GRAVOTECH
EXPRESSION OF THINGS

METAL MARKER G

TECHNICAL DATA SHEET

Product

Metal marker G is an alcohol based formulated product for CO2 metal laser marking. Gently shake the product prior use until the suspension is homogeneous. Refer to safety datasheet for individual protection equipment.
Please note that the product is not suitable for anodized aluminium. .

Product Use

Safety of use

Always use gloves when manipulating the product

Applying and drying

Clean the surface prior use (there must be no dust or grease remaining on the substrate). Shake bottle for a few second before applying by small successive taps.
A homogeneous and thin layer must be obtained. As long as the product is wet, you can apply more product on the surface if necessary. The product must be applied evenly to ensure a good marking quality. Allow approximately 2 minutes to air dry, the product is dry when the surface becomes opaque white. Drying process can be speed up by creating a light air flow over the surface (use the machine exhaust system).

Engraving

Use CO2 Gantry or Galvo laser to engrave the item covered by Metal marker G.

Various metal can be marked using Metal marker G such as stainless steel, steel, aluminum, copper, brass, magnesium etc. Laser power should at least be 25W, a 80W power can be necessary in some cases. The following settings must be considered as a starting point, optimal settings shall be determined by the user according to laser and substrate. Raw aluminum and brass metal will require slower speed or higher power to obtain a well contrasted and permanent mark. Optimal settings are obtained when a dark mark that cannot be removed with cleaning is obtained.

	CO_2 40 W laser		
	Stainless steel	*Brass, copper*	*Aluminium**
Power	100%	100%	100%
Speed	25 %	10-15%	15%
DPI/PPI	500	500	500

** Result can be different according to aluminium grade. To our knowledge, best result are obtained on raw aluminium or combined with very low quantity of other chemical (< 1%)*

Storage and shelf-life

Product can be stored at 5-35°C temperature for one year after the opening. If the product dried because ofa wrong handling/closing, add ethanol to disperse the powder.

If the optimal product shelf-life is less than one year, it can still be used without any degradation up to two years. If some drying occurs, add a small drop of ethanol to remove the dried parts on the pen foam.

Physico-chemical properties of the marking

The following properties are confirmed according to the substrate with optimized parameters for marking. Properties should be the same if parameters are optimized to allow adhesion on the substrate.

Adhesion

Cross-cut adhesion test with visual inspection after tape removal. No change in the marking was observed for all the tested metal (brass, aluminium, stainless steel and copper).

Abrasion

Linear Taber test with 500 cycles at 60 cycles per min using a CS17 gum under 250 grams load. No change in the marking (other than the abrased metal) was observed for all the tested metals (brass, aluminium, stainless steel).

Chemical resistance

Chemical resistance was tested using fluid application by cataplasm for 7 days at room temperature. Quotation were made after 1h, 16h, 24h and at the end of the test. Samples were cleaned before each quotation and changes in the marking were evaluated. Results are summarized in the table below.

	Visual aspect after 7 days	
	Aluminium	Stainless steel
Limonene	No change	No change
MethylEthyl ketone	No change	No change
Isopropanol	No change	No change
Xylene	No change	No change
Petrol F	No change	No change
Acetone	No change	No change
Propylene carbonate	No change	No change
DMSO (Dimetylsulforyde)	No change	No change
Commercial unleaded 95 gasoline	No change	No change
Engine oil 10W40	No change	No change
kerosene	No change	No change
Limonene	No change	No change
MethylEthyl ketone	No change	No change

UV resistance

1400 hours QUV with intermediate quotation at 350hours and 700 hours. Visual inspection and grey scale evaluation according to EN20105-A02 (12/94). No change in marking quality and contrast was observed except for a bluer aspect.