



SHELL DIALA S5 BD

A readily biodegradable transformer oil with excellent cold temperature performance, providing protection and efficiency to transformers across the globe.

SHELL
LUBRICANT SOLUTIONS



APPLICATIONS

Suitable for all types of power and distribution transformers.

Particularly well equipped for applications:



where
biodegradability
is required



in very cold or
arctic climate
conditions



READILY BIODEGRADABLE

Shell Diala S5 BD is the latest addition to the Shell Diala range of high-performance transformer oils. It is readily biodegradable, meaning it is suitable for environmentally sensitive locations that require safeguarding against spills. However, improving sustainability credentials does not mean a sacrifice on performance. In fact, Shell Diala S5 BD is specifically designed to deliver peak performance in transformers under increasing pressure from growing electricity demand. Excellent cooling and heat transfer properties enable superior system efficiency, while its formulation also provides robust resistance to oil ageing and degradation.

COLD TEMPERATURE PERFORMANCE

Transformers operate in high stress environments worldwide, but some of the toughest conditions exist in very cold or arctic climates where challenges for power professionals are aplenty. Shell Lubricant Solutions has developed Shell Diala S5 BD with a low viscosity, resulting in a pour point of -48°C , providing excellent cold temperature performance to help keep business in motion.

SPECIFICATIONS & APPROVALS

- ASTM 3487 Type II (Inhibited)
- IEC 60296 Ed5 (2020); Type A, fully inhibited high-grade oils
- CAN/CSA-C50-14 (R2018) Table 1 (Class A), Type II/IV (Inhibited)
- OECD 301 B Readily biodegradable





GTL TECHNOLOGY FORMULATION

Shell's GTL technology means Shell Diala S5 BD is virtually sulphur free and does not contain any hazardous substances such as polychlorinated biphenyl (PCB) and dibenzyl disulfide (DBDS). GTL base oils offer a high degree of compositional consistency and have an excellent response to antioxidants. They protect transformers from failure by reducing the risk of corrosive sulphur developing from the insulating oil.



CONSISTENT RELIABILITY

Shell Diala S5 BD's outstanding oxidation performance makes it suitable for use in a highly loaded application like transformers. The product's extended oil life means the transformer performance is maintained for a longer period. This reduces costly downtime, enhances operator control over maintenance practices, and enables equipment to work harder for longer.

OPERATIONAL SIMPLICITY

Shell Diala S5 BD is simple and easy to use. It is fully miscible and compatible with conventional mineral oils.

FULL PRODUCT & SERVICE PORTFOLIO

Whatever your needs or application, we can provide a full range of oils and greases, including synthetic, high-performance products and additional services, to help increase your operational efficiency and lower your total cost of ownership.

CONTACT

Talk to us about the benefits Shell Diala could have for your business.

SHELL DIALA S5 BD

TYPICAL PROPERTIES OF SHELL DIALA S5 BD

Compact Data Sheet 2022 North America

Premium inhibited, readily biodegradable electrical insulating oil with excellent low temperature performance. Shell Diala S5 BD is manufactured from zero sulfur-base oils using Shell's leading technology formulation.

TEST DESCRIPTION	TEST METHOD	UNIT	ASTM D3487 Type II	CAN/CSA C50 TYPE II CLASS A	DIALA S5 BD
			Limit Value	Limit Value	Typical Data
PHYSICAL PROPERTIES					
Aniline point	ASTM D661	°C	≥63		91.5
Color	ASTM D1500	-	≤0.5	≤0.5	< 0.5
Flash point (Cleveland Open Cup method)	ASTM D92	°C	≥145	≥145	159
Interfacial tension (IFT)	ASTM D971	nN/m	≥40	≥40	53
Pour point	ASTM D97	°C	≤ -40	≤ -46	-48
Relative density (specific gravity) at 15°C	ASTM D1298		≤0.91	≤0.906	0.822
Viscosity (Kinematic)					
Viscosity at 100°C	ASTM D445	mm²/s	≤3		2.2
Viscosity at 40°C	ASTM D445	mm²/s	≤12	≤10	7.4
Viscosity at 0°C	ASTM D445	mm²/s	≤76	≤75	35
Viscosity at -40°C	IEC 61868	mm²/s		≤2500	900
Visual examination	ASTM D1524		clear and bright		clear and bright
ELECTRICAL PROPERTIES					
Dielectric breakdown voltage (DBV)					
at 60 Hz with 2.5 mm gap	D877/D877M	kV		≥20	50
at 60 Hz with VDE electrodes at 1 mm gap	ASTM D 1816	kV	≥20		32
at 60 Hz with VDE electrodes at 2 mm gap	ASTM D 1816	kV	≥35	≥24	53
at 60 Hz with VDE electrodes at 2 mm gap (after filtering, drying & degassing)	ASTM D 1816	kV		≥56	60
Dielectric breakdown voltage at impulse conditions at negative polarity point	ASTM D3300	kV	≥145	≥145	300
Gassing tendency	ASTM D2300	µL/minute	≤30	n/a	<20
Dissipation Factor (DDF)/Power Factor/Tan Delta					
at 60 Hz and at 25°C	ASTM D924			≤0.0005	0.00002
at 60 Hz and at 25°C	ASTM D924	%	≤0.05 %		0.002 %
at 60 Hz and at 100°C	ASTM D924			≤0.05	0.00088
at 60 Hz and at 100°C	ASTM D924	%	≤0.3 %		0.088 %

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

*Sulfur content below 1ppm detection limit of ASTM D5185.

TEST DESCRIPTION	TEST METHOD	UNIT	ASTM D3487 Type II	CAN/CSA C50 TYPE II CLASS A	DIALA S5 BD
			Limit Value	Limit Value	Typical Data
CHEMICAL PROPERTIES					
Oxidation stability					
72 hours test duration @110°C, report sludge	ASTM D2440	% by mass	≤0.1		< 0.01
72 hours test duration @110°C, report total acid number	ASTM D2440	mgKOH/g	≤0.3		< 0.01
164 hours test duration @110°C, report sludge	ASTM D2440	% by mass	≤0.2	≤0.05	< 0.01
164 hours test duration @110°C, report total acid number	ASTM D2440	mgKOH/g	≤0.4	≤0.2	< 0.01
500 hours test duration @120°C, report sludge	IEC 61125	% by mass		≤0.8	< 0.01
500 hours test duration @120°C, report total acid number	IEC 61125	mgKOH/g		≤1.2	0.01
500 hours test duration @120°C, report DDF at 90°C	IEC 61125			≤0.5	0.0025
Oxidation stability (pressure vessel test @140°C)	ASTM D2112	minutes	≥195	≥195	684
Oxidation inhibitor content	ASTM D2668	%	0.08 ≥ x ≤0.3	0.08 ≥ x ≤0.4	0.23
Corrosive sulfur testing					
Corrosive sulfur (method B)	ASTM D1275		non corrosive	non corrosive	non corrosive
Potentially corrosive sulfur	IEC 62535			non corrosive	non corrosive
Water	ASTM D1533	mg/kg	≤35	≤35	14
Neutralization number, total acid number	ASTM D974	mgKOH/g	≤0.03	≤0.03	0.01
Strong acids	ASTM D974			not detectable	not detectable
Furanic compounds (max. per compound)	ASTM D5837	µg/L	≤25	≤100	< 25
PCB content	ASTM D4059		not detectable	≤2 mg/kg	not detectable (< 2 mg/kg)
DBDS	IEC 62697-1			not detectable (<5 mg/kg)	not detectable (<1 mg/kg)
Metal passivator additives	IEC 60666			not detectable (<5 mg/kg)	not detectable (<5 mg/kg)

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