SHELL DIALA® OILS A & AX
Electrical insulating oil

Product Description

Shell DIALA® Oils A & AX meet standard specifications required by both ANSI/ASTM D 3487 and NEMA TR-P8-1975 for domestic electrical oil applications. These products have high electrical resistance and are thermally and oxidatively stable.

Two oils, designated Type I and Type II, are covered in these specifications. Type I oil is intended for use where normal oxidation resistance is required. Type II oil is for more severe service applications requiring greater oxidation resistance.

Applications

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

Features and Benefits

- proven product reliability
- manufactured under stringent quality control procedures
- excellent physical, chemical, and electrical properties
- two domestic refinery sources (Texas and California)

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 A/AX Oils

	Test Method	ANSI/ASTM/NEMA Limits - Type I and II	DIALA A/AX Oils Typical Values
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:	D 445/ D 88		
@ 0°C, cSt/SUS		76.0/350 max	62.3/288
@ 40°C, cSt/SUS		12.0/66 max	9.1/55.8
@ 100°C, cSt/SUS		3.0/36 max	2.31/33.9

SOC: 39-12/02

Visual Examination	D 1524	Clear & Bright	Clear & Bright

Table 2/ Electrical Properties of Shell DIALA A/AX Oils

	Test Method	ANSI/ASTM/NEMA Limits - Type I and II	DIALA A/AX Oils 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 A/AX Oils

	Test Method	Requirement		Typical Values	
		Type I	Type II	DIALA A	DIALA AX
Oxidation Inhibitor Content, %w	D 2668 or				
2,6-ditertiary butyl paracresol	D 1473	0.08 max	0.3 max	None	0.23
Corrosive Sulfur	D 1275	Non-Corrosive		Non-Corrosive	
Water, ppm	D 1533	35 max	35 max	<30	<30
Neutralization No, mg KOH/g	D 974	0.03 max	0.03 max	<0.01	<0.01
Oxidation Stability @ 72 hrs.	D 2440				
Sludge, %w		0.15 max	0.1 max	0.08	0.01
TAN-C, mg KOH/g		0.5 max	0.3 max	0.33	0.01
Oxidation Stability @ 164 hrs.	D 2440				
Sludge, wt%		0.3	0.2	0.10	0.01
TAN-C, mg KOH/g		0.6	0.4	0.30	0.03
Oxidation Stability					
Rotating Bomb, min.	D 2112	N/A	195 min	N/A	220
PCB Content, ppm	D 4059	ND	ND	ND	ND

N/A- Not Applicable

ND - Not Detectable, which is reported as <2 ppm.

Storage Precautions

The critical electrical properties of **Diala Oils** 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.equivashellmsds.com.** For more information and availability, call **1+800-782-7852** or visit the World Wide Web: **http://www.shell-lubricants.com/.**