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Improving Type A Hardness Measurements

By understanding the causes of differences among rubber hardness measurements, labs can begin to improve their hardness measurement capabilities. When using a durometer, attention should be paid to the following factors that affect hardness readings:

- (1) The **rate** at which the tester is applied to the specimen.
- (2) The **force** applied to the tester to obtain the reading.
- (3) The **time** at which to read the value after contact with the specimen is made.
- (4) Reading of the **correct value** (i.e., the parallax factor associated with a round or quadrant analog dial may cause an error in the reading).
- (5) Squareness of the instrument base to the specimen - only a slight angle creating a **non-parallel** condition at the time of reading may cause an error of several hardness points.
- (6) Specimen **support** during test - the specimen should be supported on a smooth flat surface precisely perpendicular to the indenter.
- (7) Consistent **temperature** of the specimen when making hardness tests.
- (8) Consistent **locations** to test on the specimen.
- (9) **Thickness** of specimen (minimum of 6 mm)

The Rubber Division-ACS Advisory Committee on Testing Procedures makes the following recommendation —

Labs should use a stand to hold the durometer when conducting hardness tests in order to reduce variability in test results between labs.