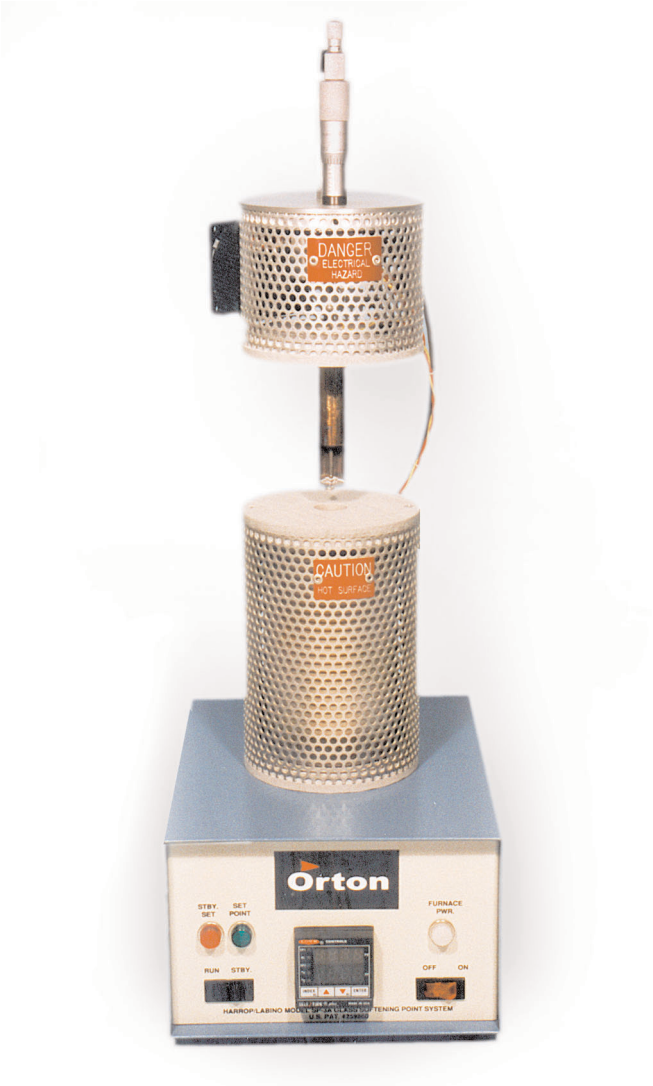
Glass Softening Point Determination System (Labino Method)



Orton Model SP-3A

This system is a Quality Control instrument that was designed to quickly and simply approximate the softening point of a solid piece of glass. There is no ASTM specification for this test method.

The Edward Orton Ceramic Foundation • 6991 Old 3C Highway • Westerville, OH 43082 USA
website: www.ortonceramic.com • phone (614) 895-2663 • fax (614) 895-5610 • email: slevin@ortonceramic.com

Glass Softening Point Temperature Determination System (Labino Method)

This unit is a modified parallel plate viscometer. A solid glass piece of known dimension (approximately 0.100″ thick by 3/16″ by 3/16″) is placed into the sample holder and lowered into the heating chamber. The probe rod is lowered to contact the glass piece. The heater is turned on, and automatically heats up at a pre-programmed rate (25°C per minute).

As the temperature rises, the glass heats and begins to soften. The probe rod begins to penetrate the glass sample. Once the probe rod has traveled a certain distance into the glass sample, a microswitch is tripped which turns the power to the furnace off. The controller remembers the temperature at which the power was turned off. This temperature is correlated to the softening point of the glass.

There are three major factors that influence the reproducibility and quality of the readings from the SP-3A:

1) Sample Size
The samples must be the same approximate size, particularly the thickness. The thickness (the dimension or distance between the sample holder and the probe) is the most critical dimension. The length and width are secondary, but important as well.

2) Operator
There will be minor differences between the way different operators set the pressure on the microswitch. If all else is equal, there could be some differences in readings. It is recommended that the same operator perform all the tests.

3) Calibration
The SP-3A must be calibrated with a glass of a known softening point, such as a NIST glass. The known softening point glass should be similar in composition and melting point as the samples being tested. It is critical that the calibration samples be the same size as the test samples, particularly the thickness.

SP-3A Models

SP-3A - base model for testing a 3 mm x 5 mm glass sample

SP-3A-FGM - with modifed sample holder for testing a 24 mm glass marble

Model SP-3A System Specifications

Maximum Temperature	1,000°C
Heating Element	Nichrome, 500 watts
TemperatureResolution	1°C
Average Heating Rate	25°C/min.
Penetration Probe Travel	0 to 0.125″ (0 to 3 mm)
Probe Travel Resolution	0.0001″ (0.oo25 mm)
Power Requirements	120 VAC, 15 amp, 50/60 Hz (240 VAC available as an option)
Dimensions	8″ W x 12″ D x 25″ T (200 x 300 x 640 mm)

Descriptions and specifications are subject to change without notice. rev. 12.12.02

The Edward Orton Ceramic Foundation • 6991 Old 3C Highway • Westerville, OH 43082 USA
website: www.ortonceramic.com • phone (614) 895-2663 • fax (614) 895-5610 • email: slevin@ortonceramic.com