

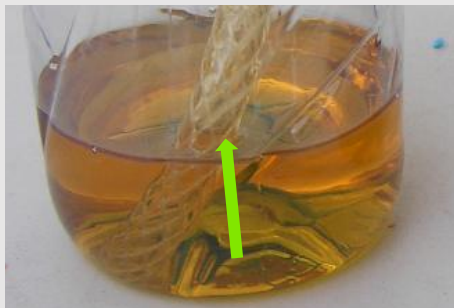
TIPS AND TRICKS

Brake Fluid: DOT & Mineral Oil

DOT brake fluid

DOT Characteristics

Abbreviation	Department of Transportation
Type	DOT 3, 4, 5 & 5.1
Based Substance	Poly- Glycol based, 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	Damage the car paint
Application	Brake system



New Brake fluid
DOT 3, 4 & 5.1



Old Brake fluid

DOT Fluid Characteristics

Brake fluid	Dry boiling point	Wet boiling point	Color	Uses
DOT 3	205°C	140°C	colorless to Amber	passenger cars & trucks
DOT 4	230°C	155°C	colorless to Amber	passenger cars & trucks
DOT 5	260°C	180°C	Purple	Military and show vehicles
DOT 5.1	270°C	190°C	colorless to Amber	Racing cars

What is meant by Dry & wet boiling point?

- **Dry boiling point** refers to the boiling temperature of the fluid as fresh not has been used before.
- **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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Brake Mineral oil

Mineral oil Characteristics	
Name	<ul style="list-style-type: none"> Brake mineral oil
Based Substance	<ul style="list-style-type: none"> Petroleum substance
Water absorption	<ul style="list-style-type: none"> Hydrophobic means it does not absorb moisture found in air, repel water
Corrosive ability	<ul style="list-style-type: none"> it will not damage the car work paint
Applications	<ul style="list-style-type: none"> for some models: steering/braking, hydraulic suspension leveling
Boiling point	<ul style="list-style-type: none"> Average 290°C depend of type

Brake fluid Mix Compatibility

Brake fluid compatibility chart					
	DOT 3	DOT 4	DOT 5	DOT 5.1	Mineral Oil
DOT 3	✓	✓	✗	✓	✗
DOT 4	✓	✓	✗	✓	✗
DOT 5	✗	✗	✓	✗	✗
DOT 5.1	✓	✓	✗	✓	✗
MINERAL OIL	✗	✗	✗	✗	!

- As DOT 3, 4, 5.1 are made of Poly-Glycol-based, they can be mix or changeable as they will not affect the brake performance or its characteristics. the main issue the decrease or increase of the boiling point of the brake fluid. An example if you put DOT 4 instead of DOT 5.1 it will has lower boiling point
- DOT 5 can't mix or interchangeable with other DOT as it is Silicone-based.
- DOT fluid and Mineral oil can't be mix or interchangeable in the system, due to:
 - DOT has the corrosion ability while mineral oil doesn't have
 - Boiling points are different.
- Mixing different type of mineral oil together it may cause problem or the system will not work properly in case of suspension leveling



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Advantages & Disadvantages DOT & Mineral oil

DOT fluid	
Advantages	High boiling point specially DOT 5.1 Can absorb water, means the system will not be corroded in future widely used by all manufacturer Cheap
Disadvantage	Corrosive, can damage car paint Absorbing water will result in decreasing the boiling point over time

Mineral brake oil	
Advantages	High boiling compared to DOT fluid Non-water absorbing means, boiling point will not drop Non-corrosive, will not damage the car paint Widely used car manufacturer and cheap
Disadvantage	Hydrophobic non-water absorbing, the mineral oil will repel water and water is heavier than oil, it will go to the lowest area in the system which is the wheel cylinder, and this will cause corrosion in it limited usage in car manufacturer and expensive in cost.



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