

# Mar-Con® 551 Polycarbonate – Forming Grade Abrasion Resistant Plastic

## **Description**

Mar-Con® 551 Polycarbonate - Forming Grade (FG) is an abrasion resistant plastic sheet product designed for a variety of high performance end uses in which the sheet will be heat formed or bent into soft radius shapes. It is a premium, high optic grade, polycarbonate sheet, coated with SciCron's Mar-Con 551 advanced technology crosslinked coating. This coating has excellent resistance to a wide variety of chemicals and solvents and is considerably more abrasion resistant than the polycarbonate plastic substrate. This combination of properties provides enhanced resistance to hazing, abrasion, and marring of the sheet surfaces from cleaning, handling, and defacement efforts. Mar-Con® 551 Polycarbonate - FG also exhibits excellent impact resistance and flame spread properties. This product can be used in many more applications than would be practical for an uncoated polycarbonate sheet. Mar-Con 551 can also be applied to thin gauge materials without suffering from distortions caused by typical thermal curing coating processes.

## **Applications**

Mar-Con® 551 Polycarbonate - FG is designed to be used where there is concern about abrasion of the surfaces of the plastic sheet from handling and other moderate abuse. It is also designed for applications requiring improved splash and wipe down resistance to many common chemicals and solvents which would normally damage the polycarbonate sheet surfaces. The Mar-Con® 551 FG surface helps prevent such damage from short-term exposures to these materials. Typical applications for Mar-Con® 551 Polycarbonate - FG include formed fabricated items for interiors such as: equipment covers, display components, safety shields, and curved machine guards.

#### **Fabrication**

Mar-Con® 551 Polycarbonate - Forming Grade is easily fabricated into flat and bent surface configurations using the same equipment employed with uncoated polycarbonate sheet products. The product is designed to accommodate drape forming and heat bending, however, care must be taken to avoid applying too much heat to prevent damage to the abrasion resistant coating. Soft radii shapes and bends can be achieved which are smooth, clear, and uniform, if recommended forming techniques are employed. Some distortion and loss of mar resistance in a bend area is normal. On tight bends, particularly in thicker materials, there may be some very fine haze lines in the bend area. When solvent welding, it is necessary to remove the coating mechanically to

achieve a good bond. Note: This product is <u>not designed</u> for vacuum formed or drawn configurations. For more information, refer to SciCron Technologies Technical Information Bulletin No. MP-02.

#### Features and Benefits

- Flexible, abrasion resistant, durable surface
  The Forming Grade Mar-Con 551 surface, more
  abrasion resistant than the base plastic, reduces risk of
  damage to the sheet surfaces from frequent cleaning
  and handling.
- Superior chemical and solvent resistance
   Reduces risk of solvent or chemical damage to the sheet surfaces
- Excellent optical properties
  High clarity, high gloss coating on a high optic substrate
  maintains optimum light transmission without distortion.
- Advanced technology, uniform surface treatment Provides enhanced abrasion and chemical resistance without changing the appearance of the polycarbonate surfaces.
- Graffiti resistance
  Easy to clean hydrophobic surface
- Superior impact resistance
   Provides exceptional shatter resistance for safety.
- Superior flame spread properties Provides additional protection in a fire.
- Superior forming and bending properties
  Results in optimum heat forming during part fabrication.

#### Cleaning

The Forming Grade Mar-Con 551 coated surface can be cleaned with a variety of common cleaners (see reverse side for specific recommendations). Care should be taken to avoid the use of any cleaner or cleaning solution which contains an abrasive. In addition, all wipes, sponges, and drying towels should be clean and free of any grit which could damage the coated surface.

## <u>Availability</u>

Mar-Con® 551 Polycarbonate - Forming Grade is available in clear, black opaque, and transparent gray and bronze tints. Other colors may be available upon special request.

## Standard Dimensions

Thickness: 3mm (1/8"), 4.5mm (3/16"), 6mm (1/4"), 9mm (3/8"), 12mm (1/2") plus films 10-90 mils

Standard Sheet Size: 48" x 96"

Other sizes and thicknesses available upon request.

Made in USA

The information and statements contained herein are believed to be accurate, however, users should perform their own testing and verification to determine the durability, applicability and suitability of the products for their own purposes. NOTHING CONTAINED HEREIN SHALL BE CONSTRUED AS A REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED. All sales are subject to SciCron's standard terms and conditions of sale, which can be found at: <a href="http://www.sctech.com/termscon">http://www.sctech.com/termscon</a>

# Mar-Con® 551 Polycarbonate - Forming Grade

Typical Physical Properties (Typical but not guaranteed values for 0.25 inch material)

| Property  | Test Method  | Units   | Mar-Con 551<br>Polycarbonate<br>Forming Grade   |
|---|--|---|---|
| Physical Specific Gravity Taber Abrasion <sup>1</sup> - $\Delta$ Haze Weighted Steel Wool Rub Resistance <sup>2</sup>   | ASTM D792<br>ASTM D1044<br>Internal  | <br>%<br>Visual Scratches   | 1.20<br>Less than 8<br>Light Scratches  |
| Mechanical Tensile Strength Ultimate Elongation Tensile Modulus Flexural Strength Flexural Modulus Compressive Strength Izod Impact Strength (milled notch) UV Exposure         | ASTM D638<br>ASTM D638<br>ASTM D638<br>ASTM D790<br>ASTM D790<br>ASTM D695<br>ASTM D256<br>ASTM G154 | psi % psi psi psi psi ft-lb/inch of notch 8 hrs UV Exposure, 4 hrs Condensation | 9,500<br>100<br>340,000<br>13,500<br>340,000<br>12,500<br>16<br>> 500 Hrs<br>No Adhesion Loss<br>ΔYI <3 |
| Thermal Deflection Temperature (264 psi load) Vicat Softening Point Maximum Continuous Service Temperature Coefficient of Thermal Expansion Coefficient of Thermal Conductivity | ASTM D648 ASTM D1525 ASTM D696 Cenco-Fitch   | °F<br>°F<br>°F<br>in/in/°F<br>BTU∙in/hr•ft²•°F                                  | 270<br>310<br>180<br>3.8 x 10 <sup>-5</sup><br>1.35   |
| Flammability Horizontal Burn (Flame Spread) UL 94 Rating of the Uncoated Substrate  | ASTM D635<br>UL 94   | in/min<br>UL Classification   | Less than 1.0<br>V-2 < 0.236 inch<br>V-0 ≥ 0.236 inch   |
| Optical Transmittance, 3mm Transparent Clear - Total Haze   | ASTM D1003<br>ASTM D1003   | %<br>%  | 88<br>Less than 1.0   |

<sup>1.</sup> Test conditions - 500 gram load, 100 revolution exposure, CS-10F Calibrase Wheel

### **Chemical Resistance ASTM D-1308**

Samples immersed in listed chemicals and then examined for visible attack at 15 minutes, 1 hour, and 24 hours

| Chemical                | Time for visible Attack |  |
|-------------------------|-------------------------|--|
| Acetone                 | < 1 hour                |  |
| Methyl Alcohol          | > 24 hours              |  |
| Isopropyl Alcohol       | > 24 hours              |  |
| Kerosene                | > 24 hours              |  |
| Toluene                 | < 1 hour                |  |
| Sodium Hydroxide (10%)  | > 24 hours              |  |
| Hydrochloric Acid (10%) | > 24 hours              |  |
| Sulfuric Acid (10%)     | > 24 hours              |  |
| Nitric Acid (10%)       | > 24 hours              |  |

## Cleaning and Graffiti Removal

### Solvents and Cleaning Liquids Found Effective Under Laboratory Conditions

Aqueous solutions of the following can be applied carefully with a soft cloth or sponge for ordinary dirt and grime.

Joy® Windex® Formula 409® Sparkle™

Rinse with clean water before drying with a chamois or cellulose sponge.

Never use an abrasive cleaner or scouring pad.

The following solvents can be used to remove graffiti and other stubborn stains:

Isopropyl Alcohol Methanol Naphtha (VM&P Grade) Kerosene Butyl Cellosolve (for paints, inks, lipstick, etc.)

Always remove residual solvent with an aqueous cleaner and a final rinse with clean water.

## Precautions:

Test conditions – 35 double rubs of #0000 steel wool under a 2 pound (908 gram), ½" contact area

<sup>1.</sup> Polycarbonate plastic is a combustible thermoplastic. Avoid exposure to flame and excessive heat. Observe fire precautions appropriate for comparable forms of wood and paper.

For building applications, comply with applicable code regulations.