

Product Evaluation

RE: Review of NIKKALITE™ Brand Ultralite Grade II (High Performance) Reflective Sheeting

PRODUCT

The Ultralite Grade II (ULG II) High Performance encapsulated lens retroreflective sheeting was developed to provide greater reflectivity and durability when used for traffic signs. The ULG II is manufactured by Nippon Carbide Industries (USA) Inc. with offices located in Rancho Dominguez, California, USA.

VENDOR CLAIMS AND INFORMATION

CLAIMS

The ULG II high performance retroreflective sheeting is manufactured with a synthetic resin that strongly resists the deteriorating effect of weathering and renders high reflectivity at night. ULG II is made with high reflective index beads that are uniform in size and with a high percentage of perfect roundness. The beads are coated with almost 100% pure aluminum on half of their spheres and every bead is embedded in synthetic resin. The top film of the retroreflective sheeting is strongly fused to the synthetic resin base film to resist delamination and provides up to 10 years of effective performance. Product web link: <http://www.nikkalite.com/type-iii-ultralite-grade%5Cretro-reflective-sheeting-ultralite-grade.html>

DESCRIPTION

ULG II high performance is an encapsulated lens retroreflective sheeting conforming to all requirements of ASTM D4956 Type III High Intensity sheeting. The Type III reflective sheeting is classified as a High-Intensity sheeting material with encapsulated glass bead retroreflective material.

POTENTIAL USAGE

The ULG II high performance retroreflective sheeting is ideal for permanent traffic signs, temporary traffic control devices and other types of safety devices requiring high visibility, legibility and durability. When used on permanent traffic signs, ULG II is warranted to retain 80% of the "minimum initial reflectivity requirements" for Type III sheeting for 10 years.

STANDARDS

ASTM D4956 Standard Specification for Retroreflective Sheeting for Traffic Control
AASHTO National Transportation Product Evaluation Program, Report 00NTPEP209: 3 Year Outdoor Exposure Test Data on Sign Sheeting Materials (1997 Test Deck)

ALBERTA TRANSPORTATION COMMENTS

EXPERIENCE

Alberta Transportation has no experience with this product. Alberta Transportation uses reflective sheeting material conforming to Standard Specifications for Highway Construction, Specification 5.18 Supply of Permanent Highway Signs, Posts and Bases.

APPLICABLE STANDARDS

The Alberta Transportation specification for Reflective Sign Sheeting Material is as follows:
Standard Specification for Highway Construction, Specification 5.18 Supply of Permanent Highway Signs, Posts and Bases

PRODUCT COMPARISON TO STANDARD

Typical Coefficient of Retroreflection (R_A) cd/fc/ft² (cd.1x⁻¹.m⁻²) of ULG II sheeting:

Observation Angle	Entrance Angle	White	Yellow	Orange	Green	Red	Blue	Brown
ULG II 0.2°	-4°	321	217	116	60.3	47.0	22.2	21.9
ASTM Type III 0.2°	-4°	250	170	100	45	45	20	12
ULG II 0.2°	+30°	292	191	102	52.2	37.6	18.4	17.4
ASTM Type III 0.2°	+30°	150	100	60	25	25	11	8.5
ULG II 0.5°	-4°	118	87.6	59.1	25.3	20	8.7	9.4
ASTM Type III 0.5°	-4°	95	62	30	15	15	7.5	5.0
ULG II 0.5°	+30°	112	81.1	47.2	21.6	16.9	7.6	7.7
ASTM Type III 0.5°	+30°	65	45	25	10.0	10.0	5.0	3.5

The ULG II Retroreflective sheeting exceeds the performance requirements of the ASTM D4956, Type III Sheeting (High Intensity) Standard Specification for Retroreflective Sheeting for Traffic Control.

The 3 year outdoor exposure test (Durability Study) on sign sheeting materials was conducted by AASHTO (National Transportation Product Evaluation Program) on their 1997 Test Deck. After 3 years of outdoor exposure the ULG II retroreflective sheeting performed very well with retroreflective readings above the minimum ASTM standard.

The ULG II Retroreflective sheeting has been tested for accelerated weathering in accordance to ASTM D-4956, Section 7.4 and 8.6. Accelerated weathering test results have been submitted for this product which show that results exceed the minimum ASTM D-4956 requirements.

RECOMMENDATIONS:

Ultralite Grade II (High Performance) reflective sheeting should be listed as a Potential Product under Alberta Transportation Products List, Signs and Support System – Reflective Sheeting, Regulatory/Warning/Information Signs – Proprietary, based on the information provided.

Final acceptance as a proven product will be based on field performance.

TRIAL PROJECTS

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