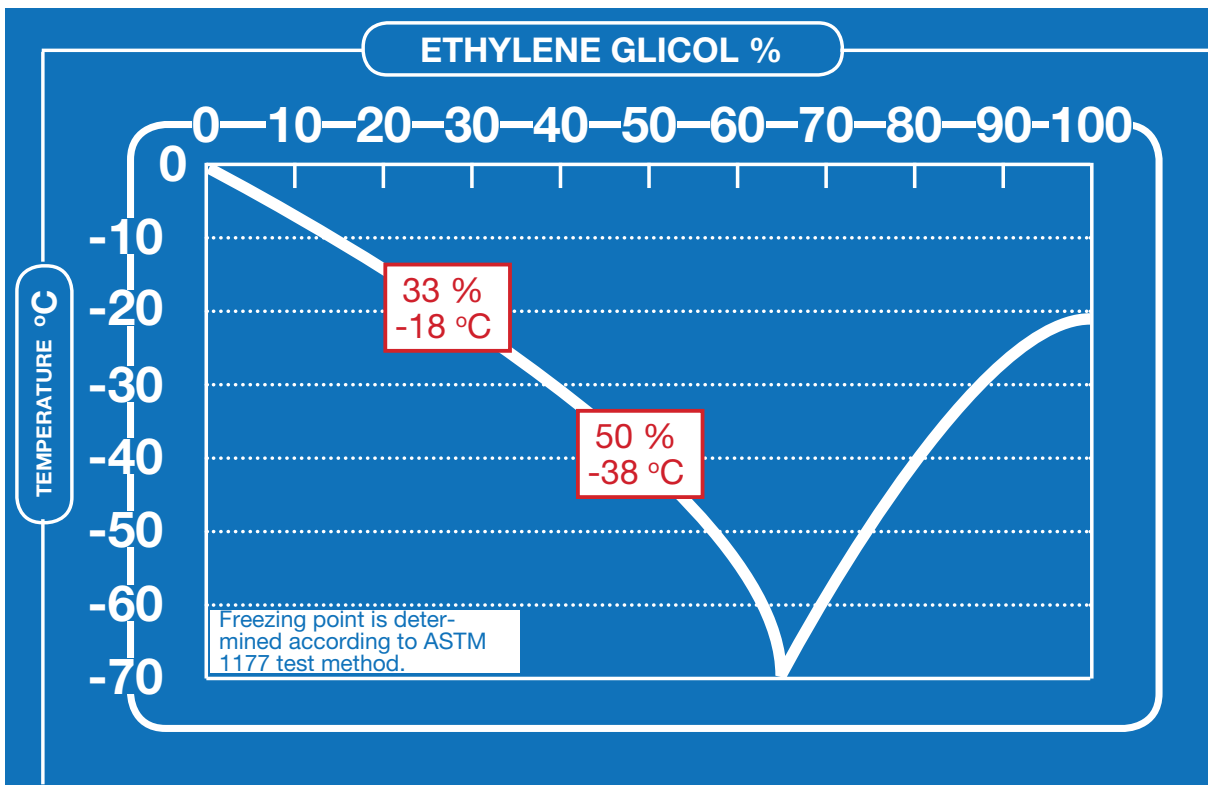
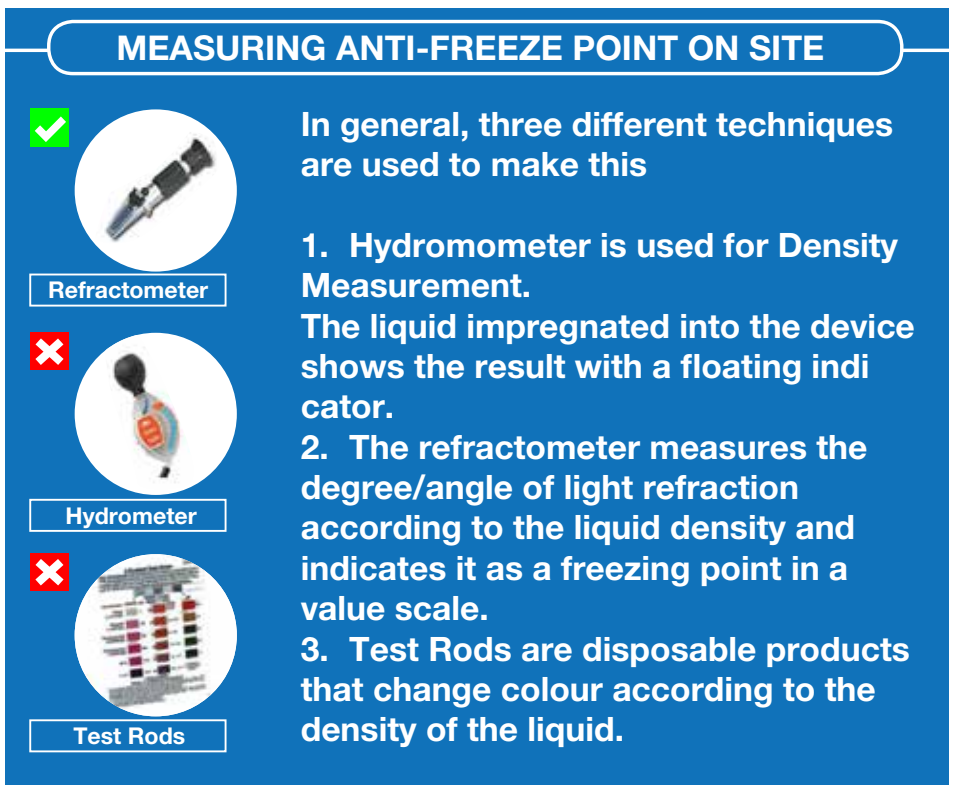
Technical Bulletin

Anti-freeze And Freezing Point

What Is Anti-freeze? How To Measure?

- Anti-freeze protects the cylinder block / sleeve, circulation pump, hoses, gaskets and the honeycomb against corrosion. Therefore, it should be used all year long (4 seasons).
- It is resistant against frost in winter and overheating in summer.
- Anti-freeze must be mixed with pure water. The most suitable mixture is 50% water and 50% antifreeze. Thus, the freezing point can be lowered to -38 degrees Celsius.

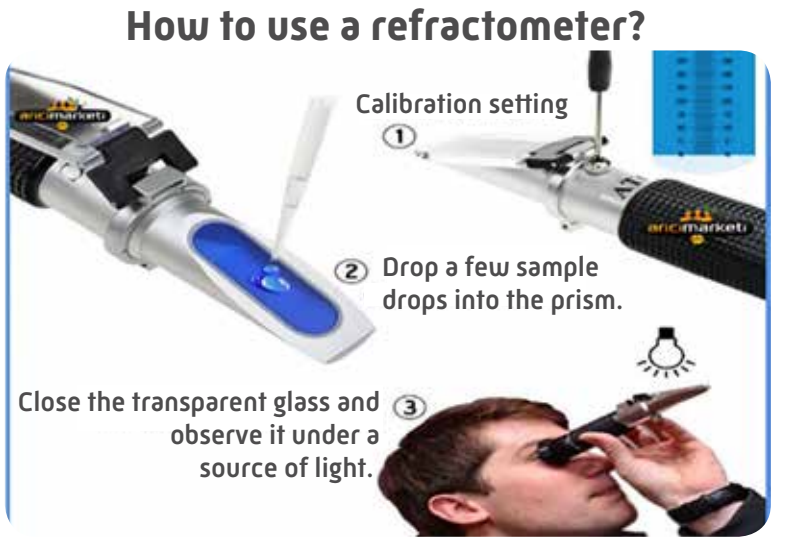




We Should Use Refractometer Instead Of Hydrometer for Accurate Measurement Because:

1. The density of liquids varies depending on the temperature. As hydrometers measure liquid density directly, the results are not reliable.
2. The results may be read inaccurately on the indicator due to air bubbles in the sample taken from the radiator by a hydrometer.
3. Refractometers can make precise measurements in ethylene- and propylene glycol-based anti-freezes.

How to use a refractometer?



Why Should We Measure Antifreeze Freezing Point Correctly?

Damages caused by Inaccurate Selection of Anti-Freeze:

Cavitations in oil cooler due to the use of unsuitable antifreeze

Engine block corrosion due to low concentration and low pH

Calcification in the cylinder liner arising from the use of very hard water

In order to obtain the desired mixture of water/anti-freeze, we need to measure accurately the freezing point of antifreeze. If the water/antifreeze mixture ratio is not sufficient, components that are in contact with cooling water in the vehicle and are likely to be damaged are:

Radiator, Liner /Sleeve, Circulation Pump, Cylinder Block, Gaskets, Thermostat, Supercharger, EGR Valve, Hoses, Engine Oil Coolant.

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