DUETS - LASER ENGRAVING STOCK –TECHNICAL DATA

Rev. 5/11/16

PROPERTIES	TEST METHOD	UNITS	VALUES
Mechanical Properties			
Tensile Strength	ASTM D-638	Psi (MPa)	6,510 (39)
Elongation	ASTM D-638	Percent	38
Modulus of Elasticity	ASTM D-638	Psi (MPa)	255,000 (1,760)
Flexural Strength	ASTM D-790	Psi (MPa)	8,890 (61)
Impact Strength-Izod (notched, ¼")	ASTM D-256	Ft-lb/in. (J/m)	1-2 (66)
Impact Strength-Falling Weight (1/8")	ASTM D-3029 GB	In-lb (J)	56 (6.33)
Thermal Properties			
Vicat Softening Temperature	ASTM D-1525 (rate A)	°F (°C)	227 (108)
Heat Deflection-Under Load	ASTM D-648 (264 ps;)	°F (°C)	176 (80)
Average Melt Flow Rate	ASTM D-1238 (3.8/230)	g/10 min	0.8
Coefficient of Linear Thermal Expansion	ASTM D-696	cm-cm/°C	12 x 10^{-5}
Molding Shrinkage	ASTM D-955	Percent	0.2-0.6
Other Properties			
Specific Gravity	ASTM D-792		1.16
Flame Spread	ASTM E-84		115
Smoke Dev. Index	ASTM D-2843		550
Self Ignition Temperature	ASTM D-1929		833
Thermal Expansion Rate			.00023/in.
General	ASTM D-4802*	n/a	n/a

*Category B-1 and B-2

Duets BY GEMINI™

Duets® Engraving and ADA Substrate Cleaning Recommendations

As a general rule, most engraving and plastic substrates will require some routine cleaning (every few months) to retain their original luster. Below are recommendations for safe and effective cleaning of Duets® materials.

- Test a scrap piece or small area of the material before cleaning the entire piece.
- Use a soft cloth or sponge for cleaning. Do not use any abrasive cleaning pads.
- Use mild soap and water to clean Duets® substrates. Rinse with warm water.
- You may try cleaning dust with a light amount of compressed air prior to any other cleaning method.
- Naptha (Naphthalene) Plastic cleaner has been tested and approved for use with Duets® products.
- Novus® #1 Plastic cleaner has been tested and approved for use with Duets® products.
- Do not use any citrus based cleaning solutions, harsh detergents, or chemicals as they will dull the finish.

Duets® Laser Settings Recommendations

While every laser is different, here are recommended laser settings to try out using our products. We recommend testing a small area/piece to find the perfect combination for your machine.

50 WATT SYSTEMS
Raster - 30% Power, 80% Speed
Vector - 80% Power, 20% Speed

75 WATT SYSTEMS
Raster - 25% Power, 90% Speed
Vector - 75% Power, 25% Speed

100 WATT SYSTEMS
Raster - 20% Power, 90% Speed
Vector - 75% Power, 40% Speed

Please remove the protective coating before laser or rotary engraving. Before cutting the materials, however, it is recommended to leave the protective masking in place when performing vector cuts if your application will permit. This will minimize residue and clean-up efforts.

Using the 'bottom up' engraving setting in your laser software will minimize the re-distribution of color residue to the core. Increasing power in 5% increments can be helpful and multiple passes might be required to achieve your optimal results. In many cases, Z-offset (controlled de-focus) in the range of 1 mm – 2 mm will allow for a smoother engraving surface with a more intense color result.