

Agomet® F 310 and Variants

Gap filling methacrylate adhesives

Properties Agomet F 310 and variants are reaction adhesives for bonding of metals and plastics. The adhesives' fast setting rates at room temperature allow handling of the bonded parts within a short lapse of time:

Agomet F 310, 311, 312, and 313 fill gaps up to 8 mm max.

Thanks to its markedly lower viscosity, Agomet F 315 can be used in all cases where high viscosity adhesives are unacceptable.

Bondable Materials Metals such as steel, aluminium, copper and its alloys, ferrites; plastics such as ABS, polystyrene, rigid PVC, polycarbonate, polyphenylenoxid, moulded polyester parts, cellulose- and wood-based materials.

	Agomet		F 310	F 311	F 312	F 313	F 315
Viscosity	Pa.s (23°C),	appr.:	22	30	22	200	2.5
Density	g/cm ³	appr.:	1	1	1	1	1
Pot life	minutes	appr.:	8 - 12	10 - 15	45 - 55	8 - 12	8 - 12
Handability	minutes	appr.:	15 - 20	18 - 24	50 - 65	15 - 20	15 - 20

Bonding procedure

Surface Preparation Even without a particular surface preparation, Agomet F 310 and variants develop high strength values. As with all bonds, however, the bonding strength can be optimised by additional surface pretreatment: the parts must be free of loose impurities such as dust, oxides, grease, mould release agents, or plasticizers. A simple wipe with a solvent such as ethyl acetate - for plastics: alcohol - is adequate. Normal residues of rolling or drawing oil are relatively compatible with Agomet F 310 and variants and can remain on the surfaces to be joined.

Amount to be applied The most favourable amount of adhesive to be applied is 150 - 250 g/m² (0.15 - 0.25 mm).

Bonding Depending on the type of application, Agomet Hardener Lacquer can be applied by spraying, brushing, roll-coating, or dipping to one or both surfaces to be bonded. The lacquer dries sufficiently in about 4 minutes to allow bonding, transporting or storage. Surfaces coated with hardener lacquer can be stored for several weeks without losing the hardener lacquer's reactivity. Once the hardener lacquer has dried, the adhesive is applied to one of the two surfaces. Then the parts are joined immediately and fixed under contact pressure. Polymerization starts as soon as the adhesive touches the hardener lacquer.

For joint gap widths up to 0.4 mm, application of hardener lacquer to just one surface is sufficient. To bridge larger joint gaps, hardener lacquer must be applied to both parts. Gaps wider than 0.8 mm should be avoided at all.

1. with Agomet Hardener Lacquer (No-mix-method)

2. with Agomet Hardener Paste For this purpose, 2 - 5%, preferably 3%, hardener paste is mixed into the adhesive. Processing is carried out immediately after the hardener has been mixed in. Thanks to its low viscosity, Agomet F 315 may also be processed with Agomet Hardener Powder.

3. with Agomet Hardener D This hardener preparation was developed especially for processing by means of 2 component mixing and dosing equipment. The amount of hardener required is 10%. This resin:hardener ratio of 10:1 can be easily processed by mixing/dosing machines.

Bonding performance

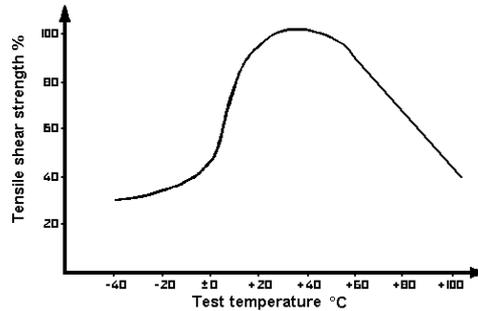
Tensile Shear Strength according to DIN 53 283, in combination with Agomet Hardener Paste or Agomet Hardener D, test specimen 100 x 25 x 1.6 mm, bonded area 3 cm², surface degreased and roughened:

Aluminium/Bondur F 44 (AlCuMg2pl)	F 310 30 N/mm ²	F 311 30 N/mm ²	F 312 30 N/mm ²	F 313 30 N/mm ²	F 315 30 N/mm ²
Brass	13 N/mm ²				
Steel	33 N/mm ²	35 N/mm ²		35 N/mm ²	
Steel (no surface preparation)	25 N/mm ²				
Steel, galvanised (no surface prep.)	20 N/mm ²				
Rigid PVC (2 mm thick, degreased)	10 N/mm ² (material break)				

Peel Strength Aluminium F 13.3 **6 N/mm**
measured in the T-Peel-Test according to DIN 53 282, test specimen 130 x 30 x 0.5 mm, surface roughened

Behaviour at elevated test temperatures Bonds produced with Agomet F 310 show the following shear strength depending on test temperatures:

Test specimen:
100 x 25 x 1.6 mm
AlCuMg2pl
degreased, roughened
bonded area 3 cm²



Thermal Stability Brief thermal loads of up to 180 °C for max. 30 minutes without mechanical stress are withstood by F 310 without destruction of the bond. After surface preparation and continuous storage for 7 days, the following shear strength values were measured at room temperature:

Sheet steel	One week storage at	20 °C	120 °C	150 °C	175 °C
- acetone flushed		39 N/mm ²	47 N/mm ²	34 N/mm ²	15 N/mm ²
- sandblasted		46 N/mm ²	45 N/mm ²	35 N/mm ²	17 N/mm ²

Chemical Resistance Agomet F 310 and its variants have very good resistance to diluted mineral acids and good resistance to alkalis, gasoline and Diesel fuels. Joints produced with AGOMET® F 310 and its variants also have good resistance against moisture and heat (tropical climate), as well as under the influence of aqueous solutions.

Advice

Shelf Life Please see labels: a minimum of 6 months in the original unopened container.

Handling Precautions

Caution

Vantico products are generally quite harmless to handle provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should be taken to prevent the uncured materials from coming into contact with the skin, since people with particularly sensitive skin may be affected. The wearing of impervious rubber or plastic gloves will normally be necessary; likewise the use of eye protection. The skin should be thoroughly cleansed at the end of each working period by washing with soap and warm water. The use of solvents is to be avoided. Disposable paper – not cloth towels – should be used to dry the skin. Adequate ventilation of the working area is recommended. These precautions are described in greater detail in Vantico publication No. 24264/3/e Hygienic precautions for handling plastics products of Vantico and in the Vantico Material Safety Data sheets for the individual products. These publications are available on request and should be referred to for fuller information.

All recommendations for the use of our products, whether given by us in writing, verbally, or to be implied from the results of tests carried out by us, are based on the current state of our knowledge. Notwithstanding any such recommendations the Buyer shall remain responsible for satisfying himself that the products as supplied by us are suitable for his intended process or purpose. Since we cannot control the application, use or processing of the products, we cannot accept responsibility therefor. The Buyer shall ensure that the intended use of the products will not infringe any third party's intellectual property rights. We warrant that our products are free from defects in accordance with and subject to our general conditions of supply.