

TOER I (Electrical Insulating Oil)

This electrical insulating oil is produced from a severely hydrotreated naphthenic oil to meet the specification requirements defined in IEC 60296:2003.

TEST DESCRIPTION		TEST METHOD	SPECIFICATIONS		MARKETING VALUES	
			Min	Max		
Function						
1	Viscosity, mm ² /s at 40°C		ISO 3104		12.0	10.0
2	Viscosity, mm ² /s at -30°C		ISO 3104		1800	1222
3	Pour Point, °C		ISO 3016		-40	-57
4	Water Content, mg/kg		IEC 60814		30	10
5	Breakdown Voltage, kV, Before treatment		IEC 60156	30		59
6	Breakdown Voltage, kV, After treatment		IEC 60156	70		84
7	Density at 20°C, g/ml		ISO 12185		0.895	0.883
8	DDF at 90°C		IEC 60247		0.005	0.002
Refining/Stability						
1	Appearance		ERTM-2	PASS		PASS
2	Acidity, mg KOH/g		IEC 62021-1		0.01	<0.01
3	Interfacial Tension, mN/m		ASTM D 971	40		50
4	Corrosive Sulfur		DIN 51353	Noncorrosive		Noncorrosive
5	Corrosive Sulfur		ASTM D 1275, B	Noncorrosive		Noncorrosive
6	Corrosive Sulfur		IEC 62535	Noncorrosive		Noncorrosive
7	Antioxidant Additive, wt%		IEC 60666	Not detected		Not detected
8	Furfural Content, mg/kg		IEC 61198		0.1	<0.1
9	Carbon Type Analysis, %	Ca	IR-Brandes			11
		Cn				48
		Cp				41
Performance						
1	Oxidation Stability at 120 °C, 164 hours	Total Acidity, mg KOH/g	IEC 61125, C		1.2	0.9
		Sludge, %			0.8	0.2
		DDF at 90°C			0.500	0.047
Health, Safety and Environment						
1	Flash Point, PMCC, °C		ISO 2719	135		145
2	PCA Content, %		BS 2000 Part 346		3	<3
3	PCB Content		IEC 61619	Not detected		Not detected

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