Technical Data Sheet (TDS)

Shell Brake & Clutch Fluid DOT 4

Shell Brake & Clutch Fluid DOT 4 is a Glycol Ether Borate based hydraulic brake fluid, specifically formulated to exceed the requirements of the internationally recognised hydraulic brake fluid standards: FMVSS No 116 DOT4, SAE J1704 and ISO4925 Class 4.

Designed to provide an elevated Equilibrium Reflux Boiling Point and Wet Equilibrium Boiling Point

The material composition and performance will ensure the safe and reliable operation of vehicle braking systems, the key points being;

High Boiling Point – Exceeds the minimum ERBP and WERBP requirements, therefore minimising the risk of vapour lock under extreme conditions

Optimal Viscosity – our product is manufactured to ensure the system remains responsive in very cold conditions whilst preventing leakage and maintaining good lubricity at high operating temperatures

Corrosion Inhibition – fully protecting the complete range of metallic components within the braking system against corrosion damage and potential system failure.

Rubber Compatibility – promotes the correct rubber swell / hardness of all rubber components to maximise the working life of system seals, ensuring a safe system operation

Fluid Compatibility - can be safely mixed with other brake fluids meeting the DOT 3 and DOT 4 specification. It is not compatible with a Mineral and Silicone oil based fluid.

TYPICAL PROPERTIES

Property	Units	Requirement	Shell Dot 4
Appearance	-		Clear and bright
Colour	-	Colourless to amber	Colourless to amber
Density @ 20 °C	g/cm³		1.07
Equilibrium Reflux Boiling Point (ERBP)	°C	230 min.	230 min.
Wet Equilibrium Reflux Boiling Point (WERBP)	°C	155 min.	155 min.
Viscosity @ -40 °C	mm²/s	1500 max.	1500 max.
Viscosity @ 100 °C	mm²/s	1,5 min.	1,5 min.
pH	-	7-11,5	7-11,5

Property		Units	Requirement	Specification	Method
Fluid Stability (High temperature)		°C	± 5	± 5	FMVSS 116 SAE J1704 ISO 4925
Fluid Stability (Chemical)		°C	± 5	± 5	FMVSS 116 SAE J1704 ISO 4925
Effect on SBR Rubber	70 °C	Increase of diameter, mm	0.15-1.4	0.15-1.4	FMVSS 116 SAE J1704 ISO 4925
		Hardness decrease (IRHD)	10 max	10 max	
		Disintegration	none	none	
	120 °C	Increase of diameter, mm	0.15-1.4	0.15-1.4	
		Hardness decrease (IRHD)	15 max	15 max	
		Disintegration	none	none	
		Hardness decrease (IRHD)	10 max.	10 max.	
		Disintegration	none	none	
Effect on EPDM Rubber	120 °C	Volume increase, %	0-10	0-10	FMVSS 116 SAE J1704 ISO 4925
		Hardness decrease (IRHD)	15 max	15 max	
		Disintegration	none	none	
Fluidity and appearance at low temperatures	-40 °C	Appearance	As before test	As before test	FMVSS 116 SAE J1704 ISO 4925
		Sludging, sedimentation crystallization or stratification	none	none	
		Flow time, secs	10 max	10 max	
	-50 °C	Appearance	As before test	As before test	
		Sludging, sedimentation crystallization or stratification	none	none	
		Flow time, secs	35 max	35 max	

Water tolerance	-40 °C	Appearance	As before test	As before test	FMVSS 116 SAE J1704 ISO 4925
		Sludging, sedimentation crystallization or stratification	none	none	
		Flow time, secs	10 max	10 max	
	60 °C	Appearance	As before test	As before test	
		Stratification	none	none	
		Sediment, % v/v	0.15 max	0.15 max	
Wet corrosion	Wt. change (mg/cm2)	Tinned iron	± 0.2 max	± 0.2 max	FMVSS 116 SAE J1704 ISO 4925
		Steel	± 0.2 max	± 0.2 max	
		Aluminum	± 0.1 max	± 0.1 max	
		Cast iron	± 0.2 max	± 0.2 max	
		Brass	± 0.4 max	± 0.4 max	
		Copper	± 0.4 max	± 0.4 max	
	Pitting or etching		none	none	
	pH (after test)		7-11.5	7-11.5	
	Gelling at 23 ± 5 °C		none	none	
	Deposit		No crystalline	No crystalline	
	Sediment, %v/v		0.1 max	0.1 max	
	SBR rubber	Increase of diameter,	1.4 max	1.4 max	
		Hardness decrease (IRHD)	15 max	15 max	
		Disintegration	none	none	
	EDPM Rubber	Volume increase, %	10 max	10 max	
		Hardness decrease (IRHD)	10 max	10 max	
		Disintegration	none	none	

Dry corrosion	Wt. change (mg/cm2)	Tinned iron	± 0.2 max	± 0.2 max	FMVSS 116 SAE J1704 ISO 4925
		Steel	± 0.2 max	± 0.2 max	
		Aluminum	± 0.1 max	± 0.1 max	
		Cast iron	± 0.2 max	± 0.2 max	
		Brass	± 0.4 max	± 0.4 max	
		Copper	± 0.4 max	± 0.4 max	
	Pitting or etching		none	none	
	pH (after test)		7-11.5	7-11.5	
	Gelling at 23 ± 5 °C		none	none	
	Deposit		No crystalline	No crystalline	
	Sediment, %v/v		0.1 max	0.1 max	
	SBR rubber	Disintegration	none	none	
	EDPM Rubber	Disintegration	none	none	
Compatibility	-40 °C	Sludging sedimentation crystallization or stratification	none	none	FMVSS 116 SAE J1704 ISO 4925
	60 °C	Stratification	none	none	
		Sediment %v/v	0.05 max	0.05 max	
Resistance to oxidation		Pitting or etching (tin foil)	none	none	
		Gum deposit	Trace only	Trace only	
		Aluminum wt. change mg/cm2	0.05 max	0.05 max	
		Cast iron wt. change mg/cm2	0.3 max	0.3 max	

Storage and Handling

- Consult and follow the specifications on the safety data sheet.
- Keep brake fluid in original packaging.
- After use, replace the cap tightly to avoid absorption of moisture and contamination caused by dirt, petroleum products or other materials.
- Brake fluid contamination affects its performances and may result in brake failure.
- Do not dispose this product in soil, water or sewers.
- Minor spills should be soaked up with, sand or absorbent granules.
- Dispose of content / container in accordance with local regulations.

Hazards and Safety

As with all chemical products, awareness and control of any potential hazards is of high importance. Please consult the material safety data sheet which is available detailing the hazards associated with this product.