Gerber High Performance Series 220 Premium Film manufactured by 3M

DESCRIPTION

Gerber High Performance Series 220 is a high performance cast vinyl film made exclusively for Gerber by 3M. Gerber High Performance Series 220 is a durable, dimensionally stable vinyl with a clear, pressure-sensitive adhesive designed to withstand a variety of severe weather and handling conditions. It is available in over 100 colors and several finishes including, opaque gloss, matte, metallic, and Clear Enamel Receptive, in both punched and unpunched formats. Series 220 comes on a paper liner.

15-inch Series 220 is an EDGE READY™ Material.

PRODUCT LINE

Property	Description
Film	2-mil cast vinyl
Thickness (film and adhesive)	2.5 to 3.5 mil (0.063 to 0.09 mm)
Film Color	Over 100 colors

Property	Description
Adhesive	Clear, pressure sensitive
Liner	78-lb white kraft liner
Application substrates	For flat surfaces with and without rivets, or simple curved surfaces
Application surfaces	Flexible signage, glass, metal, acrylic, polycarbonates, fiberglass, painted surfaces
Removability	Permanent

INTENDED APPLICATIONS

Series 220 is suitable for a wide range of commercial and industrial applications including vehicles, exterior and interior signage, window markings, display graphics, etc. It can be used on flat surfaces with and without rivets or simple curved surfaces. Series 220 has a clear adhesive and is therefore suitable for use as a cut vinyl in window/transparent substrate applications, as well as opaque applications.

PERFORMANCE LIFE (UNPRINTED)

The exterior performance life of Gerber High Performance Series 220 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 that follow. 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. [1, 4]	S. W. [2, 4]
*Vertical Exposure	**Signs Only** Solid colors, except metallic colors and clear	Unprinted, applied to first surface	7	5
		Unprinted, applied to second surface	7	5
	Vehicles Only Solid colors, except metallic colors and clear	Unprinted, applied to first surface	8	5
		Unprinted, applied to second surface	8	5

	Signs and Vehicles Metallic colors and Clear	Unprinted, applied to first surface	5	3
Application Specifics			**Performance Life (years): Unprinted**	
			U.S. [1, 4]	**S. W.** [2, 4]
****Non-Vertical Exposure**[3]	Unprinted, applied to first surface		5	Not Recommended

*Face of graphic is vertical 90º ± 10º.

**Face of graphic is more than 10° from 90°. Solid colors only.

1 For exterior performance life statement outside of the United States, contact Gerber Scientific Products, Inc.

2 The United States Desert Southwest area includes Arizona, New Mexico, and the desert areas of California, Nevada, Utah, and Texas. A detailed map is available upon request.

3 Non-vertical applications can be used to identify commercial vehicles from the air. Non-vertical applications expose the film to the maximum effect from sunlight and the environment. There are foil and film restrictions for horizontal applications. The film may change color, lose gloss, and chalk. The following performance statements assume that only legibility is required.

4 Unprinted films 220-20, 220-163, 220-263, 220-273, and 220-286 may chalk with age (Matte White, Dark Magenta, Perfect Match Red, Process Magenta, and Jade Green). This is considered normal and acceptable wear.

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

Use Gerber Series 220 settings when printing with the GERBER EDGE®, GERBER EDGE 2®, or GERBER EDGE FX™ thermal transfer printing systems.

GerberColor™ Finishing (GCF), GerberColor Spot (GCS), GerberColor Process Pro™ CMYK (GCP), GerberColor Medal (GCM), GerberColor Transparent (GCT), and GerberColor Special Effects (GCX) Series Foils, and ColorSet™ Foils can be used to print onto Series 220.

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

PROTECTING GRAPHICS

Gerber Scientific Products®, Inc. offers products that are designed to protect vinyl and printed graphics.

Gerber Guard™ manufactured by 3M is a durable, dimensionally stable, glossy vinyl overlaminate. 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 overlaminate film designed for a variety of applications. This heavy-duty overlaminate 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%.

CUTTING

Series 220 can be cut on any Gerber 15-inch sprocketed plotter, plus any FasTrack™ or ODYSSEY™ plotters. A 30° SuperSharp blade is recommended for tangential plotters (HS15™, HS15 Plus, GSX™, GS15™, GS750™, HS750™, SMIVB™). A 45° blade should be used with swivel knife plotters (FasTrack™, EmbossTrack™, enVision™, and ODYSSEY). Plotters can be set to full speed.

The minimum recommended cutting height for text is .375 inches. This recommendation is based upon evaluations using upper case Helvetica Medium copy. Users should verify their own ideal cut heights based upon their specific cutting equipment. The user should perform a test cut to determine the ideal tool force setting.

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 completely dry.

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 that 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 150ºF (66ºC) for 24 hours prior to application to help avoid outgassing.

APPLICATION TECHNIQUES

Both wet and dry application methods may be used with Series 220 and panels should be overlapped. Gerber standard tack application tape is recommended for all EDGE-printed applications (see "Printing" section for important information on applying EDGE graphics.)

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	0.008 in	0.2 mm
Tensile Strength	5 lb/in at 73°F	0.9 kg/cm at 23°C
Reverse impact resistance	No cracking at 73°F or 40°F	No cracking at 23°C or 4°C
Minimum Application Temperature	40°F	4°C
Service Temperature Range	-40°F to 225°F	-40°C to 107°C

ADHESIVE CHARACTERISTICS

Material	English Units - Pounds/inch	Metric Units - Kg/cm
Acrylic	4	0.7
Acrylic enamel	4	0.7

Alodine aluminum	8	1.4
Chrome plating	5	0.9
Fruehauf prepainted panels	4	0.7
Polycarbonate	4	0.7
Urethane paints	4	0.7

CHEMICAL RESISTANCE

Chemical Agent	Exposure Time	Result
Reference fuel	1 hour	edge softening
#1 diesel fuel	1 hour	edge softening
10% Hydrochloric acid	10 minutes	no effect
10% Ammonium Hydroxide	10 minutes	no effect
Mild acids	10 minutes	no effect
Alkalis	10 minutes	no effect
Salts	10 minutes	no effect
Water	10 minutes	no effect

FLAMMABILITY

Series 220-10 (white) has been tested for flame spread per ASTM E84-95, “Surface Burning Characteristics of Building Materials,” and meets the requirements of National Fire Protection Association Class A (1) (most fire resistant class) as defined in NFPA 101, “Life Safety Code.”

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 to learn more about our many other foils, materials and equipment.

GERBER HP SERIES 220 COLOR CHART

Solid Colors

220-10 White	220-11 Pearl Gray	220-12 Black
220-13 Tomato Red	220-14 Bright Orange	220-15 Bright Yellow
220-17 Vivid Blue	220-19 Deep Mahogany Brown	220-20 Matte White
220-21 Palm Oyster	220-22 Matte Black	220-24 Terra Cotta
220-25 Sunflower	220-27 Navy	220-29 Russet Brown
220-31 Medium Gray	220-37 Sapphire Blue	220-38 Royal Purple
220-39 Tan	220-41 Dark Gray	220-46 Kelly Green
220-47 Intense Blue	220-48 Purple	220-49 Beige
220-53 Cardinal Red	220-54 Light Orange	220-56 Dark Green
220-57 Olympic Blue	220-58 Burgundy	220-63 Geranium
220-64 Apricot	220-66 Forest Green	220-68 Dark Burgundy
220-69 Duranodic	220-77 Peacock Blue	220-86 Robin Egg Blue
220-87 Royal Blue	220-88 Violet	220-89 Sandstone
220-90 Antique White	220-94 Coral	220-96 Teal
220-98 Dark Violet	220-99 Fawn	220 100 Oyster
220-135 Primrose Yellow	220-138 Pale Lavender	220-139 Saddle Brown
220-193 Mauve	220-196 Apple Green	220-197 Light Navy
220-223 Matte Red	220-253 Warm Red	220 263 Perfect Match Red
220-307 Dark Aqua	220-347 Powder Blue	220-357 Bermuda Blue
220-367 Celestial Blue	220-377 Blue Bird	220-387 Periwinkle
220-397 Dark Blue	220-407 Matte Blue	220-417 Sky Blue
220-101 Nimbus Gray	220-103 Magenta	220-104 Dark Coral
220-105 Imitation Gold	220-130 Eggshell	220-133 Raspberry

220-134 Intense Orange	220-145 Chrome Yellow	220-151 Traffic Gray
220-163 Dark Magenta	220-173 Salmon Pink	220-176 Aqua
220-177 Shadow Blue	220-186 Bright Green	220-187 Wedgewood Blue
220-266 Cactus Green	220-273 Process Magenta	220-276 Bottle Green
220-283 Cranberry	220-286 Jade Green	220-293 Atomic Red
220-296 Eucalyptus		

Metallic Colors

220-120 Silver	220-131 Gold	220-201 Slate
220-206 Pine Green	220-208 Burgundy	220-209 Dark Brown
220-211 Charcoal	220-216 Sage Green	220-217 Dark Blue
220-218 Light Rose	220-227 Bright Blue	220-229 Copper
220-231 Light Gold	220-237 Silver Blue	

Clear 220-114 Clear Enamel Receptive

PANTONE® Simulated Color Reference Table		
PANTONE Simulated Color	**Gerber HP Series 220 Color Name**	**GSP Pigment Code**
Process Black C	BLACK	220-12
Orange 021 C	BRIGHT ORANGE	220-14
Cool Gray 2C	PEARL GREY	220-11
Black C	MATTE BLACK	220-22
109C	BRIGHT YELLOW	220-15
175C	RUSSET BROWN	220-29
179C	WARM RED	220-253
186C	PERFECT MATCH RED	220-263
214C	PROCESS MAGENTA	220-273

220C	RASPBERRY	220-133
289C	LIGHT NAVY	220-197
PANTONE Simulated Color	**Gerber HP Series 220 Color Name**	**GSP Pigment Code**
301C	INTENSE BLUE	220-47
322C	TEAL	220-96
323C	BERMUDA BLUE	220-357
348C	BRIGHT GREEN	220-186
349C	CACTUS GREEN	220-266
422C	MEDIUM GREY	220-31
434C	PALM OYSTER	220-21
872C	GOLD - Metallic	220-131
877C	SILVER - Metallic	220-120
1235C	SUNFLOWER	220-25
1795C	TOMATO RED	220-13
2727C	PERIWINKLE	220-387
2756C	ROYAL BLUE	220-87
2767C	NAVY	220-27
2935C	MATTE BLUE	220-407
2975C	POWDER BLUE	220-347
3302C	FOREST GREEN	220-66
4625C	DEEP MAHOGANY BROWN	220-19
7461C	OLYMPIC BLUE	220-57
7510C	IMITATION GOLD	220-105

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GERBER TECHNOLOGY