

Nikkalite™

Brighter and safer life

Nikkalite™ Retroreflective Sheeting Guide



Company introduction

"Striving to be a company that shines through chemistry"

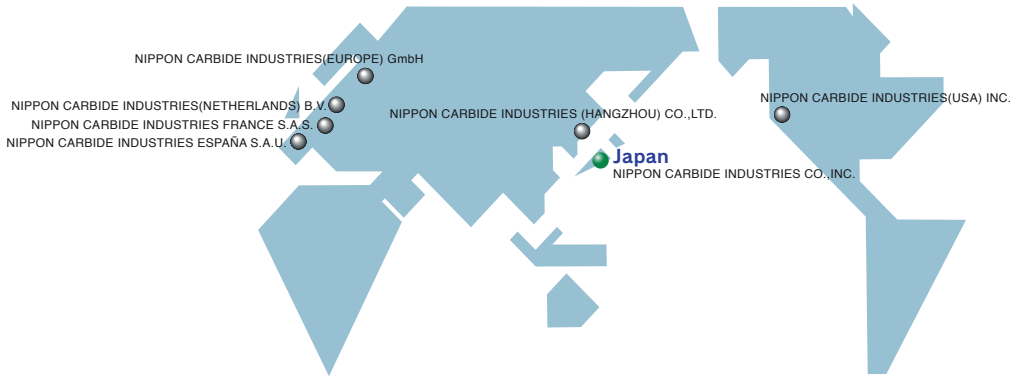
Our company aims to realize emerging technologies that will be demanded by society in the future. The Nippon Carbide Industries (NCI) Group takes an active role and is a leader in many fields including pharmaceuticals, agricultural chemicals, electronic devices, and retroreflective sheeting.

Retroreflective Materials Division introduction

Nikkalite *Brighter and safer life*

In an effort to improve safety and security to our global society, our division is a leader in manufacturing retroreflective sheeting and most importantly to provide roadway safety for the traffic industry, with maximum visibility during day and night-time roadway conditions.

Nikkalite *worldwide network*

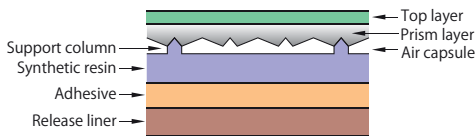


What is "Retroreflective sheeting"?

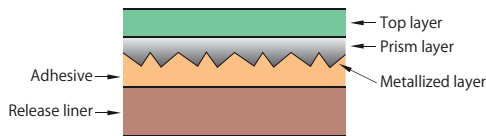
Retroreflective sheeting has a special optical phenomenon of reflection and occurs when light directed on the reflective sheeting is returned directly back to the source of light. This characteristic is quite different from luminous paint or luminescent tape.

Retroreflective sheeting has three types, "Prism type (Encapsulated and Metallized)", "Encapsulated lens type" and "Enclosed lens type". The characteristic is different depending on type, so customers can choose them in accordance with their own needs. All types of retroreflective sheeting are mainly used for traffic signs, safety products, car license plates and car decoration. To use the best applicable retroreflective sheeting to products, it can achieve the most excellent legibility and visibility.

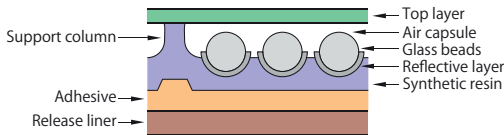
Prism type(Encapsulated)



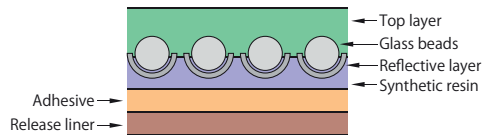
Prism type(Metallized)



Encapsulated lens type



Enclosed lens type



Nikkalite[™] products list

Usage	Type	Grade	Series number	Colour	Durability
Traffic Signs	Super High Intensity Prism type(Encapsulated)	Crystal Grade CF	99000 series		10 years *2
		Crystal Grade CV/CW	95000 series 92000 series		10 years *2
	High Intensity Prism type (Encapsulated)	Crystal Grade HIM	94000 series		10 years *4
		Ultralite ULP	R800 series R700 series		10 years
		Ultralite Extra ULX	R600 series		10 years
	Encapsulated lens type (High Intensity)	Ultralite UL	800 series		10 years *4
	Enclosed lens type	Super Engineering Grade SEG	15000 series		10 years *4
		Engineering Grade EG	8100 series		7 years *4
Construction Zone Signs	High Intensity Prism type (Encapsulated)	Ultralite UXC	C400 series		3 years
	Encapsulated lens type	Ultralite UL	800 series		3 years
	Enclosed lens type	Engineering Grade EG	8100 series		3 years
		Promotional Grade MPG	F4300 series		No guarantee
Commercial Market Graphic Market	Enclosed lens type	Fleet Marking Grade FMG	M8500 series		5 years
		Flexible Engineering Grade ELG	48000 series		5 years
		Commercial Grade CG	6200 series		5 years
Safety Products	Encapsulated lens type	Flexible Ultralite Grade	S500 series V500 series		5 years *4
	Enclosed lens type	Fleet Marking Grade FMG	M8500 series		5 years
		Promotional Grade MPG	F4300 series		No guarantee
Car License Plate	Enclosed lens type	Fleet Marking Grade FMG	M8500 series		5 years
		License Plate Grade SCL	L8500 series		5 years
		License Plate Grade MLG	45700 series 45300 series		3 years
		License Plate Grade MG	E4400 series T4400 series		3 years
	Super High Intensity Prism type(Encapsulated)	Crystal Grade CW	92000 series		10 years *2
		Crystal Grade CM	96000 series		7 years
Conspicuity Market	Prism type(Metallized)	Crystal Grade CE	93000 series		5-7 years
		Fleet Marking Grade FMG	M8500 series		5 years
	Enclosed lens type	Flexible Engineering Grade ELG	48000 series		5 years
		Acrylic Film	100 series		10 years
Accessories	Overlay Film	PVC Film	V102		5 years
		Dewtect	DT142		7 years
	Anti-graffiti Film	F-CAL	EF40801		10 years
	Lettering Film (Hi-S Cal)	PVC Film	Hi-S Cal series		5 years
	Ink	Post-Screen Printing	N3800 series		-
		Pre-Screen Printing	N3600 series		-

*2 Non-fluorescent colours only

*4 Except for Orange

Traffic Signs

Construction Zone Signs

Commercial Market Graphic Market

Safety Products

Car License Plate

Conspicuity Market

Accessories

Super High Intensity Prism type (Encapsulated)

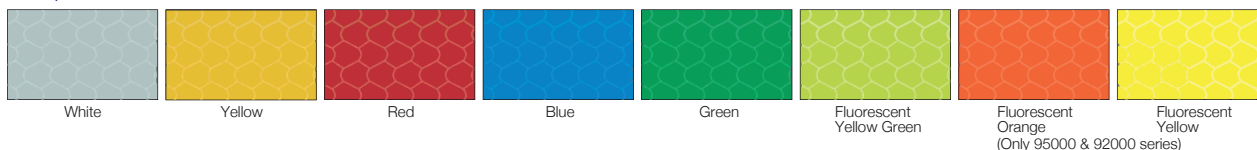
Crystal Grade CF 99000 series / CV 95000 series / CW 92000 series

CF 99000 series, CV 95000 series and CW 92000 series are used for traffic signs with excellent reflection performance and long-term outdoor durability.

Top film:	Acrylic Film
Durability *1:	10 years *2
Recommended substrate:	Aluminium
Reflectivity *3:	CF: 580 cd/lux/m2 (White 0.2°/5°) CV: 380 cd/lux/m2 (White 0.2°/5°) CW: 700 cd/lux/m2 (White 0.2°/5°) 300 cd/lux/m2 (White 0.33°/5°)

Screen printing available *6
Overlay film:
Nikkalite™ 100 series, Anti-dew Film Dewtect, Anti-graffiti Film F-CAL
Lettering film: Nikkalite™ retroreflective sheeting, Hi-S Cal

Sample colours *5



High Intensity Prism type (Encapsulated)

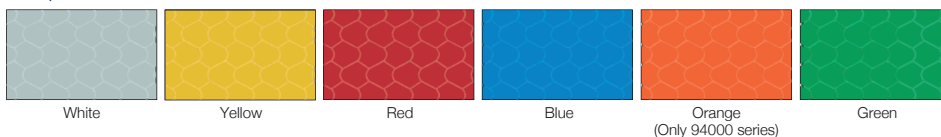
Crystal Grade HIM 94000 series / Ultralite ULP R800 series & R700 series / Ultralite Extra ULX R600 series

HIM 94000 series, ULP R800/R700 series and ULX R600 series are used for traffic signs with excellent reflection performance and long-term outdoor durability.

Top film:	Acrylic Film
Durability *1:	10 years
Recommended substrate:	Aluminium
Reflectivity *3:	HIM: 360 cd/lux/m2 (White 0.2°/5°) ULP: 250 cd/lux/m2 (White 0.2°/5°) ULX: 180 cd/lux/m2 (White 0.33°/5°)

Screen printing available *6
Overlay film:
Nikkalite™ 100 series, Anti-dew Film Dewtect, Anti-graffiti Film F-CAL
Lettering film: Nikkalite™ retroreflective sheeting, Hi-S Cal

Sample colours *5



Example of Product Application



*1 The durability is greatly effected by 1) the type of substrate, 2) preparation of the substrate surface, 3) conditions of application and 4) climatic and exposure conditions.

When proper substrates are used, and their surface preparation and application methods are in accordance with Nikkalite™ Bulletins.

*2 Non-fluorescent colours only *3 Reflectivity is the minimum value. *5 Colours may not be a 100% colour match of the actual material.

*6 If you would like to know the detail of printability, please contact to our technical service.

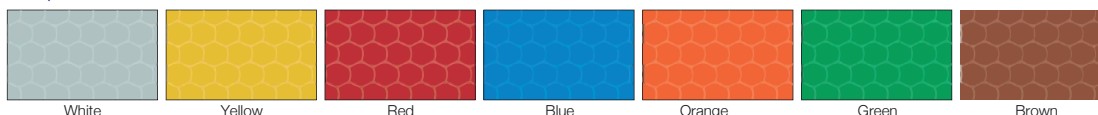
Encapsulated lens type(High Intensity)

Ultralite UL 800 series & 500 series

UL 800 series and 500 series are used for traffic signs with excellent reflection performance and long-term outdoor durability.

Top film:	Acrylic Film
Durability *1:	10 years *4
Recommended substrate:	Aluminium
Reflectivity *3:	250 cd/lux/m2 (White 0.2°/5°) 180 cd/lux/m2 (White 0.33°/5°)

Screen printing available *6
Overlay film:
Nikkalite™ 100 series, Anti-dew Film Dewtect, Anti-graffiti Film F-CAL
Lettering film: Nikkalite™ retroreflective sheeting, Hi-S Cal

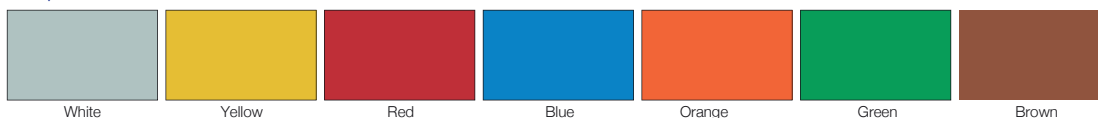
Sample colours *5**Enclosed lens type**

Super Engineering Grade SEG 15000 series

SEG 15000 series is used for traffic signs and general signs with highest reflection performance in the enclosed lens type.

Top film:	Acrylic Film
Durability *1:	10 years *4
Recommended substrate:	Aluminium
Reflectivity *3:	140 cd/lux/m2 (White 0.2°/5°)

Screen printing available *6
Overlay film:
Nikkalite™ 100 series, Anti-dew Film Dewtect, Anti-graffiti Film F-CAL
Lettering film: Nikkalite™ retroreflective sheeting, Hi-S Cal

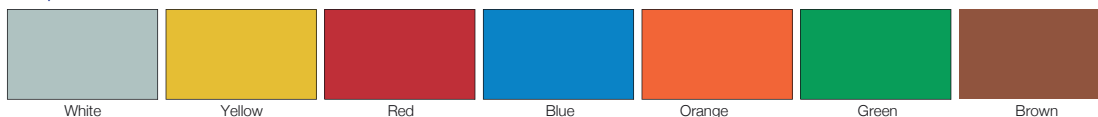
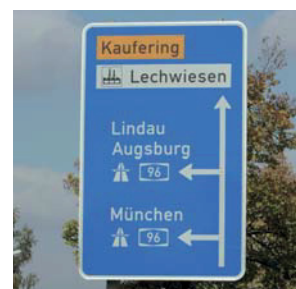
Sample colours *5**Enclosed lens type**

Engineering Grade EG 8100 series

EG 8100 series is used for traffic signs and general signs with excellent retroreflective performance and medium-term outdoor durability.

Top film:	Acrylic Film
Durability *1:	7 years *4
Recommended substrate:	Aluminium
Reflectivity *3:	70 cd/lux/m2 (White 0.2°/5°) 50 cd/lux/m2 (White 0.33°/5°)

Screen printing available *6
Overlay film:
Nikkalite™ 100 series, Anti-dew Film Dewtect, Anti-graffiti Film F-CAL
Lettering film: Nikkalite™ retroreflective sheeting, Hi-S Cal

Sample colours *5**Example of Product Application**

*1 The durability is greatly effected by 1)the type of substrate, 2)preparation of the substrate surface, 3)conditions of application and 4)climatic and exposure conditions.

When proper substrates are used, and their surface preparation and application methods are in accordance with Nikkalite™ Bulletins.

*3 Reflectivity is the minimum value. *4 Except for Orange. *5 Colours may not be a 100% colour match of the actual material.

*6 If you would like to know the detail of printability, please contact to our technical service.

Construction Zone Signs

High Intensity Prism type (Encapsulated)

Ultralite UXC C400 series

UXC C400 series are used for construction zone signs.

Top film:	Acrylic Film
Durability *1:	3 years
Recommended substrate:	Aluminium
Reflectivity *3:	250 cd/lux/m2 (White 0.2°/5°)
Screen printing available *6	

Sample colours *5



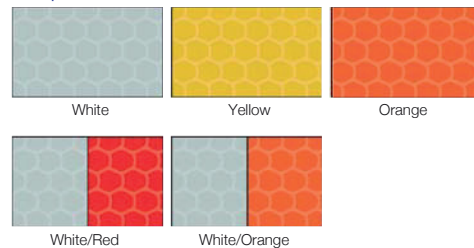
Encapsulated lens type(High Intensity)

Ultralite UL 800 series & 500 series

UL 800 series and 500 series are used for construction zone signs.

Top film:	Acrylic Film
Durability *1:	3 years
Recommended substrate:	Aluminium
Reflectivity *3:	250 cd/lux/m2 (White 0.2°/5°) 180 cd/lux/m2 (White 0.33°/5°)
Screen printing available *6	

Sample colours *5



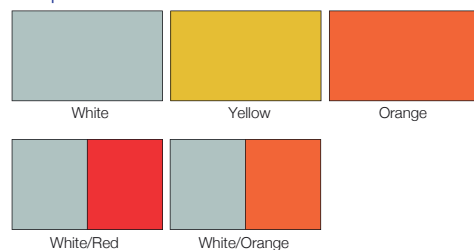
Enclosed lens type

Engineering Grade EG 8100 series

EG 8100 series is used for construction zone signs.

Top film:	Acrylic Film
Durability *1:	3 years
Recommended substrate:	Aluminium
Reflectivity *3:	70 cd/lux/m2 (White 0.2°/5°) 50 cd/lux/m2 (White 0.33°/5°)
Screen printing available *6	

Sample colours *5



Enclosed lens type

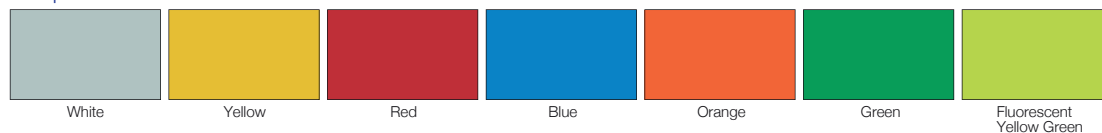
Promotional Grade MPG F4300 series

MPG F4300 series has tough surface used for construction zone signs and temporary signs.

Top film:	PET Film
Durability *1:	No guarantee
Recommended substrate:	Aluminium
Reflectivity *3:	30 cd/lux/m2 (White 0.2°/5°)

Screen printing available *6

Sample colours *5



Example of Product Application



*1 The durability is greatly effected by 1)the type of substrate, 2)preparation of the substrate surface, 3)conditions of application and 4)climatic and exposure conditions.
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Enclosed lens type

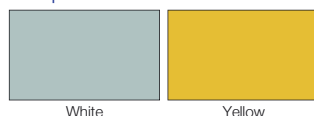
Fleet Marking Grade FMG M8500 series

FMG M8500 series is a flexible retroreflective sheeting used for advertising boards and stickers.

Top film:	PVC Film
Durability *1:	5 years
Recommended substrate:	Aluminium
Reflectivity *3:	70 cd/lux/m2 (White 0.2°/5°)

Screen printing available *6

Sample colours *5



White

Yellow

Enclosed lens type

Flexible Engineering Grade ELG 48000 series

ELG 48000 series is a flexible retroreflective sheeting used for advertising boards and stickers.

Top film:	Polyester Film
Durability *1:	5 years
Recommended substrate:	Aluminium
Reflectivity *3:	70 cd/lux/m2 (White 0.2°/5°)

Screen printing available *6

Sample colours *5



White

Black

Yellow

Red

Blue

Orange

Green

Brown

Gold

Enclosed lens type

Commercial Grade CG 6200 series

CG 6200 series is used for all types of signs and devices that do not require the higher level of performance offered by EG.

Top film:	Acrylic Film
Durability *1:	5 years
Recommended substrate:	Aluminium
Reflectivity *3:	50 cd/lux/m2 (White 0.2°/5°)

Screen printing available *6

Sample colours *5



White

Black

Yellow

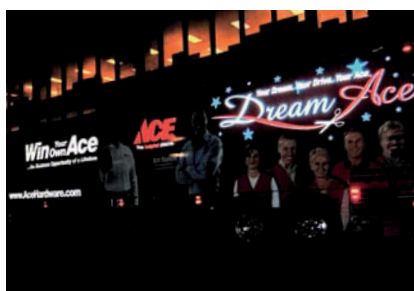
Red

Blue

Orange

Green

Example of Product Application



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When proper substrates are used, and their surface preparation and application methods are in accordance with Nikkalite™ Bulletins.

*3 Reflectivity is the minimum value. *5 Colours may not be a 100% colour match of the actual material.

*6 If you would like to know the detail of printability, please contact to our technical service.

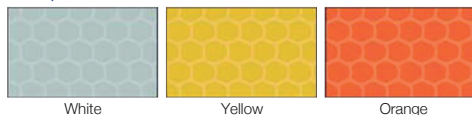
Encapsulated lens type(High Intensity)

Flexible Ultralite UL S500 series / V500 series

UL S500 series and V500 series are flexible retroreflective sheeting used for the post cone, traffic cone, safety barrel and other traffic safety devices.

Top film:	S500 series: Urethane Film V500 series: PVC Film	Screen printing available *6
Durability *1:	S500 series: 5 years *4 V500 series: 3 years *4	
Recommended substrate:	Aluminium	
Reflectivity *3:	S500 series: 250 cd/lux/m2, 180 cd/lux/m2 (White 0.2°/5°, 0.33°/5°) V500 series: 250 cd/lux/m2, 180 cd/lux/m2 (White 0.2°/5°, 0.33°/5°)	

Sample colours *5



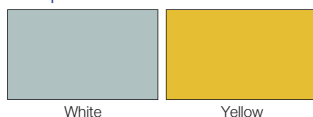
Enclosed lens type

Fleet Marking Grade FMG M8500 series

FMG M8500 series is a flexible retroreflective sheeting used for the post cone, traffic cone, safety barrel and other traffic safety devices.

Top film:	PVC Film	Screen printing available *6
Durability *1:	5 years	
Recommended substrate:	Aluminium	
Reflectivity *3:	70 cd/lux/m2, 30 cd/lux/m2 (White 0.2°/5°, 0.33°/5°)	

Sample colours *5



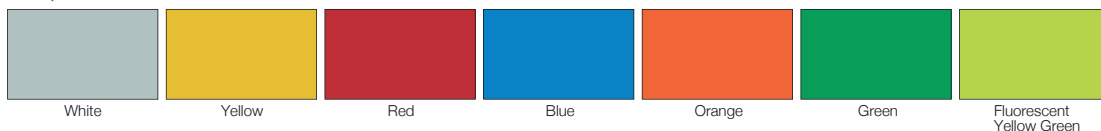
Enclosed lens type

Promotional Grade MPG F4300 series

MPG F4300 series has tough surface used for traffic safety devices and similar products.

Top film:	PET Film	Screen printing available *6
Durability *1:	No guarantee	
Recommended substrate:	Aluminium	
Reflectivity *3:	30 cd/lux/m2 (White 0.2°/5°)	

Sample colours *5



Example of Product Application



*1 The durability is greatly effected by 1)the type of substrate, 2)preparation of the substrate surface, 3)conditions of application and 4)climatic and exposure conditions.
When proper substrates are used, and their surface preparation and application methods are in accordance with Nikkalite™ Bulletins.
*3 Reflectivity is the minimum value. *4 Except for Orange. *5 Colours may not be a 100% colour match of the actual material.
*6 If you would like to know the detail of printability, please contact to our technical service.

Enclosed lens type

Fleet Marking Grade FMG M8500 series

FMG M8500 series can be used on license plate for embossing type.

Top film:	PVC Film
Durability *1 :	5 years
Recommended substrate:	Aluminium
Reflectivity *3:	70 cd/lux/m2 (White 0.2° /5°) 50 cd/lux/m2 (White 0.33° /5°)
Embossable height:	Up to 2.0mm

Characters are printable by screen printing, roller coating and hot stamping. *7

Sample colours *5



Enclosed lens type

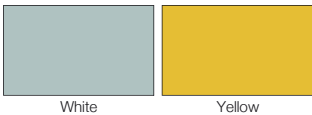
License Plate Grade SCL L8500 series

SCL L8500 series can be used on license plate for embossing type.

Top film:	Acrylic Film
Durability *1 :	5 years
Recommended substrate:	Aluminium
Reflectivity *3:	70 cd/lux/m2 (White 0.2° /5°) 50 cd/lux/m2 (White 0.33° /5°)
Embossable height:	Up to 2.0mm

Characters are printable by screen printing, roller coating and hot stamping. *7

Sample colours *5



Enclosed lens type

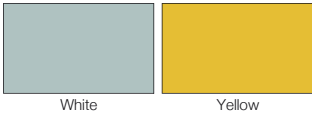
License Plate Grade MLG 45700 series & 45300 series

MLG 45700 series and 45300 series can be used on license plate for plastic plate type.

Top film:	Acrylic Film
Durability *1 :	3 years
Recommended substrate:	45700 series: N/A (without adhesive) 45300 series: Plastic
Reflectivity *3:	60 cd/lux/m2 (White 0.2° /5°) 40 cd/lux/m2 (White 0.33° /5°)

Embossing is not available
Characters are printable by hot stamping and thermal printing on 45700 series. *7

Sample colours *5



Enclosed lens type

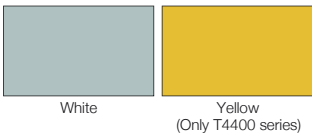
License Plate Grade MG E4400 series & T4400 series

MG E4400 series and T4400 series can be used on license plate for French embossing type.

Top film:	Acrylic Film
Durability *1 :	5 years
Recommended substrate:	Aluminium
Reflectivity *3:	70 cd/lux/m2 (White 0.2° /5°) 50 cd/lux/m2 (White 0.33° /5°)

Embossing is not available

Sample colours *5



Example of Product Application



*1 The durability is greatly effected by 1)the type of substrate, 2)preparation of the substrate surface, 3)conditions of application and 4)climatic and exposure conditions.
When proper substrates are used, and their surface preparation and application methods are in accordance with Nikkalite™ Bulletins.
*3 Reflectivity is the minimum value. *5 Colours may not be a 100% colour match of the actual material.
*7 If you would like to know the suitable inks and foils, please contact to our technical service.

Super High Intensity Prism type

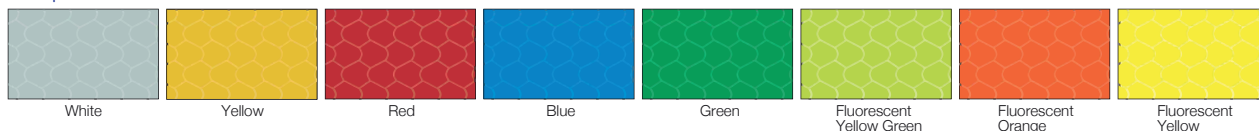
Crystal Grade CW 92000 series

CW 92000 series is used for emergency vehicle conspicuity etc with excellent retroreflection performance during the hours of darkness, high conspicuity during twilight hours of fluorescent colours and high daytime contrast colours.

Top film:	Acrylic Film
Durability *1:	10 years *2
Recommended substrate:	Aluminium
Reflectivity *3:	350 cd/lux/m2, (White 0.2°/5°) 150 cd/lux/m2 (White 0.33°/5°)

Screen printing available *6

Sample colours *5



Prism type (Metallized)

Crystal Grade CM 96000 series / CE 93000 series

CM 96000 series and CE 93000 series are flexible enough to go around corners used for vehicle conspicuity etc with excellent retroreflection performance.

Top film:	Acrylic Film
Durability *1:	CM: 7 years CE: 5-7 years
Recommended substrate:	Aluminium
Reflectivity *3:	CM: 500 cd/lux/m2 (White 0.2°/5°) CE: 450 cd/lux/m2 (White 0.33°/5°)

CE 93000 series is complied with ECE104 regulation.

Sample colours *5



Enclosed lens type

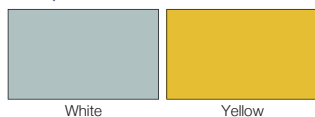
Fleet Marking Grade FMG M8500 series

FMG M8500 series is flexible enough to go around corners used for vehicle conspicuity etc.

Top film:	PVC Film
Durability *1:	5 years
Recommended substrate:	Aluminium
Reflectivity *3:	70 cd/lux/m2 (White 0.2°/5°)

Screen printing available *6

Sample colours *5



Example of Product Application



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When proper substrates are used, and their surface preparation and application methods are in accordance with Nikkalite™ Bulletins.

*2 Non-fluorescent colours only. *3 Reflectivity is the minimum value. *5 Colours may not be a 100% colour match of the actual material.

*6 If you would like to know the detail of printability, please contact to our technical service.

Enclosed lens type

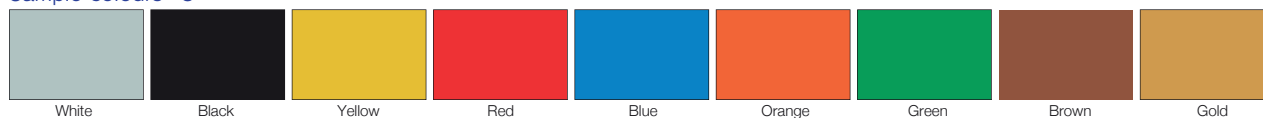
Flexible Engineering Grade ELG 48000 series

ELG 48000 series is flexible enough to go around corners used for vehicle conspicuity etc.

Top film:	Polyester Film
Durability *1:	5 years
Recommended substrate:	Aluminium
Reflectivity *3:	70 cd/lux/m2 (White 0.2°/5°)

Screen printing available *6

Sample colours *5



Accessories

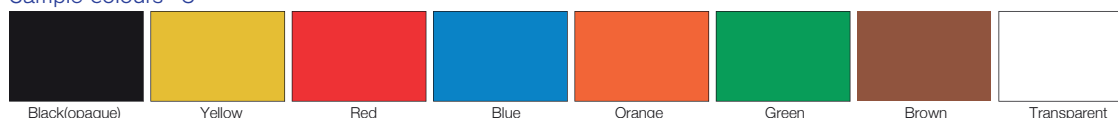
Overlay Film

Acrylic Film 100 series

100 series is used for various types of traffic signs with highly transparent and adhesion to all Nikkalite™ retroreflective sheeting.

Top film:	Acrylic Film
Durability *1:	10 years
Recommended substrate:	Nikkalite™ retroreflective sheeting

Sample colours *5



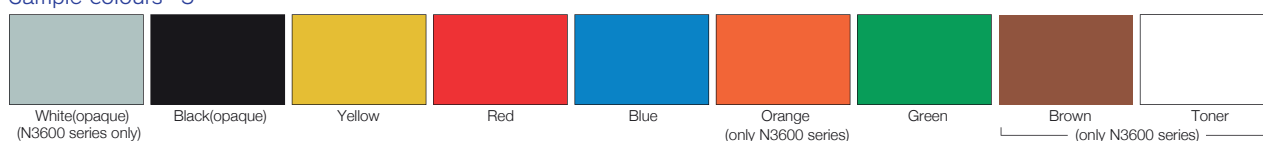
Ink

Post-screen Printing N3800 series / Pre-screen Printing N3600 series

N3800 series and N3600 series are used for various types of traffic signs with highly transparent and long-term durability.

Recommended substrate:	Nikkalite™ retroreflective sheeting
Usage rules:	Follow the Nikkalite™ Bulletins

Sample colours *5



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When proper substrates are used, and their surface preparation and application methods are in accordance with Nikkalite™ Bulletins.

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*6 If you would like to know the detail of printability, please contact to our technical service.

Reliability

All recommendations and technical information contained herein are based on our own tests and results, which the manufacture believes to be reliable, however, their accuracy and completeness are not warranted. The user is requested to conduct their own tests to determine the suitability of this product for its intended application.

Safety and Health Information

Read carefully in advance the labels, instruction manuals, material safety data sheets (MSDS), and first aid measures of the retroreflective sheeting supplied by NCI, including the auxiliary materials such as inks and solvents used for NCI's products, and such as substrate cleansers.

Warning

Failure to comply with the explicit instructions in this bulletin will result in voiding all warranties express or implied for the used of this product. If retroreflective sheeting is to be applied to a surface other than conventional sign blank materials, prospective users should contact technical representatives of NCI for advice before such application.



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