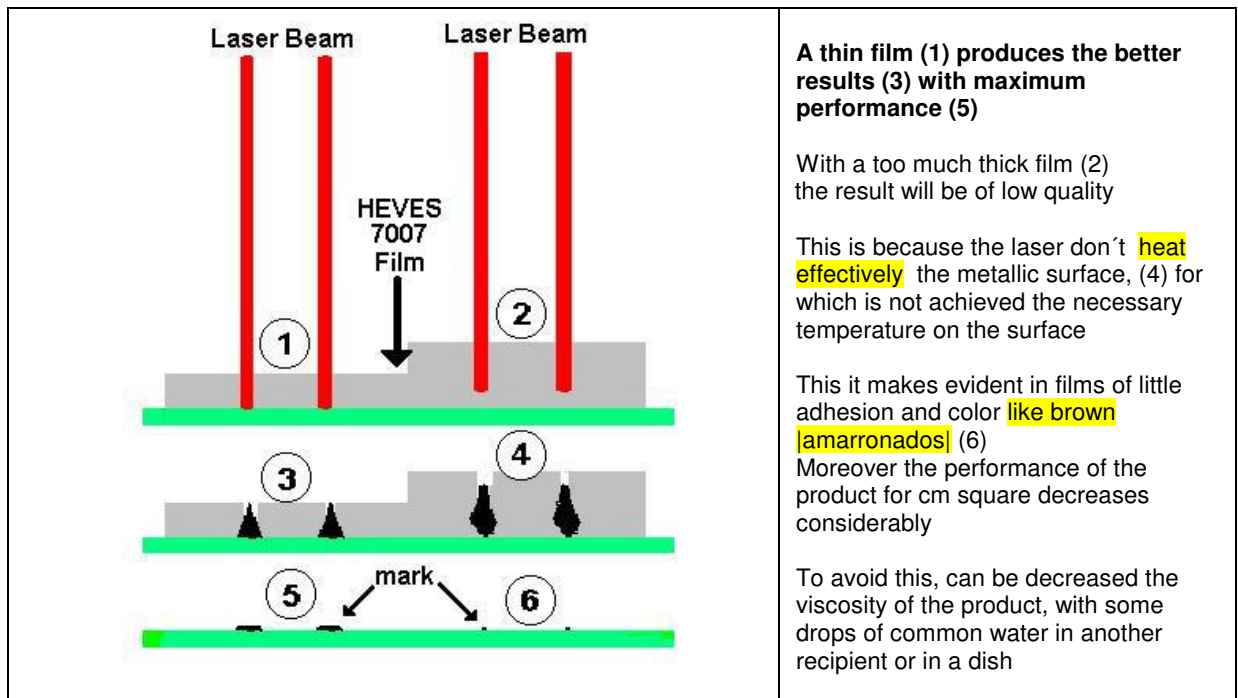


## LASER ENGRAVING HEVES PRODUCTS USE INSTRUCTIONS ( Read before using )

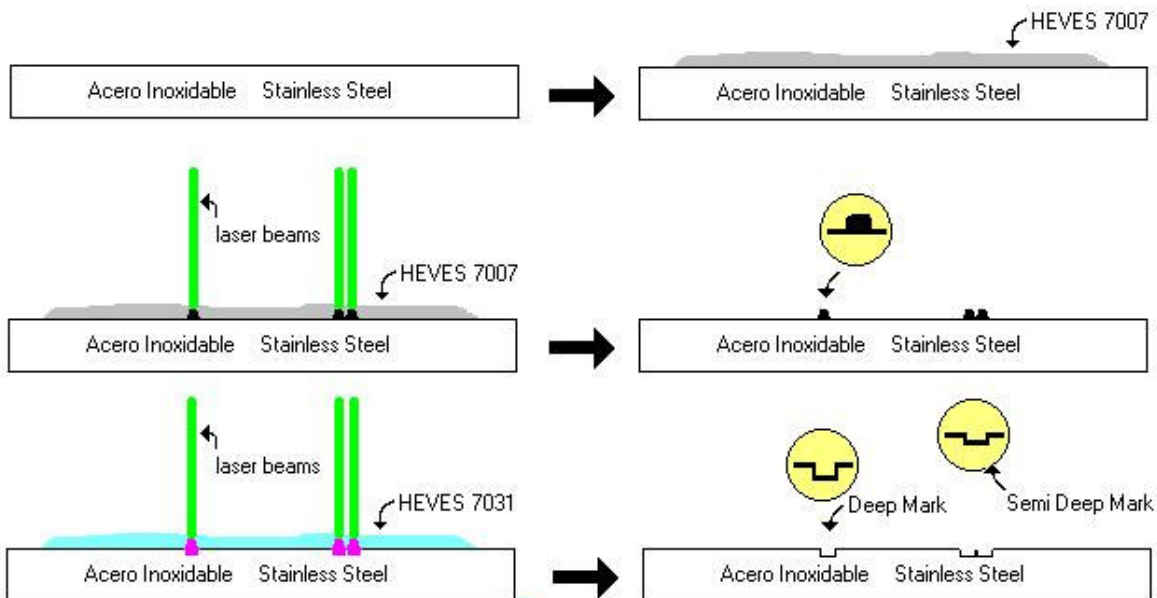
### Application way : Spray brush, roller, aerograph or air spray

1. Preparing the surface, SHAKING the bottle with the suitable product and load the already humid brush, by plunging it until the half of the horsehairs or hairs
2. To apply smoothly on the surface in a single passing and with the inclined brush in an minimum angle ( almost horizontal to the surface, never vertical to the same )
3. The film must be uniform, endless and it but dies possible, which achieves to him easily with a little practices with brush or better even using aerograph or air spray ( previous dilution the product with water )
4. Stops wither and apply the laser to the power and times that the proofs or the previous experience indicate ( in materials new make ALWAYS power proofs and speed to find the **optimal better** combination for each situation )
5. After marking serves the surplus by washing with water and by cleaning out with a wet sponge or cloth



## Superficial and Depth engraving

The HEVES 7007, HEVES 7011, HEVES 7042 , products type, produce marks over the treated surface  
The products type Heves 7031, HEVES 7040, HEVES 8010 produce marks into the treated surface



## General conditions for Laser Irradiation

### **Power and Times**

The laser engraving works by instantaneous and punctual temperature elevation in the surface material. This temperature created on the application surface, fundamentally depends:

- The applied power
- The time that the laser remains or that it passes for a point (speed)
- The quantity of laser impacts for area (DPI and PPI)

The temperature in the application point is related to power for time equation, that is to say the temperature increases with the increase of the power and decreases with the increase of the speed.

The HEVES products are formulated to work ideally with 25 to 50 watts Laser power and to medium speeds, but can work very well with minor or major power Laser Machines.

( for first time use or gravure in new materials ALWAYS make power and speed proofs, to find the **better** combination for each situation )

The surface will be perfectly covered, the applied film must be thin and it be perfectly dry.

### **Knowing the Contact Temperature by looking at emitted surface light color**

In all cases to engrave in METALS, it is necessary to achieve that the emitted surface light color by the CONTACT of the laser with the cover surface are white to reddish white clear.

To engrave in Ceramics, the light emitted by the CONTACT of the laser with the cover surface will be: Reddish white clear to reddish white dark.

To engrave in GLASS, the light emitted by the CONTACT of the laser with the cover surface will be: Reddish white dark to red.

To engrave in plastics the light emitted by the CONTACT of the laser with the cover surface will be: Reddish dark to any light.

### **Procedure to search the Gravure Best Condition :**

First: Know the nominal power of the laser Machine

Second: know the ALFA condition, that is to say the conditions that uses the operator to give the necessary energy to achieve a good black color on stainless steel

( without using additives, in the YAG laser, or using any additive in CO2 Láser machine )

Example: In a 30 watts power, CO2 laser machine, using HEVES 7007, the condition of start-up is something as ( 100 % ) of the maximum power and between the 8 to 10% of the maximum speed

### **Powder relation between Metals, Ceramics, Glasses and Plastic is :**

For Metal ( using HEVES 7007, HEVES 7011 or HEVES 7031 ) and considering the delivered energy ( power, speed and sensible frequency ) as 100 %, then :

For Ceramic ( varied according to the type ) the energy to be used is near 20%

For Glasses and Crystals ( varied according to the type ) the energy to be used is near 15%

For Plastic ( varied according to the type ) the energy to be used is near than 8 to 15%

After finding some visible effect on the material that we are treating, it is necessary to go up or go down the energy that are being according to effects that we observe:

In general using HEVES 7007 , HEVES 7011 at like and CO2 laser Beam, over Metals, most energy gets to major color and influence on the metal

For Aluminum it's necessary to be cautious and NO surpass the correct temperature, because decrease the mark adhesion and the color , for Aluminum fusion or volatilization

On Ceramic and Glasses, an energy excess don't permits the color expression because **microquiebra| micro breaks** the material and expels it, "eating " the surface

On single plastics only it's necessary sticks together the additive in the plastic, without reaching to burn it

### **Superior Power to 50 watts Laser Machine Use**

HEVES 7007, HEVES 7011 and HEVES 7031 , works whell with medium or low powers and/or high speeds

If you don't get the waited results , it can be for excess of temperature on the substratum

( very common situation in the case of engraving on Aluminums, where it is necessary to try the better point, to must not excel oneself nor neither lack of the appropriate temperature )

A) Taste decreasing the power and/or increases the speed to the one that this by using the product

B) Apply the laser on the product painted even in humid ( not wet ) without hoping a product complete dried film

### **HEVES 7007, HEVES 7011 and HEVES 7031 Performance :**

To the bottle direct viscosity , a 50 grams bottle as minimum must produce but of 6.000 squares cm and by adding some drops of water can increase it but still

In the pieces of 3x2 ( 6 cm<sup>2</sup> ) that is 1000 pieces approximately

Depending , off course , of the operator skill

And also, of the brush quality, ( **which sometimes not keeps in mind to him the sufficient** ) that must be soft, of fine hairs and maximum wide , compatible with the surface to paint

A too much thick film is doubly harmful, because decreases seriously the performance of the product and also worse the adhesion, color acting, etc.

The correct use of aerograph or air Spray , generally implies the product dilution with water, to achieve the appropriate viscosity of painted, in this case the performance increases until a 25 %

### Use Precautions

NO must be changed the plastic bottles covers and NEITHER use another products dirty brushes, to avoid contaminations between the products, invariably affected stability and "after open" duration

### Cleaning the surface

If the surface to paint is dirty whit fat, petroleum oils or silicone oils , at like. ( somewhat very common in the **polished materials**, in knives for example ), it can appear an "cut" effect or wrong wet when the product is applied  
This "cut"effect or wrong wet, is related with the surface tension and depends very much to previous material cleaning and polish method

The improvement of contact can be made for several ways, one of them is to make use of the cleaning properties included in the HEVES products and rub a little with the brush for cleans out it while applying the product

### Dry Speed

For drying , exist several options

- A) With the HEVES creams, can be decreased the placed film and with it the time of withered, by diluting in another recipient , by mixing the product and some drops of common water
- B) In all cases get very quick times of dried by means of hot air with a common hair dryer
- C) In some materials according to the thickness of the placed film or the high power of used laser, can be engraved without hoping a complete dried of the film ( it is very necessary to make proofs )

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### Information:

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