



TRW BRAKE FLUIDS, CLEANERS, OILS AND GREASE. SAFETY AND PERFORMANCE.

TRW



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Introduction

Contaminated brake fluid is the number one cause of brake failure, and brake fluid has an influence not only on the lifespan of the components in the braking system, but also indirectly on the wear rate of the seals and also on pedal feel.

Checking brake fluid regularly, and exchanging with a high quality replacement when necessary, is essential.

TRW's market leading range of brake fluids far exceed all international DOT specifications and our oils, cleaners and grease complete this exceptional range of safety critical products.

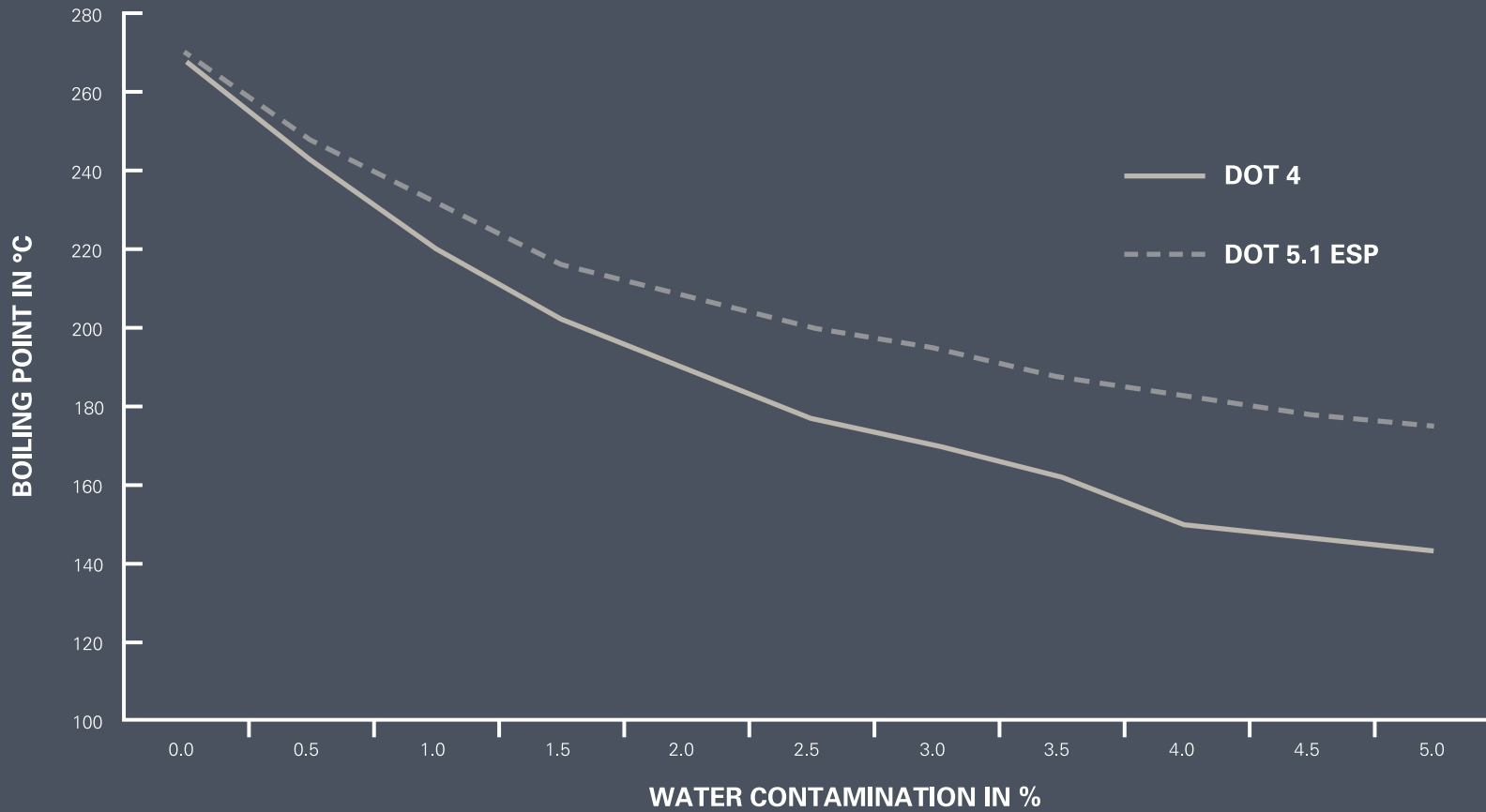




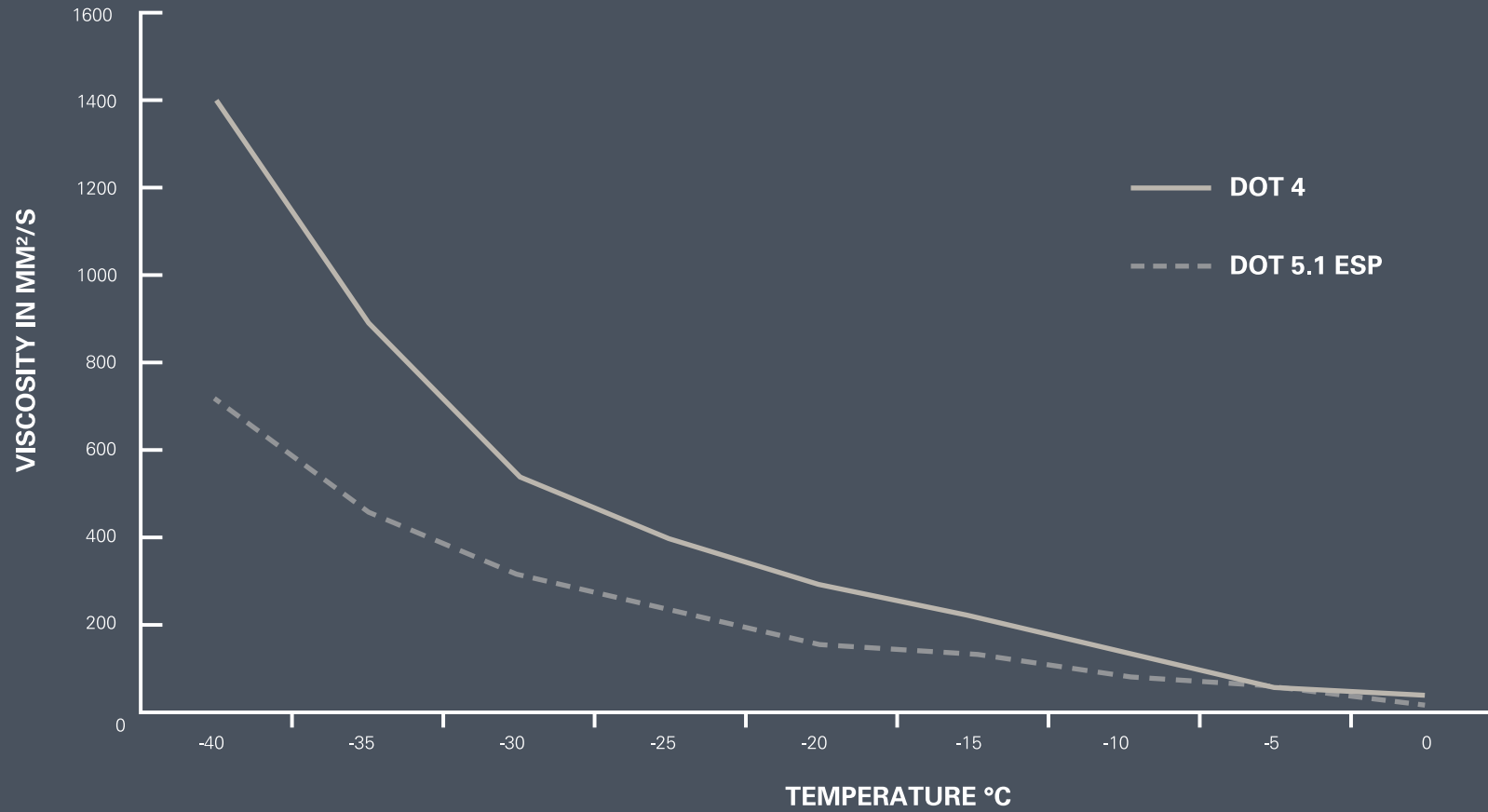
Information grid

DESCRIPTION	TYPE	TRW CAP COLOUR CODE	TRW	VOLUME PER UNIT	UNITS PER CARTON	UNITS PER PALLET
BRAKE FLUID	DOT 3	RED	PFB350	500 ml	20	560
	DOT 3		PFB301	1 l	10	330
	DOT 3		PFB305	5 l	4	64
	DOT 4	BLUE	PFB450	500 ml	20	560
	DOT 4		PFB401	1 l	10	330
	DOT 4		PFB405	5 l	4	64
	DOT 4		PFB420	20 l	1	16
	DOT 4		PFB420DR	20 l	1	24
	DOT 4 ESP		PFB440	1 l	10	330
	DOT 4 ESP		PFB445	5 l	4	64
	DOT 4 ESP		PFB620DR	20 l	1	24
	DOT 5.1	YELLOW	PFB550	500 ml	20	560
	DOT 5.1		PFB501	1 l	10	330
	DOT 5.1		PFB505	5 l	4	64
	DOT 5.1		PFB520	20 l	1	16
	DOT 5.1 ESP		PFB750	500 ml	20	560
	DOT 5.1 ESP		PFB701	1 l	10	330
	DOT 5.1 ESP		PFB705	5 l	4	64
	DOT 5.1 ESP		PFB720DR	20 l	1	24
	Grand Prix 600		BLACK	PFB601	1 l	10
GREASE			PFG110	25 g	10/bag	
HYDRAULIC FLUID	LHM Plus Mineral	GREEN	PFM201	1 l	10	330
	LHM Plus Mineral		PFM205	5 l	4	64
	SSF Fluid	ORANGE	PFS801	1 l	10	330
BRAKE CLEANER			PFC105	500 ml	12	504

Boiling Point Performance



Kinematic viscosity vs temperature







Passenger car



CV



Moto

WE'VE GOT YOU COVERED

TRW's extensive range of brake fluids caters for every type of vehicle, from those with drum brakes all-round to high performance vehicles with electronic stability control programmes. Whether DOT 3, DOT 4, DOT 4 ESP, DOT 5.1 or DOT 5.1 ESP, TRW has the right brake fluid for you. Driven by safety, all TRW brake fluids are tested to the extreme and far exceed international DOT specifications. This means that TRW brake fluids deliver higher performance in safety critical areas including boiling points and viscosity performance, as well as offering better anti-corrosion and rubber performance.

ONLY THE BEST

TRW brake fluids incorporate the latest technology to make all our vehicles safer. Containing a blend of advanced lubricants, stabilisers, anti-oxidants and corrosion inhibitors, TRW brake fluid will keep brakes working just how the manufacturer intended. Through continual research and development this careful mix helps to minimise wear, maximise performance and makes sure your brakes work in ambient temperatures from -50°C to +50°C. Our conventional DOT fluids will also mix safely with all other fluids conforming to DOT 3, DOT 4 and DOT 5.1.

BRAKE FLUID PERFORMANCE

As brakes are used, the brake fluid will heat up. If the brake fluid boils, 'vapour lock' will occur resulting in brake failure for the driver. Over time, the boiling point of all brake fluids will begin to lower as moisture from the air is absorbed. But thanks to the design, along with extensive laboratory and real-life testing, all TRW brake fluids maintain optimum braking performance for as long as possible. To sustain maximum braking performance and safety, TRW recommends that brake fluid is changed at least every two years, and every year in systems where DOT 3 is used.

WORLD INNOVATION

TRW's new DOT 5.1 ESP brake fluid is a truly unique fluid. This fluid has a minimum wet boiling point (WBP) in excess of 180°C, while keeping the viscosity at -40°C, below the maximum specification of 750 mm²/s, required for ESP. All other ESP fluids on the market are only DOT 4 because the highest minimum WBP any of them can achieve is 170°C; which means they can't be used for vehicles with a higher DOT requirement.

The specifications of the vehicle manufacturer should always be observed and followed for any application.

Dot grid

DOT 3	DOT 3 SPECIFICATION	TRW DOT 3	
DRY BOILING POINT	205°C	240°C	Vehicles with Drum Brakes front and rear Hydraulic Clutch Systems. Can also be used for modern vehicles, mainly Asian applications with disc brake, ABS, ESP
WET BOILING POINT	140°C	150°C	
VISCOSITY AT-40°C	MAX. 1500 MM2/S	1270 MM2/S	

DOT 4	DOT 4 SPECIFICATION	TRW DOT 4	
DRY BOILING POINT	230°C	270°C	Vehicles with Disc Brakes on front, Drum Brakes on rear. Vehicles with Disc Brakes all-round. Suitable for vehicles with ABS.
WET BOILING POINT	155°C	163°C	
VISCOSITY AT-40°C	MAX. 1800 MM2/S	1315 MM2/S	

DOT 4 ESP	DOT 4 ESP SPECIFICATION	TRW DOT 4 ESP	
DRY BOILING POINT	250°C	269°C	For modern vehicles equipped with ESP and ABS.
WET BOILING POINT	165°C	171°C	
VISCOSITY AT-40°C	MAX. 750 MM2/S	1698 MM2/S	

DOT 4 GP	DOT 4 GP NO SPECIFICATION	TRW DOT 4 GP	
DRY BOILING POINT		>300°C	High Performance Brake Fluid specifically developed for racing applications.
WET BOILING POINT		>195°C	
VISCOSITY AT-40°C	MAX. 1800 MM2/S	PFB501	

DOT 5.1	DOT 5.1 SPECIFICATION	TRW DOT 5.1	
DRY BOILING POINT	260°C	269°C	Heavy, high performance cars, including those fitted with ABS. Formulated to provide an extra margin of safety. Improved viscosity performance at-40°C makes it safer for use in extremely cold climates.
WET BOILING POINT	180°C	187°C	
VISCOSITY AT-40°C	MAX. 900 MM2/S	810 MM2/S	

DOT 5.1 ESP	DOT 5.1 ESP SPECIFICATION	TRW DOT 5.1 ESP	SPECIFICATION EXCEEDED
DRY BOILING POINT	260°C	272°C	Heavy, high performance cars, including those fitted with ABS/ESP system. Specially developed for the needs of ABS/ESP systems.
WET BOILING POINT	180°C	184°C	
VISCOSITY AT-40°C	MAX. 750 MM2/S	720 MM2/S	

The specifications of the vehicle manufacturer should always be observed and followed for any application.

Fluids and cleaners





MAKING LIFE EASY

For your convenience, TRW brake fluids are available in a range of different sizes from small bottles to 20l. This means you only need to buy the amount you really need. Even the containers have been specially designed to incorporate user-friendly handling along with an easy pouring action. Besides a 20l drum (for DOT 4, DOT 4 ESP and DOT 5.1 ESP brake fluid), a 20l “bag in box” system is

available for most DOT brake fluids, offering easy and controlled dispensing via tap. To make transportation and storage easier, all TRW’s packaging is high-load bearing for added safety, while heat-sealed caps ensure no contamination. Naturally all TRW brake fluids meet and exceed FMVSS 571.116, also ensuring that all DOT brake fluids range from colourless to amber. This eliminates the

possibility of confusion with other fluids. The packaging is also colour coded with red for DOT 3, blue for DOT 4 and yellow for DOT 5.1, and our new label design also incorporates the colour code. To make life even easier the packaging is also part numbered and bar coded on the front. Each bottle also contains a multi-language user guide and health and safety sheets are available on request.

Garage Equipment

To help you offer a complete range of brake system servicing, TRW has developed a number of pieces of equipment.

BRAKE FLUID TESTING

Brake fluid absorbs moisture from the atmosphere. As moisture is absorbed the boiling point of the brake fluid will be reduced. After several years the dry boiling point may have fallen to below 170°C. This can cause vapour lock, resulting in brake failure and the pedal going straight to the floor. This is potentially a very dangerous situation, so TRW recommends the following guidelines when testing the boiling point of brake fluids:

- Above 190°C ~ OK
- 180°C – 190°C ~ change in 3 months
- Below 180°C ~ change immediately

The condition of the brake fluid is often ignored, which means that the garage may put the customer at risk, while also missing extra servicing revenue. TRW believes that as many as three out of five cars on the road may contain brake fluid that is below the recommended safety limit.

BRAKE FLUID BLEEDER


TRW offers two different pieces of equipment to make brake fluid bleeding quicker, easier and safer. Designed for use in garages of all sizes, the range of brake fluid bleeders is simple to use, of the highest quality and excellent value for money.

The bleeder P/No. YCB350 works exclusively from original containers of up to five litres, with bleeder P/No. YCB351 working from containers up to 20 litres. This means that transferring brake fluid is not required and allows for a quick, clean and environmentally friendly service. It is also suitable for electro-hydraulic brakes and has a mineral oil model. There is an extensive range of adapters (adapter kit P/No. YCB352) allowing you to service all makes of vehicles.

- Allows for quick and clean servicing
- Automatic stop when container is empty
- ABS suitable
- Single person operation
- Work pressure 0 – 4 bar
- No compressed air
- Euro adapter included

Whether it's designing advanced braking systems, producing a high performance brake fluid, or the latest equipment to aid garage servicing, TRW's commitment to safety remains constant. Always producing new solutions and striving to deliver the highest quality products, TRW is the name to turn to for everything in braking.





**Safety will always
remain at the heart
of what we do.**

1. BRAKE FLUID

TRW's range of standard brake fluids, including DOT 3, DOT 4 and DOT 5.1 far exceeds international DOT specifications and comes in a range of sizes, to meet any need.

2. ESP BRAKE FLUID

Vehicles are becoming increasingly complex and many are now fitted with advanced braking systems, including electronic stability programmes (ESP). With ESP technology, brake fluid needs to react even more quickly to the system's sensors to help avoid skidding and maximise the functionality of the system. As a global leader in ESP systems for vehicle manufacturers worldwide, TRW has developed a range of specially designed ESP brake fluids that keep their viscosity, even at extremely low temperatures. This means the brake fluid can react more quickly, whatever the conditions, making our vehicles and roads safer.

3. PEAK PERFORMANCE

TRW has also developed a high performance brake fluid designed and developed specifically for the most extreme conditions. Whether rally or race, on or off-road, this 'Grand Prix' racing brake fluid has a dry boiling point in excess of 300°C (572°F), providing maximum resistance to vapour lock for increased safety, reliability and performance.

4. HYDRAULIC SYSTEM FLUID

With TRW's commitment to provide a fully comprehensive range of fluids, TRW has developed three products to supplement its brake fluid range:

LHM Plus: A hydraulic system mineral oil for Citroën cars fitted with central hydraulic systems which power the brakes, steering and suspension. It is green in colour to avoid any possible confusion with DOT fluids for conventional braking systems.

SSF: A synthetic fluid for the steering and suspension system of the Citroën C5 and other power steering systems where an orange coloured synthetic fluid is specified.

5. BRAKE CLEANERS

As you would expect, TRW brake cleaner is also an essential choice for quicker, safer and easier braking repairs or servicing. Specially formulated, TRW's market-leading brake cleaner makes up an important part of TRW's comprehensive braking system range.

- Fast and effective
- Quick evaporation
- CFC free
- Bio-degradable
- Safe on rubber components

TRW brake cleaner is available as a powerful 500ml aerosol that works at all angles.

This unit can even be used upside down and is perfect for tight and awkward spaces. For your convenience, full multi-language instructions are also supplied.

6. BRAKE GREASE

TRW brake grease (PFG110) is perfect for a wide range of brake applications. It offers excellent wear and corrosion protection as well as good adhesion and resistance to water. It also has a high load carrying capacity. It can be used in the following areas:

- All mechanical asserted units, e.g. adjusters
- All hydraulic rubber parts which are in contact with brake fluid DOT 3, 4 and 5.1
- Guide bushes and guide pins
- Clutch master and slave cylinders







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