

## DOT 5 Brake Fluids

After paying a small mint for the paint job on my restored Norton, I started considering ways to preserve and protect it. Chief among my concerns was brake fluid. I had once spilled regular brake fluid on my toolbox, and a week later it was sporting a huge corroded area with blistered paint. So after hearing about DOT 5 Silicone brake fluid I investigated. If you have similar concerns, DOT 5 Silicone might be of interest to you as well.

Silicone based DOT 5 brake fluid was originally developed for racing, but has several attractive qualities for use on classic bikes with hydraulic brake systems. These are:

- DOT 5 Silicone does not attract water. Lack of moisture absorption minimizes corrosion of internal components for better sealing, longer component life, and less maintenance. On the other hand, regular brake fluids are hygroscopic, and readily absorb water from the air and other sources. Therefore, motorcycle brake systems using DOT 3 and 4 ought to have their fluids changed regularly to prevent problems. The maximum life of DOT 3 or 4 is 5 years.
- DOT 5 Silicone will not affect plastic or painted surfaces, and is non-toxic, non-corrosive and nonirritating. With glycol based brake fluids, like DOT 3, DOT 4 and DOT 5.1, care must be used to thoroughly wash it thoroughly from skin and all painted surfaces.
- DOT 5 Silicone offers superior lubrication of master cylinder and caliper pistons preventing abrasion between the sealing cups and pistons that can take place under racing conditions. In street use, this could result in nearly zero component wear.
- DOT 5 Silicone has a very high boiling point that eliminates brake fade. Although it is no longer the preferred brake fluid for racing, it is more than adequate for street use.

### Things You Should Know

As with any product there are several trade-offs to consider before rushing out and converting every vehicle you own:

Silicone fluids are not miscible with water. It's the classic oil and vinegar scenario. DOT 5 Silicone, being less dense, tends to float on water. Therefore, if water ever entered the system it would collect at the lowest point, meaning the bottom of the caliper. Water in the bottom of the caliper could be hard to get out without removing the caliper and rotating the caliper to place the bleed nipple at the lowest point.

While it's permissible to mix DOT 3, DOT 4 and DOT 5.1 brake fluids, DOT 5 Silicone fluid cannot be mixed with any other type. If the system is not completely purged before conversion, the mixture may gel and result in very poor braking. Therefore conversion usually requires disassembly and a thorough cleaning, or at least numerous bleeding sessions over several days. Obviously then, the best time to consider conversion to DOT 5 is before rebuilding the master cylinder or caliper.

Because DOT 5 Silicone cannot be mixed with any other brake fluid it has been given a special purple color. Any owner or mechanic seeing the special purple color should instantly recognize that the fluid in the reservoir is not normal brake fluid.

There are actually two types of DOT 5 fluids. There is a SBBF (Silicone Based Brake Fluid) and a DOT 5.1 NSBF (Non-Silicone Based Fluid). For several years DOT 5.1 was not available to the general public and there was a very low chance of getting the two confused with each other. However, the latest generation of motorcycles is now using DOT 5.1 and it is becoming more commonplace. Be aware that DOT 5.1 has the same base chemistry as DOT 3 and DOT 4 and therefore does NOT offer the advantages of DOT 5 Silicone.

Another point of confusion is that most people assume that since DOT 5.1 has a higher number it must therefore be better. This is simply not true. DOT 5.1 was formulated for use in ABS systems that require a less viscous fluid. From the information I was able to gather it seems that most road racers are now relying on the latest generation of DOT 4 brake fluid, along with regular fluid replacement, for the ultimate in hydraulic brake system performance. So we may conclude that DOT 5.1 is not an improvement, but a modification for ABS use.

DOT 5 Silicone brake fluids are not generally available in Europe. If your Italian or German motorcycle brake reservoir is marked "Use DOT 5" they are generally talking about DOT 5.1, which is not a silicone brake fluid. They do this because your bike is probably equipped with ABS and DOT 5.1 is the preferred brake fluid for ABS systems.

The easiest source for DOT 5 Silicone brake fluid in the USA is your nearest Harley-Davidson shop. DOT 5 Silicone is specified as the brake fluid of choice for use in all HDs.

And of course when working with any brake fluid, proper personal protection should be worn, don't mix brake fluids from different containers, and be sure and follow the safety precautions on the label.

### Summation

Although your bike shop may try to talk you out of buying DOT 5 Silicone, realize that this is because new bikes on their showroom probably specify something else. However, you should buy and use the brake fluid that is best for YOUR motorcycle. If effective braking, low maintenance and protecting your paint job are your priorities then DOT 5 Silicone should be considered.

Thanks to Bel-Ray Lubricants for supplying the technical information used in this article. More information is available on their web site at <http://www.belray.com/>

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