chroma® | laser cutting and etching

procedures and guidelines for laser etching

Laser cutting and etching are both part of the 3form environmental graphics offering. Laser etching should always be performed by 3form, as proprietary techniques and equipment is employed to achieve a truly stunning finished product. Laser etching performed in the field will not result in the same final aesthetics as those achieved by 3form. The following settings will most closely represent 3form aesthetics when processed by a standard CO_2 laser. Laser etched products cannot be used in exterior applications.

LASER CUTTING

CO_2 lasers offer a lot of advantages for cutting 3form Chroma panels. Lasers have a narrow kerf (<0.020"), can cut to tight tolerances, and leave a polished edge finish. Laser cutting is dependent on three basic machine settings; Power, Pulse rate, Feed rate. A higher power level will allow for higher feed rates and processing of thicker panels. The power level is expressed as a percentage of the laser's maximum output in watts. Pulse rate is the rate at which laser "fires" measured in pulses per second (pps). The laser beam is not continuous but rather a series of bursts or pulses. The feed rate is the speed of the head in inches per minute (IPM).

For gauges of Chroma 1/2" or thicker, it is recommended to use a laser more powerful than 375 watts.

Increasing the power of the laser at a given feed rate will result in a more polished edge finish. However this also increases the stress level in that edge of the sheet. Sheet stress makes the edge susceptible to crazing from contact with incompatible solvents or mechanical stress. It is recommended to adjust the feed rate, pulse rate and power to a level that minimizes stress generated.

RECOMMENDED CUTTING SETTINGS

LASER WATTAGE	FEED RATE (IN/MIN)
375	30
600	50
1500	100

LASER ETCHING

Laser etching 3form Chroma panels is best achieved by 3form. In the event that panels need to be laser etched, see the settings below. These settings were developed for basic CO_2 lasers and will not achieve the level of "frosting" as those panels processed by 3form.

Laser etching is dependent on five machine settings; Power, Pulse rate, Feed rate, Focus and Line Spacing. The power level is expressed as a percentage of the laser's maximum output in watts. Power level will increase the depth of the etching and may also result in a more polished etch. Pulse rate is the rate at which laser "fires" measured in pulses per second (pps). The laser beam is not continuous but rather a series of bursts or pulses. The pulse rate will affect the finish of the etched area. The feed rate is the speed of the head in inches per minute (IPM). The feed rate will affect the deph of the etch and the surface finish of the etched area. The focus will change the size of the beam, as it contacts the material. The focus is the most improtant setting when laser etching Chroma panels. The focus can dramatically affect the surface finish of the etched area to create a polished finish to a "frosted" finish. Line spacing is the distance between the laser passes and will be need to be adjusted whenever the focus is adjusted. Visible lines or banding can be fixed by reducing line spacing, however this will also increase machining time considerably.

RECOMMENDED CUTTING SETTINGS

POWER	FEED RATE	FOCUS	SPACING	FEED RATE (IN/MIN)
50 watts	200 in/min	0.00	0.07"	30

