Technical Data Sheet

Formerly Known As: **PANOLIN BIOGREASE LL-EP-2**

Shell **PANOLIN** *S5 Grease EAL V320 2*

- Lithium Thickener
- EU Ecolabel Certified
- USA EPA VGP compliant
- Readily Biodegradable

EP universal grease - readily biodegradable, synthetic esters

Shell PANOLIN S5 Grease EAL V320 2 is a high performance readily biodegradable grease designed for use in environmentally sensitive areas where eco-label compliance is required. Suited for use in exposed applications including dredging and pivot points on construction equipment. This grease is based upon a lithium soap thickener and is formulated to offer good resistance to water washout, outstanding load carrying capacity and excellent corrosion resistance characteristics.

High-Performance Biodegradable Lubricants

Performance, Features & Benefits

- **Wide Operating Window**

  A wide temperature range allowing for use across different environments and conditions, operating temperature -30 degC to 120 degC

- **Wear Protection**

  Outstanding load carrying capacity and excellent corrosion resistance properties provide protection over a wide range of temperatures and conditions and ensure long component life.

- **Maintaining system efficiency**

  Shell PANOLIN S5 Grease EAL V320 2 offers good resistance to water wash off due to its outstanding adhesion properties.

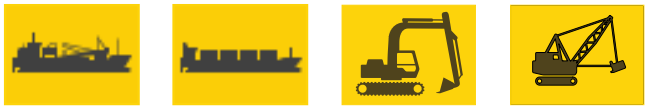
- **Lower Environmental Impact**

  Recommended for use in environmentally sensitive areas: An ‘environmentally acceptable lubricant’ as defined by the USA EPA 2013 Vessel General Permit and offers reduced impact of leak or accidental spillage into the environment when used in marine environments compared to conventional mineral oils.

  Readily biodegradable - biodegraded by over 60% after 28 days in the OECD 301 B carbon dioxide evolution test.

  Low Ecotoxicity - Classified as ‘not harmful’ to bacteria, algae, freshwater and marine invertebrates, and fish when tested as water-accommodated fractions (WAFs) according to OECD and EPA test guidelines.

Main Applications



Specifications, Approvals & Recommendations

- Meets the requirements for EU Ecolabel DE/027/311
- Swedish Standard SS 15 54 70
- Meets requirement of United States Environmental Protection Agency’s (EPA) 2013 vessel general permit (VGP)
- Biodegradable OECD 301B >60%

  For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

Typical Physical Characteristics

Properties			Method	Shell PANOLIN S5 Grease EAL V320 2
Thickener				Lithium
Base Oil (type)				Ester
Appearance, visual colour				brown
NLGI Grade			DIN 51818	2
Cone Penetration, Worked	25°C/60 strokes	0.1mm	ASTM D217	265 - 295
Dropping Point		°C	IP 396	190
Base Oil Kinematic Viscosity	@40°C	mm^2/s	ASTM D445	320
Viscosity Index (VI)			DIN ISO 2909	185
Emcor Rust Test distilled water			DIN 51802	0-0
Emcor Rust Test synthetic sea water			DIN 51802	0-0
Copper Corrosion test 24 hrs	24h @ 100°C		ASTM D4048	1B
Four Ball Weld Load		N	ASTM D2596	3 200
Four Ball Wear Test	40kg; 1h; 75°C; 1200rpm	mm scar	ASTM D2266	0.53
Water Resistance	3 hours @ 90°C		DIN 51807	1
Water Spray-off		%wt. loss	ASTM D4049	30
Flow Pressure	-30°C	mbar	DIN 51805	625
Lower and Upper Application Temperature		°C		-30 - 120
Biodegradability		%	CEC L-33-A-93	83

These characteristics are typical of production, variations in these characteristics may occur.

Health, Safety & Environment

- **Health and Safety**

  This product is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

  Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

  Guidance on Health and Safety is available on the appropriate Safety Data Sheet, which can be obtained from https://www.epc.shell.com

- **Protect the Environment**

  Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

- **Advice**

  Advice on applications not covered here may be obtained from your Shell representative.