



## Nikkalite® Flexible Crystal Grade microprismatic sheeting

### Introduction

With 30 years' experience, Rennicks (UK) Ltd has long been at the forefront of developing and supplying the latest traffic sign technology to clients who include the Highways Agency, the emergency services, local authorities and signmakers throughout the UK.

Nikkalite® Flexible Crystal Grade is a flexible microprismatic retroreflective sheeting designed for emergency vehicle liveries complying with the Home Office Police Scientific Development Branch (PSDB) [now the Home Office Scientific Development Branch (HOSDB)] High-Conspicuity Livery specification.



Nikkalite® Flexible Crystal Grade retroreflective and fluorescent retroreflective liveries are very conspicuous providing early recognition of the vehicles position to other road users due to;

- high retroreflectivity during the hours of darkness
- high conspicuity during twilight hours of fluorescent colours
- high daytime contrast colours

Nikkalite® Flexible Crystal Grade				Warranty*
White 92802	Blue 92806	Red 92805	Green 92808	10 years
Fluorescent Yellow Green 92844		Fluorescent Orange 92847		10 years

\* Warranted life when processed by Gold Converter, applied in line with NCI procedures & exposed vertically, Terms and Conditions apply.

### Retro-reflectivity Typical Data

Obs. Angle	Colour	Entrance Angles			PSDB Spec		
		5deg	30deg	45deg	5deg	30deg	45deg
0.2	Fl Y/G	979	592	80	300	150	33
0.33		494	289	50	80	60	16
0.5		328	213	24	50	20	9
1		72	65	18	8	6	2
0.2	White	963	558	71	350	150	40
0.33		504	338	51	150	60	30
0.5		346	249	30	110	60	20
1		80	91	20	9	6	3

### Day time chromaticity

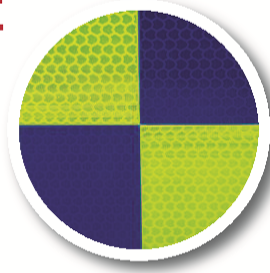
Colour	Daytime Chromaticity co-ordinates								Luminance factor $\beta$
	1		2		3		4		
	x	y	x	y	x	y	x	y	
White	0.303	0.300	0.368	0.366	0.340	0.393	0.274	0.329	$Y \geq 0.40$
Yellow	0.498	0.412	0.557	0.442	0.479	0.520	0.438	0.472	$0.45 \geq Y \geq 0.24$
Red	0.648	0.351	0.735	0.265	0.629	0.281	0.565	0.346	$0.15 \geq Y \geq 0.03$
Blue	0.140	0.035	0.244	0.210	0.190	0.255	0.065	0.216	$0.10 \geq Y \geq 0.01$
Green	0.026	0.399	0.166	0.364	0.286	0.446	0.207	0.771	$0.12 \geq Y \geq 0.01$
Fluorescent Yellow Green	0.387	0.610	0.369	0.546	0.428	0.496	0.460	0.540	$Y \geq 0.60$
Fluorescent Orange	0.583	0.416	0.535	0.400	0.595	0.351	0.645	0.355	$Y \geq 0.25$

# Nikkalite®

## BRIGHT & DURABLE

Flexible Crystal Grade offers excellent reflectivity at long and short distances as well as narrow and wide entrance angles. These properties ensure drivers and pedestrians can see the approaching emergency vehicle at any angle, allowing quick recognition when speed is of the essence and prompt action can then be taken to allow the vehicle to continue safely on its way.

**Nikkalite® Flexible Crystal Grade offers a minimum performance life of 7 years.**



## STRONG & FLEXIBLE

Because vehicles come in all shapes and sizes, Nikkalite® flexible materials allow for simple and fast application on most curves and recesses.

Tough and durable, Nikkalite® Crystal Grade has been designed to retain its strength and flexibility when applied on most vehicle contours.

## ADVANTEDGE EDGE SEAL TECHNOLOGY

Arguably the strongest and most accurate edge sealing on the market today, Nikkalite® Flexible Crystal Grade with **AdvantEdge** impervious edge seal technology ensures a quality finish every time.



## COMPLIANT

Nikkalite® Flexible Crystal Grade is approved by the HOSDB for Battenburg livery and meets all current standards. The prisms have been specially designed to achieve optimum reflection. Each cm<sup>2</sup> of the prism layer contains in excess of 5k micro-prisms accurately aligned providing outstanding reflectivity and angularity, offering early recognition and visibility of the emergency services vehicles.

Red Crystal Grade conforms to the Highways Agency Chapter 8 operations and HOSDB guidelines.

The perfect fit in more ways than one.



### 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® & Hi-S Cal® products are warranted to be free from defects in materials and workmanship at the time of their sale.

Subject to paragraph two hereof, Nikkalite® & Hi-S Cal® products are sold without any warranty whatsoever, including warranties of merchantability or fitness for a particular purpose.

The sole remedy for failure of Nikkalite® & Hi-S Cal® 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® & Hi-S Cal® products sold in the United Kingdom are sold with a warranty subject to the Warranty Agreement between Rennicks (UK) Limited, Nippon Carbide Industries Inc., and the sheeting converter.

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## Nikkalite® Flexible Engineering Grade (FEG)

### Description

Nikkalite® Flexible Engineering Grade (FEG) is a flexible glass-beaded retroreflective sheeting that renders retroreflectivity during darkness. It is designed for use on emergency vehicles and fleet markings where application to riveted and corrugated surfaces may be required. The material is highly resistant to extremes of hot, cold, dry and humid weathering conditions and vehicles liveried with FEG sheeting are attractive in appearance and highly visible during both day and night-time conditions.



### Traffic Signs Manual Chapter 8 Operations; O5.2.3(c)

Chapter 8 requires high visibility rear vehicle chevron marking for vehicles stopping on the highway for works purposes or inspections.

**O5.2.3(c) states;** Chevron markings comprising alternate strips of retroreflective red material and fluorescent yellow non-retroreflective material, of not less than 150mm width each, inclined at 45-60° to the horizontal and pointing upwards, should cover as much of the rear-facing portion of the vehicle as possible...”



**Nikkalite® 48005 Red FEG** used with **Hi-S Cal® Fluorescent Light Yellow 7F-310** complies with O5.2.3(c) colour requirements

(Refer to separate technical information for Hi-S Cal® sheetings)

### Retroreflectivity

Nikkalite® FEG is available in 24” and 48” x 50yds rolls in the following colours;

Colour	Black	Yellow	Red	Blue	Green	White
Product No	48003	48004	48005	48006	48008	48012
OA 0.2°	3	50	5	6	7	70
EA -4°						

Average coefficient of retroreflection cd/lux/sq.mtr. OA; Observation angle EA; Entrance angle

### Physical properties

Properties	Test method	Results
Average thickness	Micrometer	150+/-5um
Average Gloss	Glossmeter	>85 at 60°C
Tensile strength	Instron tester	>2.3kgf/25mm
Elongation	Instron tester	>120
Min application temperature	Flat smooth surface	15°C
Max application temperature	Corrugated / Riveted surfaces	25°C

**Expected performance life**

FEG can be expected to have a useful working life of up to 7 years on vertical panels for standard colours.

**Removal of livery**

Warm the panel by applying gentle heat to the surface and peeling away.

**Reliability of information**

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**Warranty**

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The sole remedy for failure of Nikkalite® & Hi-S Cal® 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® & Hi-S Cal® products sold in the United Kingdom are sold with a warranty subject to the Warranty Agreement between Rennicks (UK) Limited, Nippon Carbide Industries Inc., and the sheeting convertor.