



Previous Name: Shell Diala DX

Shell Diala S3 ZX-I

- Extra Performance
- Meets IEC 60296 - High

Premium Inhibited Electrical Insulating Oil

Shell Diala S3 ZX-I is a premium, inhibited electrical insulating oil manufactured from specially refined mineral oils with an ultra-low sulphur content. It offers very high oxidation stability and excellent dielectric and low temperature properties.

Shell Diala S3 ZX-I meets both the established and new industry copper corrosion tests.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

Extended oil life

Shell Diala S3 ZX-I is a fully inhibited oil giving outstanding oxidation performance and an extended oil life. Shell Diala S3 ZX-I is also suitable for use in highly loaded applications.

Transformer protection

Shell Diala S3 ZX-I is manufactured from an ultra low sulphur base oil, making it intrinsically non-corrosive towards copper, without the need for passivation.

Shell Diala S3 ZX-I meets all relevant tests for copper corrosion, namely the established DIN 51353 (Silver Strip Test), ASTM D1275, and also the latest more severe tests: IEC 62535 and ASTM D1275B.

System efficiency

The good low temperature properties of the oil ensures proper heat transfer inside the transformer, even from very low starting temperatures.

Main Applications



Transformers

All Power transformer types and applications (e.g. generator transformers, shunt reactors, distribution transformers).

Electrical equipment

Components such as rectifiers, circuit breakers and switchgear.

Specifications, Approvals & Recommendations

- IEC 60296 (Edition 4.0 2012-02): Table 2
- Transformer Oil (I) (Inhibited oil)
- Section 7.1 ("Higher oxidation stability")
- Baader oxidation test of (obsolete) DIN 57370-1 (1978)

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk, or the OEM Approvals website.

Typical Physical Characteristics

Properties		Method	IEC 60296 Requirement	Shell Diala S3 ZX-I	
Appearance		IEC 60296	Clear, free from sediment and suspended matters	Complies	
Density	@15°C	kg/m ³	ISO 3675	-	881
Density	@20°C	kg/m ³	ISO 3675	Max 895	878
Kinematic Viscosity	@40°C	mm ² /s	ISO 3104	Max 12	8.0
Kinematic Viscosity	@-30°C	mm ² /s	ISO 3104	Max 1 800	720
Flash Point (PM)		°C	ISO 2719	Min 135	140
Pour Point		°C	ISO 3016	Max -40	-60
Neutralisation Value		mg KOH/g	IEC 62021-1	Max 0.01	<0.01
Corrosive Sulphur			DIN 51353	Not corrosive	Not corrosive
Corrosive Sulphur			IEC 62535	Not corrosive	Not corrosive

Properties		Method	IEC 60296 Requirement	Shell Diala S3 ZX-I
Corrosive Sulphur		ASTM D1275 B	-	Not corrosive
Breakdown Voltage - Untreated	kV	IEC 60156	Min 30	>30
Breakdown Voltage - After Treatment	kV	IEC 60156	Min 70	>70
Dielectric dissipation factor (DDF)		IEC 60247	Max. 0.005	0.001
Oxidation Stability (500 hrs) - Total Acidity	@120°C mg KOH/g	IEC 61125 C	Max 0.3	0.02
Oxidation Stability (500 hrs) - Sludge	% m	IEC 61125 C	Max 0.05	0.01
Dielectric dissipation factor (DDF)			Max 0.05	0.005
Oxidation Stability Baader (28 d / 110°C) - Neutralisation Value	@90°C mg KOH/g	DIN 51554	-	<0.03
Oxidation Stability Baader (28 d / 110°C) - Sludge Content	%m		-	<0.006
Dielectric Dissipation Factor (DDF)	@90°C		-	0.005
Inhibitor - DBPC	%	IEC 60666	0.08 - 0.40	Max 0.3

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

Health, Safety & Environment

■ Health and Safety

Shell Diala S3 ZX-I 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 Material Safety Data Sheet, which can be obtained from <http://www.epc.shell.com/>

■ Protect the Environment

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

■ Polychlorinated Biphenyls

Shell Diala S3 ZX-I is free from polychlorinated biphenyls (PCB).

Additional Information

■ Storage Precautions

The critical electrical properties of Shell Diala S3 ZX-I are easily compromised by trace contamination with foreign material. Typically encountered contaminants include moisture, particles, fibres and surfactants. Therefore, it is imperative that electrical insulating oils be kept clean and dry.

It is strongly recommended that storage containers be dedicated for electrical service and include airtight seals. It is further recommended that electrical insulating oils be stored indoors in climate-controlled environments.

■ Advice

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