

# SAFETY DATA SHEET

## ENERGY SPRING NS GREASE EP LI 2 — Lithium Soap EP Grease

Issued in accordance with Singapore Standard SS 586-3:2022 (16-section GHS format). This document supersedes all previous versions.

### SECTION 1 - Identification of the substance / mixture and of the supplier

|                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1.1 Product identifier</b>                | NS GREASE EP LI 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Product family</b>                        | <p>Multipurpose extreme-pressure (EP) lubricating grease, NLGI consistency grade 2. A lithium hydroxystearate soap thickener carrying a blend of high viscosity index mineral base oils of 220 mm<sup>2</sup>/s at 40 °C, with extreme-pressure, anti-wear, antioxidant and anti-corrosion additives.</p> <p>Operating temperature range -20 °C to +130 °C.</p> <p>Classification: DIN 51502 KP 2 K-20.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Grade(s)</b>                              | NLGI 2 by ASTM D217, worked penetration 265 to 295 units (0.1 mm) at 25 °C.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Chemical identity</b>                     | Mixture (lubricating grease)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>CAS number</b>                            | Not applicable (mixture)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>1.2 Relevant identified uses</b>          | <p>Multipurpose grease for the lubrication of rolling element and plain bearings, hinges, pins, bushes and sliding surfaces across industrial and transport applications, including heavy duty bearings under shock loading and in wet conditions. Applied manually, by grease gun or by centralised lubrication system.</p> <p>Industrial / professional and consumer use.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Uses advised against</b>                  | <p>Any use other than that stated above. Not for use as an engine oil, gear oil, hydraulic fluid, fuel, solvent, cleaning agent or mould release agent, nor for any medicinal, food-contact or personal-care purpose. Not approved for incidental food contact (NSF H1).</p> <p>Do not use above +130 °C or below -20 °C. The upper service limit is set by the thickener and is below the dropping point of 180 °C; the dropping point is not a service temperature (see Section 9).</p> <p>Use with caution in the vicinity of hydraulic brake rubber components. Mineral oil attacks natural rubber and some other elastomers used in braking systems; confirm compatibility before use near them, and keep the product off brake friction surfaces.</p> <p>Do not mix with greases of a different thickener type. A lithium soap grease is generally compatible with lithium complex and calcium soap greases, but mixing with barium, sodium, polyurea and bentonite (clay) thickened products is to be avoided. Thickener incompatibility can cause severe softening or hardening of the grease in service and consequent bearing failure. When converting equipment from another grease, purge the bearing or system completely and re-grease at short intervals until only the new product is discharging, bearing in mind that dead spots may retain the old grease.</p> <p>Not a substitute where a grease containing molybdenum disulphide, graphite or another solid lubricant is specified: this product contains no solid lubricant.</p> |
| <b>1.3 Supplier of the safety data sheet</b> | <p>ENERGY SPRING PTE LTD<br/> 3 Temasek Avenue, #21-00<br/> Centennial Tower<br/> Singapore 039190</p> <p>Tel: +65 6993 9836<br/> E-mail: <a href="mailto:info@energy-spring.sg">info@energy-spring.sg</a><br/> Web: <a href="https://energy-spring.sg/">https://energy-spring.sg/</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Manufactured / blended by</b>             | Product supplied under a manufacturing agreement. Manufacturer details available from ENERGY SPRING PTE LTD on request.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1.4 Emergency telephone number</b> | ENERGY SPRING PTE LTD (office hours, Mon - Fri 09:00 - 18:00 SGT): +65 6993 9836<br><br>Singapore - emergency services (SCDF: ambulance and fire): 995<br>Singapore - Drug and Poison Information Centre (DPIC), Singapore General Hospital, 24-hour hotline: +65 6423 9119<br><br>Outside Singapore: contact the local emergency services or the national poison information centre for the country in which the incident occurs. |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Product           | NLGI consistency grade | Product type                         | GHS classification          |
|-------------------|------------------------|--------------------------------------|-----------------------------|
| NS GREASE EP LI 2 | 2                      | Lithium soap extreme-pressure grease | Not classified as hazardous |

## SECTION 2 - Hazards identification

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2.1 Classification of the substance or mixture</b> | GHS classification (SS 586-2 / SS 586-3):<br><br>NOT CLASSIFIED AS HAZARDOUS.<br><br>Health hazards: not classified. Environmental hazards: not classified. Physical hazards: not classified.<br><br>Supplemental labelling: EUH208 applies. See 2.2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Basis of the classification</b>                    | <p>The mixture has been assessed against the classification criteria of SS 586-2 using the generic concentration limits and the summation and additivity rules. No substance-specific concentration limit has been relied on.</p> <ul style="list-style-type: none"> <li>- Skin sensitisation. Three declared ingredients are classified Skin Sens. 1; H317: bismuth naphthenate (up to 0.99 % w/w), naphthenic acid (up to 0.9 % w/w) and zinc naphthenate (up to 0.49 % w/w). The skin sensitisation endpoint is assessed ingredient by ingredient against the 1.0 % w/w generic concentration limit; the additivity principle does not apply to it. Each of the three is below that limit, so the mixture is not classified. Because each is present at 0.1 % w/w or above, the supplemental statement EUH208 is required. This is the endpoint on which the classification turns - see the concentration limits below.</li> <li>- Serious eye damage / eye irritation. The three ingredients above carry Eye Irrit. 2 or 2A; H319 and sum to not more than 2.38 % w/w, against a 10 % w/w additivity threshold. Not met.</li> <li>- Skin corrosion / irritation. Naphthenic acid carries Skin Irrit. 2; H315 at up to 0.9 % w/w, against a 10 % w/w additivity threshold. Not met.</li> <li>- Chronic aquatic hazard. Bismuth naphthenate and zinc naphthenate carry Aquatic Chronic 3; H412 and sum to not more than 1.48 % w/w, against a 25 % w/w summation threshold. No ingredient carries an Aquatic Chronic 1 or 2 classification or an M-factor. Not met.</li> <li>- Carcinogenicity. The highly refined mineral base oil contains less than 3 % (w/w) DMSO extract when tested by IP 346. On that basis no carcinogen classification applies. Not met.</li> <li>- Aspiration toxicity. The product is a grease and is not capable of being aspirated in the sense of the criterion. Not applicable.</li> <li>- Acute toxicity, respiratory sensitisation, germ cell mutagenicity, reproductive toxicity, STOT (single and repeated exposure), and all physical hazard classes: criteria not met.</li> </ul> <p>'Not classified' is a statement about the GHS criteria. It does not mean the product is harmless. The hazards in 2.3 below apply regardless of classification, and the product must not be discharged to drains, watercourses or the ground - see Section 12.</p> |

|                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2.2 Label elements</b>                                                | <p>Pictogram: None required<br/> Signal word: None required<br/> Hazard statements: None required</p> <p>Supplemental information:<br/> EUH208: Contains bismuth naphthenate, naphthenic acid and zinc naphthenate. May produce an allergic reaction.</p> <p>Recommended handling precautions (good occupational practice, not label elements):<br/> P102: Keep out of reach of children.<br/> P262: Do not get in eyes, on skin, or on clothing.<br/> P264: Wash skin thoroughly after handling.<br/> P273: Avoid release to the environment.<br/> P280: Wear protective gloves and eye / face protection.<br/> P501: Dispose of contents and container in accordance with local regulations.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Concentration limits on which this classification depends</b>         | <p>The three naphthenate and naphthenic acid components are each classified Skin Sens. 1; H317, and each must remain below 1.0 % w/w individually for the mixture to remain unclassified. Should any one of them reach 1.0 % w/w, the mixture classifies Skin Sens. 1 - H317, requiring the GHS07 pictogram, the signal word WARNING and the precautionary statements P261, P272, P280, P302 + P352, P333 + P313 and P362 + P364.</p> <p>The margin on bismuth naphthenate is narrow: it is specified at up to 0.99 % w/w against a 1.0 % limit.</p> <p>Note that the skin sensitisation endpoint is not additive. The combined content of the three sensitisers is up to 2.38 % w/w, which would classify the mixture if the endpoint were assessed by summation, but it is not: each sensitising ingredient is compared with the concentration limit on its own. The eye and skin irritation endpoints, by contrast, are additive, and both are assessed above against a 10 % threshold which the same components fall well short of.</p>                                                                                                                                                                                                                 |
| <b>2.3 Other hazards - high-pressure injection from grease equipment</b> | <p>This is the principal hazard associated with this product in service, and it applies irrespective of the classification.</p> <p>A hand-operated grease gun readily develops several hundred bar at the nozzle, and powered and centralised equipment more. Grease escaping from a nozzle, coupler, hose or fitting at that pressure can penetrate intact skin and inject grease deep into the tissue, where it may cause local necrosis. The entry wound is typically no more than a pinprick and may be almost painless at first; pain and tissue damage characteristically appear a few hours after the injection, by which time damage is advancing. Injuries to the fingers and hand are the common presentation, since the hand is used to steady the coupler.</p> <p>Never place any part of the body in front of a grease nozzle or over a coupler while pressure is applied, do not use a hand to check for a blocked or leaking fitting, and depressurise the equipment before clearing a blockage. Any suspected injection injury is a surgical emergency and the casualty is to be sent to hospital immediately - do not wait for symptoms to develop, and obtain medical attention even where there is no apparent wound. See Section 4.</p> |
| <b>Hot equipment and hot grease</b>                                      | <p>Greasing points on operating machinery are frequently hot. Grease purged from a hot bearing can cause thermal burns, and a bearing housing packed with grease may release hot material under pressure when a plug or cover is removed. Stop and isolate the machine, and allow it to cool, before opening a bearing housing.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Skin effects</b>                                                      | <p>Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin, resulting in disorders such as oil acne or folliculitis. Signs and symptoms may include the formation of black pustules and spots on the skin of exposed areas.</p> <p>The product contains three components which are skin sensitisers at higher concentrations. Although the mixture is not classified as a sensitiser, EUH208 applies and an allergic skin reaction in susceptible individuals cannot be excluded.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Used and contaminated grease</b> | In service the grease picks up wear metals, water and oxidation products, and in some applications process contamination. The concentration of such impurities depends on the service and they may present risks to health and to the environment on disposal. All used grease should be handled with caution and skin contact avoided as far as possible. Use impervious gloves when handling used grease. |
| <b>Slip hazard</b>                  | Grease dropped or purged onto a walking surface, or trodden from a greasing point onto a stair or ladder rung, produces a severe and persistent slip hazard which is not removed by sweeping. Clean up immediately with absorbent material and a degreasing agent.                                                                                                                                          |
| <b>Fire behaviour</b>               | Not classified as flammable, but the product will burn. Grease absorbed into lagging, rags or absorbent material burns readily; dispose of contaminated rags and cleaning materials properly in order to prevent fires.                                                                                                                                                                                     |
| <b>PBT / vPvB</b>                   | PBT: not applicable. vPvB: not applicable. No ingredient is considered to meet the PBT or vPvB criteria at 0.1 % w/w or higher. The product does, however, contain components with the potential to bioaccumulate and is not readily biodegradable - see Section 12.                                                                                                                                        |

### SECTION 3 - Composition / information on ingredients

| Component                              | CAS number     | Approx. % w/w | GHS classification                                                   |
|----------------------------------------|----------------|---------------|----------------------------------------------------------------------|
| Highly refined mineral base oils*      | Proprietary    | Balance       | Not classified                                                       |
| Lithium hydroxystearate soap thickener | Proprietary    | Balance       | Not classified                                                       |
| Bismuth naphthenate                    | CAS 85736-59-0 | 0.1 - 0.99    | Skin Sens. 1; H317<br>Eye Irrit. 2A; H319<br>Aquatic Chronic 3; H412 |
| Naphthenic acid                        | CAS 1338-24-5  | 0.1 - 0.9     | Skin Irrit. 2; H315<br>Skin Sens. 1; H317<br>Eye Irrit. 2; H319      |
| Zinc naphthenate                       | CAS 12001-85-3 | 0 - 0.49      | Skin Sens. 1; H317<br>Eye Irrit. 2A; H319<br>Aquatic Chronic 3; H412 |

- Substance / mixture: Mixture. Chemical nature: a lubricating grease containing highly refined mineral base oils in a lithium hydroxystearate soap thickener, with extreme-pressure and other additives.
- \* The highly refined mineral base oil contains less than 3 % (w/w) DMSO extract when tested by IP 346. On that basis no carcinogen classification applies to the base oil or to the mixture.
- The base oils and the thickener together make up the balance of the formulation. Neither is classified as hazardous to health or the environment.
- Components shown as proprietary are identified by chemical family, their precise identifiers being withheld to protect confidentiality. Full identification is available to a physician or to a competent authority on request, and to a downstream user where required for the purposes of a workplace risk assessment.
- Concentrations are shown as ranges to protect confidentiality or to reflect batch-to-batch variation. A range beginning at zero indicates that the component may be absent from a given blend.
- Each of the three declared sensitising components is present at 0.1 % w/w or above, which requires the supplemental labelling statement EUH208 even though the mixture is not classified as a skin sensitiser. Each is below the 1.0 % w/w generic concentration limit at which the mixture would classify. See the concentration limits in Section 2.
- There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

### SECTION 4 - First aid measures

|                                                        |                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>4.1 Description of first aid measures - General</b> | Remove clothing soiled by the product without delay. In the event of serious problems, call a doctor or summon medical assistance urgently. Show this safety data sheet to the medical personnel in attendance. When administering first aid, ensure that appropriate personal protective equipment is worn, according to the incident, the injury and the surroundings. |
| <b>Inhalation</b>                                      | No treatment necessary under normal conditions of use: the product is a semi-solid grease and does not generate vapour or mist at ambient temperature. If symptoms persist, obtain medical advice. If fume from overheated or burning product has been inhaled, move the person to fresh air and obtain medical attention.                                               |

|                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Skin contact</b>                                                                   | <p>Remove contaminated clothing. Wipe off the bulk of the grease, flush the exposed area with water and then wash with soap. Do not use solvents, petrol or abrasive cleaners. If persistent irritation occurs, or if a rash develops, obtain medical attention: the product contains sensitising components and further exposure should then be prevented. Launder contaminated clothing before reuse.</p> <p>Hot product: cool the affected area immediately with cold running water for at least 15 minutes. Do not attempt to remove grease adhering to burned skin. Obtain medical attention for thermal burns.</p> <p>HIGH-PRESSURE INJECTION INJURY - where high-pressure equipment is in use, injection of product under the skin can occur. Send the casualty to hospital immediately. Do not wait for symptoms to develop, and obtain medical attention even in the absence of an apparent wound. State that this is a high-pressure injection injury. Keep the limb elevated and immobilised. Do not apply hot soaks. Take this safety data sheet to the hospital.</p> |
| <b>Eye contact</b>                                                                    | <p>Flush the eye with copious quantities of water. Remove contact lenses if present and easy to do, and continue rinsing. If persistent irritation occurs, obtain medical attention.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Ingestion</b>                                                                      | <p>In general no treatment is necessary unless large quantities have been swallowed; obtain medical advice in any event. Do not induce vomiting. Rinse the mouth with water. Never give anything by mouth to an unconscious person.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>4.2 Most important symptoms and effects, both acute and delayed</b>                | <p>Skin: oil acne or folliculitis, the signs of which include the formation of black pustules and spots on the skin of exposed areas. Dryness or dermatitis after prolonged contact. An allergic skin reaction is possible in susceptible individuals (EUH208) and may be delayed by 24 to 72 hours after contact. Thermal burns from hot product.</p> <p>Eyes: mechanical irritation, redness and watering on direct contact.</p> <p>Injection injury: a small entry wound with little initial pain, followed by delayed onset of pain and tissue damage a few hours after the injection. Local necrosis may result if the product is not surgically removed.</p> <p>Ingestion: nausea, vomiting or diarrhoea.</p>                                                                                                                                                                                                                                                                                                                                                               |
| <b>4.3 Indication of any immediate medical attention and special treatment needed</b> | <p>Treat symptomatically. No specific antidote is required.</p> <p>Note to physician - high-pressure injection. These injuries require prompt surgical intervention, and possibly steroid therapy, to minimise tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics and hot soaks should be avoided, since they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthesia, and wide exploration is essential.</p> <p>Note to physician - sensitisation. A persistent or recurrent eczematous reaction in a worker handling this product warrants dermatological assessment and patch testing, with the naphthenate and naphthenic acid components in mind. Full composition details are available from ENERGY SPRING PTE LTD on request.</p>                                   |

## SECTION 5 - Fire-fighting measures

|                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>5.1 Extinguishing media</b>                                   | <p>Suitable: foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.</p> <p>Unsuitable: water in a jet, which may spread burning material.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>5.2 Special hazards arising from the substance or mixture</b> | <p>The product is a combustible semi-solid. It is not classified as flammable and does not readily ignite, but it will burn once heated, and grease absorbed into lagging, rags or absorbent material burns readily. Heat may build pressure and rupture closed containers, spreading fire and increasing the risk of burns and injuries.</p> <p>Hazardous combustion products include a complex mixture of airborne solid and liquid particulates and gases (smoke), carbon monoxide where combustion is incomplete, and unidentified organic and inorganic compounds. Combustion of the additive system may also yield oxides of sulphur and phosphorus and metal oxides.</p> |

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>5.3 Advice for fire-fighters</b> | Wear proper protective equipment including chemical-resistant gloves; a chemical-resistant suit is indicated where large contact with spilled product is expected. Self-contained breathing apparatus must be worn when approaching a fire in a confined space. Select fire-fighters' clothing approved to the relevant standard. Use extinguishing measures appropriate to local circumstances and the surrounding environment. Collect contaminated fire-fighting water separately; it must not enter the sewage system or any watercourse. |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SECTION 6 - Accidental release measures

|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>6.1 Personal precautions, protective equipment and emergency procedures</b> | Avoid contact with skin and eyes. Wear gloves and eye protection. Beware of slippery surfaces and floors, which are the main risk arising from a grease spillage. Keep unprotected and non-essential persons away. Beware of hot product near operating machinery. For guidance on the selection of personal protective equipment see Section 8.                                                                                                                |
| <b>6.2 Environmental precautions</b>                                           | Use appropriate containment to prevent uncontrolled release. Prevent the product from spreading or entering drains, ditches, sewers or rivers by using sand, earth or other appropriate barriers. Do not allow it to penetrate the ground: this would result in soil and groundwater contamination. Inform the relevant authorities if the product has entered the environment or a public sewer.                                                               |
| <b>6.3 Methods and material for containment and cleaning up</b>                | Scrape or shovel up the bulk of the material mechanically and transfer it to a labelled, closable container for disposal. Absorb residues with a liquid-binding material such as sand, diatomite, sawdust or a proprietary inert absorbent. Finish with a degreasing agent to remove the slip hazard from the surface, and collect the washings for disposal rather than flushing them to drain. Dispose of materials and solid residues at an authorised site. |
| <b>6.4 Reference to other sections</b>                                         | See Section 7 for safe handling, Section 8 for personal protective equipment and Section 13 for disposal.                                                                                                                                                                                                                                                                                                                                                       |

## SECTION 7 - Handling and storage

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>7.1 Precautions for safe handling</b> | <p>Avoid prolonged or repeated contact with skin. Avoid contact with eyes and clothing. Wear gloves and eye protection when applying grease or purging a bearing. Do not eat, drink or smoke in areas where the product is handled. Wash hands after handling the product and before eating, drinking or smoking. Do not carry grease-soaked rags in pockets, and dispose of contaminated rags and cleaning materials properly in order to prevent fires.</p> <p>Grease equipment - never place any part of the body in front of a grease nozzle or over a coupler while pressure is applied. Do not use a hand to locate a blocked or leaking fitting. Depressurise the gun or lubrication line before clearing a blockage, changing a coupler or breaking a connection. Inspect hoses and couplers for damage before use and replace them on a planned basis. See Sections 2 and 4.</p> <p>Stop, isolate and lock out machinery, and allow it to cool, before opening a bearing housing or gearcase. Where greasing points must be served with the machine running, use extended lines to bring the greasing point away from moving parts.</p> <p>When handling the product in drums, wear safety footwear and use proper handling equipment. Keep away from foodstuffs, beverages and feed. Avoid contact with strong oxidising agents.</p> |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>7.2 Conditions for safe storage, including any incompatibilities</b> | <p>Keep containers tightly closed and store in a cool, well-ventilated place at ambient temperature, out of direct sunlight and away from extremes of temperature. Use properly labelled and closable containers. Store away from foodstuffs and away from strong oxidising agents (see Section 10). Keep out of the reach of children. Keep containers closed and correctly labelled, including the EUH208 statement. Prevent any seepage into the ground.</p> <p>Packaging materials. Suitable: mild steel, or high density polyethylene for containers and container linings. Unsuitable: PVC. Polyethylene containers should not be exposed to high temperatures, because of the risk of distortion.</p> <p>Grease may separate oil slowly in storage; a small amount of oil on the surface of the grease is normal and is stirred back in. Store drums and kegs upright and protected from water ingress.</p> <p>Container warning: empty containers retain product residue and can be hazardous. Do not cut, weld, braze, solder, drill, grind or expose such containers to heat, flame or sparks. Empty containers should be scraped out as far as practicable, properly closed and disposed of through an approved contractor.</p> |
| <b>7.3 Specific end use(s)</b>                                          | <p>Lubrication of rolling element and plain bearings and general greasing points requiring an NLGI 2 extreme-pressure grease. Operating temperature range -20 °C to +130 °C; base oil viscosity 220 mm<sup>2</sup>/s at 40 °C, which sets the speed and temperature range over which the grease is suitable (Section 9). Refer to the product technical data sheet for relubrication intervals. Do not mix with greases of a different thickener type, and use with caution near hydraulic brake rubber components - see Section 1.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## SECTION 8 - Exposure controls / personal protection

### 8.1 Control parameters &mdash; occupational exposure limits

| Component / parameter                    | Source                          | TWA (8 h)           | STEL / Ceiling              |
|------------------------------------------|---------------------------------|---------------------|-----------------------------|
| Oil mist, mineral                        | Singapore PEL (WSH Regulations) | 5 mg/m <sup>3</sup> | 10 mg/m <sup>3</sup> (STEL) |
| Oil mist, mineral (inhalable fraction)   | ACGIH TLV                       | 5 mg/m <sup>3</sup> | -                           |
| Declared additive components (Section 3) | Singapore / ACGIH               | None established    | None established            |

|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>8.1 Control parameters - note</b> | <p>The base oil is a mineral oil, so the Singapore permissible exposure level for mineral oil mist applies wherever mist or aerosol may be generated. In practice, because of the product's semi-solid consistency, the generation of mists and dusts is unlikely to occur.</p> <p>No occupational exposure limit is established for the naphthenate or naphthenic acid components. Exposure to them should be minimised as far as reasonably practicable, as is appropriate for sensitising components. No biological limit value has been allocated for this product.</p> <p>DNEL / PNEC: not determined for this mixture.</p> <p>Monitoring. Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an exposure limit and the adequacy of exposure controls. Validated measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.</p> |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>8.2 Exposure controls - general considerations</b> | <p>The level of protection and the types of control necessary will vary with the potential exposure conditions. Select controls on the basis of a risk assessment of local circumstances, using the information in this data sheet as an input. The user should read and understand all instructions and limitations supplied with any protective equipment.</p> <p>For this product the controls that matter are mechanical rather than respiratory: the integrity and safe use of grease application equipment, isolation and lock-out of machinery before opening bearing housings, and prompt clean-up of spillage to remove the slip hazard. These are addressed in Section 7.</p> <p>Define procedures for the safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Drain down systems before equipment break-in or maintenance, and retain drain-downs in sealed storage pending disposal or recycling.</p>                     |
| <b>Engineering controls</b>                           | <p>Adequate ventilation to control airborne concentrations. Use local exhaust ventilation where there is a risk of inhaling vapours, mists or aerosols; the potential for airborne concentrations is greater where the material is heated, sprayed or formed into a mist. Provide washing facilities and a suitable skin cleanser at greasing stations, and eyewash facilities where grease is dispensed under pressure. Where greasing points are difficult or hazardous to reach, fit extended lubrication lines or an automatic lubrication system rather than relying on access under guard.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Respiratory protection</b>                         | <p>No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practice, precautions should be taken to avoid breathing the material. Where engineering controls do not maintain airborne concentrations at a level adequate to protect worker health, select equipment suitable for the specific conditions of use; where an air-filtering respirator is suitable, select a filter for the combination of organic gases and vapours and particles (type A / type P, boiling point above 65 °C).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hand protection</b>                                | <p>Where hand contact with the product may occur, use gloves approved to EN ISO 374 made from PVC, neoprene or nitrile rubber. Suitability and durability depend on the frequency and duration of contact, the chemical resistance of the glove material and the dexterity required; always seek advice from the glove supplier. For continuous contact, gloves with a breakthrough time of more than 240 minutes are recommended, with a preference for more than 480 minutes where suitable gloves can be identified. Glove thickness is not a good predictor of resistance, but should typically be greater than 0.35 mm depending on the make and model.</p> <p>Gloves must only be worn on clean hands. Replace contaminated gloves - a glove holding grease against the skin is worse than no glove, given the sensitising components. After using gloves, wash and dry the hands thoroughly and apply a non-perfumed moisturiser. Use heat-resistant gloves when working on hot equipment, and impervious gloves when handling used grease.</p> |
| <b>Eye protection</b>                                 | <p>Where the material is handled such that it could be splashed into the eyes, protective eyewear is recommended: safety glasses with side shields to EN 166 as a minimum. Wear chemical goggles or a face shield where grease is dispensed under pressure, where a bearing is being purged, or where hot product may be released.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Skin and body protection</b>                       | <p>Skin protection is not ordinarily required beyond standard work clothes, but it is good practice to wear chemical-resistant gloves. Where repeated skin contact or contamination of clothing is likely, protective clothing should be worn. Change contaminated clothing promptly; grease held against the skin by clothing is a common cause of oil acne and folliculitis. Routinely wash work clothing and protective equipment to remove contaminants, and discard contaminated clothing and footwear that cannot be cleaned.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hygiene measures</b>                               | <p>Always observe good personal hygiene. Wash hands with soap and water after handling the material and before eating, drinking or smoking, and at the end of work. Use a suitable skin cream after washing. Do not use solvents, petrol or abrasive cleaners to remove grease from the skin. Practise good housekeeping. Keep the product away from foodstuffs, beverages and feed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Environmental exposure controls</b> | Avoid release to the environment. Take appropriate measures to fulfil the requirements of the relevant environmental protection legislation. Prevent discharge to drains, surface water, groundwater and soil. Where necessary, prevent undissolved material from being discharged to waste water; waste water should be treated in a municipal or industrial treatment plant before discharge to surface water. See Sections 6, 12 and 13. |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SECTION 9 - Physical and chemical properties

|                                                                    |                                                                                                             |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Physical state at 20 °C</b>                                     | Semi-solid (grease)                                                                                         |
| <b>Appearance / colour</b>                                         | Brown                                                                                                       |
| <b>Odour</b>                                                       | Slight hydrocarbon                                                                                          |
| <b>Odour threshold</b>                                             | Not determined                                                                                              |
| <b>pH</b>                                                          | Not applicable (non-aqueous product)                                                                        |
| <b>NLGI consistency grade</b>                                      | 2 (ASTM D217)                                                                                               |
| <b>Worked penetration at 25 °C</b>                                 | 265 to 295 units (0.1 mm), ASTM D217 / IP 50                                                                |
| <b>Dropping point</b>                                              | 180 °C (IP 396 / IP 132)                                                                                    |
| <b>Base oil kinematic viscosity at 40 °C</b>                       | 220 mm <sup>2</sup> /s (ASTM D445 / IP 71)                                                                  |
| <b>Base oil kinematic viscosity at 100 °C</b>                      | 19 mm <sup>2</sup> /s (ASTM D445 / IP 71)                                                                   |
| <b>Operating temperature range</b>                                 | -20 °C to +130 °C. The upper limit is set by the thickener, not by the dropping point.                      |
| <b>Thickener / base oil</b>                                        | Lithium hydroxystearate soap thickener; highly refined mineral base oils of high viscosity index            |
| <b>Product classification</b>                                      | DIN 51502 KP 2 K-20                                                                                         |
| <b>Melting / freezing point</b>                                    | Not applicable to a grease                                                                                  |
| <b>Initial boiling point / range</b>                               | Not determined                                                                                              |
| <b>Flash point</b>                                                 | Not applicable to the grease. The product is not classified as flammable, but it will burn.                 |
| <b>Flammability (solid, gas)</b>                                   | Not applicable                                                                                              |
| <b>Upper / lower explosion limit</b>                               | Typically 10 % (V) / 1 % (V)                                                                                |
| <b>Auto-ignition temperature</b>                                   | > 320 °C                                                                                                    |
| <b>Decomposition temperature</b>                                   | Not determined; see Sections 5 and 10                                                                       |
| <b>Explosive properties</b>                                        | Not classified                                                                                              |
| <b>Oxidising properties</b>                                        | Not determined                                                                                              |
| <b>Vapour pressure</b>                                             | < 0.5 Pa at 20 °C (estimated)                                                                               |
| <b>Relative vapour density</b>                                     | > 1 (estimated)                                                                                             |
| <b>Density / relative density</b>                                  | Not determined                                                                                              |
| <b>Solubility in water</b>                                         | Negligible; the product floats on water                                                                     |
| <b>Solubility in other solvents</b>                                | Not determined                                                                                              |
| <b>Partition coefficient n-octanol/water</b>                       | log Pow > 6 (based on information on similar products)                                                      |
| <b>Evaporation rate</b>                                            | Not determined                                                                                              |
| <b>Conductivity</b>                                                | Not expected to be a static accumulator                                                                     |
| <b>Particle characteristics</b>                                    | Not applicable                                                                                              |
| <b>Solids content</b>                                              | No added solid lubricant. The product contains no molybdenum disulphide, graphite or other solid lubricant. |
| <b>Other information - DMSO extract (mineral oil only), IP 346</b> | < 3 % w/w                                                                                                   |

|                              |                                                                                                                                                                                                                                                                      |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>9.2 Other information</b> | The product offers extreme-pressure load carrying capacity, mechanical stability in vibrating environments, resistance to water wash-out and oxidation stability. Refer to the product technical data sheet for performance test results and relubrication guidance. |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SECTION 10 - Stability and reactivity

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>10.1 Reactivity</b>                         | The product does not pose any reactivity hazard in addition to those set out below.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>10.2 Chemical stability</b>                 | Stable under normal conditions of storage, handling and use. In service, oxidative degradation is accelerated by high bearing temperature, water contamination and catalytic wear metals, and the grease will eventually harden, soften or separate oil; observe the relubrication interval.                                                                                                                                                                                                                                                                                                                                             |
| <b>10.3 Possibility of hazardous reactions</b> | Reacts with strong oxidising agents. No other dangerous reactions are known under normal conditions of storage and use, and hazardous polymerisation will not occur.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>10.4 Conditions to avoid</b>                | Extremes of temperature and direct sunlight. Prolonged exposure to high temperatures, which promotes oxidation, thermal degradation and oil separation. Water contamination. Sources of ignition.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>10.5 Incompatible materials</b>             | Strong oxidising agents.<br><br>PVC as a packaging or lining material (see Section 7).<br><br>Natural rubber and some other elastomers used in hydraulic braking systems: mineral oil attacks them. Use with caution near hydraulic brake rubber components and confirm compatibility before use.<br><br>Greases of a different thickener type - not a chemical hazard, but the practical incompatibility which most often causes trouble with this class of product. The thickener here is a lithium hydroxystearate soap; mixing with barium, sodium, polyurea and bentonite (clay) thickened greases is to be avoided. See Section 1. |
| <b>10.6 Hazardous decomposition products</b>   | No decomposition if stored and applied as directed. On combustion or strong overheating, see Section 5.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## SECTION 11 - Toxicological information

|                                            |                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>11.1 Basis for assessment</b>           | Information given is based on data on the components and on the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole rather than for individual components.                                                                                                                                     |
| <b>Exposure routes</b>                     | Skin and eye contact are the primary routes of exposure, although exposure may occur following accidental ingestion. Injection through the skin from pressurised grease equipment is a distinct and serious route of exposure - see Sections 2 and 4.                                                                                                                 |
| <b>Acute toxicity</b>                      | Based on available data, the classification criteria are not met.<br>Acute oral toxicity: LD50 rat > 5,000 mg/kg. Low toxicity.<br>Acute dermal toxicity: LD50 rabbit > 5,000 mg/kg. Low toxicity.<br>Acute inhalation toxicity: classification criteria not met.                                                                                                     |
| <b>Skin corrosion / irritation</b>         | Slightly irritating to skin. Based on available data, the classification criteria are not met: naphthenic acid (Skin Irrit. 2) is present at up to 0.9 % w/w against a 10 % w/w additivity threshold. Prolonged or repeated skin contact without proper cleaning can nonetheless clog the pores of the skin, resulting in disorders such as oil acne or folliculitis. |
| <b>Serious eye damage / eye irritation</b> | Slightly irritating to the eye. Based on available data, the classification criteria are not met: the Eye Irrit. 2 components sum to not more than 2.38 % w/w against a 10 % w/w additivity threshold.                                                                                                                                                                |

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Respiratory or skin sensitisation</b>    | <p>Based on available data, the classification criteria are not met, the endpoint being assessed ingredient by ingredient rather than by summation. Each of the three declared sensitising components is below the 1.0 % w/w generic concentration limit: bismuth naphthenate up to 0.99 % w/w, naphthenic acid up to 0.9 % w/w and zinc naphthenate up to 0.49 % w/w.</p> <p>Because each is present at 0.1 % w/w or above, the supplemental statement EUH208 applies: the product may cause an allergic skin reaction in sensitive individuals. Signs and symptoms would include itching, redness and rash, possibly delayed by 24 to 72 hours after contact. Once a worker is sensitised, reactions may be provoked by very low exposures.</p> <p>Respiratory sensitisation: criteria not met.</p> |
| <b>Germ cell mutagenicity</b>               | Non-mutagenic. Based on available data, the classification criteria are not met.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Carcinogenicity</b>                      | Not a carcinogen. Based on available data, the classification criteria are not met. The product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies, and highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer. None of the three declared additive components carries a carcinogenicity classification.                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Reproductive toxicity</b>                | Not a developmental toxicant and does not impair fertility. Based on available data, the classification criteria are not met.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>STOT - single exposure</b>               | Based on available data, the classification criteria are not met.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>STOT - repeated exposure</b>             | Based on available data, the classification criteria are not met.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Aspiration hazard</b>                    | Not an aspiration hazard. The product is a grease and is not capable of being aspirated in the sense of the criterion.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Other information</b>                    | Slightly irritating to the respiratory system. High-pressure injection of the product into the skin may lead to local necrosis if the product is not surgically removed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Notes to physician</b>                   | Treat symptomatically. For a high-pressure injection injury, see the note in Section 4.3, which is the one presentation associated with this product that requires urgent intervention.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Additional information - used grease</b> | Used grease may contain harmful impurities that have accumulated during use. The concentration of such impurities depends on the service, and they may present risks to health and to the environment on disposal. All used grease should be handled with caution and skin contact avoided as far as possible.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## SECTION 12 - Ecological information

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>12.1 Toxicity</b> | <p>Not classified for aquatic hazard. The two Aquatic Chronic 3 components declared in Section 3 sum to not more than 1.48 % w/w against a 25 % w/w summation threshold, and no component carries an Aquatic Chronic 1 or 2 classification or an M-factor.</p> <p>Ecotoxicological data have not been determined specifically for this product; the information given is based on a knowledge of the components and the ecotoxicology of similar products. On that basis the product is practically non-toxic:</p> <p>Toxicity to fish (acute): LL/EL/IL50 &gt; 100 mg/l. Classification criteria not met.</p> <p>Toxicity to crustacea (acute): LL/EL/IL50 &gt; 100 mg/l. Classification criteria not met.</p> <p>Toxicity to algae and aquatic plants (acute): LL/EL/IL50 &gt; 100 mg/l. Classification criteria not met.</p> <p>Toxicity to fish and crustacea (chronic): classification criteria not met.</p> <p>Toxicity to micro-organisms (acute): classification criteria not met.</p> <p>Mineral oil does not cause chronic toxicity to aquatic organisms at concentrations below 1 mg/l.</p> |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>12.2 Persistence and degradability</b>      | Not readily biodegradable. The major constituents are inherently biodegradable, but the product contains components which may persist in the environment. The product is persistent according to IMO criteria: under the International Oil Pollution Compensation Fund definition, a non-persistent oil is one which at the time of shipment consists of hydrocarbon fractions of which at least 50 % by volume distils at 340 °C and at least 95 % by volume distils at 370 °C when tested by ASTM D86; this product does not meet that definition. |
| <b>12.3 Bioaccumulative potential</b>          | Contains components with the potential to bioaccumulate. Partition coefficient n-octanol/water: log Pow > 6, based on information on similar products.                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>12.4 Mobility in soil</b>                   | Semi-solid under most environmental conditions. Floats on water. If it enters soil it will adsorb to soil particles and will not be mobile.                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>12.5 Results of PBT and vPvB assessment</b> | PBT: not applicable. vPvB: not applicable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>12.6 Endocrine disrupting properties</b>    | The mixture does not contain components identified as having endocrine disrupting properties at 0.1 % w/w or above.                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>12.7 Other adverse effects</b>              | <p>The product has no ozone depletion potential, no photochemical ozone creation potential and no global warming potential, and is a mixture of non-volatile components which will not be released to air in significant quantities under normal conditions of use.</p> <p>It is a poorly soluble mixture which causes physical fouling of aquatic organisms. Uncontrolled release to the environment must be prevented; keep the product out of drains, watercourses and the sea, and do not allow it to contaminate soil or groundwater.</p>       |

## SECTION 13 - Disposal considerations

|                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>13.1 Waste treatment methods - product</b> | <p>Recover or recycle if possible. Do not discharge into the sewerage system, surface water or the natural environment, and do not dispose of with household waste. Waste arising from a spillage or from tank cleaning should be disposed of in accordance with prevailing regulations, preferably through a recognised collector or contractor whose competence has been established beforehand.</p> <p>It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated, in order to establish the proper waste classification and disposal method.</p> <p>In Singapore, waste lubricant is a toxic industrial waste under the Environmental Public Health (Toxic Industrial Waste) Regulations and must be collected by a licensed toxic industrial waste collector. On board ship, MARPOL 73/78 governs the discharge and disposal of waste lubricant.</p> <p>For supply into the EU, the European waste catalogue code is to be assigned by the waste holder according to the origin of the waste.</p> |
| <b>Contaminated packaging</b>                 | Empty containers retain product residue and can be hazardous; their labelling, including the EUH208 statement, must remain legible until the container is cleaned. Scrape out as far as practicable, close properly and dispose of through a recognised collector or contractor. Do not cut, weld, drill or apply heat to empty containers (see Section 7).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## SECTION 14 - Transport information

|                                     |                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General</b>                      | <p>Not classified as a dangerous good for transport by any mode, and not a marine pollutant.</p> <p>The description shown may not apply to all shipping situations. Consult the applicable dangerous goods regulations for additional description requirements and for mode-specific or quantity-specific shipping requirements.</p> |
| <b>14.1 UN number</b>               | Not applicable - not regulated (ADR, RID, IMDG, IATA, ADG, DOT)                                                                                                                                                                                                                                                                      |
| <b>14.2 UN proper shipping name</b> | Not applicable - not regulated. Commercial description: lubricating grease.                                                                                                                                                                                                                                                          |

|                                                                     |                                                                                                                                |
|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>14.3 Transport hazard class(es)</b>                              | Not applicable - not regulated                                                                                                 |
| <b>14.4 Packing group</b>                                           | Not applicable - not regulated                                                                                                 |
| <b>14.5 Environmental hazards</b>                                   | Marine pollutant: No. Not classified as environmentally hazardous for land transport.                                          |
| <b>14.6 Special precautions for user</b>                            | None applicable under the transport regulations. Keep separate from foodstuffs. Handle in accordance with Sections 6, 7 and 8. |
| <b>14.7 Maritime transport in bulk according to IMO instruments</b> | MARPOL Annex I rules apply to bulk shipments by sea.                                                                           |

## SECTION 15 - Regulatory information

|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>15.1 Safety, health and environmental regulations specific to the product</b> | <p>Singapore:</p> <ul style="list-style-type: none"> <li>- Classification and labelling in accordance with SS 586-2 and SS 586-3. The product is not classified as hazardous and requires no pictogram, signal word or hazard statement. The supplemental statement EUH208 is to appear on the label. Every endpoint has been assessed against the generic concentration limits and the summation and additivity rules of SS 586-2; no substance-specific concentration limit has been relied on.</li> <li>- Workplace Safety and Health Act and subsidiary regulations - the permissible exposure level for mineral oil mist applies (Section 8). Employers should include the EUH208 sensitisation statement, the high-pressure injection risk from grease equipment and the used-grease hazard in their risk assessment.</li> <li>- Environmental Public Health (Toxic Industrial Waste) Regulations: waste grease - see Section 13.</li> <li>- Fire Safety Act and Fire Safety (Petroleum and Flammable Materials) Regulations: not applicable.</li> </ul> <p>International:</p> <ul style="list-style-type: none"> <li>- MARPOL 73/78 Annex I applies to the discharge and disposal of waste lubricant.</li> <li>- IMDG Code: not applicable - not regulated.</li> </ul> |
| <b>Notes for supply into other territories</b>                                   | <ul style="list-style-type: none"> <li>- European Union: REACH Regulation 1907/2006 and Regulation (EU) 2020/878 (safety data sheet format); CLP Regulation 1272/2008, including Annex VI Part 3 Note L for the base oils (DMSO extract &lt; 3 %, IP 346). EUH208 applies. No Unique Formula Identifier or poison centre notification under CLP Article 45 / Annex VIII is required, the mixture not being classified. Directive 2012/18/EU (Seveso III), Annex I: no named substances contained. REACH Candidate List: no component present at 0.1 % w/w or above.</li> <li>- Australia: classified under the Work Health and Safety Regulations. No poison schedule number is allocated under the Poisons Standard.</li> <li>- The regulatory information given is not intended to be comprehensive; other regulations may apply to this material in a particular territory of supply.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Chemical inventory status</b>                                                 | The components of this product are listed on, or exempt from, the inventories of the United States (TSCA) and Australia (AIC). Status on other national inventories is available from ENERGY SPRING PTE LTD on request for the territory of supply.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>15.2 Chemical safety assessment</b>                                           | No chemical safety assessment has been carried out for this mixture.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## SECTION 16 - Other information

|                               |                                                                                                                                                                                                                                                                            |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Performance level</b>      | Meets or exceeds DIN 51502 KP 2 K-20. Refer to the product technical data sheet for the full specification, performance test results and any equipment manufacturer approvals. Performance claims are commercial statements and form no part of the hazard classification. |
| <b>Revision date</b>          | 12 September 2026                                                                                                                                                                                                                                                          |
| <b>Revision number</b>        | Rev. 0                                                                                                                                                                                                                                                                     |
| <b>Reason(s) for revision</b> | First issue by Energy Spring Pte Ltd.                                                                                                                                                                                                                                      |

|                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Reference(s)</b>                                                   | <p>Singapore Standard SS 586-2:2022 and SS 586-3:2022 (classification, labelling and safety data sheets for hazardous chemicals and dangerous goods). ASTM D217 / IP 50 (cone penetration of lubricating grease), ASTM D445 / IP 71 (kinematic viscosity), IP 396 / IP 132 (dropping point), IP 346 (DMSO extract), ASTM D86 (distillation), DIN 51502 (designation of lubricating greases), MARPOL 73/78.</p> <p>Composition, component classification, physical and toxicological data derive from the component suppliers' data and from the product technical data sheet. Classification of the mixture carried out by the generic cut-off, summation and additivity methods using substance data; no testing has been carried out on the finished mixture.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Recommended uses and restrictions on use</b>                       | See Section 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Full text of hazard statements referred to in Sections 2 and 3</b> | <p>H315: Causes skin irritation.</p> <p>H317: May cause an allergic skin reaction.</p> <p>H319: Causes serious eye irritation.</p> <p>H412: Harmful to aquatic life with long lasting effects.</p> <p>EUH208: Contains [name of sensitising substance]. May produce an allergic reaction.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Training</b>                                                       | Suitable training on the safe handling and storage of this product should be given to employees on the basis of all the information in this safety data sheet, with particular attention to the high-pressure injection risk from grease guns and centralised lubrication equipment, to the avoidance of skin contact given the sensitising components and the risk of oil acne, to the handling of used grease, and to the prompt clean-up of spillage as a slip hazard.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Abbreviations and acronyms</b>                                     | <p>ACGIH - American Conference of Governmental Industrial Hygienists; ADG - Australian Code for the Transport of Dangerous Goods by Road and Rail; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AIIIC - Australian Inventory of Industrial Chemicals; Aquatic Chronic - hazardous to the aquatic environment, long-term; ASTM - American Society for Testing and Materials; CAS - Chemical Abstracts Service; CLP - Classification, Labelling and Packaging Regulation; DIN - Deutsches Institut fuer Normung; DMSO - dimethyl sulphoxide; DNEL - derived no-effect level; EC50 / EL50 / IL50 - effect concentration / loading / inhibitory level 50 %; EN - European Standard; EP - extreme pressure; EUH - supplemental EU hazard statement; Eye Irrit. - eye irritation; GHS - Globally Harmonized System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organisation; IOPC - International Oil Pollution Compensation Fund; IP - Energy Institute test method; LC50 / LD50 / LL50 - lethal concentration / dose / loading 50 %; log Pow - logarithm of the n-octanol/water partition coefficient; M-factor - multiplying factor for aquatic classification; MARPOL - International Convention for the Prevention of Pollution from Ships; NLGI - National Lubricating Grease Institute; NSF H1 - registration for lubricants with incidental food contact; PBT - persistent, bioaccumulative and toxic; PEL - permissible exposure level; PNEC - predicted no-effect concentration; PVC - polyvinyl chloride; REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; Skin Irrit. - skin irritation; Skin Sens. - skin sensitisation; STEL - short-term exposure limit; STOT - specific target organ toxicity; TSCA - Toxic Substances Control Act (United States); TWA - time-weighted average; vPvB - very persistent and very bioaccumulative; WSH - Workplace Safety and Health.</p> |
| <b>Note on the scope of this data sheet</b>                           | This data sheet covers NS GREASE EP LI 2 only. It must not be used for any other consistency grade or any other product in the NS GREASE range. A different NLGI grade or base oil viscosity would require Section 9 to be replaced, and a different additive treat rate would require Section 2 to be recalculated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

This dossier supplements the technical notifications for use, but does not replace them. The information which it contains is based on our knowledge relating to the product in question on the date indicated.

The information is given in good faith. The user's attention is also drawn to the possible risks incurred if a product is employed for uses other than those for which it was designed.

This information dossier does not, under any circumstances, discharge the user from the obligation of being aware of, and of applying, all the texts which govern his sphere of activity. He shall be solely responsible for taking the precautions associated with the use which he makes of the product.

All the statutory provisions referred to are intended simply to assist the recipient in fulfilling the obligations incumbent upon him. This enumeration

must not be considered to be exhaustive. The recipient must ensure that no other obligations are incumbent upon him, as a result of texts other than those cited, relating to the holding and handling of the product, for which he alone is responsible.

**End of document**