

"Spartech. The Leader In Sign Plastics."

• **A Leader In Quality.** Our customers are the focus of everything we do. We are dedicated to deliver a first class product on time, every time, to each of our customers.

• **A Leader In Service.** Regionally located manufacturing plants make Spartech Plastics the most responsive resource for plastic sheet in North America.

• **A Leader In Commitment And Support.** We stock the most complete signface sheet material product line in the industry.

• **A Leader In Technology.** Spartech Plastics' 40+ year reputation for innovation in thermoplastics is unsurpassed.

• **A Leader In The Industry.** With annual sales of over \$600 million, Spartech Plastics is the largest custom sheet extruder in the world.

• **ISO 9002 Certified Plants.** Spartech's full line of sign plastics are manufactured in ISO 9002 certified facilities.

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Sungard®

*Ultra Weatherable
Polycarbonate*



*Made From Lexan® Resins
or Calibre® Resins*

Sungard®

Ultra Weatherable Polycarbonate

Sungard® Ultra Weatherable Polycarbonate Sheet. The first all-polycarbonate weatherable sheet product, combines the impact strength of general purpose polycarbonate with outstanding U.V. stability. Sungard is highly resistant to weathering, discoloration, surface haze, loss of impact strength or other properties after prolonged outdoor exposure.

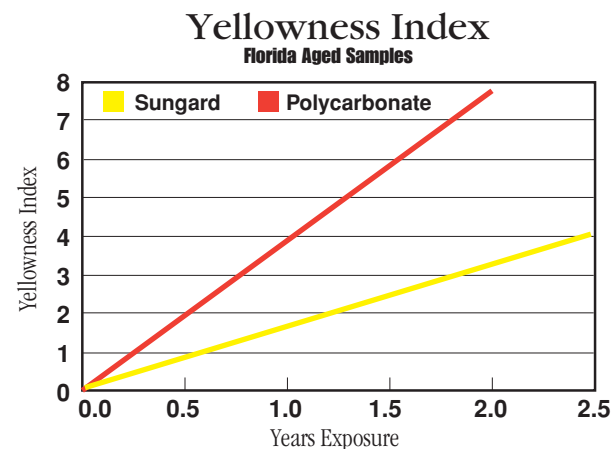
Sungard represents a scientific breakthrough in polycarbonate sheet technology which, through a unique extrusion process, imparts ultra-violet resistance to the polycarbonate structure itself.

Sungard has a twelve-year limited warranty against breakage (under normal conditions), excessive yellowing and loss of light transmission. For more information, contact Spartech Plastics.

Impact Strength. In addition to outstanding resistance to yellowness and haze, Sungard has the inherent impact strength of general purpose polycarbonate since no coating, lamination or foreign material is applied. And, unlike general purpose polycarbonate, the impact strength is retained over time.

Weatherability. The superior weatherability of Sungard polycarbonate sheet has been demonstrated in both accelerated and actual outdoor weathering test programs.

The following charts show comparisons of Sungard to general purpose polycarbonate, measuring yellowness index and haze.



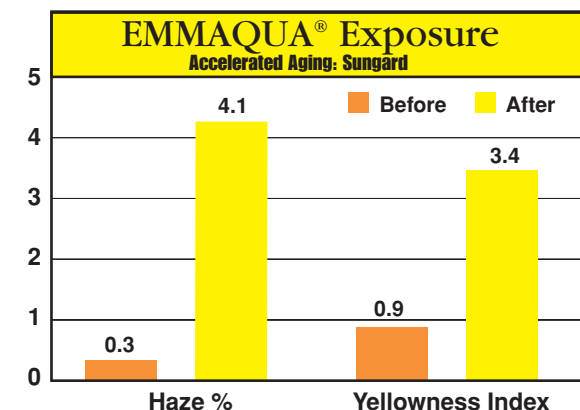
Fabrication. Unlike some competitive polycarbonate sheet products, Sungard is all polycarbonate so that delamination, mold sticking and weathering away of post-applied coatings will not occur.

Sungard can be drilled, routed, sheared and painted using the same fabrication and machining techniques as for general purpose polycarbonate.

Most conventional mechanical fixing methods such as screws and rivets can be used; adhesive and solvent bonding are possible. For proper mechanical fastening, always over-drill the hole by 1/16 of an inch to allow for expansion. Use an approved silicone sealant in the hole with the fastener to inhibit stress cracking at the hole.

Cutting. Sungard can be cut with standard high-speed metal working tools; carbide-tipped blades are recommended for longer life. Circular saws with triple chip or beveled tooth type blades with about two teeth per inch are recommended, with blade speeds in the 6000 to 8000 rpm range. Band saws having 10 to 18 teeth per inch and blade speeds of 2500 to 3000 feet per minute should be adequate for smooth clean cuts.

Cementing. Bonding Sungard to itself and to other plastics can be accomplished. Excellent results can be obtained with urethane adhesives, including Hartel #17017 and Weld-On #55 by IPS. Silicones by GE Plastics are also recommended. Solvent cementing may also be used. (For more information, contact your sign distributor.)



55,203 MI/m² Total Radiation:
Equivalent to 8.4 Years of Unaccelerated Exposure
EMMAQUA® is a registered trademark of Heraeus DSET Laboratories, Inc.

Physical Property Summary

| PROPERTY | METHOD | TYPICAL VALUE | UNIT |
|----------------------------------|---|------------------------|--------------|
| Specific Gravity | ASTM D-792 | 1.20 | g/cc |
| Tensile Strength @ Yield | ASTM D-638 | 9,360 | psi |
| Tensile Modulus | ASTM D-638 | 345,540 | psi |
| Flexural Strength | ASTM D-790 | 15,000 | psi |
| Flexural Modulus | ASTM D-790 | 391,000 | psi |
| Izod Impact, Notched | ASTM D-256 (73° F) | 17.2 | ft.-lbs/in |
| Deflection Temperature | ASTM D-638 (264 psi, unannealed) | 277 | °F |
| Falling Dart Impact (Gardner) | ASTM D-3029 (.177" samples at 73° F) | 960 (no break*) | in.-lbs |
| Coefficient of Thermal Expansion | ASTM D-696 | 3.5 x 10 ⁻⁵ | in/in/°F |
| Hardness | ASTM D-785 | 123 | Rockwell "R" |

*This is the maximum output of the test equipment.

These typical results are based on test procedures which are believed to be reliable. Due to variable conditions or methods of processing, NO GUARANTEES OR WARRANTIES ARE EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSES, nor any recommendations made to infringe on patents.

| Thickness in inches | Drying Time |
|---------------------|-------------|
| .093" | 4 hours |
| .118"/.125" | 5 hours |
| .150" | 8 hours |
| .177"/.187" | 12 hours |
| .236"/.250" | 24 hours |

For optimum results, remove protective film and space sheets one inch apart in an air-circulating oven.

Pre-Drying. The most critical step in the thermoforming process is proper drying of the sheet. The most efficient temperature is 250° F.

Drying time is dependent upon oven configuration, air circulation, sheet thickness, etc. See chart for suggested starting points. Note: Always remove protective film when drying sheet at over 200° F.

Thermoforming. Sungard can be vacuum-formed on virtually all thermoforming equipment from high-volume multi-station rotary machines to single-station or shuttle presses; pressure forming techniques have also been highly successful. Excellent forming detail can usually be obtained at sheet temperatures of 350° - 425° F; all normal tooling materials such as aluminum, epoxy and various hardwoods can be used.

| Brand | Spray | Screen | Cleaner |
|------------|------------|------------|---------|
| Grip-Flex® | T-2003 | T-1003 | T-4000 |
| Grip-Flex® | T-2004 | T-1004 | |
| | | T-1007 | |
| Lacryl® | 400 Series | 800 Series | 206-T |

Painting. Sungard can be easily painted and silkscreened using standard materials and techniques. Based on thorough testing by Spraylat and Akzo, various products are suggested (see chart).

Follow the manufacturer's guidelines for proper painting and paint removal procedures. Always remove solvents from plastic sheet as quickly as possible to prevent solvent attack.

Sungard polycarbonate sheet is manufactured from Lexan® resins or Calibre® resins. Lexan is a registered trademark of General Electric Company. Calibre is a registered trademark of Dow Chemical.

