



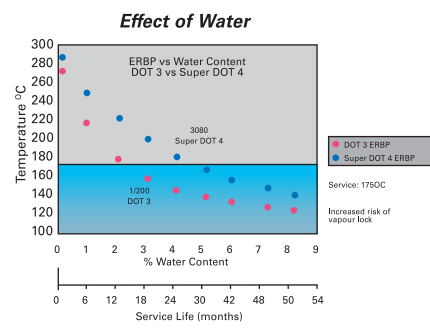
TECH TALK

BRAKE SYSTEM SERVICE MOST VITAL, YET OFTEN OVERLOOKED

The brake system of motor vehicles needs to be properly maintained. While many motorists are aware that their brake pads wear over time, many fail to realise that their brake fluid also degrades over time and needs to be regularly changed in accordance with the vehicle manufacturer's recommendations.

Brake system contamination is inevitable due to the imperfect sealing of the system against moisture. Many brake problems can be traced to air or contamination of the hydraulic fluid. Leaks at fittings where lines and hoses connect to the master cylinder, calipers and/or wheel cylinders can allow moisture to enter the system, which can cause corrosion in the braking system. Air can also appear after moisture gets into the fluid and boils, giving off steam. Two signs of air in the fluid are a noticeable decrease in brake performance and a spongy pedal that quickly and nearly effortlessly goes to the floor as air compresses easier than fluid.

Vehicle manufacturers typically specify the brake fluid performance required, usually referenced to a DOT specification. Brake fluid by nature is hygroscopic, (it rapidly absorbs moisture from air contact). As little as 3% moisture can decrease fluids performance by 30% and also negate it's anti-corrosives properties. Additionally, standard DOT 3 brake fluid can only absorb up to 7% moisture, after which water droplets and braking problems begin to form.



Anti-lock brake systems (ABS) are especially affected by moisture because they can cycle as many as 20 times per second. Spongy pedal feel is a sign of moisture in the brake fluid. Depending on temperature fluctuations and humidity, a brake system can take on as much as 3% water in as much as eight months. As shown in the graph, the recommended service interval for DOT 3 fluid is every 12 months and for DOT 4 is every 2 years.

VALVOLINE Brake Fluids

If you are working on Toyota's make sure that you use the right kind of fluid. Toyota specifies a DOT 3 brake fluid for use in their brake systems. **VPS Heavy Duty DOT 3 Brake Fluid** is suitable for use in Toyota's ABS brake systems and provides a minimum boiling point of 260°C. Consider that the standard minimum boiling point of the Australian/NZ DOT 3 specification is 230°C, VPS Super DOT 3 more than meets the task. VPS Heavy Duty Brake Fluid has been dyed blue for easy identification.

For other makes and models specifying a DOT 4 fluid, we recommend **VPS Performance Super DOT 4 Brake Fluid** suitable for car, truck and bus applications where a DOT 4 or SUPER DOT 4 is specified. The low moisture absorption maintains maximum performance even under the most severe braking conditions. Both products offer a minimum boiling point of 270°C.



SPECIFIED FLUID	MINIMUM EQUILIBRIUM BOILING POINT	MINIMUM "WET" BOILING POINT
DOT 3	205°	140°
DOT 3 – AS/NZS 1960.1 Grade 1	230°	140°
DOT 4	230°	155°
DOT 4 – AS/NZS 1960.1 Grade 3	260°	170°
SUPER DOT 4	260°	180°
DOT 5	260°	180°

PRODUCT	PRODUCT CODE
Valvoline Racing Brake Fluid 500ml	0905.72
VPS Heavy Duty DOT 3 Brake Fluid 20L	0903.20
VPS Super Performance DOT 4 Brake Fluid 20L	0900.20





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