Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Starplex® HD 1, 2

Product Use: Commercial Grease
Product Number(s): 259124, 259125
Synonyms: Delo Grease ESI HD EP 1, 2
Company Identification
Chevron Products Company
a division of Chevron U.S.A. Inc.
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America
www.chevronlubricants.com

Transportation Emergency Response
CHEMTREC: (800) 424-9300 or (703) 527-3887
Health Emergency
Chevron Emergency & Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623
Product Information
email : lubemsds@chevron.com
Product Information: 1 (800) 582-3835, LUBETEK@chevron.com

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION:

- Acute aquatic toxicant: Category 3.
- Chronic aquatic toxicant: Category 3.

Environmental Hazards:
- Harmful to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:
Prevention:
- Avoid release to the environment.

Disposal:
- Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	70 - 99 %weight
Phosphorodithioic acid, mixed O,O-bis(iso-Bu and pentyl) esters, zinc salts	68457-79-4	1 - < 4 %weight
Succinic anhydride, alkylation products with C12-rich branched olefins from propene oligomerisation, hydrolyzed, esterification products with propylene oxide	Not Available	0.1 - < 1 %weight
Phosphoric acid ester, amine salt	Mixture	0.1 - < 1 %weight

SECTION 4 FIRST AID MEASURES

Description of first aid measures
Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.
Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.
Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.
Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

Most important symptoms and effects, both acute and delayed
IMMEDIATE HEALTH EFFECTS
Eye: Not expected to cause prolonged or significant eye irritation.
Skin: High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.
Contact with the skin is not expected to cause prolonged or significant irritation. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.
Ingestion: Not expected to be harmful if swallowed.
Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

DELAYED OR OTHER HEALTH EFFECTS: Not classified

Indication of any immediate medical attention and special treatment needed
Note to Physicians: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.
Unusual Fire Hazards: Leaks/ruptures in high pressure system using materials of this type can create a

fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).

PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: This material will burn although it is not easily ignited. See Section 7 for proper handling and storage. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion. Combustion may form oxides of: Nitrogen, Zinc, Lithium, Phosphorus, Sulfur, Boron.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material.
Spill Management: Clean up spills immediately, observing precautions in Exposure Controls/Personal Protection section. Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.
Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
Precautionary Measures: DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed. Keep out of the reach of children.
Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.
Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, 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. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the workplace when designing engineering controls and selecting personal protective equipment (PPE). If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, refer to PPE information below.

Factors that affect PPE include, but are not limited to: properties of the chemical, other chemicals which may contact the same PPE, physical requirements (fit & sizing, cut/puncture protection, dexterity, thermal

protection, etc.), and potential allergic reactions to the PPE material. It is the responsibility of the user to read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.

ENGINEERING CONTROLS:
Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT
Eye/Face Protection: Wear protective equipment to prevent eye contact. Selection of protective equipment may include safety glasses, chemical goggles, face shields, or a combination depending on the work operations conducted.
Skin Protection: Wear chemical personal protective equipment (PPE) to prevent skin contact. Selection of chemical protective clothing should be performed by an Occupational Hygienist or Safety Professional and be based upon applicable standards (ASTM F739 or EN 374). Using chemical PPE depends upon operations conducted and may include chemical gloves, boots, chemical apron, chemical suit, and complete facial protection. Refer to PPE manufacturers to obtain breakthrough time information to determine how long PPE can be used before it needs to be replaced. Unless specific glove manufacturer data indicates otherwise, the below table is based upon available industry data to assist in the glove selection process and is intended to be used as reference only.

Chemical Glove Material	Thickness (mm)	Typical Breakthrough Time (minutes)
Butyl	0.7	120
Nitrile	0.8	240
Viton Butyl	0.3	240

Respiratory Protection: No respiratory protection is normally required.
If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.
Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	Form	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH	--	5 mg/m3	10 mg/m3	--	--
Highly refined mineral oil (C15 - C50)	OSHA Z-1	--	5 mg/m3	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Red
Physical State: Semi-solid
Odor: Petroleum odor
Odor Threshold: No data available
pH: Not Applicable
Vapor Pressure: No data available
Vapor Density (Air = 1): No data available
Initial Boiling Point: No data available

Solubility: Soluble in hydrocarbon solvents; insoluble in water.
Freezing Point: Not Applicable
Melting Point: No data available
Density: No data available
Viscosity: 22 mm2/s @ 100°C (212°F) (Minimum)
Coefficient of Therm. Expansion / °F: No data available
Evaporation Rate: No data available
Decomposition temperature: No data available
Octanol/Water Partition Coefficient: No data available

FLAMMABLE PROPERTIES:
Flammability (solid, gas): No Data Available

Flashpoint: (Cleveland Open Cup) 204 °C (399 °F) (Minimum)
Autoignition: No data available
Flammability (Explosive) Limits (% by volume in air): Lower: Not Applicable Upper: Not Applicable

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Incompatibility With Other Materials: Not applicable
Hazardous Decomposition Products: Hydrogen Sulfide (Elevated temperatures), Alkyl Mercaptans (Elevated temperatures)
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects
Serious Eye Damage/Irritation: The material is not considered an eye irritant. The product has not been tested. The statement is based on evaluation of data for similar materials.

Skin Corrosion/Irritation: The material is not considered a skin irritant. The product has not been tested. The statement is based on evaluation of data for similar materials.

Skin Sensitization: The material is not considered a skin sensitizer. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Dermal Toxicity: The material is not considered a dermal toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials.

Acute Oral Toxicity: The material is not considered an oral toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials.

Acute Inhalation Toxicity: The material is not considered an inhalation toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.
Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The material is not considered a mutagen. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Carcinogenicity: The material is not considered a carcinogen. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Reproductive Toxicity: The material is not considered a reproductive toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Single Exposure: The material is not considered a target organ toxicant (single exposure). The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Repeated Exposure: The material is not considered a target organ toxicant (repeated exposure). The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Aspiration Hazard: The material is not considered an aspiration hazard.

ADDITIONAL TOXICOLOGY INFORMATION:
This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).
These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen with unknown relevance to humans (A3).

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY
This material is expected to be harmful to aquatic organisms and may cause long-term adverse effects in the aquatic environment.
The product has not been tested. The statement has been derived from the properties of the individual components.

MOBILITY
No data available.

PERSISTENCE AND DEGRADABILITY
This material is not expected to be readily biodegradable. The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE
Bioconcentration Factor: No data available.
Octanol/Water Partition Coefficient: No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-

specific or quantity-specific shipping requirements.

DOT Shipping Description: NOT REGULATED AS HAZARDOUS MATERIAL UNDER 49 CFR

IMO/IMDG Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

ICAO/IATA Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES: Not applicable

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	05=MA RTK
01-2A=IARC Group 2A	06=NJ RTK
01-2B=IARC Group 2B	07=PA RTK
02=NTP Carcinogen	08-1=TSCA 5(e)
03=EPCRA 313	08-2=TSCA 12(b)
04=CA Proposition 65	

The following components of this material are found on the regulatory lists indicated.

Phosphorodithioic acid, mixed O,O-bis(iso-Bu and pentyl) esters, zinc salts	03, 06, 07

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: AIIC (Australia), DSL (Canada), IECSC (China), NZIoC (New Zealand), PICCS (Philippines), TSCA (United States).

One or more components does not comply with the following chemical inventory requirements: KECI (Korea).

NEW JERSEY RTK CLASSIFICATION:
Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Grease)

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

HMIS RATINGS: Health: 0 Flammability: 1 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: SECTION 01 - Product Identifier information was modified.
SECTION 03 - Composition information was modified.

SECTION 04 - First Aid - Skin information was modified.
SECTION 04 - Immediate Health Effects - Skin information was modified.
SECTION 05 - Unusual Fire Fighting Hazards information was added.
SECTION 07 - Precautionary Measures information was modified.
SECTION 08 - Eye/Face Protection information was modified.
SECTION 08 - General Considerations information was modified.
SECTION 08 - Occupational Exposure Limit Table information was modified.
SECTION 08 - Personal Protective Equipment List information was deleted.
SECTION 08 - Personal Protective Equipment information was added.
SECTION 08 - Skin Protection information was modified.
SECTION 09 - Physical/Chemical Properties information was modified.
SECTION 15 - Chemical Inventories information was modified.
SECTION 15 - Regulatory Information information was modified.
SECTION 16 - HMIS Rating information was modified.

Revision Date: December 30, 2022

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron Technical Center, 6001 Bollinger Canyon Road, San Ramon, CA 94583.

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.

DELO® SYN-GREASE™ SXD 220 MOLY 5% EP 1
DELO® GREASE ESI® HD MOLY 5% EP
DELO® GREASE ESI® HD MOLY 3% EP
DELO® GREASE ESI® HD EP
1, 2

PRODUCT DESCRIPTION

Delo® Grease ESI® HD EP is a comprehensive line of greases that are available with or without molybdenum disulfide. These greases are designed for plain and anti-friction bearing applications operating under high stress/high load conditions, coupled with high ambient temperatures typically found in heavy duty off-road applications.

CUSTOMER BENEFITS

Delo Syn-Grease SXD 220 Moly 5% EP 1, Delo Grease ESI HD Moly 5% EP, Delo Grease ESI HD Moly 3% EP and Delo Grease ESI HD EP greases deliver value for the off-road construction and mining industries by offering:

- **Corrosion and wear protection**
- **Water resistance** in both submerged and direct pressure spray situations
- **Shock load protection**
- **Performance across a wide temperature range** from extremely hot to extremely cold conditions, this unique Heavy Duty EP product line delivers when needed most

FEATURES

Delo Grease ESI HD EP greases are multipurpose, high performance products specially formulated for plain and anti-friction bearing applications operating under high stress/high load conditions, coupled with high ambient temperatures typically found in heavy duty off-road applications. Developed as a true contractors product, this line of grease was specifically designed to lubricate and protect equipment that is subjected to demanding conditions.

DELO SYN-GREASE SXD 220 MOLY 5% EP

Our product to use in the most demanding applications. This product features synthetic base oil in a lithium complex thickener system. Provides excellent corrosion protection, water resistance, and shock loading capability. This product also provides excellent performance throughout a wide temperature range. It is especially effective in very cold climates or where temperature ranges vary dramatically in a short period of time. It contains 5% moly which is desired by many OEMs for off-road applications.

Product(s) manufactured in the USA, Colombia and El Salvador.
Always confirm that the product selected is consistent with the original equipment manufacturer's recommendation for the equipment operating conditions and customer's maintenance practices.

A **Chevron** company product

1 July 2017
GR-36

Delo® Grease ESI® HD Moly 5% and 3%

This tier of products features 5% or 3% moly sought after by many OEMs in off-road applications. These products are formulated using highly refined base oils in a lithium complex thickener system. They also feature better corrosion resistance, wear control, and shock loading than our basic Delo Grease ESI HD EP product. They provide very good protection over a wide temperature range.

Delo Grease ESI HD EP

Our basic product which works in many applications and provides good protection from wear, shock loading, and fairly effective operating temperature range. This product features high viscosity index conventional oil in a lithium complex thickener system. The product also provides excellent corrosion protection. This product does not contain moly.

Delo Grease ESI HD EP greases are manufactured using select, highly refined base oils using a lithium complex thickener system that includes excellent rust and oxidation inhibitors coupled with extreme pressure and tackiness additives. The non-moly version is red in color and stringy in texture. Additionally, this comprehensive line includes 5% and 3% moly versions to meet the demands of OEM manufacturers who require molybdenum disulfide in the grease to meet required warranty specifications. These moly-containing products are grey/black in color and stringy in texture.

The lithium complex thickener in Delo Grease ESI HD EP greases elevates the dropping point to approximately 265°C (510°F) making them excellent for use in applications where sustained high operating temperatures are common. Additionally, since they are all comprised of the same base formulation, they are compatible with one another.

Applications

These greases are recommended for applications operating over wide temperature ranges.

Delo Grease ESI HD EP greases are not intended for use in high-speed bearing applications such as those found in electric motors due to the greases' high viscosity base stocks formulation. When in doubt, please consult your Chevron representative or OEM maintenance manual for application parameters when considering a switch to these greases.

Delo Grease ESI HD EP greases are ideal for a wide variety of Off-Road Construction applications across several industries:

- **Off-Road Construction** — These greases display outstanding water washout and spray-off resistance properties in wet, off-road environments and offer excellent shock load extreme pressure (EP) protection. Unique additive technology of these products makes them tenacious at adhering to metal surfaces found in this industry while protecting these vital components from rust and corrosion. Applications for the product include most types of heavy-duty earth moving machinery, including tractors (dozers), excavators, backhoes, shovels, high lifts, articulated loaders, haul trucks, tri-axle dumps and more. They are excellent for heavily loaded machine implement pins and bushings, and other applications operating in severe, high shock-load environments where metal to metal contact wear often occurs. Since Delo Grease ESI HD EP greases are offered in 5% and 3% moly containing versions, they are also able to meet wide off-road OEM application ranges using one common product line, thus reducing field inventory. Because they are lithium complex thickened, the non-moly version is also excellent for mixed fleet applications where disc brake lubrication is required, such as pick-up trucks.
- **Surface and Underground Mining and Quarry** — Applications appropriate for these greases include those found above plus pins and bushings on buckets, loaders, shovels and continuous miners, shaker screens, crushers, and conveyors.

Always confirm that the product selected is consistent with the original equipment manufacturer's recommendation for the equipment operating conditions and customer's maintenance practices.

- **Agriculture** — Will serve as an excellent multi-purpose heavy duty lubricant for both general and industrial farm and agricultural use, from medium to heavy duty front steer and articulated tractors and loaders to larger new rubber tracked units. These products will work well in many applications including three point hitches, high lift pins and bushings and other heavy duty farm related industrial machinery.
- **Heavy Duty On/Off Highway Road Construction and Maintenance Vehicles** — These products are well suited for greasing on/off road heavy duty tri-axle dump trucks and cement mixers that also find their way off road as much as on. Delo® Grease ESI® HD EP greases are an excellent choice for king pins, bushing and bucket pins, 5th wheels and other severe duty applications found on these types of vehicles. They are also ideally suited for on highway heavy duty applications as well as airport fixed ground operation snow and ice removal equipment, such as plows, blowers and salt spreaders when the preferred method of lubrication is by manual application. These products were formulated using a new rust inhibitor package tested with 0.5% mixtures of magnesium chloride and calcium chloride road de-icers and were proven to reduce rust and corrosion when these corrosive materials were present. In colder climates, where moly is required, the Delo Syn-Grease SXD 220 Moly 5% EP 1 grade would be the preferred product of choice.

Delo Grease ESI HD EP greases meet the requirements of the Mack MG-C grease specification. They also meet Caterpillar recommendations for greases containing 5% and 3% molybdenum disulfide.

Note 1: Delo Grease ESI HD EP greases are designed using high viscosity base oils. These oils offer excellent protection in severe duty, high shock load conditions where typical ambient temperatures are above freezing. For extreme cold weather climate conditions, Chevron recommends using Delo Syn-Grease SXD 220 Moly 5% EP 1 for equipment that requires the product to be used in centralized automatic grease dispensing systems.

Because each application varies, you should consult your equipment OEM or Chevron Lubrication Specialist before switching over to these products.

Note 2: In cases where centralized automatic dispensing systems or long manual grease runs are the preferred method of lubrication and normal operating temperatures are consistently well below 20°F, Delo Grease ESI HD EP, available in NLGI grades 2, 1, 0 and 00, would offer better pumpability. They would also be the preferred choice for onboard vehicle lubrication systems operating in severe cold weather service. Delo Syn-Grease SXD 220 Moly 5% EP and Delo Grease ESI HD EP are fully compatible. Please consult your local Chevron Lubrication Specialist for more information.

Always confirm that the product selected is consistent with the original equipment manufacturer's recommendation for the equipment operating conditions and customer's maintenance practices.

TYPICAL TEST DATA

	Delo Syn-Grease SXD 220 Moly 5% EP 1	Delo Grease ESI HD Moly 5% EP 1	Delo Grease ESI HD Moly 5% EP 2	Delo Grease ESI HD Moly 3% EP 1	Delo Grease ESI HD Moly 3% EP 2	Delo Grease ESI HD EP 1	Delo Grease ESI HD EP 2
Product Number	*259115*	*259121*	*259120*	*259123*	*259122*	*259125*	*259124*
SDS/MSDS Number							
USA	*44839*	44831	*44831*	*44825*	*44825*	*44815*	*44815*
Colombia	—	44834	*44834*	*44830*	*44830*	*44818*	*44818*
El Salvador	—	—	—	*44826*	*44826*	—	—
Molybdenum Disulfide content %	5	5	5	3	3	—	—
Operating Temperature, °C(°F)							
Minimum[a]	-40(-40)	-26(-15)	-26(-15)	-26(-15)	-26(-15)	-26(-15)	-26(-15)
Maximum[b]	235(450)	177(350)	177(350)	177(350)	177(350)	177(350)	177(350)
Penetration, at 25°C (77°F) Worked (60 strokes)	325	325	280	325	280	325	280
Dropping Point, °C(°F)	265(509)	265(509)	265(509)	265(509)	265(509)	265(509)	265(509)
Four Ball							
Weld Point, kg	800+	500	500	500	500	500	500
Wear, Scar Diameter, mm	0.48	0.43	0.43	0.43	0.43	0.43	0.43
Timken OK Load, lb	40	70	70	70	70	75	80
Load Wear Index, kg	135	75	75	75	75	75	75
Bearing Water Washout, wt % Loss at 175°F	1.5	5	4	5	4	5	4
Water Spray-off, % at 100°F	N/A	25	15	25	15	25	15
EMCOR Dynamic Bearing Rust, 10% Synthetic Sea Water, ASTM D6138	0,1	0,0	0,0	0,0	0,0	0,0	0,0
Lincoln Ventmeter, psig at 30 s, at							
75°F	260	250	450	250	510	250	625
30°F	400	600	1550	600	1700	600	1600
0°F	775	1720	1725	1720	1800	1720	1800
-22°F	1675	†	†	†	†	†	†

Always confirm that the product selected is consistent with the original equipment manufacturer's recommendation for the equipment operating conditions and customer's maintenance practices.

	Delo Syn-Grease SXD 220 Moly 5% EP 1	Delo Grease ESI HD Moly 5% EP 1	Delo Grease ESI HD Moly 5% EP 2	Delo Grease ESI HD Moly 3% EP 1	Delo Grease ESI HD Moly 3% EP 2	Delo Grease ESI HD EP 1	Delo Grease ESI HD EP 2
DIN 51805, psi 68°F(20°C) 32°F(0°C) -4°F(-20°C) -22°F	 0.9 1.2 2.2 3.1	 0.5 2 10 38	 1 4 20 max pressure	 0.5 2 10 38	 2 4 19 max pressure	 0.5 2 10 38	 2 5 22 max pressure
Copper Corrosion	1b	2b	2b	2b	2b	1b	1b
Thickener, % Type	13.0 Lithium Complex	7.0 Lithium Complex	13.0 Lithium Complex	7.0 Lithium Complex	13.0 Lithium Complex	7.0 Lithium Complex	13.0 Lithium Complex
ISO Viscosity Grade Base Oil Equivalent	220	320	320	320	320	320	320
Viscosity, Kinematic* cSt at 40°C cSt at 100°C	 200 23	 383 25	 383 25	 383 25	 383 25	 383 25	 383 25
Viscosity, Saybolt* SUS at 100°F SUS at 210°F	 1000 113	 2058 124	 2058 124	 2058 124	 2058 124	 2058 124	 2058 124
Viscosity Index	141	85	85	85	85	85	85
Oil Separation, wt %	1.6	2	2	2	2	2	2
Flash Point, °C(°F)*	232(450)	274(525)	274(525)	274(525)	274(525)	274(525)	274(525)
Texture	Stringy	Stringy	Stringy	Stringy	Stringy	Stringy	Stringy
Color	Gray/Black	Gray/Black	Gray/Black	Gray/ Black	Gray/ Black	Red	Red

a Minimum operating temperature is the lowest temperature at which a grease, already in place, could be expected to provide lubrication. Most greases cannot be pumped at these minimum temperatures.
b Maximum operating temperature is the highest temperature at which the grease could be used with frequent (daily) relubrication.
† Too stiff at this temperature to pump through device.
* Determined on mineral oil extracted by vacuum filtration.

Minor variations in product typical test data are to be expected in normal manufacturing.

Always confirm that the product selected is consistent with the original equipment manufacturer's recommendation for the equipment operating conditions and customer's maintenance practices.

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