



Previous Name: Shell Diala GX

Shell Diala S3 ZX-IG Dried

- Extra Performance
- Meets IEC 60296

Premium Inhibited Electrical Insulating Oil

Shell Diala S3 ZX-IG Dried is a premium inhibited insulating oil manufactured from highly refined mineral oils. It offers very high oxidation stability, good dielectric strength, gas absorbing behaviour and excellent low temperature properties.

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

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

Extended oil life

Shell Diala S3 ZX-IG Dried is a fully inhibited oil giving outstanding oxidation performance and an extended oil life.

Diala S3 ZX-IG Dried provides gas absorbing performance in transformers running under very high voltage and electrical stress. This makes it particularly suitable for Generator transformer and HVDC converter applications.

Transformer protection

Shell Diala S3 ZX-IG Dried is non-corrosive towards copper, with no need for additional passivation.

Shell Diala S3 ZX-IG Dried 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.

Shell Diala S3 ZX-IG Dried is specially dried and handled to achieve a low water content and retain a high breakdown voltage at point of delivery. This enables it to be used in many applications without further treatment.

Main Applications



Transformers

All Power transformer types and applications (e.g. generator transformers, shunt reactors, distribution transformers) and high voltage DC (HVDC) converter stations.

Electrical equipment

Components such as rectifiers, circuit breakers, bushings, instrument transformers and switchgears.

Specifications, Approvals & Recommendations

- IEC 60296 (Edition 4.0 2012-02), Table 2 Transformer Oil (I), inhibited
- 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-IG Dried
Appearance			IEC 60296	Clear, free from sediment and suspended matters	Complies
Density	@15°C	kg/m ³	ISO 3675	-	890
Density	@20°C	kg/m ³	ISO 3675	Max 895	886
Kinematic Viscosity	@40°C	mm ² /s	ISO 3104	Max 12	8.0

Properties			Method	IEC 60296 Requirement	Shell Diala S3 ZX-IG Dried
Kinematic Viscosity	@-30°C	mm ² /s	ISO 3104	Max 1 800	1 100
Flash Point (PM)		°C	ISO 2719	Max 135	136
Pour Point		°C	ISO 3016	Max -40	-57
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
Corrosive Sulphur			ASTM D1275 B	-	Not corrosive
Breakdown Voltage - Untreated		kV	IEC 60156	Min 30	>60
Breakdown Voltage - After Treatment		kV	IEC 60156	Min 70	>70
Dielectric dissipation factor (DDF)	@90°C		IEC 60247	Max 0.005	0.002
Gassing			IEC 60628 A	-	-14
Oxidation Stability (500 hrs) - Total Acidity	@120°C	mg KOH/g	IEC 61125 C	Max 1.2	1.0
Oxidation Stability (500 hrs) - Sludge		% m	IEC 61125 C	Max 0.8	0.45
Oxidation Stability : DDF	@90°C		IEC 60247	Max 0.5	0.12
Oxidation Stability Baader (28 d / 110°C) - Neutralisation Value		mg KOH/g	DIN 51554	-	0.1
Oxidation Stability Baader (28 d / 110°C) - Sludge Content		%m		-	0.01
Oxidation Stability Baader (28 d / 110°C) - DDF	@90°C			-	0.01
Metal Passivator - Benzotriazole derivative		ppm	IEC 60666	Not detectable (<5 mg/kg), or as agreed upon with the purchaser	Max 20
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-IG Dried 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-IG Dried is free from polychlorinated biphenyls (PCB).

Additional Information

Storage Precautions

The critical electrical properties of Shell Diala S3 ZX-IG Dried 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.