SAFETY DATA SHEET


SECTION 1. IDENTIFICATION

Product name : Shell Omala S2 G 220

Product code : 001D7837

Manufacturer or supplier’s details
Manufacturer/Supplier : Shell Oil Products US
P.O. Box 4427
Houston TX  77210-4427
USA
SDS Request : (+1) 877-276-7285
Customer Service :

Emergency telephone number
Spill Information : 877-504-9351
Health Information : 877-242-7400

Recommended use of the chemical and restrictions on use
Recommended use : Gear lubricant.

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification
Not a hazardous substance or mixture.

GHS Label element
Hazard pictograms : No Hazard Symbol required
Signal word : No signal word
Hazard statements : PHYSICAL HAZARDS:
Not classified as a physical hazard under GHS criteria.
HEALTH HAZARDS:
Not classified as a health hazard under GHS criteria.
ENVIRONMENTAL HAZARDS:
Not classified as an environmental hazard under GHS criteria.

Precautionary statements : Prevention:
No precautionary phrases.
Response:
No precautionary phrases.
Storage:
No precautionary phrases.
Disposal:
No precautionary phrases.

Other hazards which do not result in classification
Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.
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Used oil may contain harmful impurities.
Not classified as flammable but will burn.

The classification of this material is based on OSHA HCS 2012 criteria.

Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Highly refined mineral oils and additives.
The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

Hazardous components

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Synonyms</th>
<th>CAS-No.</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amine phosphate</td>
<td></td>
<td>91745-46-9</td>
<td>0.1 - 0.5</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST-AID MEASURES

General advice: Not expected to be a health hazard when used under normal conditions.

If inhaled: No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.

In case of skin contact: Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.

In case of eye contact: Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

If swallowed: In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

Most important symptoms and effects, both acute and delayed: Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.

Protection of first-aiders: When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.

Immediate medical attention, special treatment: Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Foam, water spray or fog. Dry chemical powder, carbon dio-
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SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Avoid contact with skin and eyes.

Environmental precautions
Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up
Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.

Additional advice
For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.

SECTION 7. HANDLING AND STORAGE

Technical measures
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.
Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Precautions for safe handling:
- Avoid prolonged or repeated contact with skin.
- Avoid inhaling vapour and/or mists.
- When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
- Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.

Avoidance of contact:
- Strong oxidising agents.

Product Transfer:
- This material has the potential to be a static accumulator. Proper grounding and bonding procedures should be used during all bulk transfer operations.

Storage:
- Keep container tightly closed and in a cool, well-ventilated place.
- Use properly labeled and closable containers.
- Store at ambient temperature.

Packaging material:
- Suitable material: For containers or container linings, use mild steel or high density polyethylene.
- Unsuitable material: PVC.

Container Advice:
- Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil mist, mineral</td>
<td>Not Assigned</td>
<td>TWA ((inhalable fraction))</td>
<td>5 mg/m3</td>
<td>US. ACGIH Threshold Limit Values</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Mist)</td>
<td>5 mg/m3</td>
<td>OSHA_TRANS</td>
</tr>
</tbody>
</table>

Biological occupational exposure limits

No biological limit allocated.

Monitoring Methods

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 OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.

Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.

Examples of sources of recommended exposure measurement methods are given below or con-

Engineering measures: The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:
- Adequate ventilation to control airborne concentrations.

Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

General Information:
- Define procedures for safe handling and maintenance of controls.
- Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.
- Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.
- Drain down system prior to equipment break-in or maintenance.
- Retain drain downs in sealed storage pending disposal or subsequent recycle.
- Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Personal protective equipment

Respiratory protection: No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for the combination of organic gases and vapours [Type A/Type P boiling point >65°C (149°F)].

Hand protection
Remarks: Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model.

Eye protection: If material is handled such that it could be splashed into eyes, protective eyewear is recommended.

Skin and body protection: Skin protection is not ordinarily required beyond standard work clothes. It is good practice to wear chemical resistant gloves.

Protective measures: Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Environmental exposure controls
General advice: Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Chapter 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water. Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Liquid at room temperature.

Colour: brown

Odour: Slight hydrocarbon
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odour Threshold</td>
<td>Data not available</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Pour point</td>
<td>-18 °C / -0.40 °F Method: ISO 3016</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>&gt; 280 °C / 536 °F Estimated value(s)</td>
</tr>
<tr>
<td>Flash point</td>
<td>240 °C / 464 °F Method: ISO 2592</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Data not available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Data not available</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>Typical 10 %(V)</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>Typical 1 %(V)</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>&lt; 0.5 Pa (20 °C / 68 °F) Estimated value(s)</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>&gt; 1 Estimated value(s)</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.899 (15 °C / 59 °F)</td>
</tr>
<tr>
<td>Density</td>
<td>899 kg/m³ (15.0 °C / 59.0 °F) Method: ISO 12185</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td></td>
</tr>
<tr>
<td>Water solubility</td>
<td>negligible</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>Data not available</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Pow: &gt; 6 (based on information on similar products)</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>&gt; 320 °C / 608 °F</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Data not available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td></td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>220 mm²/s (40.0 °C / 104.0 °F) Method: ISO 3104</td>
</tr>
<tr>
<td></td>
<td>19.4 mm²/s (100 °C / 212 °F) Method: ISO 3104</td>
</tr>
<tr>
<td>Conductivity</td>
<td>This material is not expected to be a static accumulator.</td>
</tr>
</tbody>
</table>
Decomposition temperature : Data not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

Chemical stability : Stable.

Possibility of hazardous reactions : Reacts with strong oxidising agents.

Conditions to avoid : Extremes of temperature and direct sunlight.

Incompatible materials : Strong oxidising agents.

Hazardous decomposition products : Hazardous decomposition products are not expected to form during normal storage.

SECTION 11. TOXICOLOGICAL INFORMATION

Basis for assessment : Information given is based on data on the components and the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Information on likely routes of exposure
Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.

Acute toxicity

Product:
Acute oral toxicity : LD50 (rat): > 5,000 mg/kg
Remarks: Expected to be of low toxicity.

Acute inhalation toxicity : Remarks: Not considered to be an inhalation hazard under normal conditions of use.

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg
Remarks: Expected to be of low toxicity.

Skin corrosion/irritation

Product: Remarks: Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.

Serious eye damage/eye irritation

Product:
Remarks: Expected to be slightly irritating.

**Components:**

**Amine phosphate:**
Remarks: Based on available data, the classification criteria are not met.

**Respiratory or skin sensitisation**

**Product:**
Remarks: Not expected to be a skin sensitiser.

**Components:**

**Amine phosphate:**
Remarks: Experimental data has shown that the concentration of potentially sensitising compo-
nents present in this product does not induce skin sensitisation. May cause an allergic skin reac-
tion in sensitive individuals.

**Germ cell mutagenicity**

**Product:**
Remarks: Not considered a mutagenic hazard.

**Carcinogenicity**

**Product:**
Remarks: Not expected to be carcinogenic.

Remarks: Product contains mineral oils of types shown to be non-carcinogenic in animal skin-
painting studies. Highly refined mineral oils are not classified as carcinogenic by the Internation-
al Agency for Research on Cancer (IARC).

**Reproductive toxicity**

**Product:**
Remarks: Not expected to impair fertility., Not expected to be a developmental toxicant.

**STOT - single exposure**

**Product:**
Remarks: Not expected to be a hazard.

**STOT - repeated exposure**

**Product:**
Remarks: Not expected to be a hazard.
ASPIRATION TOXICITY

Product:
Not considered an aspiration hazard.

FURTHER INFORMATION

Product:
Remarks: Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

Remarks: Slightly irritating to respiratory system.

SECTION 12. ECOLOGICAL INFORMATION

Basis for assessment: Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s) (LL/EL/IL50 expressed as the nominal amount of product required to prepare aqueous test extract).

ECOTOXICITY

Product:
Toxicity to fish (Acute toxicity): Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to daphnia and other aquatic invertebrates (Acute toxicity): Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to algae (Acute toxicity): Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to fish (Chronic toxicity): Remarks: Data not available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): Remarks: Data not available

Toxicity to bacteria (Acute toxicity): Remarks: Data not available

PERSISTENCE AND DEGRADABILITY

Product:
Biodegradability
Remarks: Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but contains components that may persist in the environment.

Bioaccumulative potential
Product:
Bioaccumulation
Remarks: Contains components with the potential to bioaccumulate.

Mobility in soil
Product:
Mobility
Remarks: Liquid under most environmental conditions. If it enters soil, it will adsorb to soil particles and will not be mobile. Remarks: Floats on water.

Other adverse effects
no data available
Product:
Additional ecological information
Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

Poorly soluble mixture. May cause physical fouling of aquatic organisms.

Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues
Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment. Waste, spills or used product is dangerous waste.

Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

Contaminated packaging
Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand. Disposal should be in accordance with applicable regional, national, and local laws and regulations.
SECTION 14. TRANSPORT INFORMATION

National Regulations

US Department of Transportation Classification (49 CFR Parts 171-180)
Not regulated as a dangerous good

International Regulation

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollution category : Not applicable
Ship type : Not applicable
Product name : Not applicable
Special precautions : Not applicable

Special precautions for user

Remarks : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

Additional Information : MARPOL Annex 1 rules apply for bulk shipments by sea.

SECTION 15. REGULATORY INFORMATION

California Prop 65 : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:
EINECS : All components listed or polymer exempt.
TSCA : All components listed.
DSL : All components listed.

SECTION 16. OTHER INFORMATION

Further information
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NFPA Rating (Health, Fire, Reactivity)  0, 1, 0

A vertical bar (|) in the left margin indicates an amendment from the previous version.

Abbreviations and Acronyms: The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial Hygienists
ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS = Australian Inventory of Chemical Substances
ASTM = American Society for Testing and Materials
BEL = Biological exposure limits
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
CAS = Chemical Abstracts Service
CEFIC = European Chemical Industry Council
CLP = Classification Packaging and Labelling
COC = Cleveland Open-Cup
DIN = Deutsches Institut fur Normung
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DSL = Canada Domestic Substance List
EC = European Commission
EC50 = Effective Concentration fifty
ECETOC = European Center on Ecotoxicology and Toxicology Of Chemicals
ECHA = European Chemicals Agency
EINECS = The European Inventory of Existing Commercial Chemical Substances
EL50 = Effective Loading fifty
ENCS = Japanese Existing and New Chemical Substances Inventory
EWC = European Waste Code
GHS = Globally Harmonised System of Classification and Labelling of Chemicals
IARC = International Agency for Research on Cancer
IATA = International Air Transport Association
IC50 = Inhibitory Concentration fifty
IL50 = Inhibitory Level fifty
IMDG = International Maritime Dangerous Goods
INV = Chinese Chemicals Inventory
IP346 = Institute of Petroleum test method N° 346 for the determination of polycyclic aromatics DMSO-extractables
KECI = Korea Existing Chemicals Inventory
LC50 = Lethal Concentration fifty
LD50 = Lethal Dose fifty per cent.
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading
LL50 = Lethal Loading fifty
MARPOL = International Convention for the Prevention of Pollution From Ships
NOEC/NOEL = No Observed Effect Concentration / No Observed Effect Level
OE_HPV = Occupational Exposure - High Production Volume
### SAFETY DATA SHEET


<table>
<thead>
<tr>
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</tr>
</thead>
</table>

PBT = Persistent, Bioaccumulative and Toxic  
PICCS = Philippine Inventory of Chemicals and Chemical Substances  
PNEC = Predicted No Effect Concentration  
REACH = Registration Evaluation And Authorisation Of Chemicals  
RID = Regulations Relating to International Carriage of Dangerous Goods by Rail  
SKIN_DES = Skin Designation  
STEL = Short term exposure limit  
TRA = Targeted Risk Assessment  
TSCA = US Toxic Substances Control Act  
TWA = Time-Weighted Average  
vPvB = very Persistent and very Bioaccumulative

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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.