



# KODAK RELIABLE IMAGE TIP # 67

## How to use a Hydrometer and Why

### HYDROMETER:

A device used to measure “SPECIFIC GRAVITY”, the ratio of water to concentrate chemical.

If you have a “Deep Tank Processor”, (i.e. Allen or Houston Fearless) you are using concentrated Developer and Fixer chemistry. You must check the Specific Gravity of your mixed chemicals regularly to ensure you are mixing the chemicals properly and ultimately, producing quality images. Kodak concentrated chemicals have specific gravity specifications related to the proper mix ratios. (See below)

A hydrometer consists of a hollow tube with an enlarged lower section, or float, topped by a narrow stem. The lower section is weighted, so the hydrometer will float in liquids with its stem protruding from the surface. The stem is graduated with marks that are used to indicate the density of the liquid in which the hydrometer floats. When the density of the liquid is high, it supports the hydrometer more easily, so less of the stem is submerged. Less dense liquids allow the hydrometer to sink deeper. Hydrometers are commonly graduated in terms of specific gravity. The reading is taken at the point where the top of the meniscus intersects the stem of the hydrometer (see picture below).

### Specific Gravity Specifications:

**KODAK DEVELOPER CONCENTRATE**  
**MIX RATIO @ 1:7 = 1.045 - 1.055**

**KODAK FIXER CONCENTRATE**  
**MIX RATIO @ 1:3 = 1.080 - 1.105**



## **SPECIFIC GRAVITY should be checked at least weekly**

Specific Gravity tests may be performed in a graduated cylinder or within the chemical tank if there is room to view the device. The specific gravity should stay within an upper and a lower limit as determined by the manufacturer for each solution.

Varying dilution ratios will cause:

Too much water (weak mixture) = LOW background density:

Too much chemical (strong mixture) = HIGH background density



Hydrometers for micrographic chemistry may be obtained from many sources, below is one from VWR International.

VWR International - 800-932-5000 or <http://www.vwrsp.com/>

Hydrometer range must be **1.000 to 1.220**, Catalog # **34610-002**

Approximate length: 300mm (11<sup>13</sup>/<sub>16</sub>" ). Unit price \$24.41 (US)