Refractometer

Instructions for Use

Antifreeze Determination of Solar Fluids
TYFOCOR® L - Water Mixtures /
TYFOCOR® LS ready-to-use / TYFOCOR® HTL ready-to-use

Calibrating Procedure

1. Open the illuminating plate, apply 1-2 drops of distilled water onto the prism surface and press the plate onto the prism surface.

2. Turn the pointy end of the tester to the light and look into the eyepiece. Adjust the eyepiece such that the graduation appears in focus.

3. The borderline now appears in the field of vision, which separates the light part from the dark part. By turning the adjusting screw (with the assistance of a screwdriver), turn the borderline such that it is congruent with the lower most line.

4. After carrying out adjustment, carefully dry the prism surface.

Measuring procedure

1. Apply 1-2 drops of the test liquid onto the prism surface. Then press the illuminating plate onto the prism surface.

2. Hold the pointy end against the light and turn the eyepiece such that the borderline is visible. The borderline shows the value for the measured medium.

Instructions for care for measuring

1. Apply the liquid to be tested such that it is spread out over the entire prism surface. The borderline can not be clearly seen if there is too little or too much fluid

2. After measuring, the liquid should be carefully removed from the prism surface. An incorrect reading can result from a poorly dried prism surface.

3. If the prism surface is contaminated by oil, grease or similar, an accurate measurement is not possible, since the sample will be repelled from the surface. In such a case, the prism surface is to be wiped clean with a spiritus rag and dried.

4. Avoid damaging the prism surface.

5. This refractometer is to be handled with care, since it is a precision instrument.

6. Do not clean the refractometer under running water. It is splashproof, but not waterproof.

Read off at the propylene glycol scale only. Read-off values for **TYFOCOR® LS and -HTL** slightly deviate from the effective frost protection, as shown by the following tables:

Tyfocor® L concentrate [% v/v]	Freezing pt. [°C]
25	- 10
30	- 14
35	- 17
40	- 21
45	- 26
50	- 32
55	- 40
100 (conc.)	< -50 °C

Tyfocor® LS ready-to-use [% v/v]	Read Off [°C]	Corresp. ..°C frost protection
100	**-31**	**-28**
Unadmissible	dilution	by water
95	-28	-25
90	-25	-23
85	-22	-20
80	-20	-18

Tyfocor® HTL ready-to-use [% v/v]	Read Off [°C]	Corresp. ..°C frost protection
100	**<-55**	**-35**
Unadmissible	dilution	by water
95	-45	-33
90	-39	-29
85	-34	-25
80	-29	-23

Freezing point: initial formation of ice crystals occur at this temperature.
Frost protection: arithmetic average value of freezing point and pour point.

A minimum concentration of 25 % v/v must be observed for aqueous TYFOCOR® L solutions when used for cooling and standard heating purposes. In solar heating equipment, a lower application limit of 40 % v/v should be kept.

TYFOCOR® LS and TYFOCOR® HTL are ready-to-fill formulations and must not be further diluted by the user. The tables shown above are for information only.

T Y F O R O P C h e m i e G m b H

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