Technical Data Sheet

Formerly Known As: **Shell Diala AX**

Shell Diala *S2 ZX-A*

- *RELIABLE PERFORMANCE*
- *MEETS ASTM D3487 TYPE II*

Inhibited electrical insulating oil

Shell Diala S2 ZX-A is an inhibited electrical insulating oil manufactured from highly refined mineral oils. It offers good dielectric properties, good oxidation stability and provides efficient heat transfer even at low temperatures. Shell Diala S2 ZX-A meets both the established and the new industry copper corrosion tests.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Extended oil life**

  Shell Diala S2 ZX-A is an inhibited oil giving outstanding oxidation performance and an extended oil life.

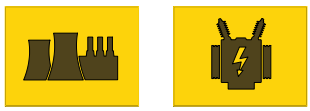
- **System efficiency**

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

- **Transformer protection**

  Shell Diala S2 ZX-A is non-corrosive towards copper, with no need for additional passivation. Shell Diala S2 ZX-A meets all relevant tests on copper corrosion ASTM D1275, and also the latest more severe tests: IEC 62535 and ASTM D1275B.

Main Applications



- **Transformers**

  Electrical insulating oil for grid and industrial transformers.

- **Electrical equipment**

  Components such as rectifiers, circuit breakers and switchgears.

Specifications, Approvals & Recommendations

Shell Diala S2 ZX-A meets the requirements of ANSI/ASTM D3487 Type II

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

Typical Physical Characteristics

Properties			Method	ASTM D3487 Type II Requirement	Diala S2 ZX-A
Kinematic Viscosity	@0°C	mm^2/s	ASTM D445	max. 76	60
Kinematic Viscosity	@40°C	mm^2/s	ASTM D445	max. 12	9
Kinematic Viscosity	@100°C	mm^2/s	ASTM D445	max. 3	2.2
Flash Point (COC)		°C	ASTM D92	min. 145	150
Pour Point		°C	ASTM D97	max. -40	-57
Aniline Point		°C	ASTM D611	63-84	69
Appearance			ASTM D1524	Clear & Bright	Clear & Bright
Density	@15°C	kg/m^3	ASTM D1298	max. 910	890
Interfacial Tension	@25°C	mN/m	ASTM D971	min. 40	42
Corrosive Sulphur			ASTM D1275	Not corrosive	Not corrosive
Corrosive Sulphur			ASTM D1275B	Not corrosive	Not corrosive
Corrosive Sulphur			IEC 62535	Not corrosive	Not corrosive
Water Content		mg/kg	ASTM D1533	max. 35	<30
Oxidation Inhibitor Content		%m	ASTM D1473	max. 0.3	complies

Properties			Method	ASTM D3487 Type II Requirement	Diala S2 ZX-A
Dielectric Breakdown Voltage - Oil as Received		kV	ASTM D1816 (VDE)	min. 35	40
Dielectric Breakdown Voltage - After Treatment		kV	ASTM D1816 (VDE)	min. 56	>70
Dielectric Breakdown Voltage - Impulse		kV	ASTM D3300	min 145	>300
Dielectric Dissipation Factor (DDF)	@100^{0}C		ASTM D924	max. 0.3	0.1
PCB Content		mg/kg	ASTM D4059	Not detectable	Not detectable
Oxidation Stability - Sludge	@72 hrs	%m	ASTM D2440	max. 0.1	<0.01
Oxidation Stability - Total Acid Number	@72 hrs	mg KOH/g	ASTM D2440	max. 0.3	<0.01
Oxidation Stability - Sludge	@164 hrs	%m	ASTM D2440	max. 0.2	0.01
Oxidation Stability - Total Acid Number	@164 hrs	mg KOH/g	ASTM D2440	max. 0.4	0.1
Oxidation Stability (RPVOT)		min	ASTM D2112	min. 195	240
Gassing Tendency		mm^{3}/min	ASTM D2300	max. 30	complies

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 S2 ZX-A 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 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 S2 ZX-A is free from polychlorinated biphenyls (PCB).

Additional Information

- **Storage Precautions**

  The critical electrical properties of Shell Diala S2 ZX-A 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.