



Manual versus SP10 Automated Smoke Point Labor Savings

**Manual Method
IP 57
ASTM D1322**



**Automated Method
IP 57
ASTM D1322**



Test phase	Description	Technician time (minutes)	Description	Technician time (minutes)
Technician	Requires extensive training		Requires little if any training	
Sampling	According to the method		According to the method	
Candle Preparation	Need to prepare three candles: 1 - One candle with a low reference blend 2 - One with a high reference blend 3 - One with the sample to be tested	10	Need to prepare one single candle: 1 - One with the sample to be tested	3
Lamp Factor Determination	9.1 Calibrate the apparatus in accordance with 9.2. Recalibrate at regular intervals of not more than seven days or when there has been a change in the apparatus or operator , or when a change of more than 0.7 kPa occurs in the barometric pressure reading. 9.2 Calibrate the apparatus by testing two of the reference fuel blends specified in 5.4, using the procedure specified in clause 10 and, if possible, bracketing the smoke point of the sample. If this is not possible, use the two blends having their smoke points nearest to the smoke point of the sample.	30	The lamp factor determination is done once with all different blends and different barometric pressures. The SP10 memorizes all lamp factors for all different barometric pressures. The technician keys in the barometric pressure before the test and then the SP10 will use the right correction according to the pressure and the measured smoke point value. Measurement of the flame height is achieved with a camera eliminating technician subjectivity. The lamp factor does not need to be recalculated when different technicians use the SP10. <i>NOTE: the lamp factor calculation is calculated without rounding.</i>	0
Smoke Point Determination	Technician performs three independent determinations. Best resolution: 0.5 mm	10	Technician enters sample information and starts test. Three observations are performed automatically. Resolution 0.01 mm.	1
Reported Result	Average of the three observations and corrected with the lamp factor determined during the calibration phase with the different 0.5 mm roundings indicated in the method <i>Smoke Point Resolution: 0.5 mm</i>	3	Automatic calculation of the average of the three observations without 0.5 mm roundings. <i>Smoke Point Resolution: 0.1 mm</i>	0
Precision	IP 57 and ASTM D 1322: r = 2 R = 3 Precision recently obtained in ten different international Interlaboratory Studies: r = 1 R = 5		r = 0.4 R = 1	
		TOTAL: 53 Minutes		TOTAL: 4 Minutes

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