Doosan Infracore
Portable Power

Material Safety Data Sheet

Doosan Infracore Portable Power
1293 Glenway Drive
Statesville, NC 28625

Doosan Ultra Low Sulfur Diesel

Product Description: Hydrocarbons and Additives

Transportation Emergency Response
CHEMTREC: (800) 424-9300 or
Doosan Portable Power: (800) 633-5206

SECTION 1 COMPOSTION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*
Fuels, Diesel	68334-30-5	➢ 99%

Hazardous Constituent(s) Contained in complex Substance(s)

Name	CAS#	Concentration*
Ethyl Benzene	100-41-4	0.1 – 1%
Naphthalene	91-20-3	0.1 – 1%

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

NOTE: Composition may contain up to 0.5% performance additives and / or dyes

SECTION 2 HAZARDS IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines (see MSDS section 14)

Potential Physical / Chemical Effects
Combustible. Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited. Material can accumulate static charges which may cause an incendiary electrical charge.

Potential Health Effects
Repeated exposure may cause skin dryness or cracking. If swallowed, may be aspirated and cause lung damage. Possible human cancer hazard. Under conditions of poor personal hygiece and prolonged repeated contact, some polycyclic aromatic compounds (PAC's) have been suspected as a cause of skin cancer in humans. May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression. High-pressure injection under skin may cause serious damage.

Target Organs: Skin, lungs

Environmental Hazards
Toxic to aquatic organisms, may cause long-term adverse affects in the aquatic environment.

NFPA Hazard ID:	Health: 1	Flammability: 2	Reactivity: 0
HMIS Hazard ID:	Health: 1	Flammability: 2	Reactivity: 0

NOTE: This material should not be used for any other purpose that the intended use 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 FIRST AID MEASURES

INHALATION:
Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate 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:
Remove contaminated clothing. Dry wipe exposed skin and cleanse with waterless hand cleaner and follow by washing thoroughly with soap and water. For those providing assistance, avoid further skin contact to yourself or others. Wear impervious gloves. Launder contaminated clothing separately before reuse. Discard contaminated articles that cannot be laundered. 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.
INGESTION:
Seek immediate medical attention. Do not induce vomiting.
NOTE TO PHYSICIAN:
If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.
PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE:
Hydrocarbon Solvents/petroleum hydrocarbons- Skin contact may aggravate an existing dermatitis.

SECTION 4 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA:
Appropriate Extinguishing Media: Use, water fog, foam, dry chemical of 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 supply to cool fire exposed surfaces and to protect personnel.

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

FLAMMABILITY PROPERTIES:
Flash Point [Method]: > 55°C (131°F) [ASTM D-93]
Flammable Limits (Approximate Volume % in Air): LEL: 0.6 UEL: 7.0
Autoignition Temperature > 200°C (392°F)

SECTION 5 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES:
In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the

applicable 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 4 for firefighting information. See the Hazard Identification Section for Significant Hazards. See section 3 for First Aid advice. See section 7 for Personal Protective Equipment.

SPILL MANAGEMENT:

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 ne 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.

Water Spill: Stop leak if you can do it without risk. Eliminate sources of ignition. If the Flash Point exceeds the Ambient Temperature by 10°C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient air temperature by at least 10°C, use booms as a barrier to protect shorelines and allow material to evaporate. 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 6 HANDLING AND STORAGE

HANDLING:

Avoid all personal contact. Do not siphon by mouth. Use proper bonding and/or grounding procedures. For use as a motor fuel only. Do not use as a cleaning solvent or other non-motor fuel uses. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices, etc.) in or around any fueling or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and / or local laws and regulations. Prevent spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source).

Static Accumulator: This material is a static accumulator.

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. Drums must be grounded and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters.

SECTION 7 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES:

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

Source	Form	Limit / Standard			Note	Source
Ethyl Benzene		TWA	435 mg/m3	100 ppm	N/A	OSHA Z1
Ethyl Benzene		STEL	125 ppm		N/A	ACGIH
Ethyl Benzene		TWA	100 ppm		N/A	ACGIH
Fuels, Diesel [total hydrocarb, vapor & aerosol]	Vapor and aerosol	TWA	100 mg/m3		Skin	ACGIH
Naphthalene		TWA	50 mg/m3	10 ppm	N/A	OSHA Z1
Naphthalene		STEL	15 ppm		Skin	ACGIH
Naphthalene		TWA	10 ppm		Skin	ACGIH
Total Hydrocarbons	Stable aerosol	TWA	5 mg/m3		N/A	ExxonMobil
Total Hydrocarbons	Total vapor and aerosol	TWA	500 mg/m3	100 ppm	N/A	ExxonMobil

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: use explosion-proof ventilation equipment to stay below exposure limits.

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.

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. The types of clothing to be considered for this material include: chemical resistant gloves are recommended. If contact with forearms is likely wear gauntlet style gloves.

Eye Protection: if contact with material is likely, chemical goggles 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: Chemical/oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material 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:
See sections, 5,6,11 and 12

SECTION 8 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
Color: Clear (may be dyed)
Odor: Petroleum / Solvent
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION:

Relative Density (at 15°C): 0.81 – 0.87
Flash Point [Method]: > 55°C (131°F) [ASTM D-93]
Flammable Limits (Approximate volume % in air): LEL: 0.6 UEL: 7.0
Autoignition Temperature: > 200°C (392°F)
Boiling Point / Range: 145°C (293°F) - 370°C (698°F)
Vapor Density (Air = 1): > 2 at 101 kPa
Vapor Pressure: 0.067 kPa (0.5 mmHg) at 20°C
Evaporation rate (n-butyl acetate = 1): N/D
pH: N/A
Low Pow (n-Octanol / Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 1.7 cSt (1.7 mm2/sec) at 40°C – 4.1 cSt (4.1 mm2/sec) at 40°C
Oxidizing Properties: See Sections 2, 14, 15

OTHER INFORMATION:

Freezing Point: N/D
Melting Point: N/A
Pour Point: > -6°C (21°F)

SECTION 9 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions
CONDITIONS TO AVOID: Open flames and high energy ignition sources
MATIERALS TO AVOID: Halogens, strong acids, strong basis, strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures
HAZARDOUS POLYMERIZATION: Will not occur

SECTION 10 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m3	Minimally toxic. Based on test data for structurally similar materials.
Ingestion	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available	May dry the skin leading to discomfort and dermatitis. Based on test data for structurally similar tests.

Eye	
Irritation (Rabbit): Data available	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar tests.

CHRONIC/OTHER EFFECTS:
For the product itself:
Sensitization- non-sensitizing to the skin of laboratory animals.
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.
Diesel Fuel- Caused cancer in animal tests. Caused mutations in vitro. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased fetal resorptions at maternally toxic doses. Dermal exposure to high concentrations resulted in respiratory tract irritation with weight loss and some mortality. Inhalation exposure to high concentrations resulted in respiratory tract irritation, lung changes/infiltration/accumulation, and reduction in lung functions.
Diesel exhaust fumes- Carcinogenic in animal tests. Inhalation exposures to exhaust for 2 years in test animals resulted in lung tumors ad lymphoma. Extract of particulate produced skin tumors in test animals. Caused mutation in vitro.

Contains:
NAPHTHALENE- Exposure to high concentrations of naphthalene may cause destruction of red blood cells, anemia, and cataracts. Naphthalene caused cancer in laboratory animal studies, but the relevance of these findings to humans in uncertain.
ETHYLBENZENE- Caused cancer in laboratory animal studies. The relevance of these findings to humans is uncertain.

Additional information is available by request

The following ingredients are cited on the lists below:

Chemical Name	CAS number	List Citations
ETHYL BENZENE	100-41-4	5
NAPHTHALENE	91-20-3	2, 5

- REGULATORY LISTS SEARCHED -

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2 A	6 = OSHA CARC

SECTION 11 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
More volatile component- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and waste water solids.
High molecular wt. component- Low solubility and floats and is expected to migrate from water to the land. Expected partition to sediment and waste water solids.

PERSISTENCE AND DEGRADABILITY
Biodegradation:

Material- expected to be inherently biodegradable
Atmosphere Oxidation:
More volatile component- Expected to degrade rapidly in air

SECTION 12 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.
REGULATORY DISPOSAL INFORMATION
RCRA Information- Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corosivity, reactivity or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Potential RCRA characteristics: IGNITABILITY.
Empty Container Warning
Empty Container Warning (where applicable)- empty containers may 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 suitability 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 13 TRANSPORT INFORMATION

LAND (DOT)

Proper Shipping Name:	Diesel Fuel
Hazard Class & Division:	Combustible Liquid
ID Number:	NA 1993
Packing Group:	III
ERG number:	128
Label(s):	None
Transport Document Name:	Diesel Fuel, Combustible Liquid, NA 1993, PG III

Footnote: The flash point of this material is greater than 100°F. Regulatory classification of this material varies. DOT: Flammable liquid or combustible liquid. OSHA: Combustible liquid. IATA/IMO: Flammable liquid. This material is not regulated under 49 CFR in a container of 119 gallon capacity or less when transported solely by land, as long as the material is not a hazardous waste, a marine pollutant, or specifically listed as a hazardous substance.

LAND (TDG)

Proper Shipping Name:	Gas Oil
Hazard Class & Division:	3
UN Number:	1202
Packing Group:	III

SEA (IMDG)

Proper Shipping Name:	Gas Oil
Hazard Class & Division:	3
EMS Number:	F-E, S-E
UN Number:	1202
Packing Group:	III
Label(s):	3

Transport Document Name: Gas Oil, 3, UN1202, PG III, (55°C c.c.)

AIR (IATA)

Proper Shipping Name:	Gas Oil
Hazard Class & Division:	3
UN Number:	1202
Packing Group:	III
Label(s):	3
Transport Document Name:	Gas Oil, 3, UN1202, PG III

SECTION 14 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:
AICS, IECSC, DSL, EINECS, ELINCS, KECI, PICCS, TSCA

EPCRA:
This material contain no extremely hazardous substances.

CERCLA:
This material is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Contact local authorities to determine if other

SARA (311/312) REPORTABLE HAZARD CATEGORIES:

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
NAPHTHALENE	91-20-3	0.1 – 1%
ETHYL BENZENE	100-41-4	0.1 – 1%

The Following ingredients are Cited on the Lists Below:

Chemical Name	CAS Number	Typical Value	
ETHYL BENZENE	100-41-4	1, 4, 10	
FUELS, DIESEL	68334-30-5	1, 18, 19	
NAPHTHALENE	91-20-3	1, 4, 5, 10	

- REGULATORY LISTS SEARCHED -

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code Key: CARC = Carcinogen; REPRO = Reproductive

SECTION 15 OTHER INFORMATION

N/D = Not Determined, N/A = Not Applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
No revision information is available.

THIS MSDS COVERS THE FOLLOWING MATERIALS:
Diesel No. 2, ESSO Diesel Fuel, Exxon Diesel Fuel, Low Sulfur Diesel, Marine Diesel Fuel, Mobil Diesel Fuel, Ultra Low Sulfur Diesel, Winterized Diesel Fuel

PRECAUTINARY LABEL TEXT:
Contains: Diesel Fuel
WARNING!

HEALTH HAZARDS:
Repeated exposure may cause dryness or cracking. Possible human cancer hazard. If swallowed, may be aspirated and cause lung damage.
Target Organs: Lungs, Skin

PHYSICAL HAZARDS:
Combustible. Material can accumulate static charges which may cause an incendiary electrical discharge.

PRECAUTIONS:
Avoid contact with skin. Do not siphon by mouth. Use proper bonding and/or grounding procedures.

FIRST AID:
Eye: Flush thoroughly with water. If irritation occurs, get medical assistance.

Oral: Seek immediate medical attention. Do not induce vomiting.

Skin: Remove contaminated clothing. Dry wipe exposed skin and cleanse with waterless hand cleaner and follow by washing thoroughly with soap and water. For those providing assistance, avoid further skin contact to yourself or others. Wear impervious gloves. Launder contaminated clothing separately before reuse. Discard contaminated articles that cannot be laundered. 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 form high pressure injection may be minimal or absent, early surgical treatment within the first hours may significantly reduce the ultimate extent of injury.

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

SPILL/LEAK:
Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

Water Spill: Stop leak if you can do it without risk. Eliminate sources of ignition. If the Flash Point exceeds the Ambient Temperature by 10°C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Air Temperature by at least 10°C, use booms as a barrier to protect shorelines and allow material to evaporate. Seek the advice of a specialist before using dispersants.

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. The product contains a chemical known to the State of California to cause cancer, birth defects, or reproductive harm are created by the combustion of 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.