



Azienda con  
Sistema Qualità certificato  
UNI EN ISO 9001:2008

## TECHNICAL DATA SHEET PRODUCT

# P 5 SYSTEM

### POLYURETHANE BASED BI-COMPONENT ADHESIVE

P5 SYSTEM is polyurethane based bi-component adhesive, thixotropic, odourless, natural color, polymerizing at room temperature, for structural bonding of a wide range of materials such as **thermoplastics, steel, thermosetting plastics, aluminium, concrete, wood and glass, marble, granite, natural and artificial stones.**

#### CHARACTERISTICS OF THE PRODUCT

	PROPERTIES	COMPONENT A	COMPONENT B	MIXTURE
CHEMICAL BASE	Chemical base	Poliol	Isocyanate	Polyurethane
	Mixing ratio (in volume)	1,00	1,00	
	Mixing ratio (in weight)	0,81	1,00	
REACTION TIME	Color	Natural	Yellow	Natural
	Aspect	Liquid	Liquid	Thixotropic
	Viscosity (mPa•s)	835	3.300	40.000
	Specific gravity	0,99	1,22	1,11
COLOR	Application temperature (°C / °F)			+10/+30 /
	Working/Application time			5 min
	Setting time			15 min
HARDNESS	Time of end reaction			480 min
	Reaction temperature (°C)			50
	Hardness (Shore)			75 D
VISCOSITY	Break elongation (%)			15%
	Service temperature (°C)			-36 / +100
	Shelf life (months)			12
	Storage temperature (°C)			+20 / +30



#### PREPARING THE SURFACE

Strength and seal of a bonding/gluing depend on the correct treatment of the surfaces to be bonded, that must be cleaned by a suitable degreasing agent for removing any trace of dust, dirt, oil or grease.

The pre-treatment of thermoplastic materials such as PVC, polycarbonate, polypropylene, PMMA, etc. can be effected by using a mix of light ethers or by isopropanol. Avoid the use of solvent because they can spoil the surface. The pre-treatment of all the other surfaces can be effected by using acetone or trichloroethylene. Never use gasoline/fuel/petrol or other kind of solvent.

Where is possible, make a mechanical abrasion to remove any trace of eventual paint from the surface to be glued and for improving the strength and the seal of the bonding. Let the pre-treated surfaces dry before applying the adhesive.



#### APPLICATION OF THE PRODUCT

P5 SYSTEM is normally supplied in two-component cartridge (side-by-side cartridge).

In any case, the mixing must be carried out through a static mixer of at least 16 elements. A lower number of elements does not allow a complete mixing. A higher number of elements increases the speed of the chemical reaction of curing. The mixers are disposable.

The two-component cartridges can be used by manual applicators or specific tires depending on the capacity and shape of the cartridge. In the case of supplying the product in drums for process applications by using special automatic dosing systems

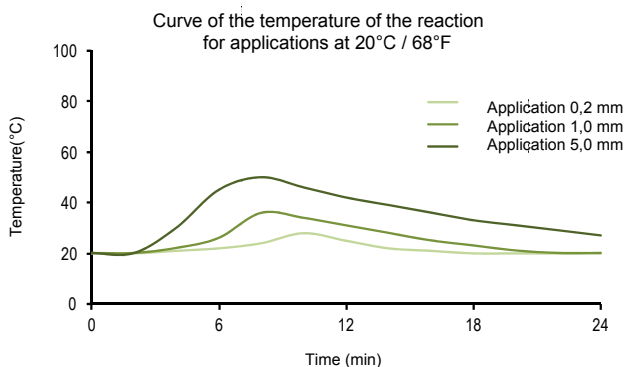
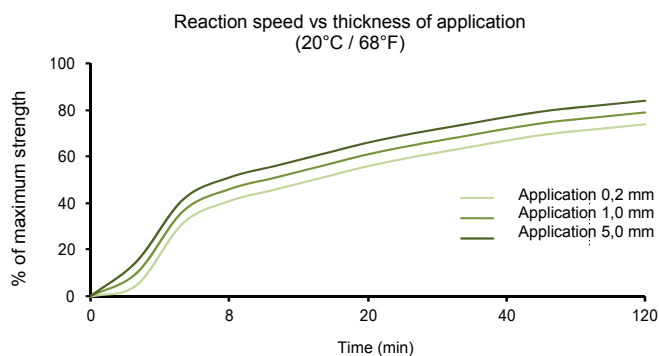
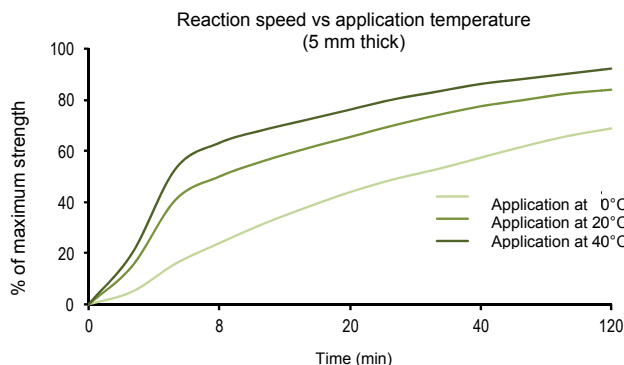
of low viscosity materials. The technical service of GENERAL is available provide advice about the kind of equipment suitable to their specific needs. The mixture should be applied directly from the mixer to the pre-treated and dry surface.

The optimum adhesive layer, that guarantees the maximum resistance at the junction, has a minimum thickness of 0.5 mm.

The materials to be bonded must be assembled before the adhesive begins to harden and tightened with uniform contact pressure over the entire bonded surface.

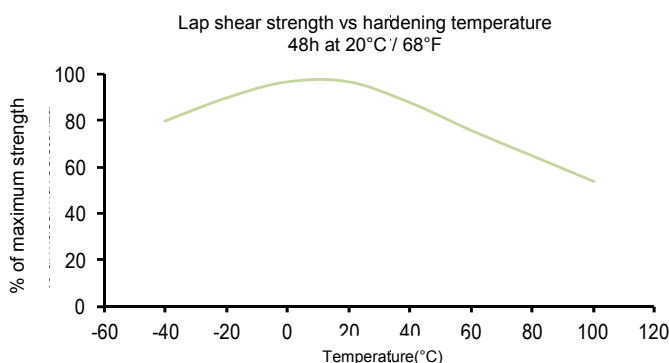


**REACTION** The speed of the hardening reaction is mainly conditioned by two factors: the temperature of application and the thickness of application. Since the reaction is exothermic, the speed decreases when the thickness and the application temperature decrease. Although to a lesser extent, also the substrate conditions the reaction speed. Materials with a high coefficient of thermal conductivity will tend to slow it down. The maximum temperature of the reaction is reached in applications of consistent thickness (5 mm) and it is always less than 50°C / 122°F.



**TECHNICAL CHARACTERISTICS OF THE PRODUCT AFTER HARDENING**

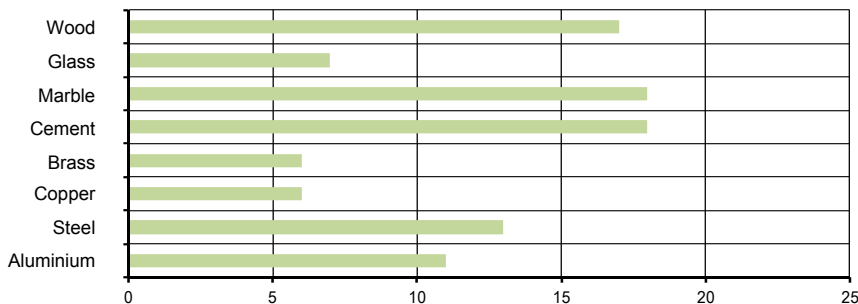
The shown values have been obtained after tests on standard samples/batch, by gluing for superposition of specimen of different material of dimensions 100x20x2 mm with a surface area of adhesion of 20x20 mm. The values obtained with standard test methods on typical batches, are provided solely as technical information and do not constitute a product specification. Therefore the user must make their own and preliminary tests and evaluate and approve the product for the specific application



**PHYSICAL PROPERTIES OF THE PRODUCT AT 20°C / 68°F**

Breaking Load (N/mm <sup>2</sup> )	23
Electrical Resistivity (Ω•cm)	1,2x10 <sup>15</sup>
Dielectric Constant $\epsilon_r$	3,8
Dielectric Strength (kV/mm)	25
Thermal Conductivity (W/m•K)	0,21

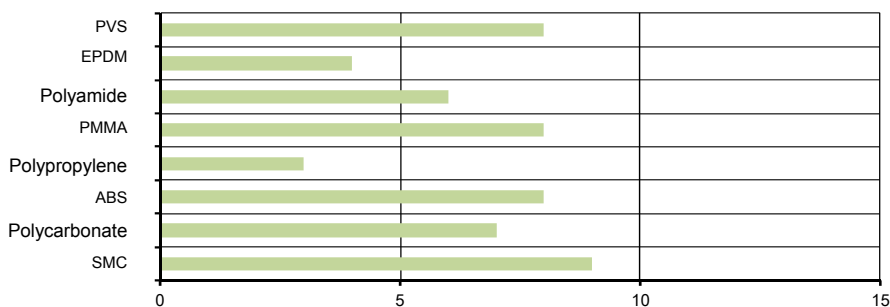
Overlap average shear strength (N/mm<sup>2</sup>) of different materials



Tests effected at temperature of 20°C / 68°F typical on metal-to-metal joints after 48 hours hardening at 20°C/68°F

Pre-treatment made by sandblasting and degreasing by acetone

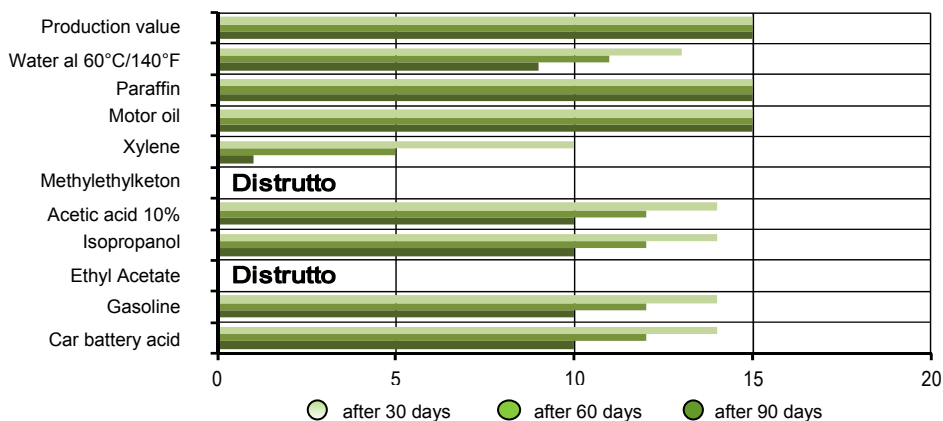
Overlap average shear strength (N/mm<sup>2</sup>) of plastic materials



Tests made at temperature of 20°C / 68°F on typical plastic-to-plastic joints after 48 hours hardening at 20°C/68°F

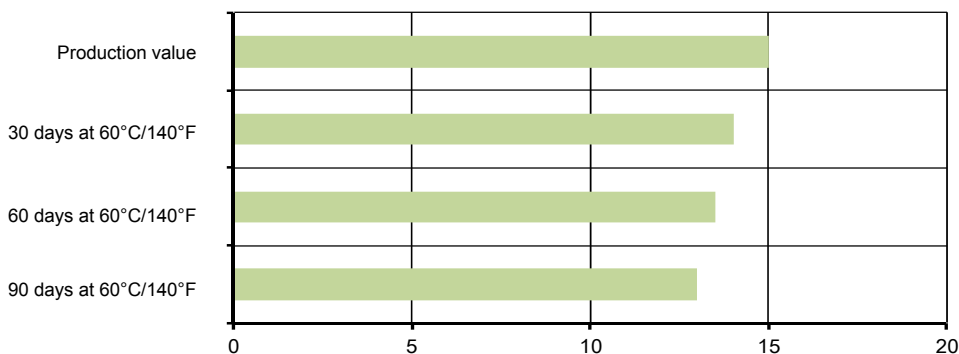
Pre-treatment made by abrasion and degreasing by isopropanol

Overlap average shear strength (N/mm<sup>2</sup>) vs ageing to chemical agents



Unless otherwise indicated, the tests were carried out at 20°C/68°F after 30, 60, 90 days immersion at 20°C/68°F on typical steel-to-steel joints after 48 hours hardening at 20°C/68°F

Overlap average shear strength (N/mm<sup>2</sup>) vs thermal ageing



Tests carried out at 20°C/68°F on typical steel-to-steel joints after ageing at 60°C/140°F

After 3 thermal cycles of 24 hours each from -40°C to +100°C / from -40°F to 212°F, there were no change in the average shear strength.

Pre-treatment made by sandblasting and degreasing by acetone



**SHELF-LIFE  
OF THE  
PRODUCT**

P5 SYSTEM has a shelf-life of 12 months from its preparation/production, provided it is stored in a cool and dry place at temperatures between +20°C and +30°C / 68°F and 86°F.  
The expiry date is indicated on the label.

Once opened, the cartridges can be stored until the expiry date (always to the above conditions) leaving assembled the last static mixer used.



**PRECAUTION  
FOR  
PRODUCT  
HANDLING**

While having low toxicity, P5 SYSTEM must be used by following the precautions normally taken when handling chemicals.

Avoid any contact between not cured substance and food or cooking/kitchen tools, and take all necessary precautions to avoid contact with the skin, as on people with specific hypersensitivity may have a harmful effect. It is recommended to wear rubber or latex gloves and to adequately protect the eyes.

It is recommended to thoroughly clean the skin at the end of the work shift with abundant hot water and soap.

The use of solvents is not recommended. Dry with paper tablecloths

It is recommended to ventilate the work area

These precautions are described in greater detail in the Material Safety Data Sheet for the products and should be referred to for complete information.



**PACKAGING**

side-by-side plastic cartridge of 50 ml. and 200ml.

**TEST**

Before the final application, always carry out a preliminary test to determine compatibility of the product with the support and the correct methods of application.

**NOTE**

Information and, in particular, the recommendations relating to the application and use of the products INDUSTRIA CHIMICA GENERAL are given in good faith and are based on current knowledge and experience of the products when properly stored, handled and applied under normal conditions.

The customer is responsible to confirm the suitability of the product application. Because you can not control the application, use or processing of the products, we accept no liability. The customer must ensure that the use of the products will not infringe any intellectual property rights of third parties.

INDUSTRIA CHIMICA GENERAL specifically disclaims any express or implied warranty, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of the GENERAL products.

INDUSTRIA CHIMICA GENERAL disclaims all liability for damages arising out or incidental of any kind, including lost of profits.

Users should always refer to the most recent technical data sheet regarding the product, which will be supplied on request.