

## BENEFITS

- Laser engraving and cutting
- Excellent UV resistance
- A fine silk-screened layer
- Resistant to chemical agents
- Subsurface engraving: produce multi-colour signage with paint fill
- Easy to keep surface clean
- Interior and exterior use

## APPLICATIONS

Interior and exterior signage,  
professional name plates

## SPECIFICATIONS

Finish	Glossy
Composition	Acrylic
Engraving depth	0.2 mm (.008")
Full sheet	1220 mm x 610 mm (48" x 24")
Half sheet	610 mm x 610 mm (24" x 24")
Quarter sheet	610 mm x 305 mm (24" x 12")
Other size	-

## CAPABILITIES

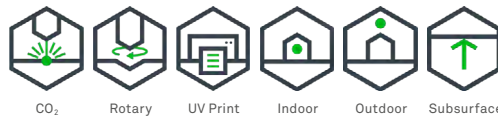
Interior	■
Exterior	■
Shear	-
Saw	■
Silk screen	■
Hot stamp	■
Heat bending	■
Scratch resistant	■
Flexible	-
Break resistant	-
UV resistant	■
Min. temp.	-40°C (-40°F)
Max. temp.	80°C (176°F)

## TECH TIPS

Excellent material for both rotary and laser engraving.

You can use Gravotech recommended paint to colour any Gravoglas™ 1 subsurface engraving. See p.51.

For custom colours, see Custom materials on demand p. 08.

CO<sub>2</sub>

Rotary

UV Print

Indoor

Outdoor

Subsurface

surface /  
backing colour

		2-ply		
		1.5 mm (1/16")	3.0 mm (1/8")	5.0 mm (.20")
clear / white		18141*	18193	18264
clear / red		18201	18267	
clear / blue		18207	18270	
clear / silver		18171	18244	18293
clear / gold		18168	18235	18290
clear / old gold		18174	18252	18296
clear / black		18138*	18183	18261

\* Conventional colours for the identification of pipes in the industrial sector (AFNOR NF X. 08-002 and INRS ED 88 norms).



**GRAVOTECH**  
EXPRESSION OF THINGS

Printed colours for indication only. Cannot serve as a substitute for real material sample.

**Docteur Odile TERRASSON**  
**MEDECINE GENERALE**  
**CONVENTIONNEE**  
Consultations  
de 9H00 à 12H00 et de 17H00 à 19H00



# GRAVOGLAS™ 1

V21-117



The outdoor acrylic material for upscale architectural signage

La matière acrylique extérieure pour la signalétique architecturale haut de gamme

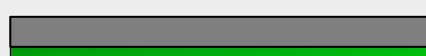
APPLICATIONS: Outdoor & indoor signage, professional nameplates...

APPLICATIONS: Signalétique intérieure et extérieure, plaques professionnelles...

## CROSS SECTION / COUPE DU PRODUIT

Clear PMMA

Back colour: silk screen  
Subsurface engraving



PMMA transparent

Couleur de fond : Sérigraphie  
gravure envers

SHEAR – Cisaille		◆	SAW – Scie
SILK SCREEN – Sérigraphie	◆	◆	HOT STAMPING – Marquage à chaud
SCRATCH RESISTANT – Résistance à la rayure	◆		FLEXIBLE – Flexible
BREAK RESISTANT – Résistance à la cassure		◆	UV RESISTANT – Résistance aux UV

- Storage: Sheltered location, lay flat. Avoid storing straight on the floor.  
*Stockage : Local abrité, à plat. Eviter un stockage à même le sol.*
- Resistant to chemical agents.  
*Résistant aux agents chimiques.*
- Needs colouring. Use Gravolaque paint.  
*Mise en couleur nécessaire. Utiliser la peinture Gravolaque.*
- Fixing techniques: Mechanical fixing or double-sided tape.  
*Techniques de fixation : Fixation mécanique ou adhésif double face.*
- More info on our website.  
*Plus d'infos sur notre site web.*

[www.gravotech.com](http://www.gravotech.com)



# GRAVOGLAS™ 1

## TECHNICAL DATA SHEET

SPECIFICATIONS	
MATERIAL – matière	PMMA
FINISH – finition	Glossy – Brillant
SHEET SIZE – taille des feuilles	1220 x 610 mm ± 3 mm / (48"x24") ± 1/8"
THICKNESS – épaisseur	1.5 mm – 3 mm – 5 mm / 1/16" – 1/8" – 0.20"
MARKING METHOD – marquage	Laser, Rotary, UV print – Laser, Rotary, Impression UV
CUTTING DEPTH – profondeur de gravure	0.2 mm / (.008")
TEMPERATURE RANGE – résistance en température	-40°C (-40 °F) + 80°C (176 °F)
UV RESISTANCE – résistance UV	1400 h QUV or 3 years without significant degradation 1400 h QUV ou 3 ans sans dégradation significative
SCRATCH RESISTANCE – résistance à l'abrasion	TABER test > 500 cycles CS17 / 250g
FLAMMABILITY – inflammabilité	94 HB on UL94 test

PHYSICAL PROPERTIES	VALUES	ASTM METHOD
SPECIFIC GRAVITY – densité	1.15	ASTM D-792
HARDNESS ROCKWELL – dureté	45M	ASTM D-785
TENSILE STRENGTH – résistance à la traction	38 MPa	ASTM D-638
TENSILE MODULUS – module de traction	1.8 GPa	ASTM D-638
IZOD IMPACT STRENGTH (AT 23°C) – impact au choc IZOD	6.3 KJ/m <sup>2</sup>	ASTM D-256
FLEXURAL MODULUS – module de flexion	1.7 GPa	ASTM D-790
FLEXURAL STRENGTH – contrainte de flexion	62 MPa	ASTM D-790
ELONGATION AT BREAK – allongement à la rupture	40%	ASTM D-638
HDT TEMPERATURE AT WHICH MATERIAL DEFLECTS – température de fléchissement sous charge	88°C (1.82MPa) 93°C (0.455Mpa)	ASTM D-648
VICAT SOFTENING POINT – point de ramollissement VICAT	98°C (50°C/hr ;10N) 86°C (50°C/hr ;50N)	ASTM D-1525
COEFFICIENT OF THERMAL EXPANSION – coefficient expansion thermique	0.1x10 <sup>-5</sup>	ASTM D-696
THERMAL CONDUCTIVITY – conductivité thermique	30.6 x10 <sup>3</sup> W/(m <sup>2</sup> .K)	ASMT C-177
MELTING TEMPERATURE – température de fusion	235°C	-
SURFACE RESISTIVITY – conductivité surfacique	3.1 x10 <sup>7</sup> ohm.m	ASMT D-257
VOLUME RESISTIVITY – conductivité volumique	3.8 x10 <sup>11</sup> ohm.m	ASMT D-257

Gravotech warrants that its products comply with its technical specification within normal condition of use, without any other warranty including without being limited to any other warranty of merchantability, performance or suitability. Technical specifications result from data and technical report raised from suppliers or from Gravotech or external independent laboratory studies. Consequently each end user shall perform appropriate testing under real conditions of use to ensure consistency and adequacy of the product to its intended specific purpose and needs. Out of standard conditions of use as well as harsh conditions such as for example UV, hygrometry, salinity or temperature specifics shall be taken into account to avoid any product deterioration. End User shall be liable regarding its own testing results and therefore its final decision regarding suitability of the product according to Gravotech specifications and recommendation.

Gravotech garantit la conformité des produits à ses seules spécifications techniques dans des conditions normales d'utilisation et sans aucune autre garantie notamment de commercialisation, adaptabilité ou performance. Les spécifications données sont issues d'informations et rapports techniques collectés auprès des fournisseurs, ou de mesures effectuées par Gravotech ou par un laboratoire externe indépendant. Par conséquent il est nécessaire que chaque utilisateur effectue des tests appropriés en conditions réelles d'utilisation afin de s'assurer de l'adéquation du produit à ses besoins et usages spécifiques. Les conditions non standards voire extrêmes concernant notamment les conditions UV, l'hygrométrie, la salinité, ou la température doivent être impérativement prises en considération afin d'éviter toute détérioration du produit. L'utilisateur sera seul responsable du résultat de ces tests et du choix du produit adapté selon les recommandations et spécifications fournies par Gravotech.



## SAFETY DATA SHEET

### 1 - IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Identification of the substance or preparation:**

Name: GRAVOGLAS1.  
Product code: GRAV 037.

**Company/undertaking identification:**

Registered company name: GRAVOTECH MARKING SAS.  
Address: 56, avenue Jean Jaurès.10600.La Chapelle Saint Luc.France.  
Telephone: +33 (0)3 25 41 65 65. Fax: +33 (0)3 25 79 04 25.  
e-mail : info@gravograph.fr  
http://www.gravograph.com

**Emergency telephone: +33 (0)1 45 42 59 59.**

Association/Organisation: INRS / ORFILA http://www.centres-antipoison.net.

**Use of the substance/preparation:**

Flat or shaped items, obtained by different processes such as machining, heat or cold-forming, assembling.

### 2 - HAZARDS IDENTIFICATION

This product is not classified as flammable. Refer to the recommendations regarding the other products present on the site  
May produce an allergic reaction.

**Other data:**

Thermal decomposition giving flammable and irritating products.  
Formation of toxic products through combustion.

### 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Full text of risk phrases appearing in section 3: see section 16.

**Hazardous substances present on their own:**

(present in the preparation at a sufficient concentration to give it the toxicological characteristics it would have in a 100% pure state)  
This preparation contains no hazardous substance in this category.

**Other substances representing a hazard:**

No known substance in this category present.

**Substances present at a concentration below the minimum danger threshold:**

No known substance in this category present.

**Other substances with occupational exposure limits:**

No known substance in this category present.

**May produce an allergic reaction:**

INDEX	CAS	EC	Name	Symb.	R:	%
607-035-00-6	80-62-6	201-297-1	METHYL METHACRYLATE	Xi F	11 37/38 43 Note(s): D	0 <= x % < 1

### 4 - FIRST AID MEASURES

As a general rule, in case of doubt or if symptoms persist, always call a doctor.  
NEVER induce swallowing in an unconscious person.

**In the event of exposure by inhalation:**

In the event of inhalation, move patient to the open air. Keep warm and at rest.  
If breathing is irregular or has stopped, proceed with artificial respiration and seek medical attention.  
Remove particles from respiratory system.  
Blow nose.

**In the event of splashes or contact with eyes:**

Wash thoroughly with soft, clean water for 15 minutes holding the eyelids open.  
If there is any redness, pain or visual impairment, consult an ophthalmologist.

**In the event of splashes or contact with skin:**

Cool skin rapidly with cold water after contact with molten polymer.  
If skin irritation persists, call a doctor.  
In case of extensive burns, hospitalize.

**In the event of swallowing:**

Consult a doctor and show him the label.

**5 - FIRE-FIGHTING MEASURES****Suitable extinguishing media:**

Sprayed water, foam, dry powder, carbon dioxide (CO<sub>2</sub>).

**Special protective equipment for fire-fighters:**

Due to the toxicity of the gas emitted on thermal decomposition of the products, fire-fighting personnel are to be equipped with autonomous insulating breathing apparatus.

**6 - ACCIDENTAL RELEASE MEASURES****Personal precautions:**

Consult the safety measures listed under headings 7 and 8.

**Environmental precautions:**

Prevent any material from entering drains or waterways.  
Use drums to dispose of waste recovered in accordance with applicable regulations (see heading 13).  
If the product contaminates waterways, rivers or drains, alert the relevant authorities in accordance with statutory procedures

**Methods for cleaning up:**

Clean preferably with a detergent, do not use solvents.

**7 - HANDLING AND STORAGE**

The regulations relating to storage premises apply to workshops where the product is handled.

**Handling:**

Do not breathe vapours/dust.  
Handle cautiously to avoid cuts.

**Fire prevention:**

Prevent access by unauthorised personnel.

**Recommended equipment and procedures:**

For personal safety, see §8.  
Observe precautions stated on label and also industrial safety regulations

**Prohibited equipment and procedures:**

Smoking, eating and drinking are prohibited in premises where the preparation is used

**Storage:**

Keep the container tightly closed in a dry place.

**Specific use(s):**

Recommended packaging material: Polyethylene.

**8 - EXPOSURE CONTROLS/PERSONAL PROTECTION**

Use personal protection equipment as per Directive 89/686/EEC.

Average concentrations in atmospheric dust inhaled:

- Total dust: TWA = 10 mg/m<sup>3</sup>
- Alveolar dust: VME = 5 mg/m<sup>3</sup>

**Exposure limit values per INRS ED 984:**

France	VME-ppm:	VME-mg/m <sup>3</sup> :	VLE-ppm:	VLE-mg/m <sup>3</sup> :	Notes:	TMP N°:
80-62-6	100	410	200	820	-	82

**Exposure limit values per 2006/15/CE, 2000/39/EC and 98/24/EC:**

EC	VME-mg/m <sup>3</sup> :	VME-ppm:	VLE-mg/m <sup>3</sup> :	VLE-ppm:	Notes:
80-62-6	-	50	-	100	-

**Exposure limit values (2003-2006):**

Switzerland	VME-mg/m3:	VME-ppm:	VLE-mg/m3:	VLE-ppm:	Temps:	RSB:
80-62-6	210	50	420	100	4x15	S
Germany/AGW	AGW:	AGW:	Faktor:	Bemerkungen:		
80-62-6	50 ml/m3	210 mg/m3	2(I)	DFG, Y		
UK/WELs	TWA:	STEL:	Ceiling:	Definition:	Criterion:	
80-62-6	50 ppm	100 ppm	-	-	-	
UK/OES	TWA:	STEL:	Ceiling:	Definition:	Criterion:	
80-62-6	50 ppm	100 ppm	-	-	-	
ACGIH/TLV	TWA:	STEL:	Ceiling:	Definition:	Criterion:	
80-62-6	50 ppm	100 ppm	-	-	-	

**Respiratory protection:**

With this preparation, particularly avoid inhaling dust.

**Hand protection:**

Type of gloves recommended :

- Butyl rubber
- Neoprene

**Eye and face protection:**

Wear safety goggles.

**Skin protection:**

For further information, see § 11 of S.D.S. - Toxicological information.

**9 - PHYSICAL AND CHEMICAL PROPERTIES****General information:**

Physical state:	solid
-	Sheets - tubes.

**Important health, safety and environmental information:**

pH of the substance or preparation:	not relevant.
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The pH is impossible to measure or its value is not relevant.

Flash point interval:	Flash point > 60°C
Vapour pressure:	not relevant.
Density:	> 1
Density:	1.19
Water solubility:	Insoluble.

**Other information:**

Self-ignition temperature:	430 °C.
Solubility in organic solvents:	- aldehydes - ketones - acetic esters - chlorinated solvents - aromatic solvents.
Decomposition temperature:	> 250°C.
Softening point:	> 103°C.

**10 - STABILITY AND REACTIVITY**

The preparation is stable at the handling and storage conditions recommended per § 7 of the safety data sheet,

**Hazardous decomposition products:**

Thermal decomposition giving flammable and irritating products (methyl methacrylate) and toxic products (carbon monoxide and dioxide).

**11 - TOXICOLOGICAL INFORMATION**

No data is available regarding the preparation itself.

**Other data:**

CAS 80-62-6 : IARC Group 3: The agent is not classifiable as to its carcinogenicity to humans.

**12 - ECOLOGICAL INFORMATION**

No ecological data on the product itself is available.

The product must not be allowed to run into drains or waterways.

**Persistence and degradability:**

Inert polymer : not biodegradable on the basis of its structure.

**Other adverse effects:**

Germany: WGK 2 (VwVwS vom 17/05/99, KBws)

### 13 - DISPOSAL CONSIDERATIONS

Do not pour into drains or waterways.

**Waste:**

Recycle or dispose of waste in compliance with current legislation, preferably via a certified collector or company.  
Do not contaminate the ground or water with waste, do not dispose of waste into the environment.

**Soiled packaging:**

Empty container completely. Keep label(s) on container.  
Give to a certified disposal contractor.

### 14 - TRANSPORT INFORMATION

Exempt from transport classification and labelling.

Transport product in compliance with provisions of the ADR for road, RID for rail, IMDG for sea and ICAO/IATA for air transport (ADR 2009 - IMDG 2008 - ICAO/IATA 2009).

### 15 - REGULATORY INFORMATION

**Classification by:**

So called 'all preparations' Directive 1999/45/EC and its adaptations.  
EC regulation 1272/2008 (CLP) and its adaptations (EC regulation 790/2009).

**Contains:**

Contains 201-297-1	METHYL METHACRYLATE. May produce an allergic reaction.
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**Particular provisions:**

Germany: WGK 2 (VwVwS vom 17/05/99, KBws)

### 16 - OTHER INFORMATION

Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge and on national and community regulations.

The product must not be used for any purposes other than those specified under heading 1 without first obtaining written handling instructions. It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations.

The information given on this safety data sheet must be regarded as a description of the safety requirements relating to our product and not a guarantee of its properties

**Full text of risk phrases appearing in section 3:**

R 11	Highly flammable.
R 37/38	Irritating to respiratory system and skin.
R 43	May cause sensitisation by skin contact.