

Univolt™ TO(S)

Hydrocarbon Fluid

General

Specification Region ▪ Asia Pacific

Function	Minimum	Maximum	Unit	Test Method
Viscosity				ASTM D7042
40°C	--	12	mm ² /s	ISO 3104
-30°C ¹	--	1800	mm ² /s	
Pour Point	--	-40	°C	ISO 3016
Water	--	30	mg/kg	IEC 60814
Breakdown Voltage, before Treatment	30	--	kV	IEC 60156
Breakdown Voltage, after Treatment	70	--	kV	IEC 60156
Density (20°C)	--	0.8950	g/ml	ASTM D7042 ISO 12185 ISO 3675
Dielectric Dissipation Factor				IEC 60247
90°C	--	0.005		IEC 61620

Refining/Stability	Minimum	Maximum	Unit	Test Method
Color	--	0.5		ASTM D1500 ISO 2049
Appearance	Clear, Free of Sediment or Suspended Matter	--		IEC 60296
Acidity ¹	--	0.01	mg K/g	IEC 62021-1 IEC 62021-2
Interfacial Tension	43	--	mN/m	ASTM D971 IEC 62961
Total Sulfur Content ¹	--	0.05	%	ISO 14596 ISO 8754
Sulfur, Corrosive ¹	Non-corrosive	--		DIN 51353
Sulfur, Potentially Corrosive ¹	Non-corrosive	--		IEC 62535
DBDS or Dibenzyl Disulfide ²	Not Detectable	--		IEC 62697-1
Oxidation Inhibitor	0.08	0.40	%	IEC 60666
Additives, Metal Passivators ³	Not Detectable	--		IEC 60666
2-Furfural & Related Compounds ⁴	Not Detectable	--		IEC 61198
Stray Gassing ⁵	Not Detectable	--		IEC 60296-PROA4

Performance	Minimum	Maximum	Unit	Test Method
Oxidation Stability, Acidity ⁶	--	0.3	mg K/g	IEC 61125
Oxidation Stability, DDF @ 90°C ⁷	--	0.05		IEC 61125
Oxidation Stability, Sludge ⁷	--	0.05	wt%	IEC 61125
RPVOT ⁸ (With AO)	Report Only	--		ASTM D2112

Health, Safety and Environment (HSE)	Minimum	Maximum	Unit	Test Method
Flash Point	135	--	°C	ISO 2719
Polycyclic Aromatics ¹	--	3	%	IP 346
Polychlorinated Biphenyl Content ⁹	Not Detectable	--		IEC 61619

Univolt™ TO(S)
Hydrocarbon Fluid**Notes**

Univolt™ TO(S) meets the requirements of IEC 60296 as a Type A (fully inhibited high-grade oils).

ExxonMobil's sampling and testing procedures in effect at the time of production will be used for certification testing. Results may be based on tank certification, manufacturing data, periodic testing and/or most recent product restock. ExxonMobil reserves the right to use other equivalent test methods in certifying this product.

The values indicated in this document may deviate from the test method requirements by the number of significant figures shown.

Product contains an alkylated polystyrene pour point depressant in the range of 0.01 - 0.03 wt%.

¹ Test will be conducted on a periodic interval. Value reported will be the last tested figure

² Not detectable (< 5 mg/kg)

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³ Not detectable (< 5mg/kg), or as agreed upon with the purchaser

Test will be conducted on a periodic interval. Value reported will be the last tested figure

⁴ Not detectable (< 0.05 mg/kg) for each individual compound

Test will be conducted on a periodic interval. Value reported will be the last tested figure

⁵ Non stray gassing: < 50ul/l hydrogen (H₂) and < 50 ul/l methane (CH₄) and <50ul/l ethane (C₂H₆)

IEC 60296, Procedure in clause A.4 (oil saturated with air) in the presence of copper

Test will be conducted on a periodic interval. Value reported will be the last tested figure

⁶ Oxidation stability @120 C, 500h

⁷ Oxidation stability @120 C, 500h

Test will be conducted on a periodic interval. Value reported will be the last tested figure

⁸ Oxidation Stability of Inhibited Mineral Insulating Oil by Pressure Vessel

Test will be conducted on a periodic interval. Value reported will be the last tested figure

⁹ Not detectable (< 2 mg/kg)

Test will be conducted on a periodic interval. Value reported will be the last tested figure

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