Ravensberger Schmierstoffvertrieb GmbH
Joellenbecker Strasse 2
33824 Werther
Germany
Tel.: 05203/9719-0
Fax.: 05203/9719-40

- Certificate / ProductInformation -

RAVENOL DOT 5.1

Art. 1350602

SYNTHETIC BRAKE FLUID

Description:

RAVENOL DOT 5.1 brake fluid is suitable for use in all vehicles with ABS properties. The fluid is chemically stable and contains additives that provide the highest lubricating power.
The specific formulation of **RAVENOL DOT 5.1** offers international DOT 5.1 specifications SAE J 1704, ISO 4925 and fulfills FMVSS 116 DOT 5.1.
RAVENOL DOT 5.1 fluid is an ideal brake fluid for modern vehicles with the brake circuit accompanying systems such as ESP and ABS due to its low viscosity. The safety potential of the aggregates is enhanced by the excellent properties of **RAVENOL DOT 5.1** even at low temperatures.

Application Directions:

RAVENOL DOT 5.1 brake fluid can be used in all vehicles where DOT 5.1 specification is required. It is suitable for all hydraulic brake systems with synthetic fluid.
RAVENOL DOT 5.1 brake fluid is miscible with all known brake fluids of the same specification.
To use the high performance level of **RAVENOL DOT 5.1**, a complete change of the brake fluid is recommended.
RAVENOL DOT 5.1 is not suitable for vehicles with mineral oil systems (e.g. certain Citroën models).

FOLLOW VEHICLE MANUFACTURERS RECOMMENDATIONS WHEN ADDING BRAKE FLUID
KEEP BRAKE FLUID CLEAN AND DRY. Contamination with dirt, water, petroleum products or other materials may result in brake failure or costly repairs.
STORE BRAKE FLUID ONLY IN ITS ORIGINAL CONTAINER.
KEEP CONTAINER CLEAN AND TIGHTLY CLOSED TO PREVENT ADSORPTION OF WATER.
CAUTION! DO NOT REFILL CONTAINER AND DO NOT USE FOR OTHER LIQUIDS.
Dispose of used brake fluid responsibly (EU waste code 160113).
Brake fluid damages paint work –if spilt wash off immediately with plenty of water.

Quality Classification:

RAVENOL DOT 5.1 is tried and tested for aggregates specifying:
Specifications: ISO 4925 Class 5.1, FMVSS 116 DOT 5.1, SAE J 1704

Technical Characteristics:

RAVENOL DOT 5.1 offers:

- Optimal ABS properties.
- Chemical stability.
- High lubricating power.
- Neutral behavior towards brake parts.
- Low viscosity at low temperatures.
- Miscibility with all brake fluids of the same specification.

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Technical Values:

Characteristics	Unit	Data	Test according to	Specification
Colour		Light yellow	visual	Light to amber
Density at 20°C	kg/m³	1069,0	EN ISO 12185	
Dry Equilibrium Reflux Boiling Point	°C	269	FMVSS 116	Min. 260°C
Wet Equilibrium Reflux Boiling Point	°C	187	FMVSS 116	Min. 165°C
Viscosity at -40°C	cSt	810	ASTM D445	Max. 750 cSt
Viscosity at 100°C	cSt	2,16	ASTM D445	Min. 1,5 cSt
pH-Value		7,49	FMVSS 116	7 – 11,5
High Temperature Stability	°C	0	FMVSS 116	Max. +/- 3,0°C
Chemical Stability	°C	+1,5	FMVSS 116	Max. +/- 3,0°C
Evaporation	%w/w	68	FMVSS 116	Max. 80%
Fluidity & Appearance at -40°C		Pass, 2s	FMVSS 116	No freezing, Bubble time 10 sec. Max
Fluidity & Appearance at -50°C		Pass, 4s	FMVSS 116	No freezing, Bubble time 35 sec. Max
Water Tolerance at -40°C		Clear, 2s	FMVSS 116	Max. 10s
Water Tolerance at +60°C		Clear, No sediment	FMVSS 116	Sediment not to exceed 0.05% v/v
Compatibility at -40°C		Clear, No stratification	FMVSS 116	No stratification
Compatibility at +60°C		Clear, No sediment	FMVSS 116	Sediment not to exceed 0.05% v/v
Water Content	%	0,10	Karl Fischer	
Corrosion Resistance				
Tinned Iron	Δ mg/cm²	-0,01	FMVSS 116	Max. 0.2
	Appearance	Good		No pitting or etching
Steel	Δ mg/cm²	-0.004	FMVSS 116	Max. 0.2

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	Appearance	Good		No pitting or etching
Aluminium	Δ mg/cm²	-0,02	FMVSS 116	Max. 0.1
	Appearance	Good		No pitting or etching
Cast Iron	Δ mg/cm²	-0,01	FMVSS 116	Max. 0.2
	Appearance	Good		No pitting or etching
Brass	Δ mg/cm²	-0,05	FMVSS 116	Max. 0.4
	Appearance	Good		No pitting or etching
Copper	Δ mg/cm²	-0,03	FMVSS 116	Max. 0.4
	Appearance	Good		No pitting or etching
Zinc	Δ mg/cm²	+0,03	FMVSS 116	Max. 0.4
	Appearance	Good		No pitting or etching
Fluid Appearance		Pass	FMVSS 116	No crystallisation or gelling
Sediment	%	<0,05	FMVSS 116	<0,1%
pH-Value		7,33	FMVSS 116	7 - 11,5
Rubber Diameter Change		+0,03	FMVSS 116	Max. +1,4
Hardness Change	°IRHD	-6	FMVSS 116	Max. -15 °IRHD
Appearance		Pass	FMVSS 116	disintegration
Oxidation Resistance				
Cast Iron	Δ mg/cm²	-0,01	FMVSS 116	Max. 0.3
	Appearance	Good		No pitting or roughening
Aluminium	Δ mg/cm²	-0,01	FMVSS 116	Max. 0.05
	Appearance	Good		No pitting or roughening
Effect on Rubber				
SBR at 70°C	Ø change, mm	+0,44	FMVSS 116	0,15 to 1,40
	Δ hardness, IRHD	-6	FMVSS 116	0 to -10
	Δ volume, %	+4,31	FMVSS 116	1 to 16
	Appearance	Good	FMVSS 116	No blistering, sloughing or disintegration
SBR at 120°C	Ø change, mm	+0,72	FMVSS 116	0,15 to 1,40
	Δ volume, IRHD	-11	FMVSS 116	0 to -15

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	Δ volume, %	+8,47	FMVSS 116	1 to 16
	Appearance	Good	FMVSS 116	No blistering, sloughing or disintegration
EPDM at 70°C (as required by SAE J1703)	Δ hardness, IRHD	-2	FMVSS 116	0 to -10
	Δ volume, %	+0,74	FMVSS 116	0 to 10
	Appearance	Good	FMVSS 116	No blistering, sloughing or disintegration
EPDM at 120°C	Δ hardness, IRHD	-3	FMVSS 116	0 to -15
	Δ volume, %	+1,73	FMVSS 116	0 to 10
	Appearance	Good	FMVSS 116	No blistering, sloughing or disintegration
Natural at 70°C (as required by ISO 4925)	Ø change, mm	+0,42	FMVSS 116	0,15 to 1,40
	Δ hardness, IRHD	-6	FMVSS 116	0 to -10
	Δ volume, %	+3,62	FMVSS 116	1 to 16
	Appearance	Good	FMVSS 116	No blistering, sloughing or disintegration

All indicated data are approximate values and are subject to the commercial fluctuations.