

## ASTM Methodes for the use of Refractometers

Recommended instruments:     **ATR-W2, DSR-λ**

### **ASTM\_D 542**

#### **“Index of Refraction of Transparent Organic Plastics”**

This test method covers a procedure for measuring the index of refraction of transparent organic plastic materials. A small drop of contacting liquid is palced on the center of the prism, then the test sample is palced on the prism. The sample must had a flat polished surface that will sit on the refractometer prism.

### **ASTM\_D1218-99**

#### **“Standard Test Method for Refractive Index and Refractive Dispersion of Hydrocarbon Liquids”**

This test method covers the measurement of refractive indexes (accurate to six units in the fifth decimal place) and the refractive dispersion (accurate to twelve units in the fifth decimal place) of transparent and light colored hydrocarbon liquids which have refractive indexes in the range between 1.33 to 1.50 at temperatures from +20 to +30°C.

### **ASTM\_D1747-99**

#### **“Standard Test Method for Refractive Index of Viscous Materials”**

This test method covers the determination of the refractive indexes (accurate to two units in the fourth decimal place) of transparent and light colored hydrocarbon liquids which have refractive indexes in the range between 1.33 to 1.60 at temperatures from +80 to +100°C.

### **ASTM\_D1807-00, 2005, (equivalent to ISO 5661)**

#### **“Standard Test Method for Refractive Index and Specific Optical Dispersion of Electrical Insulating Liquids”**

This test method covers the determination of the refractive indexes and the specific optical dispersion of electrical insulating liquids such as are used in capacitors, transformers, circuit breakers and oil-filled cables. The determination of the refractive index is described in ASTM\_D1218. The specific optical dispersion is calculated by dividing the refractive dispersion value by the relative density (specific gravity) of the testing liquid.

## **ASTM\_D 3321**

### **“Standard Practise for use of the Refractometer for Determining the Freezing Point of Aqueous Engine Coolants”**

This test method covers the use of a portable refractometer for determining the approximate freezing protection provided by ethylene and propylene glycol-based coolant solutions as used in engine cooling systems and special applications. Some instruments have a supplementary freezing protection scale for methoxypropanol coolants. Others carry a supplemental scale calibrated in density or specific gravity readings of sulfuric acid solutions so that the refractometer can be used to determine the charged condition of lead acid storage batteries.

## **ASTM\_D 4095**

### **“Standard Practice for use of the Refractometer for Determining non-volatile Matter (Total Solids) in Floor Polishes”**

This practice covers the use of a refractometer for determining the non-volatile matter (total solids) in floor polishes. This practice is also applicable to resin solutions and wax emulsions used in floor polishes.

## **ASTM\_D 4542**

### **“Standard Test Method of Pure Water Extraction and Determination of the soluble Salt Content of Solids by refractometer”**

This test method is developed for soils having a water content equal to or greater than approximately 14% for example, marine soils.

## **ASTM\_D 5006**

### **“Standard Practice for Measurement of Fuel System Icing Inhibitors (Ether Type) in Aviation Fuels”**

This test method covers a technique for measuring the concentration of Diethylene Glycol Monomethyl Ether (DiEGME) in aviation fuels. The HB and Brix scale refractometers are specified to determine the concentration of this fuel system icing inhibitor (FSII) by measuring the refractive index of a water extract. Precision estimates have been determined for the DiEGME additive using specific extraction ratios with a wide variety of fuel types. The extraction ratios are high enough that portable handheld refractometers can be used, but not so high as to sacrifice accuracy or linearity, or both, in the 0.01 to 0.25 vol % range of interest.

