TECHNICAL BULLETIN

Refractive Index and Mixing of Tri-Cool® TC-1

REFRACTIVE INDEX

A refractometer is used to determine the dilution ratio of Tri-Cool TC-1. The refractometer takes light and bends it through the solution to give a reading on the Brix scale. Below is a chart that shows the refractive index vs. dilution ratio for Tri-Cool TC-1 (Fig. 2).

To obtain refractive index using a refractometer:

1. Make sure prism and cover are clean. Clean with a soft moist cloth and then dry thoroughly.
2. Lift cover lid and place 2 drops of sample on the prism.
3. Gently close cover - avoid air bubbles between prism and cover.
4. Look through the eyepiece and point the refractometer toward any convenient light source.
5. The scale and borderline should be visible (Fig. 1).
6. Adjust the eyepiece for the sharpest image possible.
7. Read the value at the point where the borderline crosses the scale (Fig.1).
8. Refer to graph for actual concentration level of Tri-Cool TC-1 solution (Fig. 2).
9. Clean prism and cover immediately after use.

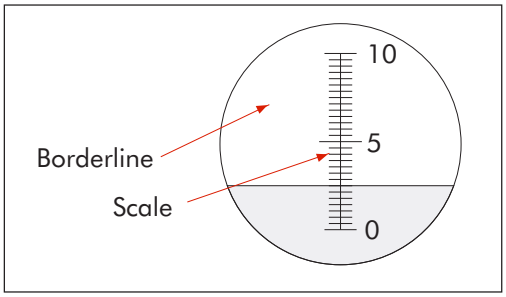

Figure 1

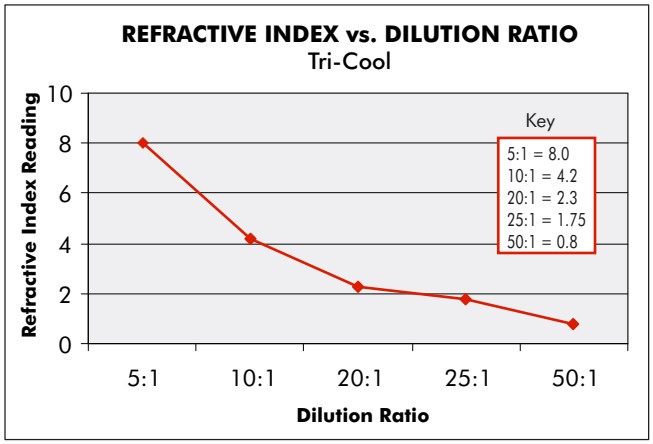

Figure 2

MIXING

Tri-Cool TC-1 is a premium water based coolant. The following steps are designed to optimize the mixing process and provide a consistent dilution and results. This can be best achieved by adhering to the same mixing process. Hardness of water can have an effect on coolant; this may be a problem in your area.

Proper Mixing Procedures

Proper mixing procedures are critical to the attainment of long coolant life and economical use of coolant concentration related problems. Premixing coolant concentrate with pure water in accordance with the coolant manufactures recommendations assures efficient use of the concentrate.

1. Pour one quart of Tri-Cool TC-1 into a measured container.
2. Turn on a stream of water into a 5 gallon pail.
3. Pour Tri-Cool TC-1 promptly into the stream of water and finish the pour when 4 gallons of water are in the container.

(262) 691-9336
(800) 558-7008 (US only)
inquiries@tricocorp.com
www.tricocorp.com
1235 Hickory St
Pewaukee, WI 53072

4. Finish filling pail to approximately 4 ½ gallons. Mix with paddle, let sit one hour, mix again.
5. Allow the foam to settle.
6. Use a refractometer to measure the ratio and compare refractive index to chart.

Refractometer Chart for Tri-Cool TC-1

Concentration	Refraction	Concentration	Refraction
5:1	8.0	24:1	1.85
6:1	7.1	25:1	1.75
7:1	6.1	26:1	1.7
8:1	5.3	27:1	1.6
9:1	4.8	28:1	1.52
10:1	4.2	29:1	1.48
11:1	3.9	30:1	1.4
12:1	3.6	31:1	1.31
13:1	3.4	32:1	1.3
14:1	3.2	33:1	1.24
15:1	3.0	34:1	1.2
16:1	2.85	35:1	1.18
17:1	2.7	36:1	1.15
18:1	2.6	37:1	1.12
19:1	2.45	38:1	1.09
20:1	2.3	39:1	1.05
21:1	2.2	40:1	1.0
22:1	2.05	45:1	0.9
23:1	1.9	50:1	0.8

Suggested Dilution Ratios

SPRAY APPLICATION MIXING INSTRUCTIONS		
Operation	Dilution Ratio	Tri-Cool per gallon of water
Grinding	40:1	3 ounces
General Machining	32:1	4 ounces
Broaching, Tapping, Heavy Machining	20:1	6 ounces
FLOOD APPLICATION MIXING INSTRUCTIONS		
Operation	Dilution Ratio	Tri-Cool per gallon of water
Light Machining	32:1	4 ounces
General Machining	20:1	6 ounces
Heavy Machining	10:1	12 ounces

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