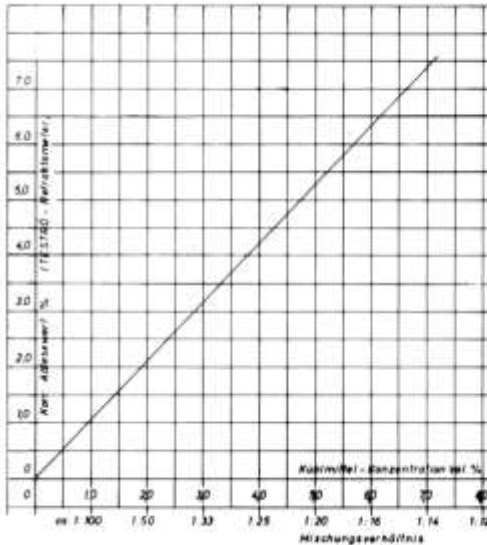


# TESTRÖ-Refractometers

## Determining the concentration

Instruction for drawing up a nomo- or diagram and for determining the conversion factor  $F$  for determining the concentration by  
**TESTRÖ-Hand Refractometers HR 10, 20, 32**

DIAGRAMM



Ordinates = scale value, abscissa = measured concentration

NOMOGRAMM

Konz. Ableswert	Konz. vol. %	Misch- Verhältnis
70		1:14
60		1:16
50		1:20
40		1:25
30		1:33
20		1:50
10		1:100

### Drawing up a nomo- or diagram

The nomogram and the diagram respectively can be drawn up for every cooling lubricant without difficulty. Just produce three emulsions or solutions of exact volume concentration (water and concentrate should have a temperature of 20°C) and determine, by multiple repetition, the scale values for the three calibration concentrations. The average values are drawn into a diagram (ordinates = scale value; abscissa = measured concentration). In case of appropriate implementation the values lie on a straight line. From this line the "real concentration value" correlating to every scale value can be read. Thus, to every point on the line there belongs a reading and a concentration value. By juxtaposing these number pairs there ensues the nomogram for the respective coolant.

Please note that the refraction is highly dependent of temperature. Thus, all measurements have to be carried out at the same temperature (normally 20°C). Otherwise an appropriate correction will be necessary.

### Determination of the conversion factor $F$

The following methods are possible:

- The conversion factor  $F$  is numerically identical with the specific concentration value of the dia- or nomogram, that corresponds to the refractometer scale value 1.0, and can therefore be deduced from above mentioned documents.
- In general, the conversion factor  $F$  can also be determined from the refractometer scale value of one single emulsion or solution of known concentration by dividing the concentration value by the scale value.

Example: Concentration (measured) = 4.0

Refractometer scale value = 5.0

$$\text{Conversion factor } F = \frac{4.0}{5.0} = 0.8$$

Provided that you do not want to draw up a dia- or nomogram (optional) or determine the conversion factor  $F$  on your own, we recommend to ask your distributor for the dia- or nomogram or for the factor of the in question coolant.

In both cases it would be necessary that the determination and the control of the concentrations / mixing ratios of the coolants ensues with a **TESTRÖ** Hand Refractometer.