

Nikkalite® Microprismatic Retroreflective Sheeting  
Crystal Grade CV type 95800 Series



### Description

Nikkalite® Crystal Grade CV is a new microprismatic retroreflective sheeting from Nippon Carbide Industries (NCI), designed for use on road traffic signs manufactured to BS 8408.

### 4 Performance requirements

#### 4.2 Chromaticity

When tested in accordance with section 5.2.1 of BS 8408:2005, the chromaticity co-ordinates and the luminance factor of Crystal Grade CV shall conform to Table 2 and Table 3 of BS 8408:2005.

#### 4.3 Physical performance

##### 4.3.1 Adhesion to the Substrate

When tested in accordance with section 5.3.1 of BS 8408:2005, the average peel strength shall not be less than 20N per 25mm of sample width.

##### 4.3.2 Salt Spray Resistance

After exposure to salt spray in accordance with section 5.3.2 of BS 8408:2005, the coefficient of retroreflection shall not be less than 90% of its value before exposure.

##### 4.3.3 Impact Resistance

When tested in accordance with section 5.3.3 of BS 8408:2005, there shall be no cracking of the sheeting or delamination of the sheeting from the substrate outside a circle of radius 6mm with the point of impact at its centre.

##### 4.3.4 Hermeticity of sheeting cells

When tested in accordance with section 5.3.4 of BS 8408:2005, no more than 3% of the uncut edge cells shall be penetrated by water.

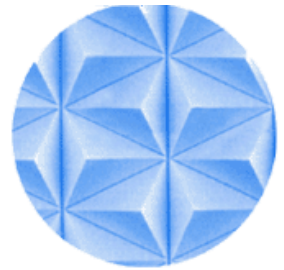
##### 4.3.5 Appearance after Weathering

When exposed as required in section 5.3.5 of BS 8408:2005, the sheeting shall not show significant cracking, scaling, pitting, blistering, edge lifting, delamination, curling, shrinkage or expansion or other obvious defects.

### 6 Photometric rating to BS 8408

BS 8408; 2005 *Testing and performance of microprismatic retroreflective sheeting materials* differs from the traditional approach of publishing the minimum coefficient of retroreflectivity against which sign face sheetings are tested. In BS 8408 the characteristics of microprismatic retroreflective sheetings are tested, and their performance rated for specific driving scenarios. Please refer to ["How to use BS 8408"](#)





























A luminance index system has been developed to rate the ability of a microprismatic sheeting to provide the luminance and this is shown against rating category codes / scenarios. There are 256 recognised scenarios in BS 8408, and 14 example scenarios published in BS 8408 are shown below with the minimum Crystal grade CV luminance index results.



	<b>White</b> <b>95812</b>
	<b>Yellow</b> <b>95804</b>
	<b>Red</b> <b>95805</b>
	<b>Blue</b> <b>95806</b>
	<b>Light Green</b> <b>95808</b>
	<b>Dark Green</b> <b>95828</b>
	<b>Fluorescent Yellow Green</b> <b>95844</b>
	<b>Fluorescent Orange</b> <b>95847</b>
	<b>Fluorescent Yellow</b> <b>95894</b>

Typical road scenarios published in Table I.5 of BS 8408.

(Graphics have been added as a visual aid to the scenarios. i.e. vehicle type and sign type)

Driving Scenario	Veh' type	Sign type	Unlit min	Lit min		CV luminance rating
D1 A1 V1 P1 A			1.00	1.00		2.26
D1 A1 V1 P3 A			1.00	1.00		1.04
D1 A1 V2 P1 A			1.00	1.00		0.93
D1 A1 V2 P3 A			1.00	1.00		0.42
D2 A1 V1 P1 A			1.00	1.00		3.49
D2 A1 V1 P3 A			1.00	1.00		1.78
D2 A2 V1 P1 B			1.00	3.00		4.46
D2 A2 V1 P2 B			1.00	3.00		3.26
D3 A2 V1 P1 A			1.00	1.00		2.47
D3 A2 V1 P2 A			1.00	1.00		1.58
D3 A2 V1 P1 B			1.00	3.00		3.70
D3 A2 V1 P2 B			1.00	3.00		2.37
D3 A3 V1 P1 B			1.00	3.00		1.31
D3 A3 V1 P2 B			1.00	3.00		0.84

*Note;*

*The values provided above have been measured by Nippon Carbide Industries (NCI), in line with BS 8408 procedures.*

Ratings for alternative scenarios are available from Rennicks UK Ltd.

## Overview of BS 8408

BS 8408 defines 384 theoretical scenarios for both lit and unlit sign situations.

This is reduced to 256 actual scenarios after accepting that;

- 1) Sign category type A Legend (informatory signs) for both lit and unlit scenarios have the same minimum requirement defined in BS 8408 as 1.0.
- 2) Overhead signs are always within entrance angularity sub class A1 (up to 15°) as explained in G 2.1.2.

Nikkalite CV passes more scenarios in BS 8408 than any other microprismatic sheeting on the market today;

117 out of 256, which is a pass rate of 45%

### Roll storage

Please refer to separate detailed technical information

[Roll Storage, Substrate Preparation & Application of sign face sheetings.](#)

### Application of Crystal grade CV sheeting

Nikkalite® 95800 series sheeting must be butt jointed and not overlapped. CV will bond to clean smooth surfaces of tested and approved metal, and coated metal. Please refer to more detailed separate technical information sheet;

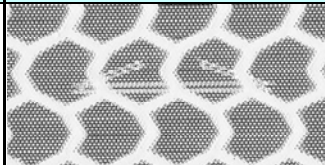
[Roll Storage, Substrate Preparation & Application of sign face sheetings](#)

### Datum axis

Performance index results for CV sheeting are measured with the sheeting as example 2 in Annex A of BS 8408; i.e. in a horizontal axis as per diagram below. The highest overall luminance for Nikkalite CV is provided when the sheeting is applied across the sign face as in the vast majority of UK sign manufacturing situations. Market analysis of sign manufacturers confirmed the horizontal application direction occurs in approximately 97% or more of signs.

If the sheeting is applied in a vertical direction the values may be slightly lower in certain scenarios.

Please contact Rennicks UK for further advice if required.

GRADE	DATUM MARK
CV	

### Coloured overlay films

**Nikkalite®** PA100 self-coloured transparent overlay films have a clear acrylic pressure sensitive adhesive and are designed to offer a simplified and efficient system of sign manufacture for various types of Road Traffic Signs manufactured to BS 8408.

Please refer to separate detailed technical information [PA100 Coloured overlay films](#)

### Crystal grade CV Health & Safety (COSHH)

Although the adhesive contains a small amount of solvent, it is almost certain that this solvent will not be emitted from the sheeting. For further information please contact Rennicks UK for a COSHH data sheet.

### Screen printing

Crystal grade should be screen printed with **Nikkalite®** N3600 inks which are durable, highly transparent, quick drying screen printing inks, that bond strongly and permanently to the surface of CV Crystal grade sheeting.

Please refer to separate detailed [Screen printing technical information](#)

### Colour matching

When using more than one piece of reflective sheeting together, sheeting from the same roll should be used for uniform colour matching and reflectivity. Every other piece of material should be rotated by 180°, so the same roll edges come together and butted together.

Microprismatic sheetings should not be overlapped.

Colour matching is the responsibility of the sign manufacturer.

### Graphic cutting

The material must be allowed to condition, out of its box and correctly supported, ideally in a room with an ambient temperature of 15°C to 25°C (59°F to 77°F) before cutting.

Certain upright friction and flat bed plotters are suitable for cutting **Nikkalite**® Crystal grade CV sheeting. The sheeting should be tested to determine suitability of equipment. Off cuts of sheeting should be stored flat or tightly wound around the outside of a core diameter of 90mm or greater.

### Packaging & Storage of finished signs prior to installation

Finished signs should be adequately packaged to prevent damage during handling and transit. The sheeting liner may be used against the sign face in addition to bubble wrap and the signs should be placed face to face.

The effective performance life and guarantees may be become void by mishandling, or incorrect storage and installation techniques.

[Please refer to our separate handling and storage instruction sheet.](#)

### Sign cleaning

Signs covered with DT142-S Dewtect dew resistant sheeting should not require cleaning and the surface properties may be damaged or destroyed by cleaning. Please refer to our separate information [Sign cleaning](#)

### Durability

When processed and applied in line with NCI instructions, **Nikkalite**® 95800 Crystal grade sheeting when exposed vertically under normal weathering conditions in the UK or Ireland can be expected to have a useful performance life as shown in the table below.

However, actual performance depends greatly on type and treatment of substrate and on weathering conditions.

Type	Effective life UK & Ireland
95804 Yellow	12 years
95805 Red	12 years
95806 Blue	12 years
95812 White	12 years
95808 Green	12 years
95828 Dark Green	12 years

**Reliability of information**

All recommendations and technical information contained herein are based on experience and tests, which the manufacturer believes to be reliable, but their accuracy and completion are not warranted.

The user is cautioned to undertake tests to determine the suitability of a particular product for the intended application.

**Warranty**

**Nikkalite**<sup>®</sup> products are warranted to be free from defects in materials and workmanship at the time of their sale. Subject to paragraph two hereof, **Nikkalite**<sup>®</sup> products are sold without any warranty whatsoever, including warranties of merchantability or fitness for a particular purpose. The sole remedy for failure of **Nikkalite**<sup>®</sup> products to conform to said warranty is the replacement of the defective products; neither the manufacturer nor the seller shall be liable for any loss, damage or injury, direct or indirect, consequential or incidental, arising from the use of or inability to use said products.

**Nikkalite**<sup>®</sup> products sold in the United Kingdom are sold with a warranty subject to the [Road Traffic Sign Warranty](#) agreement between Rennicks (UK) Limited, Nippon Carbide Industries Inc., and the Traffic Sign Manufacturer.

For further information please contact



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