



# Gerber High Performance Series 280i Plus Reflective

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## DESCRIPTION

Gerber HP Series 280i Plus is a high performance reflective film made exclusively for Gerber by 3M™. Series 280i Plus is durable and dimensionally stable with a clear, pressure-sensitive adhesive designed to withstand a variety of severe weather and handling conditions. It is available in white only on a 78-lb, double-sided, poly-coated liner.

Series 280i Plus is an EDGE READY™ material that has been optimized for improved printing on the GERBER EDGE®, GERBER EDGE 2®, and GERBER EDGE FX™ thermal transfer printing systems and is also removable with heat.

## PRODUCT CONSTRUCTION

Property	Description
Thickness (film and adhesive)	7 to 8 mil (0.18 to 0.20 mm)
Film color	White
Adhesive	Clear, pressure sensitive
Liner	Polyethylene-coated paper
Application substrates	For flat surfaces with or without rivets or moderate curved surfaces

Property	Description
Application surfaces	Flexible signage, glass, metal, acrylic, polycarbonates, fiberglass, and painted surfaces
Removability	Removable with heat and/or chemicals from most substrates within specified warranty period

## INTENDED APPLICATIONS

Series 280i Plus is suitable for a wide range of commercial and industrial applications including vehicles, exterior and interior signage, window markings, etc. It can be used on flat surfaces with or without rivets, or moderate curved surfaces.

## PERFORMANCE LIFE – (UNPRINTED)

The exterior performance life of Series 280i Plus is based upon field experience and exposure tests conducted throughout the United States. When the graphics are processed and used according to Gerber recommendations, they should have an expected performance life up to the values shown in the charts below. The actual performance depends on the following conditions:

- ◆ Selection and preparation of substrate
- ◆ Application methods
- ◆ Exposure conditions
- ◆ Cleaning methods

Application Specifics			Performance Life (years): Unprinted	
			U.S. <sup>1</sup>	Desert SW <sup>2</sup>
*Vertical Exposure 280i Plug	Signs Only	Unprinted, applied to first surface	5	3
	Vehicles Only	Unprinted, applied to first surface	7	5

\* Face of graphic is vertical  $90^{\circ} \pm 10^{\circ}$ .

1. For exterior performance life statements outside of the United States, contact Gerber Technology.

2. The United States Desert Southwest area includes Arizona, New Mexico, and the desert areas of California, Nevada, Utah, and Texas.

## SHELF LIFE AND STORAGE

Apply film within one year of receipt. Printed graphics should also be applied within one year. Film and printed graphics (with or without premask) should be kept in a clean area free from excessive moisture and direct sunlight. Maintain temperature at less than 100°F (38°C).

**Use a paper interleaf between layers of stacked or rolled printed materials. Do not stack printed graphics face to face.**

## PRINTING

Series 280i Plus has been optimized for use with EDGE® Series printers in conjunction with GerberColor™ Finishing (GCF), GerberColor Spot (GCS), GerberColor Process Pro™ CMYK

(GCP), and GerberColor Transparent (GCT) Series Foils. **GerberColor Process Pro and Transparent Foils are especially ideal for use with Series 280i Plus because the transparent characteristic of these foils allows the retroreflectivity of the film to show through.**

Gerber standard tack application tape is required to be used as the transfer carrier for all printed graphics.

Recommended working environment is as follows:

- Operating temperature: 50°F to 95°F / 10°C to 35°C
- Recommended temperature for assured printing accuracy: 68°F to 78°F / 20°C to 26°C
- Operating humidity: 20% to 90% relative humidity, non-condensing (maximum range; actual range varies by material used)

## PROTECTING GRAPHICS

Gerber Technology offers products that are designed to protect vinyl and printed graphics.

Gerber Guard™ is a durable, dimensionally stable, glossy vinyl overlamine. This film has a petrochemical-resistant construction and is intended to be used when markings may be exposed to petrochemical spillage and/or severe handling conditions.

Gerber UVGuard™ is a custom-formulated, 1-mil, clear, TEDLAR® polyvinyl fluoride (PVF) laminating film designed to further expand the resistance to weathering of printed graphics for up to five years.

Gerber UVGuard™ 9 manufactured by 3M is a 2-mil, glossy, clear, mildew-resistant, polyvinyl fluoride laminating film with a petrochemical-resistant adhesive system. It is designed to further expand the resistance to weathering of printed graphics up to nine years. Gerber UVGuard 9 has the highest protection from UV fade.

Gerber StrikeGuard™ is an 8.0-mil, clear, glossy overlamine film designed for a variety of applications. This heavy-duty overlamine film is ideal for the protection of graphics, up to two years, and is especially beneficial where printed graphics experience severe handling and forceful impact. Gerber StrikeGuard is not recommended in applications that require petrochemical protection or where additional UV or vandal resistance is desired.

Abrasion Guard™ SPF (Sign Protection Formula) is a clear, top-coat GerberColor Finishing Series (GCF) Foil designed for use with EDGE® Series thermal transfer printing systems, to protect graphics from moderate contact and exposure to harmful effects of UV rays. It has an expected performance life of up to five years (when printed by itself). When applied as a protective overprint on other GerberColor Foils, Abrasion Guard SPF will extend the life of the base color by up to 30%.

Matte Clear is a clear matte finish, top coat GerberColor Foil designed for use with EDGE® Series thermal transfer printing systems, to reduce glare and protect graphics from moderate contact or handling. It has an expected performance life of up to three years.

## CUTTING

Series 280i Plus can be cut on any 15-inch EDGE-compatible sprocketed plotter using a 30° blade. When using a GS15 plus™ plotter, a 45° tangential blade is recommended. See FF# 5252.

Excess film should be weeded within 24 hours of cutting to minimize the effect of adhesive flow.

## SUBSTRATE PREPARATION

Before applying your graphic, wash the surface of your substrate with warm water and detergent. Do not use soaps or other cleaners with lotions or creams as they will leave a residue. Thoroughly rinse the surface and allow it to dry completely.

Saturate a clean paper towel with a solvent-based cleaner and wipe the substrate surface. Be certain to follow all manufacturer safety guidelines when using any solvent. Dry the surface with a lint-free paper towel before the solvent evaporates.

If applying to glass, wipe the surface with a 2-to-1 mixture of water and isopropyl alcohol. Glass temperatures can vary across the surface. These temperature variations can produce stresses, which may cause the glass to break. Use caution when applying to glass.

Some polycarbonate substrates may weaken when certain vinyl films are applied to them. Because of this possibility, the user will need to determine if safety items such as helmets, safety shields, and some windshields are compatible with their vinyl's adhesive.

Many paint systems (e.g. two-part urethane) and some plastic substrates will outgas if they are not fully cured. Outgassing can cause permanent bubbling in most films; substrates should be tested for outgassing prior to final application. Plastics should be dried at 150°F (66°C) for 24 hours prior to application to help avoid outgassing.

## APPLICATION TECHNIQUES

Only dry application method should be used with Series 280i Plus and panels should be overlapped by 0.1 inch. Gerber standard tack application tape is recommended for all EDGE-printed applications.

## MAINTENANCE

To clean printed graphics, use a mild, non-abrasive soap with a soft cloth or sponge. Avoid using alcohol-based cleansers or soaps containing grit or abrasives. Automated vehicle washing systems that use rotary cleaning brushes should also be avoided.

## PHYSICAL PROPERTIES

Property	English Units	Metric Units
Dimensional Stability	0.015 in	0.4 mm
Service temperature range	-30°F to 200°F	-34°C to 93°C
Minimum Application Temperature	50°F (flat w/o rivets) 55°F (flat w/ rivets)	10°C (flat w/o rivets) 13°C (flat w/ rivets)

## ADHESION CHARACTERISTICS (24 HOURS AFTER APPLICATION)

Substrate	English Units	Metric Units
Aluminum	4.8 lb/in	0.86 kg/cm
FRP	3.7 lb/in	0.7 kg/cm
Painted aluminum panels	2.6 lb/in	0.5 kg/cm

## CHEMICAL RESISTANCE

Series 280i Plus Reflective film is resistant to mild acids, mild alkalis and salts. Material has excellent water resistance.

## RETRO REFLECTION

At a  $-4^\circ$  entrance angle and a  $0.2^\circ$  observation angle, unprinted film Series 280i Plus has the following typical coefficient of retro reflection. It is expressed in candlepower per foot-candle per square foot (candela/lux/square meter) per ASTM E 810.

The entrance angle is formed by a light beam striking the surface at a point and at a line that is perpendicular to the surface at the same point.

An observation angle is formed by the light beam striking the reflective surface and returning to the observer. From 800 feet (249 meters), a motorist normally views a graphic at  $0.2^\circ$  angle.

Typical Coefficient of Retro reflection	100
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## RELATED LITERATURE

Refer to Product Bulletins of relevant foils and materials for product-specific handling, production, and finishing information.

## CONTACT INFORMATION

For help with questions concerning Gerber products, please call your distributor or Gerber Customer Service at 1-800-222-7446 or (860) 644-1551. Visit us on the Internet at [www.gspinc.com](http://www.gspinc.com) to learn more about our many other foils, materials and equipment.

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<b>Category:</b> EDGE READY™	<b>FastFact #:</b> 5582	<b>Supplied by:</b> Aftermarkets	<b>Last Modified:</b> 9/2/2015
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