

**SU GRAY**  
CASTROL

**ISSUE:**  
**E002-WKSHP**

## TECH TALK - EXPERT TO EXPERT

CASTROL TECHNICAL HELPLINE  
1300 557 998

### BRAKE FLUIDS - AT CASTROL IT'S ALL ABOUT **REACTION TIME**

**BRAKE FLUID IS CRITICAL TO SAFETY AND POSSIBLY THE MOST IMPORTANT FLUID IN YOUR CAR, BUT ITS MAINTENANCE CAN BE OVERLOOKED. ENSURING THE PRODUCT IS STORED CORRECTLY, IS IN GOOD CONDITION AND IS WITHIN RECOMMENDED USE BY DATES IS VITAL. WHILE IN THEORY DOT 3, DOT 4 AND SUPER DOT 4 BRAKE FLUIDS ARE MISCIBLE, CASTROL RECOMMENDS IT'S SAFER TO DRAIN AND REFILL THAN TO MIX.**

#### INCOMPRESSIBLE STOPPING POWER.

Brake fluid needs to be incompressible so pressure can transfer from the brake pedal through to the calipers. If it becomes compressible the pedal will feel spongy and need to be pushed further or pumped to deliver the same pressure, reducing the ability to stop quickly. To ensure a high braking function it is essential to check the reservoir level regularly as it shouldn't change unless there is a leak in the system or wear in the brake pads. Topping up without fixing the issue may result in compromised fluid and even give a false sense of security.

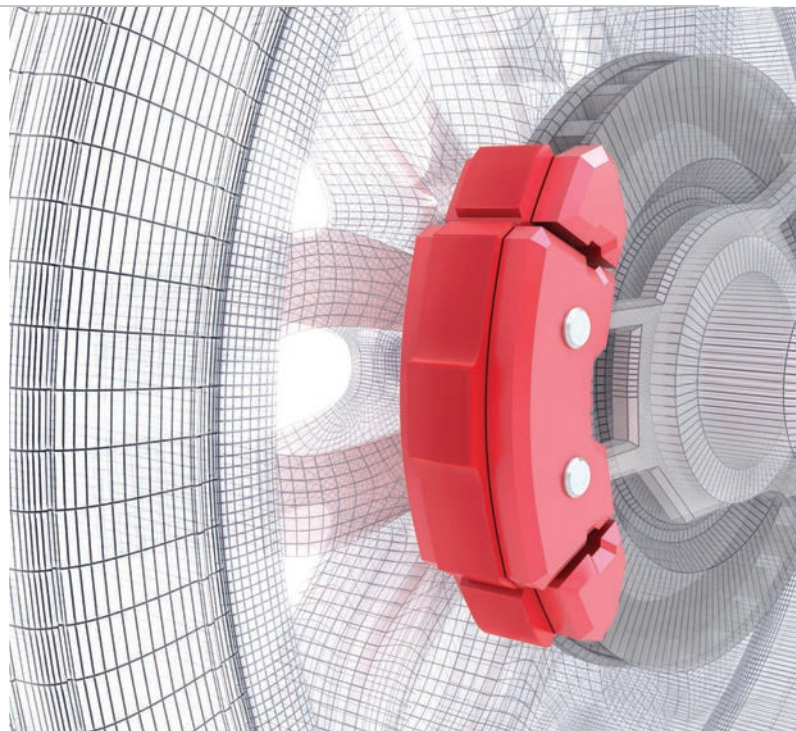
#### BRAKE FLUIDS REQUIRE HIGH BOILING POINTS FOR STOP PERFORMANCE.

The major standard for brake fluids is US FMVSS 116 which defines the US Department of Transport (DOT) classes. The standard outlines criteria for equilibrium wet and dry boiling points, for resistance to thermal stress, viscosity at differing temperatures, seal compatibility and corrosion protection. As brake fluids become very hot during use, they need high boiling points to avoid gas bubbles which increase compressibility and lower braking power. Each batch of Castrol brake fluid is tested against these specifications to ensure the product's high performance at every application.

SPECIFICATION / STANDARD	DRY EQUILIBRIUM REFLUX BOILING POINT, °C MIN	WET* EQUILIBRIUM REFLUX BOILING POINT, °C MIN	VISCOSITY @-40 °C, CST MAX.
DOT 3	205	140	1500
DOT 4	230	155	1800
DOT 4+	260	180	1200-1500
DOT 5 (SILICONE)	260	180	900
DOT 5.1	260	180	900

\*Wet boiling point is temperature at which a DOT fluid begins to boil AFTER it has absorbed 3.7% water by volume (equates roughly to 2 years service)

The three main types of brake fluids are glycol ether, silicone or mineral oil, using the correct is important to avoid damage to seals. DOT 3 tend to be glycol ether, DOT 4 and Super DOT 4 are generally borate ester / glycol ether, DOT 5.1 have similar high temperature performance as DOT 4 plus a lower viscosity at cold temperatures.



The most commonly used fluids are glycol ethers, which have the disadvantage of being hygroscopic (they readily absorb water). Increasing water content reduces the fluid's boiling point and increases the risk of vapour lock and loss of performance.

Mineral oil brake fluids are used in some applications but they are different to any other brake fluids and cannot be mixed. The presence of a small amount of mineral oil in a glycol ether system will result in damage to seals.

Silicone (DOT 5) brake fluids don't strip paint like standard brake fluids and are often used in motor bikes to avoid damaging the fuel tank's paintwork and sometimes in Motor Racing. While DOT 5's are less hygroscopic they are more compressible, demonstrate inferior lubrication and free water tends to accumulate in low spots in the brake system which becomes a corrosion issue.

**FOR THE ULTIMATE IN RACING BRAKE FLUIDS, CASTROL SRF HAS BEEN AND REMAINS THE INDUSTRY STANDARD FOR HIGH PERFORMANCE APPLICATIONS.**

#### SMALLER IS BETTER FOR STORAGE.

It's important to store glycol ether brake fluids carefully, particularly if you stock larger containers. Once open any fluid in the container will be exposed to moisture in the 'headspace' of the container, so it is preferable to use small containers. Castrol recommends that product held in partially filled containers should be discarded after a maximum of 12 months.

**TO ACHIEVE A SAFE RELIABLE STOP PERFORMANCE, IT'S IMPORTANT NOT TO IGNORE BRAKE FLUIDS DURING VEHICLE MAINTENANCE SCHEDULES.**

**CONTACT CASTROL'S TECHNICAL HELPLINE 1300 557 998 FOR FURTHER EXPERT ADVICE**