



GRAVOTECH

by  BRADY.

EBOOK

Signage professions

What are the criteria for selecting engraving materials?





What are the criteria for selecting engraving materials?

With a [source book](#) containing over 500 references, it's never easy to select the right Gravotech engraving material for you and your customer.

With over 80 years of expertise in engraving, this guide will help you identify step by step the different criteria to take into account **when choosing an engraving material** !



The Gravotech expert



Martin has been market manager for Gravotech's **personalization** and **signage** sector for over 5 years. With his team, he transforms field trends and customer needs into specifications to guide future product development.

Martin Roth
Personalization and Signage Market Manager

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You already consider yourself an expert in engraving materials? So do we!

Take a look at our **technical guide!** It contains dozens of use cases and a top 5 list of suitable materials for each.



What is an engraving material? ✓

Gravotech has been developing its own plastic materials for over 50 years. A plastic engraving material is an assembly of several layers of plastic in different colors.

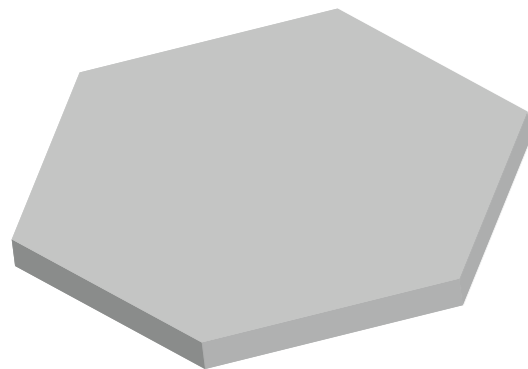
The principle is the same for laser marking or mechanical engraving: by removing part of the upper layer, the lower layer is revealed

and another color appears to obtain a contrasting engraving. Text, drawings, logos and pictograms can all be engraved...

To meet all your application needs, we offer a wide range of materials with different types of assembly.

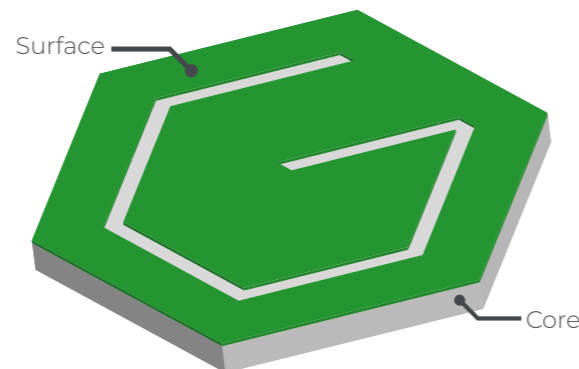
1-PLY

For cutting, no engraving
1 layers, 1 color



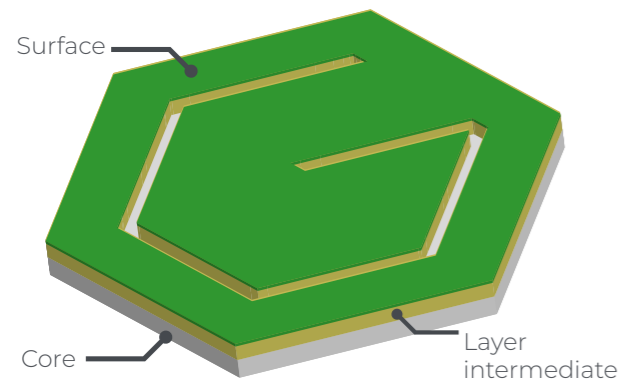
2-PLY

The most common design
2 layers, 2 colors



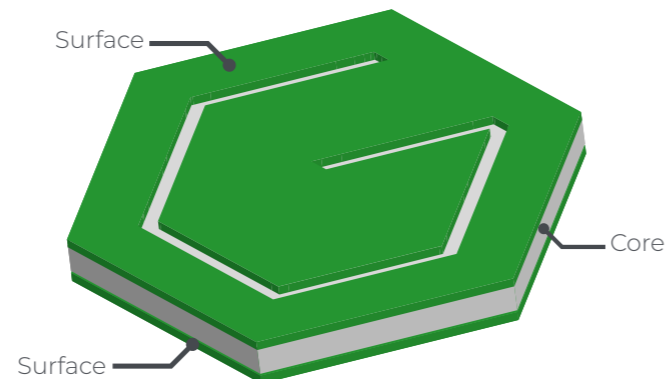
3-PLY

Allows for 3 engraving colors
3 layers, 3 colors



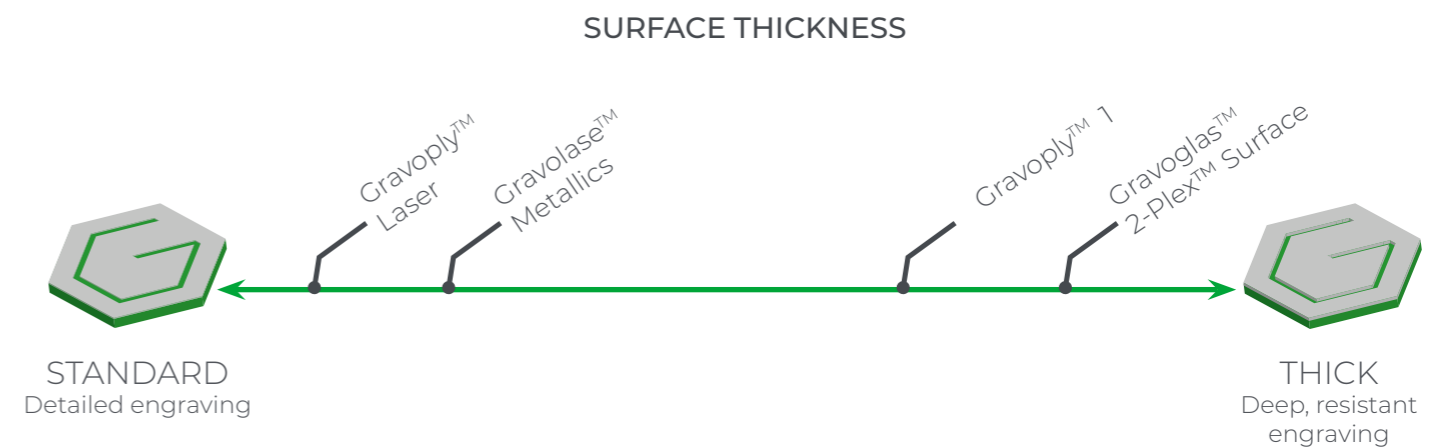
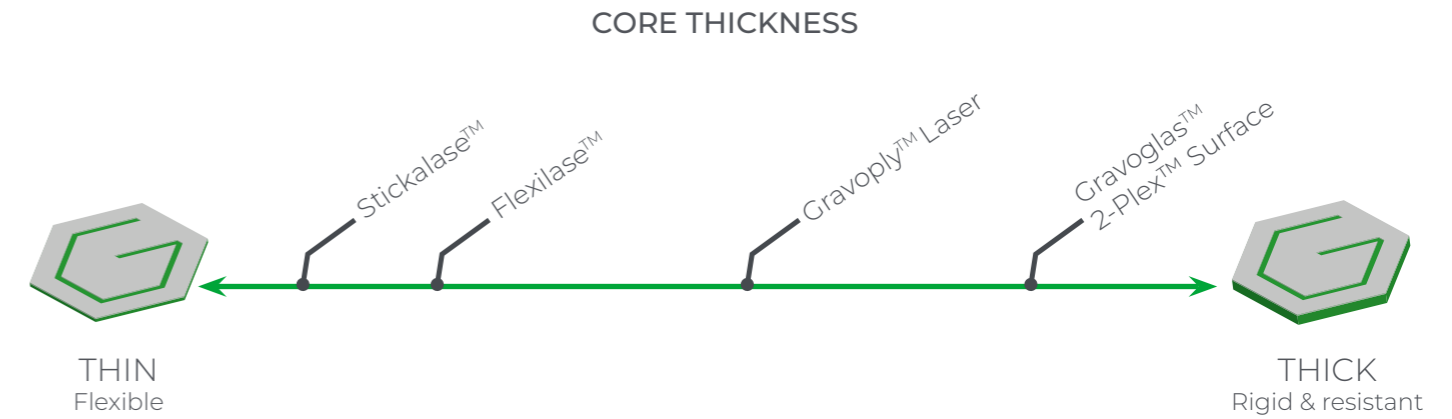
DOUBLE SIDED

Can be engraved on both sides
2 layers, 2 colors on each side



Technical variations

The bottom layer is called **the core** and the top layer **the surface**. By varying their thickness, it is possible to obtain different engraving and cutting results to meet different requirements.

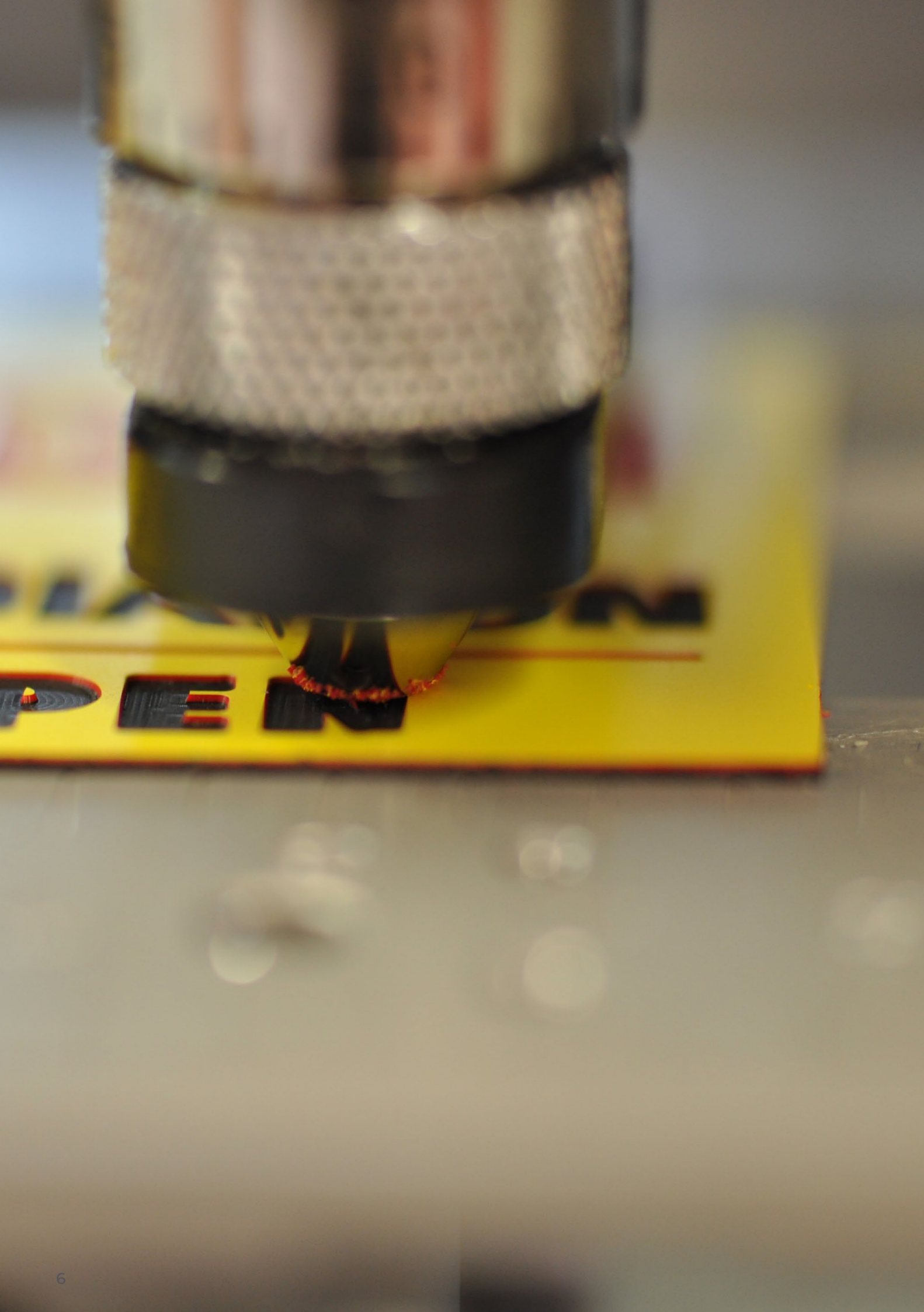


Core composition

The Core composition is selected to provide specific properties.

PMMA cores are the most popular: they are versatile, long-lasting and resistant to harsh environments (bad weather, industrial conditions...). They can be processed by laser or rotary engraving.

ABS cores are more economical and bring a certain flexibility to the material. Intended for indoor use, they are generally processed by rotary engravers, as ABS is not suitable for laser cutting.



Criteria 1

The machine technology available to you

When it comes to choosing **the ideal engraving material**, several factors need to be taken into account to achieve the best results.

The first criteria to consider when choosing a material for engraving is the technology of your machine (mechanical or laser, or both). Not all materials can be engraved or cut, depending on the technology used.



Mechanical technology

If you have a **mechanical engraving machine**, almost all Gravotech engraving materials can be used for both engraving and cutting.

It's important to note that some materials, such as wood, acrylic or brass, won't naturally produce contrasting engraving. If you wish to add contrast to these materials, you can use a [coloring product after engraving](#).





Laser technology

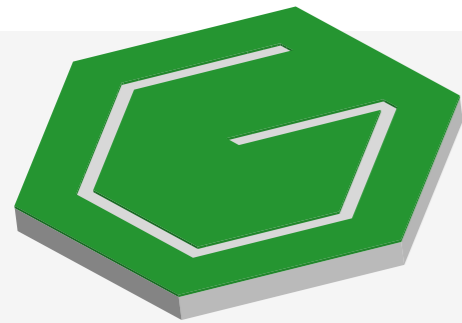
CO2 lasers, on the other hand, generally produce a naturally contrasting engraving without any additional product.

Some materials, such as wood or acrylic, can be engraved with both laser and mechanical engraving machines. Please note, however, that some material ranges, such as ABS-based plastics or metals, can be engraved with a laser, but not cut.

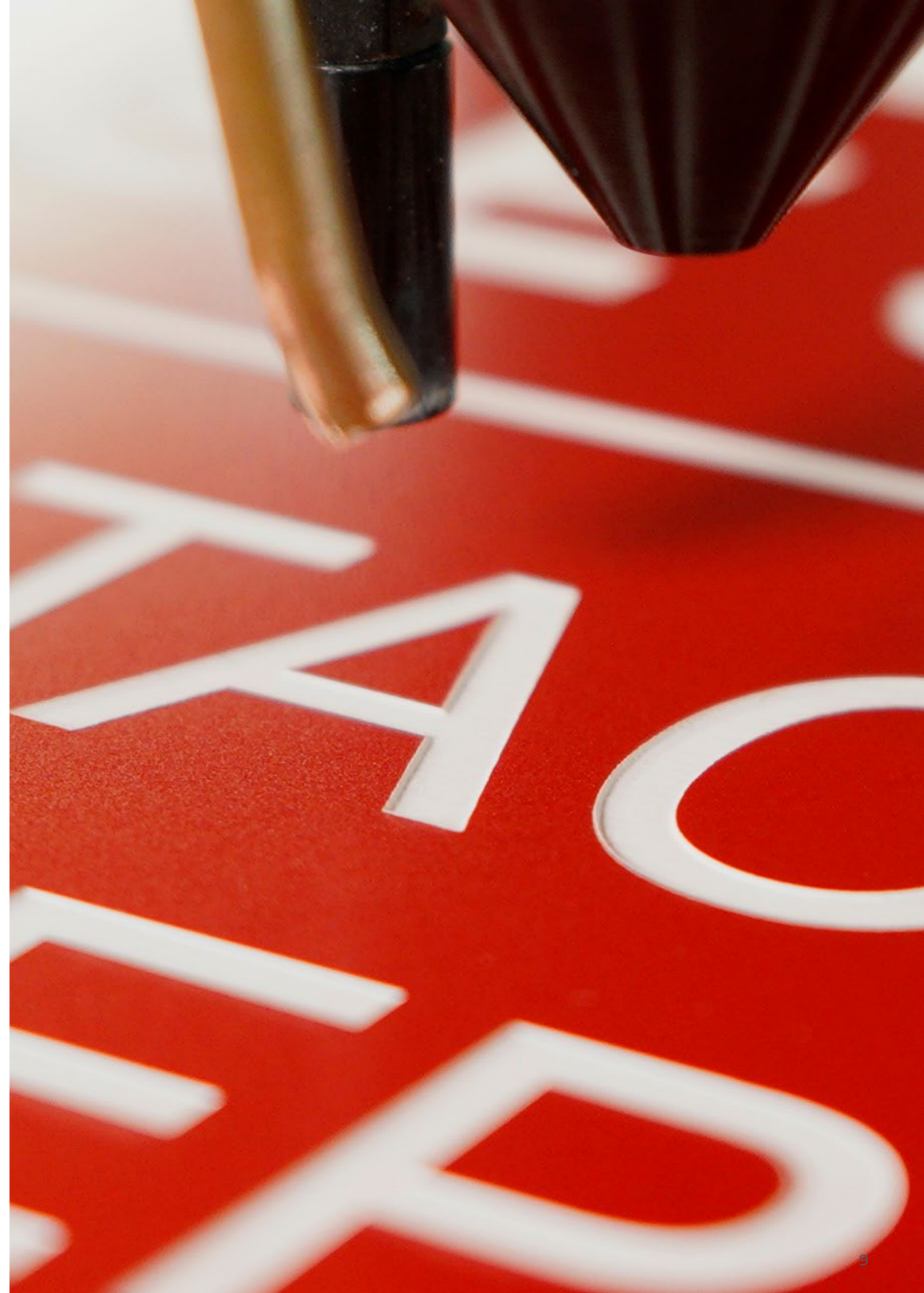
In this case, you can **use Gravotech's cutting service**. You can order materials already cut to the desired dimensions, and simply carry out the engraving. You'll gain in versatility, by offering your customers new materials, and in profitability, by freeing up machine time for other projects.



Attention most plastic engraving materials are compatible with laser engraving, but PVC materials should be avoided altogether. Under the effect of the laser, PVC releases harmful substances such as chlorine, which are dangerous for humans and the mechanical components of your laser machine.



Find out more about the service on-demand cutting





Criteria 2

The environment of your signage projects



Outdoor application

For the **harshest exterior applications**, the "Material + Engraving" combination is by far the best because it meets **durability** requirements that no other technology will achieve (UV printing for example).

Signs affixed outdoors are subject to much greater stress than those affixed indoors. Their intensity varies greatly from one application to another, depending on the location and weather conditions.

The materials to be engraved must:

- Have good **resistance to bad weather** (rain, snow) and temperature changes;
- Be able **to withstand ultraviolet (UV) rays**;
- **Resist specific environments** such as salty air or strong winds by the sea, humidity in forests, pollution in cities, etc.
- Or even occasionally be immersed in liquids such as seawater.

From a technical point of view, PMMA (acrylic) type materials are considered suitable for outdoor environments. ABS-based plastics or wood, for example, are not suitable and will degrade more rapidly.

If the environment is very restrictive, we recommend using thick materials and engraving them deeply. Other materials are engraved on the back, once the plate has been installed, the engraving lasts a very long time because it is protected from the outside elements by a transparent acrylic face, this is the case with **Gravoglas™ 1**, for example.



Indoor application

For **indoor** applications, the choice of materials for engraving signage is generally wider, with **fewer constraints**. With the exception of certain **industrial environments**, where signage will have to withstand **chemicals** or **extreme temperatures**, specifically high or low.

Some indoor applications can be considered as outdoor. For example, if a nameplate is to be placed near a window, it must be able to withstand exposure to the sun, so a UV-resistant material is preferred. This is also the case for so-called "hybrid" applications, such as nameplates intended to be placed in the engine compartments of vehicles (cars, trucks, etc.), or in sheltered but unenclosed environments such as a station platform.



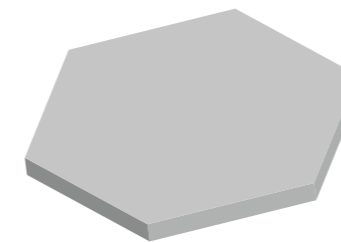
Criteria 3 ✓

The composition and aesthetic rendering expected by the end-user

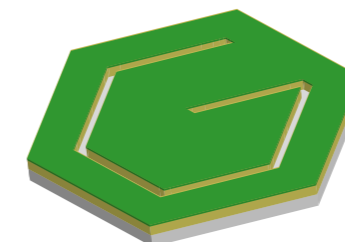
At this stage of the process, the two previous criteria have probably already guided you towards a type of material to use, or even a few names of Gravotech material ranges. However, depending on the application, the **choice of engraving materials** can still be relatively wide. With over 500 references available, Gravotech offers you a complete range, based on the following criteria:

Type of material

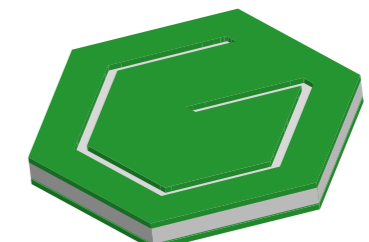
Usually manufactured in two-layer, some Gravotech materials are designed in single-layer, three-layer or even double-sided versions.



Single-layer (1-ply)



Tri-layer (3-ply)



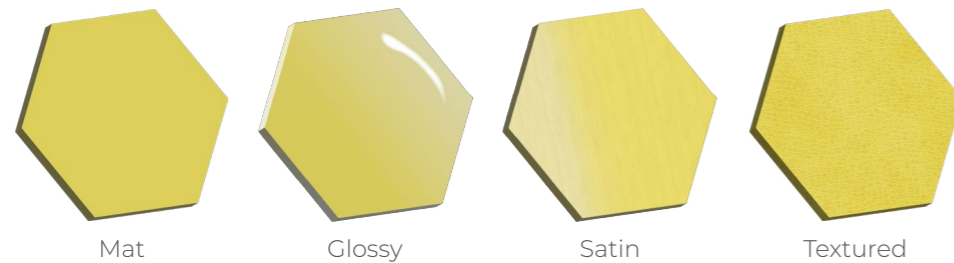
Double-sided

They may vary according to various factors:

- **Composition** plastics, metals, rubber, PMMA, wood...
- **Thickness** rigid or flexible.
- **Options** options: cut to size, adhesive or magnetic back, etc.

Surface finish

Each material can also be offered with different finishes: plastics are often matte, but can also come in satin, glossy or even brushed. Metals and plastics with a metallic effect are generally glossy or brushed.

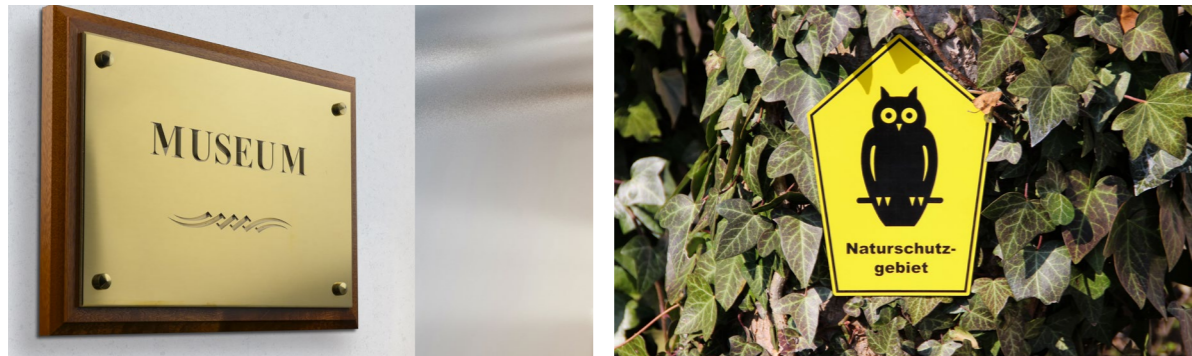


Tip

In a brightly lit room or in an outdoor environment exposed to sunlight, the natural shine of metals can impair legibility, in which case matte materials, often plastics, should be used.

The choice of colors

The desired appearance can be important in your choice of material. Should the engraved characters and pictures be contrasting or tone-on-tone, **plain color or metallic?**



If you want to create more high-end, traditional signage, metals and metallized plastics always work. On the contrary, if you are looking for rather colorful signage, as if to meet a graphic charter, or a standard, then plastic materials are the ranges with the greatest possibility of diverse colors.

Thickness



It's also important to take into account any technical constraints that may require you to select a specific material thickness. The most popular thicknesses for two-layer materials such as **Gravoply™** are 1/16" to 1/8", as they offer a very good compromise between rigidity, cost and durability.

Gravotech generally offers several thicknesses in each of its engraving material ranges, although some ranges may be more limited than others.

The budget

As you can see, the possibilities in terms of appearance and rendering are considerable! However, your customers' expectations must always be set against their budget.

Metals, for example, are particularly high-end when it comes to engraving, but are much more expensive than plastics. Metallic-effect plastics are a real alternative for even the tightest budgets.



Tip

And don't forget how to attach your signs most of our materials are available on request with an adhesive backing for direct attachment to smooth or rough walls. Flexible materials such as Flexilase™ can even be bonded to rounded surfaces. Our range of engraving accessories also includes a host of fastening ideas: spacers, brackets, chains, badge fasteners and more.



Discover all the possibilities of composition, finishes, colors and thicknesses in our online catalog!


ROTARY



Type of material	Compatible materials	Type of material	Compatible materials
Plastics	Gravoply™ 1	Plastics	Gravoglas™ 2-Plex™ Surface engraving
	Gravoply™ 2*		Acrylics
	Gravoglas™ 2-Plex™ Surface engraving	Acrylic	
	Gravoply™ 3C	Flexible sheets	Flexilase™
	Ecocut		Gravofoil™
Acrylics	Gravoglas™ 2-Plex™ Subsurface engraving	Metals	Gravobrass™ Exterior
	Acrylic		Gravoxal™*
Flexible sheets	Flexilase™		
	Gravofoil™		
Metallics	Metallex™		
Metals	Gravometal™		
	Gravobrass™ Exterior		
	Colored Aluminum*		
	Gravoxal™*		
Phenolics	Gravostrat™		
	Gravostrat™*		
Materials for accessibility signage	Gravotac™		

**These materials are laserable but not compatible with cutting. They are suitable for applications where cutting is carried out by another technology. Our cut-to-size service can cut these materials for you.*


CO2 LASER



Type of material	Compatible materials	Type of material	Compatible materials
Plastics	Gravoply™ Laser	Plastics	Gravoply™ Laser
	Gravoply™ Ultra		Gravoply™ Ultra
	Gravoply™ 2*	Acrylics	Gravoglas™ 1
Gravoglas™ 1	Acrylic		
Acrylic	Ecocut Laser		
Acrylics	Ecocut Laser	Flexible sheets	Flexilase™
	Rubbalase™		Metals
	Flexilase™		DuraBlack®*
Flexible sheets	Flexilase™		
	Stickalase™		
Metallics	Gravolase™ Metallics		
Metals	Colored Aluminum*		
	Gravoxal™*		
	AlumaMark®*		
	DuraBlack®*		
Phenolics	Gravostrat™*		
Materials for accessibility signage	Gravotac™ Exterior		
Wood	Laser Wood		

Think rendering!

Example case

For metallic nameplates, the **GravobrasTM Exterior** is often the material of choice when you want to give a high image of the business. But there are other materials for this application with interesting characteristics and providing a similar rendering.

GravoglasTM 2-plexTM subsurface, for example, is an acrylic (plastic) material which is therefore non-oxidizable and cleans more easily than brass. It is available in high-end metallic effect colors at a more attractive price.

The **GravostralTM** is a phenolic-based hybrid material with a brushed aluminum surface. It won't be suitable for outdoor use, but thanks to its two-layer appearance (two different colors), it won't require a coloring product to achieve contrast in the engraved elements.



GravobrasTM Exterior



GravoglasTM 2-plexTM subsurface



GravostralTM

Criteria 4

The type of information on signage

Signage meets a variety of needs: **guiding and orienting** people, **identifying and signalling** spaces or objects for information or regulatory purposes... In addition to exposure to external constraints, these objectives also influence the choice of materials to be engraved.



Guidance and orientation



Identifying spaces



Pointing out safety features

Informative or directional nameplates

The use of informative and directional signage brings together a vast set of indicative plates, sometimes normative which can be personalized to the charter of a company or a place.

These can be used both indoors and outdoors.
Examples:



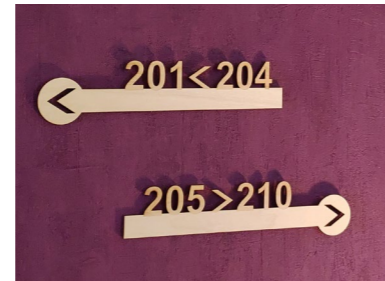
Badges

[See the application](#)



Trophy plates

[See the application](#)



Directories, location maps

[See the application](#)



Small labels

[See the application](#)



Small flexible labelling

[See the application](#)

These informative and/or directional signs can be large or small, depending on their use. The **dimensions to be covered** must be taken into account to identify the type of material to be used. At Gravotech, the maximum size for a sheet of raw material is 24" x 48", although there are exceptions.

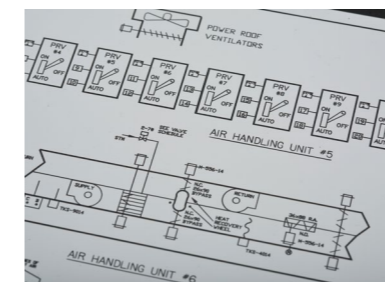
Signage in an industrial or normative environment and its specificities

In industry, signage must very often **comply with specific specifications and constraints**.

There are **three types of industrial signage**:

- **Signs to identify specific areas**, such as racks and storage areas, or access and circulation routes reserved for certain users;
- **Signs with special technical features**, such as resistance to fire, abrasion, certain chemicals or non-conductive electricity;
- **Signage specific to standardized environments**, such as flexible labels for electrical panels and cables, piping elements or fire-fighting equipment...

All these specific features need to be taken into account when selecting materials for engraving. Several of Gravotech's material ranges have specific technical characteristics designed to meet these requirements. The colors offered in some of our ranges meet the color codes established in numerous international standards.



[See the application](#)

For example, most signage in the service sector must meet color standards, such as to inform of an obligation or a prohibition.

For industrial or safety signage, Gravotech offers ranges of materials specially designed for these applications, such as the **Gravoply™ 3C**.

Accessibility signage

Accessibility signage for shops, government offices and public places enables many people to get around and find their way around independently.

In particular, there are standards concerning the accessibility of public places to the visually impaired. The **Gravotac™** and **Gravotac™ Exterior** ranges have been developed to meet these visual contrast standards and are compatible with the use of Braille beads.



Making it easier to find locations

Guiding people into buildings

Drawing attention to service modalities

[See the application](#)

Conclusion

Now you know all the criteria for choosing your engraving material!

Your machine's technology, where to mount your signage, aesthetics, rendering, finish and technical features are all essential questions to answer when defining your needs.

With all these criteria in mind, your choice of engraving material will certainly appear more defined, and all that's left is to identify the range of engraving materials that meets all your expectations. To do this, here are your two essential tools:



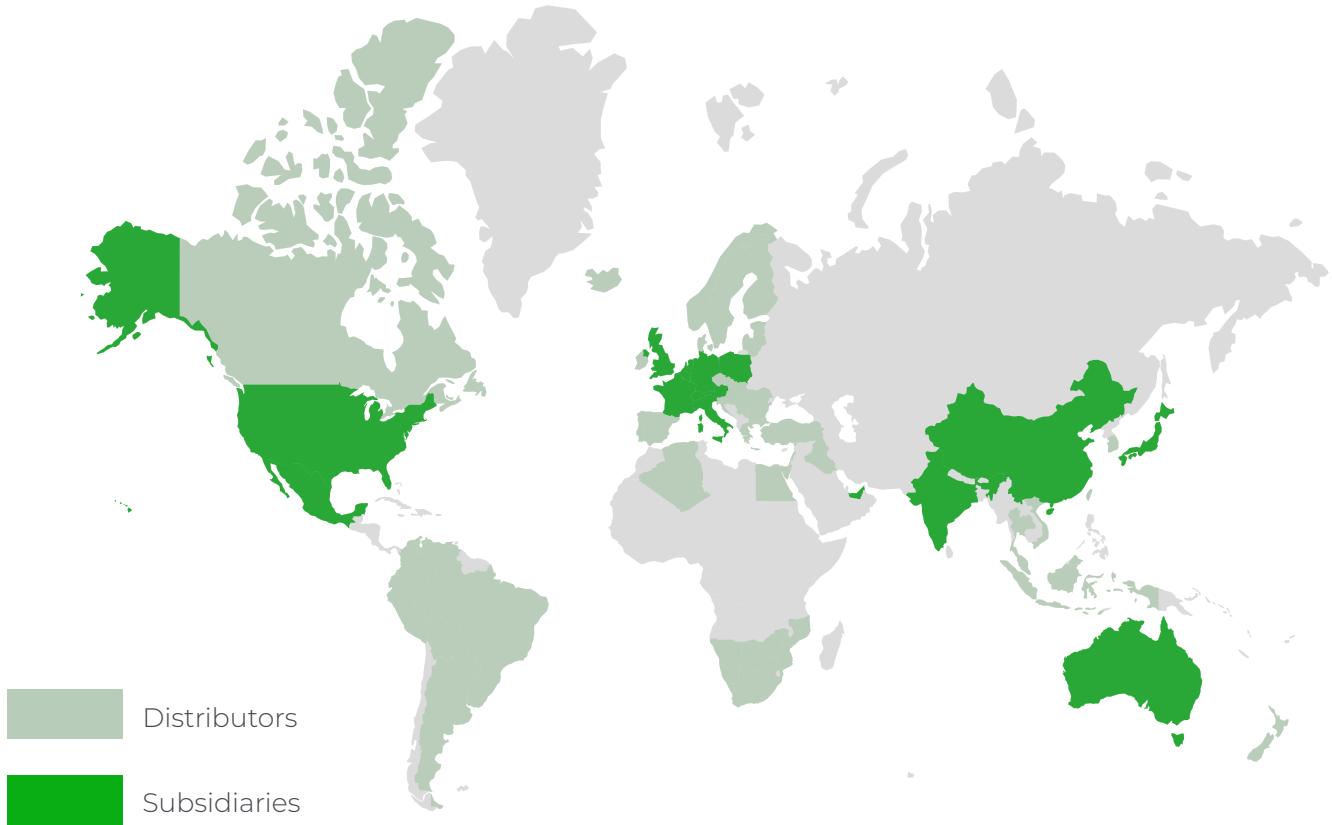
Our **online catalog**, your reference for engraving materials!



Our technical **selection guide** covers all our use cases and suggests the most popular etching materials for these applications!



Gravotech, leader in permanent marking solutions



+85

years of expertise



+60 000

customers



+85 %

sales
export



77

countries



GRAVOTECH

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