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ORTHENE SELLING SPECIFICATION

Product: Hydraulic Brake & Clutch Fluid: 260 DOT 5.1
Specification No: OSS 13
Issue No: 6
Date: August 2017

The product shall fully meet the requirements of the latest issue of the US FMVSS 116 DOT 5.1, DOT 4, DOT 3, SAE J 1703, SAE J 1704 and ISO 4925 (Classes 3, 4 & 5.1) Specifications. The product shall also meet the following requirements:

Test	Units	Method	Specification
Equilibrium Reflux Boiling Point	°C.	FMVSS 116	260 Min.
Wet Equilibrium Boiling Point	°C.	FMVSS 116	180 Min.
Kinematic Viscosity at -40 °C.	cSt	ASTM D 445	900 Max.

Test Required	Typical Results	Specification
Dry Equilibrium Reflux Boiling Point, °C	269	260 °C. Min.
Wet Equilibrium Reflux Boiling Point, °C	187	180 °C. Min.
Kinematic Viscosity @ -40 °C, cSt	810	900 cSt Max.
@ 100 °C, cSt	2.16	1.5 cSt Min.
pH	7.49	7 – 11.5
High Temperature Stability, °C	Nil	+/- 3.0 °C. Max
Chemical Stability, °C	+1.5	+/- 3.0 °C. Max
Evaporation, %w/w	68	80% Max
Fluidity & Appearance @ -40 °C	Pass, 2 seconds	No freezing, Bubble time 10 sec. Max
@ -50 °C	Pass, 4 seconds	No freezing, Bubble time 35 sec. Max
Water Tolerance @ -40 °C	Clear, 2 seconds	10 seconds Max
@ +60 °C	Clear, No sediment	Sediment not to exceed 0.05% v/v
Compatibility @ -40 °C	Clear, No stratification	No stratification
@ +60 °C	Clear, No sediment	Sediment not to exceed 0.05% v/v
Colour, visual	Pale Straw	Water white to amber
Water Content, %	0.10	Not required
Density @ 20 °C, g/ml	1.069	Not required

Corrosion Resistance

Tinned Iron	Δ mg/cm ²	-0.01	0.2 Max
	Appearance	Good	No pitting or etching
Steel	Δ mg/cm ²	+0.004	0.2 Max
	Appearance	Good	No pitting or etching
Aluminium	Δ mg/cm ²	-0.02	0.1 Max
	Appearance	Good	No pitting or etching
Cast Iron	Δ mg/cm ²	-0.01	0.2 Max
	Appearance	Good	No pitting or etching
Brass	Δ mg/cm ²	-0.05	0.4 Max
	Appearance	Good	No pitting or etching
Copper	Δ mg/cm ²	-0.03	0.4 Max
	Appearance	Good	No pitting or etching
Zinc	Δ mg/cm ²	+0.03	0.4 Max
	Appearance	Good	No pitting or etching
Fluid Appearance		Pass	No crystallisation or gelling
Sediment %		< 0.05	< 0.1%
pH		7.33	7 – 11.5
Rubber Diameter Change mm		+0.03	+1.40 Max
Hardness Change °IRHD		-6	-15 °IRHD Max
Appearance		Pass	No sloughing, blistering or disintegration

Oxidation Resistance

Cast Iron	Δ mg/cm ²	-0.01	0.3 Max
	Appearance	Pass	No pitting or roughening
Aluminium	Δ mg/cm ²	-0.01	0.05 Max
	Appearance	Pass	No pitting or roughening

Effect on Rubber

SBR @ 70 °C	∅ change, mm	+0.44	0.15 to 1.40
	Δ hardness, IRHD	-6	0 to -10
	Δ volume, %	+4.31	1 to 16
	Appearance	Good	No blistering, sloughing or disintegration
SBR @ 120 °C	∅ change, mm	+0.72	0.15 to 1.40
	Δ hardness, IRHD	-11	0 to -15
	Δ volume, %	+8.47	1 to 16
	Appearance	Good	No blistering, sloughing or disintegration
EPDM @ 70 °C (as required by SAE J1703)	Δ hardness, IRHD	-2	0 to -10
	Δ volume, %	+0.74	0 to 10
	Appearance	Good	No blistering, sloughing or disintegration
EPDM @ 120 °C	Δ hardness, IRHD	-3	0 to -15
	Δ volume, %	+1.73	0 to 10
	Appearance	Good	No blistering, sloughing or disintegration
Natural @ 70 °C (as required by ISO 4925)	∅ change, mm	+0.42	0.15 to 1.40
	Δ hardness, IRHD	-6	0 to -10
	Δ volume, %	+3.62	1 to 16
	Appearance	Good	No blistering, sloughing or disintegration