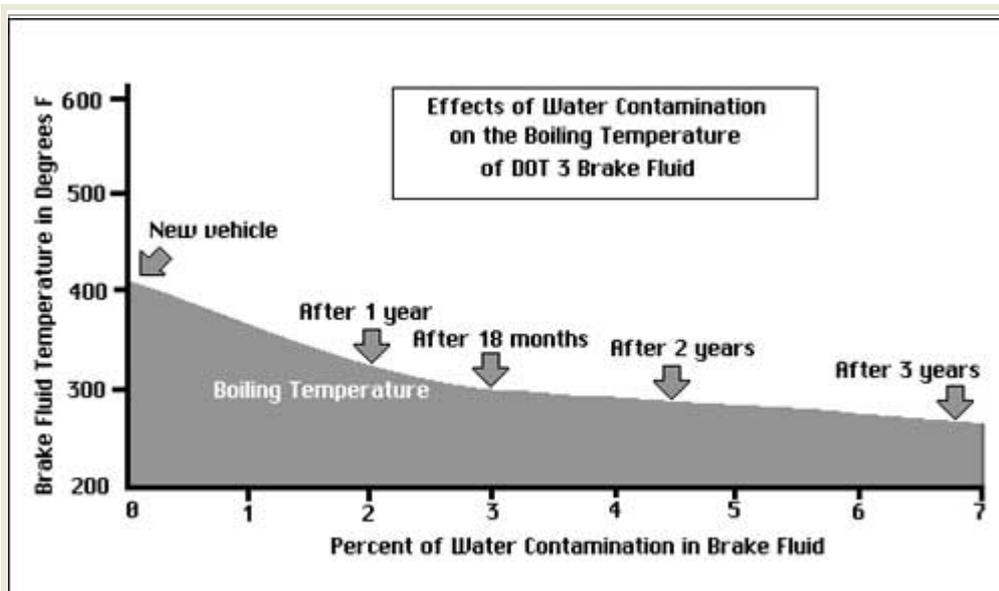


Brake Fluid

N.B. There are many racing fluids available, bringing the price and the quality of DOT 3 and DOT 4 far beyond the standard fluids.



DOT 3

DOT 3 brake fluid is the "conventional" brake fluid used in most vehicles.

Advantages:

It is inexpensive, and available at most gas stations, department stores, and any auto parts store.

It is completely compatible with DOT 3 and DOT 5.1.

Disadvantages:

It eats paint.

It absorbs water very readily. Accordingly, once a container of DOT 3 has been opened, it should not be stored for periods much longer than a week before use.

It is NOT compatible with Dot 5 whatsoever and should never be mixed. A safe switch from DOT 3/DOT 4/DOT 5.1 to DOT 5 requires a complete flush of the braking system and a change of all seals in the hydraulic system.

Maintenance

Flush every 2 years.

DOT 4

Advantages:

It is available at most auto parts stores, and gas stations and department stores.

It does not absorb water as readily as DOT 3 fluid.

It has a higher boiling point than DOT 3 fluid, making it more suitable for high performance applications where the brake systems are expected to get hot.

It is completely compatible with DOT 3 and DOT 5.1.

Disadvantages:

It eats paint.

It is about 50% more expensive than DOT 3 fluid. (One brand is the easily found Castrol LMA)

It is NOT compatible with Dot 5 whatsoever and should never be mixed. A safe switch from DOT 3/DOT 4/DOT 5.1 to DOT 5 requires a complete flush of the braking system and a change of all seals in the hydraulic system.

Maintenance

Flush every 2 years.

DOT 5

DOT 5 brake fluid is also known as "silicone" brake fluid. It was designed for the US Army, who has requested permission to stop using it.

Advantages:

It does not eat paint or skin.

It does not absorb water ([BUT!!! See more on this under disadvantages, below.](#))

It has a higher boiling point than DOT 3 and DOT 4.

It is compatible with all rubber formulations.

It is a good choice for Concours cars, which are rarely driven and/or never driven hard.

Disadvantages:

It does NOT mix with DOT3 or DOT 4 or DOT 5.1. Most reported problems with DOT 5 are probably due to some degree of mixing with other fluid types. A residue of the former non-compatible fluid is sufficient to cause serious issues. The best way to convert to DOT 5 is to rebuild totally the hydraulic system. Additionally, the same advice applies if switching from Dot 5 to any of the other fluids.

Since DOT 5 does not absorb water, any moisture in the hydraulic system will "puddle" in one place. This can cause localized corrosion in the hydraulics.

Careful bleeding is required to get all of the air out of the system. It is hard to do without introducing bubbles and thus results in soft pedal feel. These small bubbles will form large bubbles over time. It may be necessary to do a series of bleeds.

DOT 5 is less compressible (often creating a slightly softer pedal). It is not recommended for racing application.

It is hard to pour without introducing bubbles and thus results in soft pedal feel,

It is not recommended by the brake manufacturer, especially for ABS brakes.

It is about twice as expensive as DOT 4 fluid.

So silicone fluid aerates easily. Harley-Davison, one of the sole current OEM users of silicone fluid, warns buyers to let the fluid sit at least an hour before using it. If shaken on the way home, it will aerate enough to look like a freshly poured soft drink. Silicone fluid is also slightly more compressible than glycol fluid, does not change colour to tip the user to its moisture content, and worst of all, neither accepts or disperses moisture, making systems using it more corrosion prone, and requiring much more frequent fluid changes. Silicone brake fluid also lacks glycol fluid's naturally occurring lubricity, making it incompatible with the mechanical valving in some anti-lock braking systems.

Dot 5.1

DOT5.1 is a relatively new brake fluid that is causing no end of confusion amongst mechanics. The DOT could avoid a lot of confusion by giving this new fluid a different designation. The 5.1 designation could lead one to believe that it is a modification of silicone-based DOT 5 brake fluid. Calling it 4.1 or 6 might have been more appropriate since it is a glycol-based fluid like the DOT 3 and 4 types, not silicone-based like DOT 5 fluid.

As far as the basic behaviour of 5.1 fluids, they are much like "high performance" DOT 4 fluids.

Advantages:

It provides superior performance over all the other brake fluids discussed here. It has a higher boiling point, either dry or wet, than DOT 3 or 4 or even DOT 5. In fact, its dry boiling point (about 275 degrees C) is almost as high as racing fluid (about 300 degrees C) and 5.1's wet boiling point (about 175 to 200 degrees C) is naturally much higher than racing's (about 145 C).

It is compatible with all rubber formulations.

It is completely compatible with DOT 3 and DOT 4 making an upgrade from either easy.

Disadvantages:

It will absorb water.

It will eat paint.

It is more difficult to find for sale, typically at very few auto parts stores. Try NAPA #NBF51012

It is mildly more expensive than DOT3 or DOT4.

It is NOT compatible with Dot 5 whatsoever and should NEVER be mixed. A safe switch from DOT 3/DOT 4/DOT 5.1 to DOT 5 requires a complete flush of the braking system and a change of all seals in the hydraulic system.

