



## Specifications

### Introduction

REFLOMAX GLODIAN™ CLARO™ series is a reflective advertising material which is made of micro prismatic retro-reflective film.

The biggest merit of this material is that digital printing is available directly onto the material which can provides very high reflective performance in the dark at night.

It has the adhesive material on the back, and can be used for temporary sign, banner, wall advertisement, etc. for the outdoor and indoor advertisement.

REFLOMAX GLODIAN™ CLARO™ is a microprism reflective film as top film and metalized & adhesive backing.

REFLOMAX GLODIAN™ CLARO™ series is a high-quality, digital printable and durable. It also has fine tensile strength and type of fabric backing and metalized Micro-Prism side to use for the construction and maintenance, utility and incident management applications.

It makes the object with GLODIAN™ CLARO™ series highly visible under foul weather and even under wet condition by enhancing the safety of drivers in the road.

### Daytime Color

The daytime color requirements of REFLOMAX GLODIAN™ CLARO™ are as given in Table 2 when tested in accordance with ASTM D 4956 and available in silver.

### Weatherability

REFLOMAX GLODIAN™ CLARO™ series has a one (1) year warranty under the conditions of vertical outdoor exposure (color fastness).

REFLOMAX GLODIAN™ CLARO™ series is warranted to be free from defects in materials and workmanship at the time of shipment and to meet the specifications stated in this Product Data. If sheeting is proven not to have met the Warranty on its shipment date, then a buyer's exclusive remedy under REFLOMAX's sole obligation will be entitled to refund or replacement of the sheeting.

The failure to meet the REFLOMAX Warranty must be solely subject to the result of the Product and any defects in workmanship.

The warranty by REFLOMAX is excluded if such failure is caused by any of:

- Improper manufacturing, handling, maintenance or installation;
- Non-vertical applications where the sign face is more than  $\pm 10\%$  from vertical;
- Faults of substrate;
- Loss of adhesion due to incompatible or improperly prepared substrate;
- Exposure to chemicals, abrasion and other mechanical damage; or
- Collisions, vandalism or malicious mischief.

REFLOMAX reserves the right to determine the method of replacement, and any replacement Product will have the remaining period of the original Product's unexpired Warranty. Claims made under this warranty shall be accepted only if:

- The Sign was dated upon completion of manufacturing (date) using a permanent method (e.g. sticker, permanent marker or crayon, metal stamp);
- REFLOMAX is notified of a REFLOMAX warranty claim during any available warranty period, and the owner or fabricator provides the information reasonably required by REFLOMAX to verify if the REFLOMAX Warranty is effective.

### Composition

REFLOMAX GLODIAN™ CLARO™ is composed of a smooth surface, high gloss, abrasion and weather resistant UV-stabilized micro-prismatic retroreflective layer.

### Front Material

PVC

### Release liner

Paper+ silicone coated one side, 0.075mm

### Reflectivity

The Retroreflective performance is tested in accordance with such procedures as defined in CIE 54:1982. Unless otherwise stated, the measured values are averages taken from 90° orientation. The 0° orientation is to be taken as down web of REFLOMAX supplied rolls. The values are expressed as coefficients of Retro-reflection and  $R_A$  in cd/lux/m<sup>2</sup>.

### Adhesive

The adhesive consists of a solvent polyacrylate, permanent pressure sensitive adhesive with aggressive tack and formulated for the application to plastic as well as metal surfaces. The adhesive is protected by a siliconized PE-paper as release liner. REFLOMAX GLODIAN™ CLARO™ has a pressure-sensitive adhesive that is recommended for room temperature application. Room temperature application is defined as 18°C (64.4°F) ~ 25°C (77°F).



76, Pureundeulpan-ro, 1010beongil,  
Paltan-myeon, Hwaseong-si,  
Gyeonggi-do, 18525, Rep. of Korea



TEL +82 (0)31-8014-9724  
FAX +82 (0)31-8059-2130



www.reflomax.com

### Weatherability

GLODIAN™ CLARO™ meets the requirements stated in Section 6.4 of ASTM D4956. The material is weather resistant and shows no significant cracking, scaling, pitting, blistering, edge lifting, or curling, or more than 0.8 mm (1/32") shrinkage or expansion. Retro-reflectivity is measured after undergoing the outdoor weathering with an observation angle of 0.20° and entrance

angles of -4° and +30°. The minimum coefficient of retroreflection (RA) after going through the weathering is 80% of the values as specified in Table 1.

When tested using a xenon-arc weatherometer in accordance with ASTM D 4956, REFLOMAX GLODIAN™ CLARO™ meets or exceeds the weathering requirements.

### Application | Processing

REFLOMAX GLODIAN™ CLARO™ is developed especially for the traffic control applications. Surfaces onto which the material will be applied must be thoroughly cleaned from dust, grease or any contamination which may have effect on the adhesion of the material. Freshly lacquered or painted surfaces must be fully cured.

Plastic surfaces need to be free of any effluent. The user shall have a test for the compatibility of selected substrate prior to application of the material. For other applications, the user is fully responsible for evaluating the suitability of the product, and for any risks concerning such use. The sheeting should be applied onto a smooth, clean and dry surface at the temperatures ranging from 10°C (50°F) to 38°C (100°F). The materials must be applied pursuant to Application Instructions.

### Solvent Resistance

REFLOMAX GLODIAN™ CLARO™ is composed of a smooth surface, high gloss, abrasion and weather resistant UV-stabilized micro-prismatic retroreflective layer.

### Shrinkage

A 9" x 9" (229 mm x 229 mm) specimen of the sheeting with liner is pretreated for at least one hour at the temperature of 23°C (73°F) ± 2°C (3°F) and 50% R.H. The release liner is then removed, and the specimen is placed on a flat surface **with the adhesive side up**. 10 minutes after the liner is removed and again after 24 hours, the specimen is measured to determine the amount of dimensional change. The specimen shall not shrink in any dimension more than 0.8 mm (1/32") in 10 minutes and 3.2 mm (1/8") in 24 hours.

**Table 1** Minimum Coefficient of Retroreflection

| Item      | Observation Angles | Entrance Angles | Typical RA |
|-----------|--------------------|-----------------|------------|
| CLARO™ 01 | 0.2°               | -4°             | 160        |

### Film Pattern



## Application Instruction

### Processing instructions for REFLOMAX GLODIAN™ CLARO™

All information herein is based upon our best knowledge, experience and application tests. Its purpose is to provide the practitioners with the suggestions and support. GLODIAN™ CLARO™ is a product series of Micro-Prism type Retro-Reflective Material. Micro-Prism Type Material is composed of millions of durable micro-prisms formed on flexible, UV-stabilized glossy polymeric film. GLODIAN™ CLARO™ is a kind of High Gloss Pressure Sensitive Adhesive (PSA) and Metallized Micro-Prism side. GLODIAN™ CLARO™ is serviceable in various colors to meet a wide variety of needs from customers. It makes the objects with GLODIAN™ CLARO™ highly visible in daytime, nighttime, foul weather and even under the wet condition by enhancing the safety of drivers in the road. GLODIAN™ CLARO™ is supple and conformable material. It can be also easily applied onto the winding substrate like construction and maintenance, utility and incident management applications, short-or mid-term traffic signs, warnings, construction/work zone information signs, traffic control sign (Tripod Stand sign), etc.



76, Pureundeulpan-ro, 1010beongil,  
Paltan-myeon, Hwaseong-si,  
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## Size & Package

- **Roll Size** 122cm x 50m (48" x 50yd)
- **Packing Size** 1,305mm x 230mm x 240mm  
(51.4" x 9.1" x 9.4")
- **Net Weight** 30kg (66.1 lb) per roll
- **Gross Weight** 33kg (72.7 lb) per roll

## Notes

- 1) The specifications can be changed for the upgrade of product. The above data are the average of test results at the normal test condition.
- 2) The use of reflective material does greatly enhance visibility; however, no reflective material can assure absolute visibility, particularly in offensive weather conditions.
- 3) Performance will vary from actual use, exposure conditions and maintenance. Users should test reflective material to ensure the conformance to their own requirement.
- 4) GLODIAN™ CLARO™ is suitable to be attached onto aluminum, iron, stainless, polar polymer (PVC, TPU) but it is unfit for non-polar polymer (PP, PE).
- 5) The acceptable temperature range to use GLODIAN™ CLARO™ application without any potential problems is -15 to 70°C.

## Storage

Store in a cool dry place, preferably at 18°C (64.4°F) to 28°C(82.4°F) and use within 1 year after arrival date.

Store rolls in their original shipping cartons. Partially used rolls should be returned to their shipping carton. Avoid banding, crating, or stacking signs. Package for shipment shall be in accordance with commercially accepted standards to prevent movement and chafing. Store sign packages indoors side up. Panels or finished signs must remain dry during shipment and storage. If packaged signs become wet, unpack immediately and allow signs to dry.

Rolled material should be stored in the original carton. The rolls have standard spacers (core plugs) that can prevent contact between the roll surface and the carton, and as a result can avoid the formation of pressure marks and surface damage. Please make sure that partly processed rolls are never stored without spacers.

When making the rolls available for processing, it is advisable to use a horizontal suspension type. If the rolls are stored in a vertical and freestanding position, negative effect on the film's characteristics can be avoided. It is crucial to place the roll on the spacer to avoid any breakage at the edges and contamination.



## Important

### Durability

The durability of GLODIAN™ CLARO™ series and finished product using them will depend upon substrate selection and preparation, compliance with recommended application procedures, geographic area, exposure conditions, and maintenance. Maximum durability of GLODIAN™ CLARO™ series can be guaranteed for applications subject to vertical exposure on stationary objects when processed and applied to well-made aluminum pursuant to the recommendation from REFLOMAX. Periodic sign inspection and regular sign replacement are strongly recommended in order for sign owners to ensure their own effective service life and the durability warranty, if provided.

### Substrate

The user must determine the suitability of any nonmetallic sign backing for its intended use. Applications to unprimed, excessively rough or non-weather resistant surfaces can deteriorate the performance of such applications.

### Exposure

Exposure to severe or unusual conditions can deteriorate the performance of such applications. Signs in mountainous areas where are covered by snow for a long times may also shorten the durability. Atmospheric conditions in specific geographic regions may result in reduced durability.

### Splice

There could be one splice per roll and additional meter will be provided in case of roll with splice.

## Warranty

No warranty is given for the purposes other than those listed in the Specifications Sheet or which are not processed subject to REFLOMAX's processing and handling instructions. The durability of the signs will depend on many factors, including but not limited to substrate selection and preparation, compliance with recommended application guidelines, geographic area, exposure conditions and maintenance of the product and finished sign. Sign fault by the substrate or improper surface preparations is not under the responsibility of REFLOMAX. Please see the full warranty instrument available at [www.reflomax.com](http://www.reflomax.com) for further information.

GLODIAN™ is registered trademark of REFLOMAX Co., Ltd.