HELLA PAGID

BRAKE SYSTEMS

INFORMATION ON FLUIDS

HELLA PAGID KEEPS YOU SAFE

Our fluids for active braking safety

Based on manufacturing expertise and first-class quality, HELLA PAGID has been making an important contribution to safety optimization on our roads for many years.

As one of the leading aftermarket suppliers of products in the areas of brake hydraulics, wear parts, coupling hydraulics, fluids and accessories, we consistently focus on fair partnerships, technological advances, long-term innovation and the highest quality. Our research and development therefore focuses on Germany and we manufacture only at high-performance production plants in accordance with German specifications.

Brake systems are complex entities in which many elements must work together perfectly to ensure safe functioning, even in extreme situations.

The brake fluid is an important part of this system because it transfers the pedal force to the brake system through hydraulic pressure. To perform this function, the brake fluid must conform to clearly defined automaker requirements and its composition must be perfectly coordinated to the characteristics of various brake systems. Brake fluids from HELLA PAGID do not just exactly meet these conditions, they far exceed them.

The brake fluid product range from HELLA PAGID is appropriately supplemented with brake cleaner and mounting paste. Both of these quality products are tried-and-tested, easy to use and ideal for optimizing the braking and traffic safety of a vehicle.

OPTIMUM BRAKING PERFORMANCE. MAXIMUM SAFETY.

HELLA PAGID BRAKE FLUIDS

The strong product range for all conventional brake systems

The hydraulic transfer of pedal force to the wheel brakes ensures that a certain braking effect is achieved easily and reliably. The brake fluid plays a key role in this braking effect. In order to fulfill its function, the effect of the brake fluid may never be impeded under any circumstances.

The brake fluid must be resistant to cold temperatures so it does not become viscous or freeze. It must never boil at high temperatures because the resulting gas bubbles can lead to brake failure. In other words, there must always be a sufficient amount of brake fluid available in perfect condition to guarantee the functional and traffic safety of a vehicle.

But that's not all. The various brake systems on the market present the brake fluid with requirements that are defined in different ways. To ensure that these requirements are met, there is an internationally binding classification from DOT ("United States Department of Transportation"), which must be observed by manufacturers and, therefore, forms the guidelines for the HELLA PAGID product range.

A mineral oil specifically for central hydraulic systems in Citroën vehicles.

Type	Part number (long)	Part number (short)	Quantity in the assortment	Packaging unit
LHM	8DF 355 360-101	95010	1 l	10
	8DF 355 360-111	95011	5 l	4

Recommended for older vehicles.

Type	Part number (long)	Part number (short)	Quantity in the assortment	Packaging unit
DOT 3	8DF 355 360-071	95014	1 l	10

The most common brake fluid on the market with higher safety standards.

Type	Part number (long)	Part number (short)	Quantity in the assortment	Packaging unit
DOT4	8DF 355 360-001	95003	250 ml	24
	8DF 355 360-011	95004	500 ml	24
	8DF 355 360-021	95005	1 l	10
	8DF 355 360-031	95006	5 l	4

An important feature of the fluid is its particularly low viscosity. Therefore, this fluid is recommended for all vehicles featuring modern safety systems, such as electronic stability programs and ABS.

Type	Part number (long)	Part number (short)	Quantity in the assortment	Packaging unit
DOT 4 LV	8DF 355 360-051	95012	1 l	10
	8DF 355 360-061	95013	5 l	4

It meets the highest demands and guarantees additional safety for high-performance vehicles, including in vehicles with ABS and electronic stability programs.

Type	Part number (long)	Part number (short)	Quantity in the assortment	Packaging unit
DOT5.1	8DF 355 360-081	95008	500 ml	24
	8DF 355 360-091	95009	1 l	10

BEST FEATURES. OPTIMUM VALUES.

HELLA PAGID BRAKE FLUIDS

Better than the standard

Regardless of the category, each brake fluid must have very specific features to ensure proper functioning in any situation. Key criteria for this include the dry boiling point, wet boiling point and viscosity.

To ensure that brake fluids meet the safety-related requirements with respect to this criteria, specific minimum standards have been specified in accordance with the DOT classification. However, HELLA PAGID is not satisfied with these minimum standards. All of our brake fluids far exceed the legal values (see table) and provide maximum safety, even in extreme situations.

The dry boiling point

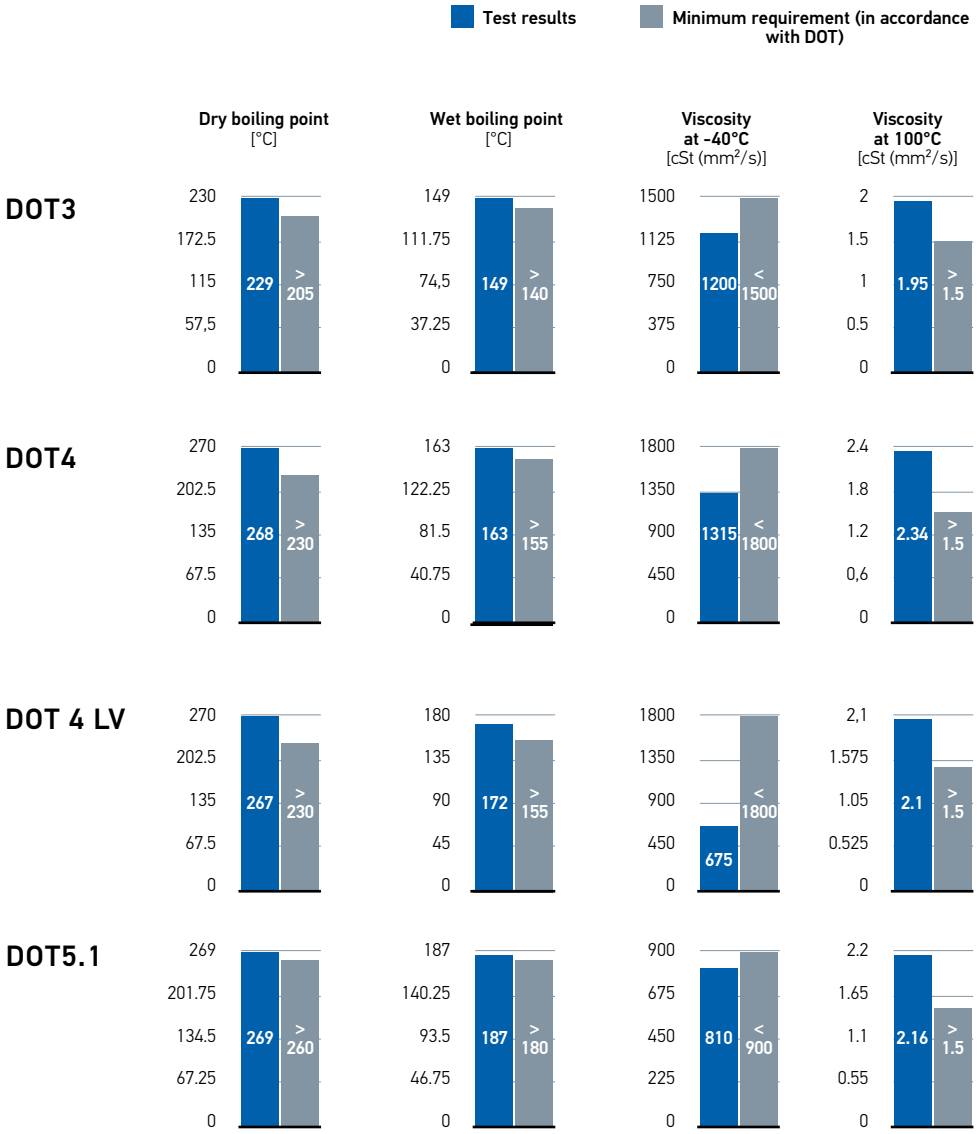
This is the boiling point of new brake fluid without water content. When braking, kinetic energy is converted into heat. The brake fluid absorbs part of this heat and, to keep the heating under control in each phase and to prevent the formation of gas bubbles that can cause a brake failure, the boiling point must reach a certain level.

The wet boiling point

In addition to the heat, the brake fluid also absorbs humidity. This results in an increase in the water content and a reduction in the boiling point in aged brake fluid or brake fluid that has been used over a long period of time. Normally, this wet boiling point is specified for brake fluids with a water content of around 3.5% (relative to the total amount).

The viscosity

Viscosity is a measure of how easily a fluid flows. The greater the viscosity, the thicker the fluid (flows poorly); the lower the viscosity, the thinner the fluid (flows more easily). When temperatures rise, the viscosity of most fluids decreases. The viscosity is particularly relevant for brake fluids intended for modern vehicles with electronic stability programs and ABS (DOT 4 LV and DOT 5.1) because these vehicles require a fluid with a relatively high viscosity, even when temperatures are low.


Test results
Minimum requirement (in accordance with DOT)
Dry boiling point [°C]
Wet boiling point [°C]
Viscosity at -40°C [cSt (mm²/s)]
Viscosity at 100°C [cSt (mm²/s)]
DOT3
230
172.5
115
57,5
0
229
> 205
149
111.75
74,5
37.25
0
149
> 140
1500
1125
750
375
0
1200
< 1500
2
1.5
1
0.5
0
1.95
> 1.5
DOT4
270
202.5
135
67.5
0
268
> 230
163
122.25
81.5
40.75
0
163
> 155
1800
1350
900
450
0
1315
< 1800
2.4
1.8
1.2
0,6
0
2.34
> 1.5
DOT 4 LV
270
202.5
135
67.5
0
267
> 230
180
135
90
45
0
172
> 155
1800
1350
900
450
0
675
< 1800
2,1
1.575
1.05
0.525
0
2.1
> 1.5
DOT5.1
269
201.75
134.5
67.25
0
269
> 260
187
140.25
93.5
46.75
0
187
> 180
900
675
450
225
0
810
< 900
2.2
1.65
1.1
0.55
0
2.16
> 1.5

CHANGE EARLY. DRIVE SAFELY.

EVEN THE BEST BRAKE FLUIDS HAVE EXPIRE

You can always rely on brake fluids from HELLA PAGID. However, after a specific period of time, they must be changed. There are obvious reasons for this.

Brake fluid is hygroscopic, which means that it absorbs water from its surroundings. Water is normally taken in through the brake hose. The older this brake hose is, the more permeable it is. If the water content of the brake fluid is too high, then the boiling point decreases. This can trigger the formation of dangerous gas bubbles when braking and, in the worst case scenario, lead to a failure of the brake system. Brake fluid that is extremely dark or black is a sign of contamination. This damages the rubber parts of the brake master cylinder and can cause corrosion.

Therefore, to guarantee the best braking performance and highest level of safety, HELLA PAGID recommends the following change intervals:

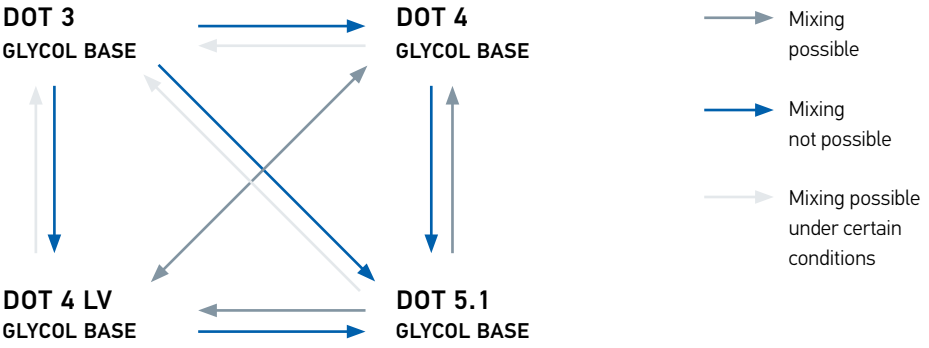
→ DOT 3: every 12 months

→ DOT 4, DOT 4 LV, DOT 5.1 and LHM: every 24 months

In addition, the brake system and the brake hoses in particular should be checked for leaks regularly during service inspections.

MIXABILITY OF BRAKE FLUIDS

HELLA PAGID generally recommends using the brake fluid defined by the automaker and to avoid mixing brake fluids with different DOT specifications.



DOT 5 (silicone base) and LHM can generally not be mixed with other DOT classes

CLEAN UNTIL FREE OF RESIDUE. PREVENT MALFUNCTIONS.

HELLA PAGID OFFERS THE BEST PRODUCTS FOR THE CARE AND MAINTENANCE OF THE BRAKE SYSTEM

BRAKE CLEANER

The brake cleaner from HELLA PAGID attracts brake dust and is a reliable means of removing oil, grease, dirt, and brake fluid – and it leaves no residue. Therefore, this tried-and-tested cleaning agent is virtually suited for all brake, coupling and drive parts, as well as starters, alternators, carburetors, fuel pumps and engine parts. It does not cause polystyrene to break down and is free from chlorinated solvents.

Product characteristics:

→ Great cleaning effect

→ Low evaporation rate

→ Cleans without causing discoloration or leaving streaks

→ Protects against immediate rusting

→ Does not contain chlorinated or halogenated hydrocarbons.

→ Acetone-free

	Property	Unit	Test method
Color	Transparent		Visual
Odor	Neutral		
Density at 20°C	0.695	g/cm3	DIN 51757
Flash point	< 21	°C	DIN 51755
Evaporation speed	2.2		DIN 53170

Use:

Spray soiled parts intensively and allow solvent to drain or evaporate. If necessary, wipe off with a towel until dry. Repeat if parts are heavily soiled.

HELLA PAGID brake cleaner is available in 500 ml spray cans.

Part number: 8DX 355 370-001 / 95001

MOUNTING PASTE

In order to ensure safe functioning in the long term, the wheel brake must undergo regular maintenance. During maintenance, all mechanical parts should be greased with a temperature-resistant, non-metallic, permanent lubricant. When doing so, always ensure that the lubricant is suitable. To eliminate all risks and prevent possible malfunctions in the highly sensitive safety systems (ABS, electronic stability programs) while driving, we recommend that you use HELLA PAGID mounting paste.

Product characteristics:

→ Temperature-resistant
→ Non-metallic
→ Free of particulate matter
→ Transparent
→ Acid-free

Use:

→ Universal use at all lubrication points in the vehicle
→ On brake and coupling systems
→ As a battery terminal grease

HELLA PAGID mounting paste is available in a 75 ml tube.

Part number: 8DX 355 370-011 / 95002

Brake cleaner
and mounting paste

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9Z2 999 135-884 J00912/KB/12.14/1.5
Printed in Germany
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