



# GRAVOGLAS 1

## ENGRAVING and COLOURING TIPS



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Gravoglas 1 is made of a clear Poly Methyl Methacrylate layer (PMMA) over which a flat silk-screened plate is applied. This plate gives the background engraving colour. It is intended for sub-surface engraving. It is easy to handle and ideal for outdoor use.



When handling, always take care not to SCRATCH the plate.  
(Methacrylate is very sensitive to scratches).

### CUTTING GRAVOGLAS 1



Use a **Saw** : make sure you check the **blade quality** and **do not to move the saw carriage too quickly** in order to avoid chips.

Circular saw  
VA 1 : # 68 000 000  
VA 11 : # 68 001 000

### ENGRAVING GRAVOGLAS 1

Keep the protective film on the top side during the engraving operation.



- **CLAMPING GRAVOGLAS 1** : It can be clamped, according to its shape and dimension, on a **clamping table** or a **vacuum table**, or in a **vice** with **celoron or aluminium jigs** (for small pieces of material).

For batch production, use the mechanical stop located on the jigs.

- **ENGRAVING WITH A CUTTER** :  
Gravoglas 1 is intended for sub-surface engraving, the engraving depth depends on the character height and the colouring. It gives more or less relief depth to the text engraved.  
The swarf extractor is not essential with Gravoglas 1.

The use of a **regulating nose** is recommended because the **Metacrylate** used in the manufacturing process of Gravoglas 1 is « cast ». The characteristic of cast layers is the uneven thickness : it can vary from more or less 10% of the plate's thickness. The use of a regulating nose will avoid depth differences in the engraving.

A standard spindle is used.

- **Engraving with a pantograph** : you should not apply too strong a pressure on the tool-holder in order not to scratch the plate with a regulating nose, but enough to ensure that you get the depth you wish to obtain.



Remember to use a sub-surface font (use a mirror, direct it towards the line that you engraved to check your text).

- **Engraving with an electronic machine** : with a regulating nose, we advise you to release the spindle spring.



Remember to select the reverse mode in the parameters of the engraving software.

NB : You can use a collet spindle and a High Frequency spindle (but watch out for the spindle electric wire).



## TOOLS

### Cutter :

- steel
- carbide (more resistant in the long run)

Grinding	
Cutting angle	40°
Half-taper angle	18°
Tip angle	7°
Clearance angle	15°

Caution : these parameters are only valid with Gravograph's standard cutters.

Type of tools	Steel	Carbide
∅ 3.17	05 576 xxx	05 410 xxx
∅ 4.36	58 106 xxx	58 101 xxx
TwinCut® insert	-	B7 301* xxx

\* for best results

**NB :** The size of the tip depends on the engraving width you wish to obtain.

If you wish to obtain a beautiful relief effect, for single line engraving only, use a round tip cutter : #58 106 9xx (caution : character height of 7 mm minimum. The use of this cutter on multi-line fonts is not advised as the engraved characters will show grooves at the bottom of the engraving.)

## MACHINE PARAMETERS

CUTTER	Speed (mm/s)			Dwelling time	Engraving depth
	Z	X-Y	Rotation (Revolution / mn)		
	13 to 20**	13 to 20**	18 to 20 000	0	0.2 or + (to give relief depth*)

\* this depends on the tool width

\*\* according to the engraving depth

**Number of passes :** 2, one for the engraving and one to clean the bottom of the engraving.

Both passes are essential to have a polished aspect without facets (essential with the gold or silver paint, otherwise the grooves will be visible).

## COLOURING GRAVOGLAS 1

Gravoglas 1 is intended for sub-surface engraving, thus when applying paint on the engraving, the colour will show on the surface through the clear layer.

**VERY IMPORTANT :** remember to drive out the swarf with a small soft brush (the one delivered with the machines for instance)



- ❖ **Paint :** Apply it with a flat spatula that will not scratch (a piece of Gravoply or bristol) or fill the engraved characters with a syringe.



Never apply 2 coats

Clear away the excess with a clean spatula.

Caution : check that the filling does not contain any air bubbles.

Leave to dry for a few hours.

Gravolaque  
#87 400 0xx

## FINISH

- ❖ **BEVELLING :** you can use the B4 or B6 machines to enhance the finish of the plate to obtain different types of bevelling according to your requirement.

Examples :



For a better finish, we advise you to set the bevel depth to 2/3 of the plate thickness (1 spin on the vernier).

- ❖ If you want a perfect presentation, stick down a piece of 0.8 mm thick material or Gravofoil of the same size (Gravograph product) on the back of the engraved plate (this way you will hide the excess paint).

B4 : # 00 014 00  
B6 : # 00 014 10

Professional  
tip