Ravensberger Schmierstoffvertrieb GmbH
Postfach 1163
33819 Werther
Tel.: +49/5203/9719-0
Fax.: +49/5203/9719-42

- Certificate / ProductInformation -

RAVENOL DOT 4

Art. 1350601

SYNTHETIC BRAKE FLUID

Description:

RAVENOL DOT 4 is a brake fluid for the use in all vehicles with optimum ABS characteristics. There is a chemical stability and it is provided with additives which save the best lubrication efficiency. Because of the special formulation of **RAVENOL DOT 4** the international specifications SAE J 1704, ISO 4925 and the safety regulations FMVSS 116 DOT 3 and DOT 4 from the United States of America are exceeded.

Application Directions:

RAVENOL DOT 4 can be used in all vehicles for which the DOT 4 specification for brake fluids is required. It is suitable for all hydraulic brake systems with synthetic fluids.
RAVENOL DOT 4 is miscible with all known brake fluids of the same specification.
To use the high performance level of **RAVENOL DOT 4**, a complete change of the brake fluid is recommended.
RAVENOL DOT 4 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 4 is tried and tested for aggregates specifying:
Specifications: ISO 4925 Class 4, FMVSS 116 DOT 4, SAE J 1704

Technical Characteristics:

RAVENOL DOT 4 offers:

- optimum ABS characteristics
- chemical stability
- best lubrication efficiency
- neutral behaviour regarding brake parts
- low viscosity at low temperatures
- miscible with all brake fluids of the same specifications

Technical Values:

Characteristics	Unit	Data	Test according to	Specification
Colour		Light yellow	visual	Light to amber
Density at 20°C	kg/m³	1052,0	EN ISO 12185	
Dry Equilibrium Reflux Boiling Point	°C	271	FMVSS 116	Min. 260°C
Wet Equilibrium Reflux Boiling Point	°C	169	FMVSS 116	Min. 165°C

Ravensberger Schmierstoffvertrieb GmbH
Postfach 1163
33819 Werther
Tel.: +49/5203/9719-0
Fax.: +49/5203/9719-42

- Certificate / ProductInformation -

RAVENOL DOT 4
Art. 1350601
SYNTHETIC BRAKE FLUID

Viscosity at -40°C	cSt	1340	ASTM D445	Max. 750 cSt
Viscosity at 100°C	cSt	2,41	ASTM D445	Min. 1,5 cSt
pH-Value		8,53	FMVSS 116	7 – 11,5
High Temperature Stability	°C	-1	FMVSS 116	Max. +/- 3,0°C
Chemical Stability	°C	+1	FMVSS 116	Max. +/- 3,0°C
Evaporation	%w/w	61	FMVSS 116	Max. 80%
Fluidity & Appearance at -40°C		Pass, 4s	FMVSS 116	No freezing, Bubble time 10 sec. Max
Fluidity & Appearance at -50°C		Pass, 8s	FMVSS 116	No freezing, Bubble time 35 sec. Max
Water Tolerance at -40°C		Clear, 3s	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	%	<0,2	Karl Fischer	

Corrosion Resistance

Tinned Iron	Δ mg/cm²	-0,03	FMVSS 116	Max. 0.2
	Appearance	Good		No pitting or etching
Steel	Δ mg/cm²	-0.01	FMVSS 116	Max. 0.2
	Appearance	Good		No pitting or etching
Aluminium	Δ mg/cm²	0	FMVSS 116	Max. 0.1
	Appearance	Good		No pitting or etching
Cast Iron	Δ mg/cm²	-0,03	FMVSS 116	Max. 0.2
	Appearance	Good		No pitting or etching
Brass	Δ mg/cm²	-0,08	FMVSS 116	Max. 0.4
	Appearance	Good		No pitting or etching
Copper	Δ mg/cm²	-0,05	FMVSS 116	Max. 0.4
	Appearance	Good		No pitting or

Ravensberger Schmierstoffvertrieb GmbH
Postfach 1163
33819 Werther
Tel.: +49/5203/9719-0
Fax.: +49/5203/9719-42

RAVENOL DOT 4
Art. 1350601
SYNTHETIC BRAKE FLUID

				etching
Zinc	Δ mg/cm²	+0,01	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		8,2	FMVSS 116	7 - 11,5
Rubber Diameter Change		+0,16	FMVSS 116	Max. +1,4
Hardness Change	°IRHD	-4	FMVSS 116	Max. -15 °IRHD
Appearance		Pass	FMVSS 116	disintegration
Oxidation Resistance				
Cast Iron	Δ mg/cm²	+0,04	FMVSS 116	Max. 0.3
	Appearance	Good		No pitting or roughening
Aluminium	Δ mg/cm²	+0,02	FMVSS 116	Max. 0.05
	Appearance	Good		No pitting or roughening
Effect on Rubber				
SBR at 70°C	Ø change, mm	+0,56	FMVSS 116	0,15 to 1,40
	Δ hardness, IRHD	-3	FMVSS 116	0 to -10
	Δ volume, %	+6,21	FMVSS 116	1 to 16
	Appearance	Good	FMVSS 116	No blistering, sloughing or disintegration
SBR at 120°C	Ø change, mm	+0,73	FMVSS 116	0,15 to 1,40
	Δ volume, IRHD	-7	FMVSS 116	0 to -15
	Δ volume, %	+7,69	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, %	+1,39	FMVSS 116	0 to 10
	Appearance	Good	FMVSS 116	No blistering, sloughing or disintegration
EPDM at 120°C	Δ hardness, IRHD	-2	FMVSS 116	0 to -15
	Δ volume, %	+1,91	FMVSS 116	0 to 10
	Appearance	Good	FMVSS 116	No blistering,

Ravensberger Schmierstoffvertrieb GmbH
Postfach 1163
33819 Werther
Tel.: +49/5203/9719-0
Fax.: +49/5203/9719-42

- Certificate / ProductInformation -

RAVENOL DOT 4

Art. 1350601

SYNTHETIC BRAKE FLUID

				sloughing or disintegration
Natural at 70°C (as required by ISO 4925)	Ø change, mm	+0,38	FMVSS 116	0,15 to 1,40
	Δ hardness, IRHD	-5	FMVSS 116	0 to -10
	Δ volume, %	+4,61	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.