SHELL DIALA® OIL AX

Electrical insulating oil

Product Description

Shell DIALA® Oil AX meets standard specifications required by both ANSI/ASTM D 3487 and NEMA TR-P8-1975 for domestic electrical oil applications. These two specifications of electrical oils, Type I and Type II, are covered in these specifications. Type I oil is intended for use where normal oxidation resistance is required. **Shell DIALA® Oil AX** is a Type II oil and is for more severe service applications requiring greater oxidation resistance **Shell DIALA® Oil AX** has high electrical resistance and is thermally and oxidatively stable.

Applications

- **intended for use in transformers, circuit breakers, oil-filled switches and in X-ray equipment**

Features and Benefits

- **proven product reliability**
- **excellent physical, chemical, and electrical properties**

Approvals and Recommendations

- ANSI/ASTM D 3487
- NEMA TR-P8-1975
- U.S. Government Military Specification VV-I-530A and Amendment 2 for Class I and Class II fluids (Type I and Type II, respectively); supersedes the Department of the Navy specification OS-1023
- NATO symbol S-756, British Standard BS 148:1972

Table 1/ Physical Properties of Shell DIALA® Oil AX

	Test Method	ANSI/ASTM/NEMA Limits - Type I and II	DIALA AX Oil Typical Values
Code Number			68690
Aniline Point, °C	D 611	63-84	74
Color	D 1500	0.5 max	<0.5
Flash Point, °C	D 92	145 min	156
Interfacial Tension, dynes/cm @ 25°C	D 971	40 min	47
Pour Point, °C	D 97	-40 min	-47
Specific Gravity, 15/15°C	D 1298	0.91 max	0.885
Viscosity: @ 0°C, cSt/SUS @ 40°C, cSt/SUS @ 100°C, cSt/SUS	D 445/ D 88	 76.0/350 max 12.0/66 max 3.0/36 max	 62.3/288 9.1/55.8 2.31/33.9
Visual Examination	D 1524	Clear & Bright	Clear & Bright

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Table 2/ Electrical Properties of Shell DIALA® Oil AX

	Test Method	ANSI/ASTM/NEMA Limits - Type I and II	DIALA AX Oil Typical Values
Dielectrical Breakdown Voltage			
@ 60 Hz, Disc electrodes, kV	D 877	30 min	> 35
@ 60 Hz, VDE electrodes, kV	D 1816 (1)		
0.040 - inch (1.02 mm) gap		28 min	> 28
0.080 - inch (2.03 mm) gap		56 min	> 56
Dielectric Breakdown Voltage Impulse			
@ 25°C, needle-to-sphere grounded	D 3300		
1-inch (25.4 mm) gap, kV		145 min	> 180
Power Factor, 60 Hz:	D 924		
@ 25°C, %		0.05 max	0.003
@ 100°C, %		0.30 max	0.06
Gassing Tendency, µL/min	D 2300	+30 max	+12

(1)- New, filtered, dehydrated and degassed oil.

Table 3/ Chemical Properties of Shell DIALA® Oil AX

	Test Method	Requirement Type II	Typical Values DIALA AX
Oxidation Inhibitor Content, %w			
2,6-ditertiary butyl paracresol	D 2668 or D 1473	0.3 max	0.23
Corrosive Sulfur	D 1275	Non-corrosive	Non-corrosive
Water, ppm	D 1533	35 max	<30
Neutralization No, mg KOH/g	D 974	0.03 max	<0.01
Oxidation Stability @ 72 hrs.	D 2440		
Sludge, %w		0.1 max	0.01
TAN-C, mg KOH/g		0.3 max	0.01
Oxidation Stability @ 164 hrs.	D 2440		
Sludge, wt%		0.2	0.01
TAN-C, mg KOH/g		0.4	0.03
Oxidation Stability			
Rotating Bomb, min.	D 2112	195 min	220
PCB Content, ppm	D 4059	ND	ND

N/A- Not Applicable
ND - Not Detectable, which is reported as <2 ppm.

Storage Precautions

The critical electrical properties of Shell DIALA® Oil AX **are easily compromised by minute concentrations of contaminants. Typically encountered contaminants include moisture, particulates, fibers 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 oil service and include air-tight seals. It is further recommended that electrical insulating oils be stored indoors in climate controlled environments.**

Handling & Safety Information

For information on the safe handling and use of this product, refer to its Material Safety Data Sheet at **http://www.shell-lubricants.com/msds/.** If you are a Shell Distributor, please call **1+800-468-6457** for all of your service needs. All other customers, please **call 1+800-840-5737** for all of your service needs. Information is also available on the World Wide Web: **http://www.shell-lubricants.com/.**

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