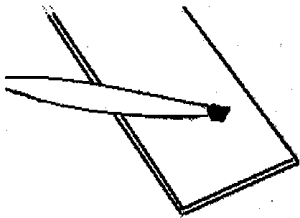


Analyzing Magnetic Materials Using the Elzone®

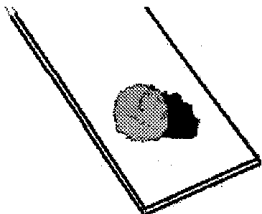
Magnetic particles can be a problem for analysis because they are (1) difficult to disperse and (2) easy to reaggregate. Special analysis methods are required when normal dispersion techniques and ultrasonication fail.

One such method is heating the material to reset the magnetic field to zero. This method, however, can cause the sample to change particle size due to sintering. Another method is degaussing the material in a decreasing magnetic field. This method may demagnetize only some of the particles or the sample may be demagnetized only while in the degaussing field. Both methods may also affect the measured particle size distribution.

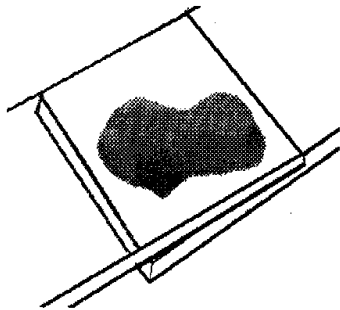
A special dispersion method has been developed for measuring magnetic particles on the Elzone that involves neither heating nor degaussing. This method uses a viscous liquid, such as common off-the-shelf honey available at your local grocery store. Dispersion is accomplished on a microscope slide rather than in a vial or a beaker. The process is as follows:



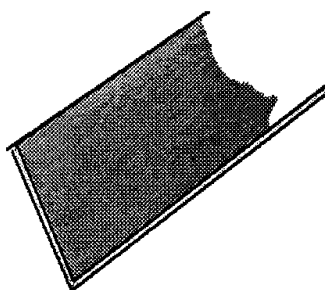
Place a small amount of sample on a clean microscope slide.



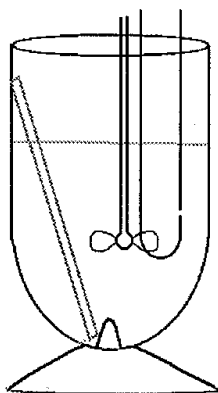
Place a drop of honey on the slide next to the sample; mix until a paste is formed.



Take another clean slide and place it on top of the first slide overlapping only half way, pressing the honey-sample mixture between the two slides. Separate the two slides; this shears the particles. Place the slides back together, again overlapping by half and then separate them again. Repeat this procedure several times.



Examine the slide under the microscope to make sure the sample is dispersed well. If the sample is not completely dispersed, repeat the shearing process a few more times. If the sample appears too concentrated, add a little honey and repeat the shearing process.



Install a 30-micrometer orifice on the Elzone and mount a stirrer propeller. Pour 50 milliliters of electrolyte into a beaker, then place one of the final dispersed slides into the electrolyte. After the particles start to break loose from the slide, open the valve to the vacuum position to start the analysis. Stop the analysis when the microscope slide is clear.