers.
Hazardous Decomposition Products:	Product does not decompose at ambient temperatures.
Hazardous Polymerization:	Will not occur.

SECTION 10 TOXICOLOGICAL DATA

ACUTE TOXICOLOGY

Oral Toxicity (RATS): Practically non-toxic. (LD50: greater than 2000 mg/kg) – Based on testing of similar products and/or the components.

Dermal Toxicity (RABBITS): Practically non-toxic. (LD50: greater than 2000 mg/KG) – Based on testing of similar products and/or the components.

Inhalation Toxicity (RATS): Practically non-toxic. (LC50: greater than 5 mg/l) – Based on testing of similar products and/or the components.

Eye Irritation (RABBITS): Practically non-irritating. (Draize score: greater than 6 but 15 or less) – Based on testing of similar products and/or the components.

Skin Irritation (RABBITS): Practically non-irritating. (Primary irritation index: greater than 0.5 but less than 3) –Based on testing of similar products and/or the components.

Other Acute Toxicity Data: Although an acute inhalation study was not performed with this product, a variety of mineral and synthetic oils, such as those in this product, have been tested. These samples had virtually no effect other than a nonspecific inflammatory response in the lung to the aerosolized mineral oil. The presence of additives in other tested formulations (in approximately the same amounts as in the present formulation) did not alter the observed effects.

SubChronic Toxicology (Summary): No significant adverse effects were found in studies using repeated dermal applications of similar formulations to the skin of laboratory animals for 13 weeks at doses significantly higher than those expected during normal industrial exposure.

Reproductive Toxicology (Summary): No teratogenic effects would be expected from dermal exposure, based on laboratory developmental toxicity studies of major components in this formulation and/or materials of similar composition.

Chronic Toxicology (Summary): Repeated and/or prolonged exposure may cause irritation to the skin, eyes or respiratory tract. Overexposure to oil mist may result in oil droplet deposition and/or granuloma formation. For mineral base oils: Base oils in this product are severely solvent refined and/or severely hydrotreated. Chronic mouse skin painting studies of severely treated oils showed no evidence of carcinogenic effects. These results are confirmed on a continuing basis using various screening methods such as Modified Ames Test, IP-346, and/or other analytical methods. For synthetic base oils: The base oils on this product have been tested in the Ames assay and other tests of mutagenicity with negative results. These base oils are not expected to be carcinogenic with chronic dermal exposures.

Sensitization (Summary): Not expected to be sensitizing based on tests of this product, components, or similar products.

SECTION 11 ECOLOGICAL INFORMATION

Environmental Fate and Effects: In the absence of specific environmental data for this product, this assessment is based on information for representative products.

Ecotoxicity: Available ecotoxicity data (LL50 >1000 mg/L) indicates that adverse effects to aquatic organisms are not expected from this product.

Mobility: When released into the environment, adsorption to sediment and soil will be the predominant behavior.

Persistence and Degradability: This product is expected to be inherently biodegradable.

Bioaccumulative Potential: Bioaccumulation is unlikely due to the very low water solubility of this product; therefore bioavailability to aquatic organisms is minimal.

SECTION 12 DISPOSAL CONSIDERATIONS

Waste Disposal: Product is suitable for burning in an enclosed, controlled burner for fuel value. Such burning may be limited pursuant to the Resource Conservation Act. In addition, the product is suitable for processing by an approved recycling facility or can be disposed of at an appropriate government waste disposal facility. Use of these methods is subject to user compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous

waste (40 CFR, Part 261 D), nor is it formulated to contain materials which are listed hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity. The unused product is not formulated with substances covered by the Toxicity Characteristic Leaching Procedures (TCLP). However, used product may be regulated.

SECTION 13 TRANSPORT INFORMATION

USA DOT: Not regulated by USA DOT.
RID/ADR: Not regulated by RID/ADR.
IMO: Not regulated by IMO.
IATA: Not regulated by IATA.
STATIC ACCUMULATOR (50 picosiemens or less): Yes

SECTION 14 REGULATORY INFORMATION

US OSHA Hazard Communication Standard: When used for its intended purposes, this product is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

EU Labeling: Product is not dangerous as defined by the European Union Dangerous Substances/Preparations Directives. EU labeling not required.

Governmental Inventory Status: All components comply with TSCA, EINECS/ELINCS, AICS, METI, and DSL.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III: This product contains no "EXTREMELY HAZARDOUS SUBSTANCES."

SARA (311/312) Reportable Hazard Categories: None.

This product contains no chemical subject to the supplier notification requirements of SARA (313) toxic release program.

The following product ingredients are cited on the lists below:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS*
ZINC (ELEMENTAL ANALYSIS) (0.08%)	7440-66-6	22
ZINC ALKYL DITHIOPHOSPHATE (0.67%)	68649-42-3	22

REGULATORY LISTS SEARCHED

- | | | | |
|--------------|--------------|------------------|------------|
| 1= ACGIH ALL | 8= IARC 2B | 15= TSCA 12b | 22= MI 293 |
| 2= ACGIH A1 | 9= OSHA CARC | 16= CA P65 | 23= MN RTK |
| 3= ACGIH A2 | 10= OSHA Z | 17= CA P65 REPRO | 24= NJ RTK |
| 4= NTP CARC | 11= TSCA 4 | 18= CA RTK | 25= PA RTK |
| 5= NTP SUS | 12= TSCA 5a2 | 19= FL RTK | 26= RI RTK |
| 6= IARC | 13= TSCA 5e | 20= IL RTK | |
| 7= IARC 2A | 14= TSCA 6 | 21= LA RTK | |

*EPA recently added new chemical substances to its TSCA Section 4 test rules. Please contact the supplier to confirm whether the ingredients in this product currently appear on the TSCA 4 or TSCA 12b list.

Code key:

CARC=Carcinogen

SUS=Suspected Carcinogen

REPRO=Reproductive

SECTION 15

USE: HYDRAULIC OIL

NOTE: PRODUCTS OF DOOSAN AND ITS AFFILIATED COMPANIES ARE NOT FORMULATED TO CONTAIN PCBS.

Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used

for other applications. In any case, the following advice should be considered:

Industrial Label: Under normal conditions of intended use, this product does not pose a risk to health. Excessive exposure may result in eye, skin or respiratory irritation. Always observe good hygiene measures. First Aid: Wash skin with soap and water. Flush eyes with water. If overcome by fumes or vapor, remove to fresh air. If ingested do not induce vomiting. If symptoms persist seek medical assistance. Read and understand the MSDS before using this product.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.