



STEPS



1. PRODUCT IRRADIATION



2. SPF 290 ANALYSER

3. CLASSIFICATION

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Boots Star® Rating

The Boots Company 2011 Method.

This is a proprietary method used to describe the protection offered by sunscreen products. Clearance is required from the trademark owners before the logo can be used.

UVA/UVB Ratio is calculated from this in vitro measurement technique.

Classification in accordance with labeling requirements is reported.

Preparation

The substrate for measurement is abraded Polymethylmethacrylate (PMMA) Plates.

A thin film of the test product, at a thickness of 1.3 mg/sq cm, is applied, by a standard application technique.

This involves applying a series of around 30 dots over the area of the plate and then rubbing out evenly with the finger which has been pre-impregnated to saturation with the same product. The prepared plates are left to air dry for 15 min.

Measurements are taken against a matching blank glycerin loaded PMMA plate, at increments of 1 nm between the range of 290 and 400 nm.

A minimum of 5 measurements are taken pre-irradiation and a corresponding 5 are made post irradiation, on non-overlying areas of each of the plates, such that the accumulated measured area of 2.0 cm has been sampled.

Reporting

UVA/UVB Ratios are calculated for both before and after irradiation. Star rating is allocated according to the results of the two measurements.

NOTE: The original 'one star' and 'two star' categories are obsolete in the new system due to the requirements of the EC recommendations referred to in the introduction to this method. Transmittance of a dried down film is measured between 290 nm and 400 nm.

Challenge of the sample film is required by pre irradiation with a compliant light source which is designed to imitate sunlight. The spectral curve is measured, using a purpose built spectrophotometer which has been fitted with an integrating sphere device.

Requirement:		INITIAL mean UVA:UVB RATIO			
		0.0 to 0.59	0.6 to 0.79	0.8 to 0.89	0.9 and over
POST EXPOSURE mean UVA:UVB RATIO	0.0 to 0.56	No Rating	No Rating	No Rating	No Rating
	0.57 to 0.75	No Rating	***	***	***
	0.76 to 0.85	No Rating	***	****	*****
	0.86 and over	No Rating	***	****	*****

Measurement

After initial pre-irradiation measurements, a fixed dose of UV light of 17.5 J/sq cm is applied to the plates in a Xenon Arc solar simulator, filtered to comply with the requirements of the Boots Protocol. Post irradiation measurements are then made.

An SPF 290 Analyser is utilised for measurement. The instrument is calibrated on a regular basis.