Broad Spectrum Requirements from…

AS/NZS 2604:1998
Australian/New Zealand Standard™
Sunscreen products—Evaluation and classification

PRINCIPLE
There are 3 alternative test methods for determining the broad spectrum transmission by a sunscreen. The percentage transmittance of a solution of the product (Method 1), a thin film of the product in a cell (Method 2) or a thin film of the product on a flat plate (Method 3) is determined between 320 nm and 360 nm equivalent to an 8 um (Methods 1 and 2) or 20 um (Method 3) layer on the skin. The method to be used will depend on the composition of the product.

PERFORMANCE REQUIREMENTS
A broad-spectrum claim cannot be made for a product with an SPF less than 4.

If tested in accordance with the (solution) Method 1 or thin (wet) film Method 2, an 8 um layer of the product shall not transmit more than 10% of radiation at any wavelength from 320 nm to 360 nm inclusive;

or

if tested in accordance with the plate (dry film) Method 3, the ultraviolet transmittance of a 20 um layer of the product in the wavelength range 320–360 nm shall be not more than 1%.

METHOD 1—SOLUTION METHOD
This method is used for a product that dissolves completely in a solvent mixture consisting of Dichloromethane 12.5 : Cyclohexane 37.5 :Isopropanol 50.0.

A lidded 10 mm quartz cell is filled with a dilution of the sample of - 0.8 mg/mL .

Transmission of the sample between 320 nm and 360 nm is determined against the solvent blank.

METHOD 2—THIN FILM METHOD
This method shall be used for a product that is opaque by reflection rather than absorption or which does not dissolve completely in the solvent of Method 1.

A quartz cell, with suitable lid, constructed to provide an 8 um layer of sunscreen product for testing is used. The cell is filled with the sunscreen product and determine the transmission of the product from 320 nm to 360 nm inclusive.

METHOD 3—PLATE METHOD
This method of sample preparation is suitable for testing all sunscreen products regardless of the solvents used and whether the sunscreen includes suspended solids.

Quartz plates for sample preparation, of a size appropriate to the instrument are used.

A Plastic film, nominally 20 um thick, is used as a template and the product is applied in a controlled thickness to a quartz plate, by ladling the film level with a razor blade. Transmission of the product from 320 nm to 360 nm is determined.