TroLase Reverse

Physical Properties	Specification	Test Method
Substrate	Impact Modified Acrylic (PMMA)	
Colors & Variance	See catalogue or visit our webshop https://shop.troteclaser.com/	
Thicknesses	1.6mm (+/-5%)	
Sheet Sizes	1245 x 616mm (+/- 3 mm) full sheet half 610 x 610mm / quarter 610 x 305mm	
Flatness	6mm max warp	
Fabrications Properties	Laser, Saw, Guillotine	
Engraving Depth	0,08 mm	
Use	Exterior, Interior	
Processing	Screen printing, Hot stamping, UV-/ Digital printing	
UV Light Resistance	Equivalent of 2 years without any color change or fading	500 hours QUV chamber
Abrasion	< 200 cycles CS17 wheel / 500g	Taber testing
Vicat Softening Point	98°C (50°C/h; 10N) 86°C (50°C/h; 50N)	ASTM D-1525
Specific Gravity	1.15 g/cc	ASTM D-792
Izod Impact	@ 23°C 58.7 J/m	ASTM D-256
Tensile Modulus	270,000 PSI / 1861.58 MPa	ASTM D-638
Tensile Strength @ Maximum	5,500 PSI / 37,92 MPa	ASTM D-638
Flexural Modulus	270,000 PSI / 1861.58 MPa	ASTM D-790
Flexural Strength @ Maximum	10,300 PSI / 71.02 MPa	ASTM D-790
Thermal Conductivity	1.5 BTU/h*ft²*F/in	ASTM C-117
Heat Deflection Temperature	(0.455 MPa; annealed) 89 °C (1.82 MPa; annealed) 80°C	ASTM D-648
Hardness	45M Rockwell	ASTM D-785
Melt Flow Rate	1.0g/10min (230°C/ 3.8kg)	ASTM D-1238
Flammability rating	UL94 HB / EN13501 E	UL94 / ISO13501

Restriction of Hazardous Substances (RoHS)/ U.L. Certification/Halogenated Materials Trotec has investigated the Restriction of Hazardous Substances (RoHS 3) directive issued by the European Union (directive 2015/863/EU). This RoHS directive prohibits the distribution of products after June 2015, which contain the following materials: lead, mercury, cadmium, hexavalent chromium, poly-brominated biphenyls and poly-brominated diphenyl ethers. The directive appears to apply to all products that operate on electrical power and contain electronic components. Trotec complies with the use and disclosure of all halogenated materials and does not incorporate poly-brominated biphenyls or poly-brominated diphenyl ethers in any of its products. Based on our audit, Trotec plastic sheet products are in compliance with this directive and do not contain any of the elements noted above or in the candidate list in accordance with the referenced directive. Our related MSDS documents may be found in the Trotec webshop (shop.troteclaser.com) at the related article and can be referenced for further information.

All products are sold upon condition that purchasers shall make their own tests to determine the suitability of such products for their particular purposes and uses, and that purchasers assume all risks and liability for the results of use of the products, including use in accordance with seller's recommendations, Nothing in this bulletin constitutes permission or a recommendation to practice or use any invention covered by any patent owned by this company or by others. THERE IS NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PURPOSE. PRODUCTS WILL MEET SELLER'S STANDARD SPECIFICATIONS THEREFORE, BUT THERE ARE NO OTHER WARRANTIES FOR THE PRODUCTS DESCRIBED.

Certifications: ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO 50001:2018 (Certificate can be found on the Trotec-Website)

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Frequently Asked Questions

Should the protective masking film be removed before laser engraving/cutting and rotary engraving/cutting?
Please remove the protective coating before laser or rotary engraving.
Before cutting the materials, however, it is recommended to leave the protective masking in place when performing vector cuts if your application will permit. This will minimize residue and clean-up efforts.

Engraving Tips – how can a perfect white result be achieved when engraving a 2-ply material with white core and dark top colors?
Using the 'bottom up' engraving setting in your Ruby® or JobControl® laser software will minimize the re-distribution of color residue to the core color. Increasing power in 5 % increments can be helpful and multiple passes might be required to achieve your optimal result, though with TroLase materials only one pass brings a very good result.
In many cases, Z-offset (controlled de-focus) in the range of 1 mm - 2 mm will allow for a smoother engraving surface with a more intense color result.

How do I use parameters in Ruby® and JobControl®?
In Ruby® and JobControl® you will find parameters optimized for quality and for speed.
"Quality" parameter sets are recommended for applications where fine detail and strong contrast is required.
"Speed" parameters are for time-efficiency orientated applications, where a reduced degree of detail in engraving is acceptable.

How do I reduce the dust generated during engraving or cutting?
It is recommended to set the parameters to engrave effectively through the color surface, while only as little as possible is being removed off the core material. Also, using a vacuum table and exhaust system to effectively remove the dust generated.
It can also help to use the Air assist function of the laser.

How to store laser materials correctly to avoid warping?
- The panels should be stored horizontally and flat
- Storage location should be dry and weatherproof (indoor)
- Average-temperature rooms without large fluctuations in room temperature and air humidity
- The material should not be exposed to direct sunlight, as the protective film can become porous if too much heat is generated
- Too long storage can have a negative effect on the protective film

Can there be dimensional and color deviations?
Any color deviations between the images shown in the shop and the actual items are due to electronic display or typographical reasons and are not considered mistakes. Depending on the batch, minor dimensional and color deviations may occur due to production.

Cleaning instruction
Any cleaning material that dissolves or releases the dirt or stain from the surface can be used to clean AGM or AGG series. Household detergents such as Mr. Clean®, Windex with Ammonia D ® (S.C. Johnson & Son, Inc.) 99% Isopropyl Alcohol should be applied generously using a soft cloth with minimal pressure to avoid micro-scratching the stained area. Do not use abrasives such as rubbing compounds or cleaners.

Icon Legend

Laser material
This material is suitable for processing on a laser device.

Rotary material
This material is suitable for processing with mechanical engraving devices.

Reverse engraving
This material is engraved from the back using mirrored graphics. The engraved area can be infilled or backlit to enhance the contrast against the colored background.

Front engraving
This material is engraved from the front side.

Exterior use
This material is tested for UV-resistance and suitable for outdoor use.

Indoor use
This material is suitable for interior applications.

Adhesive possible
Adhesive backing can be applied on selected materials.

UV-Print-Icon
This material is especially suitable for UV/ digital printing.

Grey Icons
All symbols in grey mean that the respective application does not apply.