



# REFRACTOMETER

- **Antifreeze test instrument**
- **Adjustable eye piece**
- **Easy to use**



## Refractive Index

The refractive Index of a material is an optical measurement of its ability to bend a beam of light entering it. The refractive index may be used to determine the concentration of a material when dissolved in water due to the difference in refractive index between water and the material being monitored. All glycol-based antifreezes will refract light and this property can be used to determine the concentration of treatment present.

## How to use

The Refractometer has an adjustable eyepiece. If the user normally wears spectacles, it may be that the scale is sharper without them. The scale is calibrated for use at  $20\pm2^{\circ}\text{C}$  with the graphs provided. If used in temperatures outside of this range, it is advisable to recalibrate - please refer to steps 1 to 3 of the instruction leaflet supplied with product.

When determining the concentration of antifreeze in a water system, it is advisable to take the average of two or three readings if time permits.

## Test Procedure

1. Take a small sample of test solution into a clean container. Ensure that the sample does not contain grit that could scratch the prism.
2. Allow samples to cool to room temperature ( $20\pm2^{\circ}\text{C}$ ) before testing. Very hot solutions could crack the glass prism and will also give inaccurate results.
3. Open the illuminator plate situated at the end of the instrument furthest away from the eyepiece and place a drop or two of test sample on the prism. Use only plastic applicator rods as the prism glass is relatively soft and can be easily scratched.
4. Close the illuminator plate and direct the instrument towards a convenient light source. Looking through the eyepiece a circular field will be seen with a vertical scale down the centre. When an optically active material is present in the sample, the field will also be split horizontally into dark and light areas. The position at which the demarcation between light and dark crosses the vertical scale is the point from which the reading should be taken.
5. Select an appropriate graph for the type of antifreeze being tested, i.e. FernoX Alpha-11. Compare the % BRIX reading with the graph and read off the concentration of antifreeze and compare with the guideline concentrations.