# Using the Hand Held Refractometer

Tech Tip #6

Creating solutions that flex.

## Refractometer Usage

A refractometer (see figure 1) is a small piece of equipment commonly used to check the sugar density (in percent Brix) for fruit harvests. It is often used in the quality control of jams, syrups, and almost any liquid where sugar content is critical. Refractometers are also used to check component balances in photopolymer washout solvents such as Solvit QD and Solvit M100.

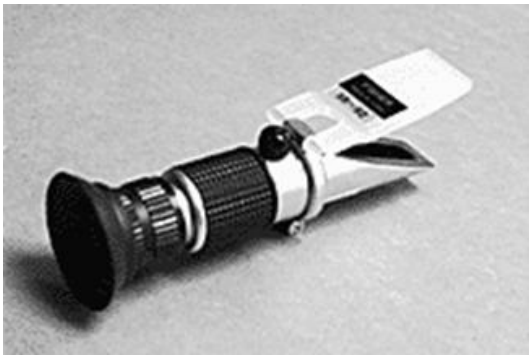

**Figure 1**

## Using the Refractometer

A refractometer is easy to use. A reading is taken as follows:

1. Wear gloves, safety glasses, and protective clothing.
2. Make sure the Solvit QD and the refractometer are at the same temperature (preferably room temperature ~75 °F).
3. Open the prism cover and put a couple of drops of Solvit QD on the prism.
4. Close the prism cover and look through eyepiece. The closer to a light source, the clearer the reading.
5. The reading should be 70.0.
6. Wipe off the prism with a clean, soft towel or tissue paper.

**For information related to Solvit M100, please contact:**
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MacDermid GRAPHICS SOLUTIONS

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When reading a sample, the top part of the prism will be blue, and the bottom part of the prism will be white. The line where blue changes to white is the brix value of that solvent (see Figure 2). For Figure 2, the brix value is 70.0.

If the entire prism is blue, then the brix value is to too low to be measured. If the entire prism is white, then the brix value is too high to be measured. The recommended refractometer is Fisher Scientific #13-946-24 (1-800-766-7000). This refractometer measures the range between 58 and 92 brix, which is ideal for Solvit QD.

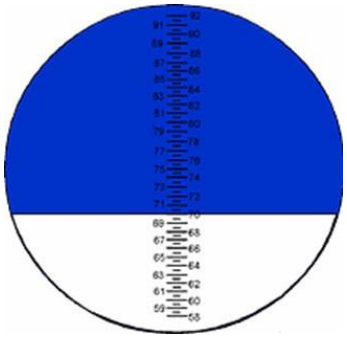

**Figure 2**

## Refractometer Calibration

Unless a refractometer is calibrated, there is no way to tell if the reading is accurate. The hand held refractometer is fairly rugged, but can be knocked out of calibration by rough usage such as tossing it into a cabinet or dropping it. If this happens, the refractometer must be recalibrated. New refractometers should always be calibrated prior to being used.

Calibration is similar to reading a sample. To calibrate the refractometer, do the following:

+ Make sure the calibration fluid* and the refractometer are at the same temperature.
+ Open the cover and put a drop of calibration fluid onto the prism.
+ Adjust the calibration screw on top of the refractometer until the brix value reads 70.
+ Wipe the prism clean.

*The calibration solution is available from Cargille Laboratories, Inc. [(973) 239-6633]: 1809X Refractive Index LiquidND=1.464

## Refractometer Care

Refractometers will give good results if properly handled. Some guidelines are:

1. Always wipe the solvent sample off of the prism when finished reading and allow the components to fully dry.
2. Refractometers are not waterproof, so do not rinse them with water.
3. Do not drop or mishandle the refractometer.
4. Do not scratch the prism.
5. Do not try to read organic solvents (paint thinner, benzene, etc.).
6. Keep oil off of the prism. The fluid will bead and give poor results.

If there are any questions, please contact MacDermid's Technical Service at 1-800-348-7201. We'll be glad to help you.