



# Braking safely

## Bosch brake fluids



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# Bosch brake fluid: the safety factor

Vehicles are becoming ever more powerful and traffic density is increasing too. Therefore, reliable brakes are needed. Special attention is to be paid to regular checks and replacement of brake fluids – the transmitter of the forces acting within the braking system. Bosch thus offers high-quality brake fluids.

## Brake fluid: reliable pressure within the braking system

Brake fluids need to provide high performance, even under tough conditions. High temperatures within the braking system heat up the brake fluid, a hygroscopic medium constantly taking up water. The more water it contains, the lower the boiling point. It heats up faster when braking and forms bubbles of vapor; the braking performance becomes unreliable.

**Workshops are asked to check the brake fluid. Using the Bosch BFT 100 brake-fluid tester, the boiling points can be determined accurately. Depending on the results, Bosch recommends to replace the brake fluid on an annual basis – or at least every two years.**



## Bosch range of brake fluids

However, power transmission is not the only task of brake fluids. They also lubricate the hydraulic components of braking systems. Their special composition protects against corrosion. At the same time, they contain additives preventing any possible damage to seals, gaskets and hoses. Bosch brake fluids contribute to the long service life and optimum functionality of all braking components.

## Bosch brake fluids for all applications:

Bosch offers workshops a range of brake fluids suiting virtually any everyday situation:

- ▶ DOT 3: for use in older vehicles; can only be mixed with brake fluids featuring equal specifications
- ▶ DOT 4: with high boiling point for vehicles built from 1990 onwards
- ▶ DOT 4 HP: specifically for vehicles equipped with ABS and ESP®
- ▶ DOT 5.1 Super: to be used under extreme driving conditions



## Simply safer: Bosch BFT 100 brake-fluid tester

BFT 100 works in accordance with the boiling-point method – the only accurate method for brake-fluid testing. Once it compared the measured values with the DOT minimum values (DOT 3, DOT 4, DOT 4 HP, DOT 5.1) stored at the device, BFT 100 displays the results. Practical feature for quick operation: The tester's source of power is the vehicle's own battery (12 V).

**Order number: 0 986 625 001**



## Benefiting from experience gained in system development

For more than 126 years, Bosch has been developing motor-vehicle systems. The development of braking systems has been equally comprehensive. Accordingly, all brake fluids have been tested to comply with the systems. At the same time, they meet the high demands placed on safety and quality.



## Bosch brake hoses with tested and approved quality

Built from multi-layer plastic rubber with fabric lining, Bosch brake hoses cope with high mechanical strains. In addition, they are resistant to oils, fuels and environmental influences. They are equipped with connectors identical with OES ones and stand out for their high pulse stability in ESP®, ABS or TCS systems. Even in case of high temperatures, they feature a low water permeability – and thus an accordingly long service life.

# Suiting perfectly: Bosch brake fluids



Bosch DOT 3



Bosch DOT 4



Bosch DOT 4 HP



Bosch DOT 5.1 Super

### Bosch DOT 3 brake fluid

- Suitable for all hydraulic braking systems
- Mostly used for older vehicles
- Mixable with all brake fluids complying with SAE J 1703, FMVSS § 571.116 DOT 3 or ISO 4925 unless the vehicle manufacturer specified otherwise
- Must not be mixed with common DOT 4 fluids!

DOT 3	Bosch
Dry boiling point (°C)	≥205
Wet boiling point (°C)	≥140
Viscosity at -40°C (mm <sup>2</sup> /sec)	1500

### Bosch DOT 4 brake fluid

- Suitable for all hydraulic braking systems
- Mixable with all brake fluids complying with FMVSS § 571.116 DOT 4, SAE J 1704 or ISO 4925 unless the vehicle manufacturer specified otherwise

DOT 4	Bosch
Dry boiling point (°C)	≥230
Wet boiling point (°C)	≥155
Viscosity at -40°C (mm <sup>2</sup> /sec)	1800

### Bosch DOT 4 HP brake fluid

- High-performance brake fluid for all hydraulic braking systems
- Low viscosity, thus particularly suitable for vehicles equipped with electronic braking systems (ABS/ESP®).
- Mixable with all brake fluids complying with FMVSS § 571.116 DOT 4, SAE J 1704 or ISO 4925 unless the vehicle manufacturer specified otherwise

DOT 4 HP	Bosch
Dry boiling point (°C)	≥260
Wet boiling point (°C)	≥170
Viscosity at -40°C (mm <sup>2</sup> /sec)	700

### Bosch DOT 5.1 Super brake fluid

- High-performance brake fluid for all hydraulic braking systems
- Suitable for applications related to racing and extreme driving conditions
- Mixable with all brake fluids complying with FMVSS § 571.116, SAE J 1703 or ISO 4925 unless the vehicle manufacturer specified otherwise

DOT 5.1 Super	Bosch
Dry boiling point (°C)	≥260
Wet boiling point (°C)	≥180
Viscosity at -40°C (mm <sup>2</sup> /sec)	900

## That's for sure: high quality

### Five characteristics of reliable brake fluids:

- Consistent transmission behavior
- Top protection against the formation of vapor bubbles
- Optimum viscosity
- Additives for protection against corrosion and for lubrication
- Complying with all applicable safety standards\*

### Optimum viscosity ensures safe pressure ratios

Different characteristics of brake fluids in terms of viscosity ensure and contribute to the optimum functionality of different systems. For the absolutely reliable system performance – within fractions of a second – of modern electric control systems such as ABS or ESP®, a particularly low viscosity is required. Bosch DOT 4 HP

thus features a faster control circuit with an increased number of cycles concomitantly providing additional safety and comfort. Even in case of high temperatures, Bosch brake fluids feature optimum flow characteristics. This ensures quick pressure build-up and discharge and optimum pressure transmission to the braking system.

\*The DOT (Department of Transportation, USA) defines minimum safety values by stringent specifications.

# A task for professionals: brake-fluid replacement at the workshop



- Warning, brake fluid is highly corrosive!**
- ▶ Always wear protective gloves and safety glasses and stick to the safety instructions!
  - ▶ In case any brake fluid drops onto the vehicle paint, wash it off with a lot of water!
  - ▶ Always dispose of brake fluid at specialized waste-management facilities!



Connecting the overpressure equipment



Bleeding the braking system



New brake fluid flows in – free of bubbles and yellow



Checking the brake-fluid level at the expansion tank

**Attention! Only trained professionals should maintain braking systems and replace brake fluids. In this regard, please note the respective vehicle manufacturer's specifications.**

### Preparations for the replacement of brake fluids

Correct preparation helps saving time. This applies to the replacement of a vehicle's brake fluid as well:

- ▶ Use the automotive lift or a workshop pit.
- ▶ Prepare your tools: Bleeding bottle, filled overpressure equipment, syringe to extract brake fluid and a receptacle to fill in the used brake fluid.
- ▶ Open and ring wrenches featuring the right sizes should be at hand.

### How to proceed when replacing brake fluids

- Step 1:** Select the suiting brake fluid according to the manufacturer specifications.
- Step 2:** Extract as much brake fluid as possible from the reservoir.
- Step 3:** Connect the overpressure equipment using the matching vehicle-specific adapter for the expansion tank and fill in at least 3 liters of brake fluid.
- Step 4:** Adjust the pressure as specified by the manufacturer to 0.5–2 bar (7.25–29 psi).
- Step 5:** The device will now build up the pressure. Check the expansion tank for any leakages.

- Step 6:** Start brake bleeding at the wheel located the closest to the brake master cylinder. Depending on the individual application, the brake master cylinder can be placed at different locations. The Bosch KTS system will provide you with detailed information on this topic.
- Step 7:** Hook in the bleeding bottle at an axle part (not at the brake hose) and plug the transparent plastic hose onto the bleed screw.
- Step 8:** Having turned the bleed screw by half a turn, let the liquid (approx. 250 ml) flow until the brake fluid comes out free of bubbles and yellow.
- Step 9:** Proceed accordingly at all axles. Depending on the manufacturer, this procedure might vary.

For this reason, Bosch recommends to have a look at the Bosch KTS system. Attention! Having completed this procedure on one axle, the bleed screw is to be tightened again! Always drain about the same amount of fluid on each one of the brakes and tighten the respective bleed screw after each bleeding.

**Information: The bleeding device automatically pumps fresh brake fluid into the brake hoses.**

- Step 10:** Turn off the bleeding device and disconnect it from the expansion tank.
- Step 11:** Check and correct the level of brake fluid until it reaches the "MAX" level at the expansion tank.

### Bosch parts, bytes and services:

- Complete support for your brake business
- ▶ Optimum braking components for almost any vehicle
  - ▶ Efficient diagnostic equipment
  - ▶ Reliable service



### Parts

- ▶ Almost complete range of braking components
- ▶ State-of-the-art technology
- ▶ High quality and reliability
- ▶ Long service life
- ▶ Tested safety



### Bytes

- ▶ Brake testers
- ▶ ESI[tronic] 2.0 diagnostic software with vehicle-specific service and repair instructions, system information and spare-parts catalog for almost any vehicle



### Services

- ▶ Trainings
- ▶ Technical hotline
- ▶ Reliable and fast delivery service

# What drives you, drives us.

Technology from Bosch is used in practically every vehicle in the world. For us, the focus is on people and helping them to stay mobile.

We have been dedicated to people for more than 126 years with our pioneering spirit, research, production and expertise.

Our dedication is an unwaivering commitment to providing them with a unique combination of parts, diagnostics, workshop equipment and services:

- ▶ state-of-the-art solutions for efficient vehicle repairs
- ▶ innovative workshop equipment and software – also available on favorable lease terms
- ▶ the world's largest range of new and remanufactured spare parts
- ▶ fast, reliable delivery service
- ▶ expert customer care via our hotline
- ▶ extensive range of training courses
- ▶ specific sales and marketing support
- ▶ plus many other services

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- ▶ Light technology
- ▶ Comfort electronics
- ▶ Hybrid/e-mobility
- ▶ Electronic Service
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- ▶ Workshop concepts

Subject to technical changes and software changes

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