



REPAIR FOR...

Clutch Hydraulics

CLUTCH HYDRAULICS: DOT or MINERAL

Valeo Technical Hotline (☐ **800 80 50 46**) has been receiving questions about types of hydraulic liquids to be used in the clutch loop (hydraulic circuits).

The most common type used is **DOT** with the different subtypes existing (**DOT 3, DOT 4, DOT 5 & DOT 5.1**).

Depending on the composition of internal components (pistons, seals, joints), some references for new vehicles must use **MINERAL** ones, find below the table with the **Valeo's references for clutch hydraulics circuits which use MINERAL oil** and the **technical explanations about DOT & Mineral fluids**.

The following CSCs use Mineral oils:

- **810002**
- **804599**

DOT Characteristics

Abbreviation	Defined by "Department of Transportation"
Types	DOT 3, 4, 5 & 5.1
Based Substance	Poly- Glycol based for DOT 3, 4, 5.1 DOT 5 with Silicone based
Poly- Glycol characteristic	Hygroscopic means it has the ability to absorb moisture found in air, (DOT 3,4 & 5.1)
Silicone based characteristic	Hydrophobic means it does not absorb moisture found in air (DOT 5)
Corrosive ability	Yes
Application	Brake & hydraulic systems



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Mineral oil Characteristics

Name	Brake mineral oil
Based Substance	Petroleum substance
Water absorption	Hydrophobic means it does not absorb moisture found in air, repel water
Corrosive ability	No
Applications	For some models: steering/braking, hydraulic suspension leveling
Boiling point	Average 290°C depend of type

DOT Fluid Characteristics

Type	Dry boiling point	Wet boiling point	Color
DOT 3	205°C	140°C	colorless to Amber
DOT 4	230°C	155°C	colorless to Amber
DOT 5	260°C	180°C	purple
DOT 5.1	270°C	190°C	colorless to Amber

What is the difference between Dry Boiling Point & Wet Boiling Point?

- **Dry boiling point** refers to the boiling temperature of the fluid for the first usage.
- **Wet boiling point** refers to the temperature of the fluid will boil after it has absorbed **3.7%** water by volume. DOT brake fluid reach this percentage after 2 years of usage. At this point fluid must be replaced.



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