

Adhesives and Tooling

Structural Adhesives

XW 1038 Resin with XW 1015-1 Hardener

Two component epoxy paste adhesive for composite and metal bonding

Key properties

- Temperature resistant to >100°C
- Excellent resistance to most common chemicals
- Non flowing paste for ease of application
- Gap filling
- Cold or warm curing

Description

XW 1038 / XW 1015-1 is a two component, non slumping paste adhesive, cold or warm curing, impact resistant, with excellent resistance to water, solvents and chemicals. It is suitable for bonding a range of ferrous metals and aluminium alloy substrates and polymeric substances such as GRE, ABS and SMC, for applications such as composite pipe bonding as well as general industrial applications.

Typical product data

Property	XW 1038	XW 1015-1
Colour (visual)	white paste	grey paste
Specific gravity	ca. 1.45	ca. 1.65
Viscosity at 25°C (Pas)	thixotropic	thixotropic
Flash point (°C)	>200	>100

Processing

Pretreatment

The strength and durability of a bonded joint are dependant on proper treatment of the surfaces to be bonded. At the very least, joint surfaces should be cleaned with a good degreasing agent such as acetone, trichloroethylene or proprietary degreasing agent in order to remove all traces of oil, grease and dirt. Alcohol, gasoline (petrol) or paint thinners should never be used.

The strongest and most durable joints are obtained by either mechanically abrading or chemically etching ("pickling") the degreased surfaces. Abrading should be followed by a second degreasing treatment

Mix ratio	Parts by weight	Parts by volume
XW 1038	100	100
XW 1015-1	50	44

Resin and hardener should be mixed together at room temperature stirring thoroughly.

Application of adhesive

The resin/hardener mix is applied directly or with a spatula, to the pretreated and dry joint surfaces.

A layer of adhesive 0.05 to 0.10mm thick will normally impart the greatest lap shear strength to the joint.

The joint components should be assembled and clamped as soon as the adhesive has been applied. An even contact pressure throughout the joint area will ensure optimum cure.

Mechanical processing

Specialist firms have developed metering, mixing and spreading equipment that enables the bulk processing of adhesive.

Vantico will be pleased to advise customers on the choice of equipment for their particular needs.

Equipment maintenance

All tools should be cleaned with hot water and soap before adhesives residues have had time to cure. The removal of cured residues is a difficult and time-consuming operation.

If solvents such as acetone are used for cleaning, operatives should take the appropriate precautions and, in addition, avoid skin and eye contact.

Times to minimum shear strength

Temperature	°C	10	15	20	30	40	60	100
Cure time to reach	hours	7	3½	2	1	-	-	-
LSS > 1N/mm ²	minutes	-	-	-	-	26	8	2
Cure time to reach	hours	22	6	4	2	-	-	-
LSS > 10 N/mm ²	minutes	-	-	-	-	50	15	<4
Pot life 500g bulk	minutes	120	-	60	45	20	-	-

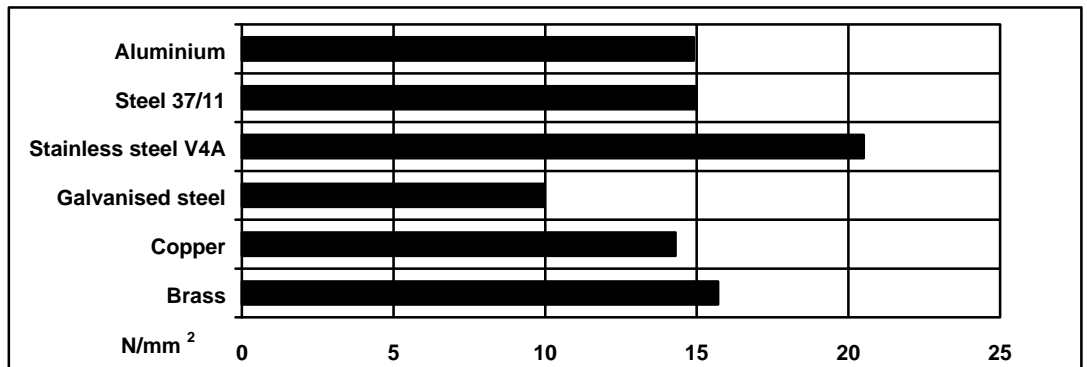
Typical cured properties

Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-jointing 170 x 25 x 1.5 mm strips of aluminium alloy. The joint area was 12.5 x 25 mm in each case. The figures were determined with typical production batches using standard testing methods. They are provided solely as technical information and do not constitute a product specification.

Average lap shear strengths of typical metal-to-metal joints (ISO 4587)

Cure: 24 hours at 23°C + 2 hours at 100°C and tested at 23°C

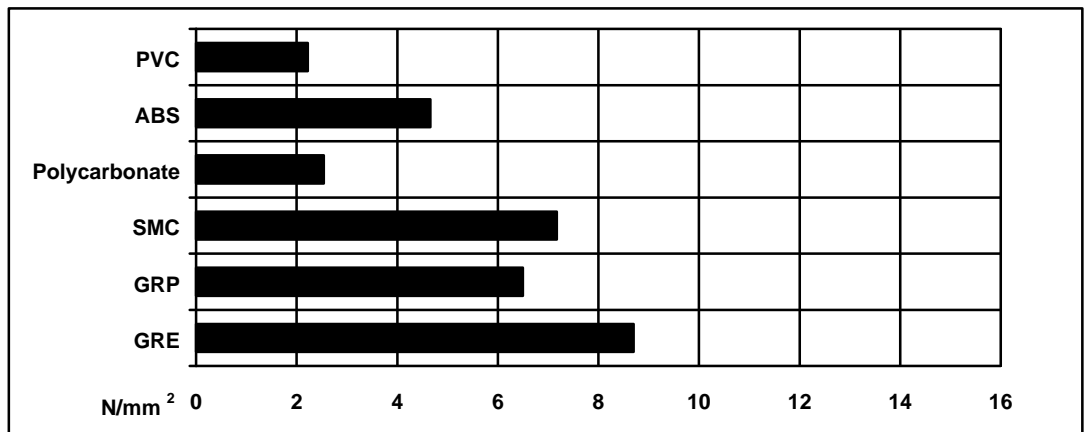
Pretreatment - Sand blasting



Average lap shear strengths of typical plastic-to-plastic joints (ISO 4587)

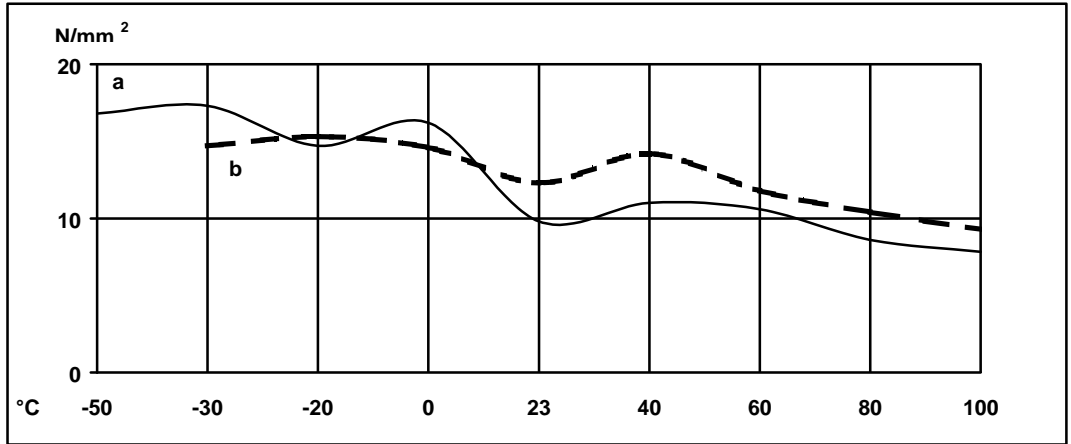
Cure: 24 hours at 23°C + 2 hours at 100°C and tested at 23°C

Pretreatment - Lightly abrade and alcohol degrease.



Lap shear strength versus temperature (ISO 4587) (typical average values)

Cure: (a) = 7 days at 23°C; (b) = 24 hours at 23°C + 2 hours at 100°C



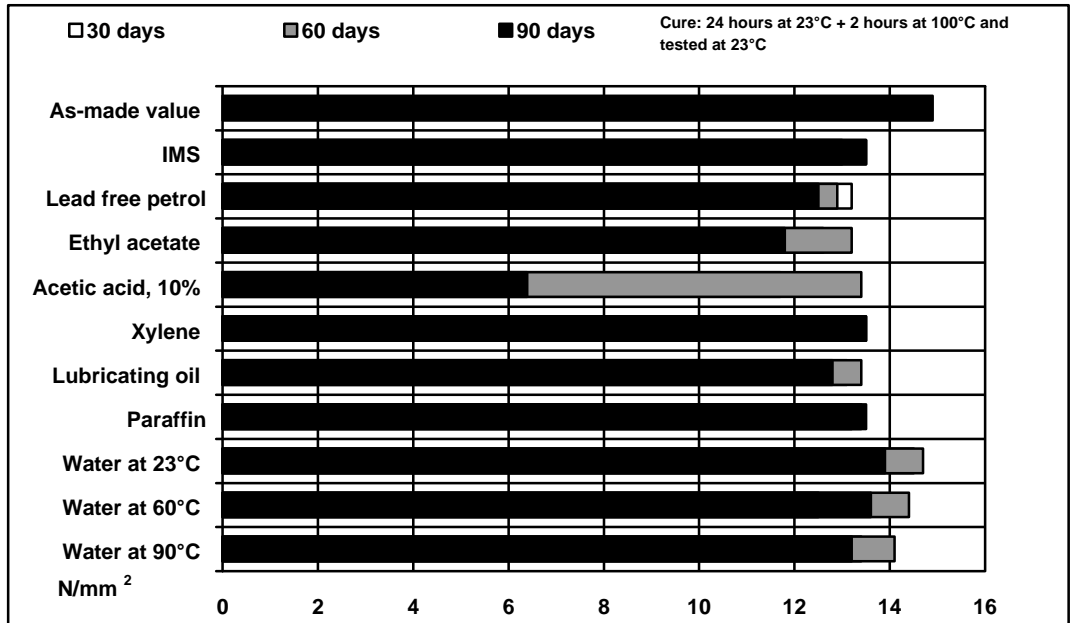
Roller peel test (ISO 4578)

2.2 N/mm

Cure: 24 hours at 23°C + 2 hours at 100°C and tested at 23°C

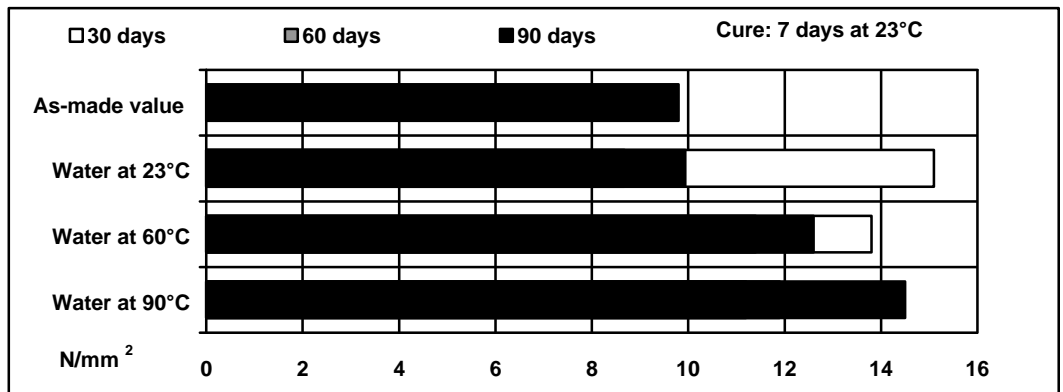
Lap shear strength versus immersion in various media (typical average values)

Unless otherwise stated, L.S.S. was determined after immersion for 90 days at 23°C



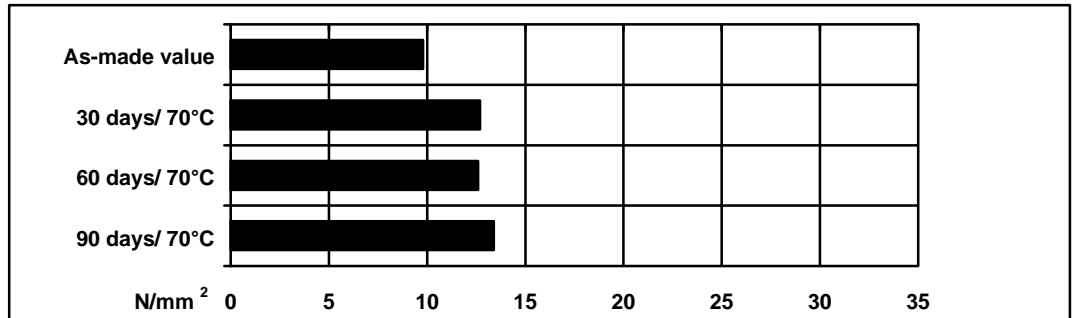
Lap Shear Strength versus water immersion (typical average values)

After cure only at 23°C



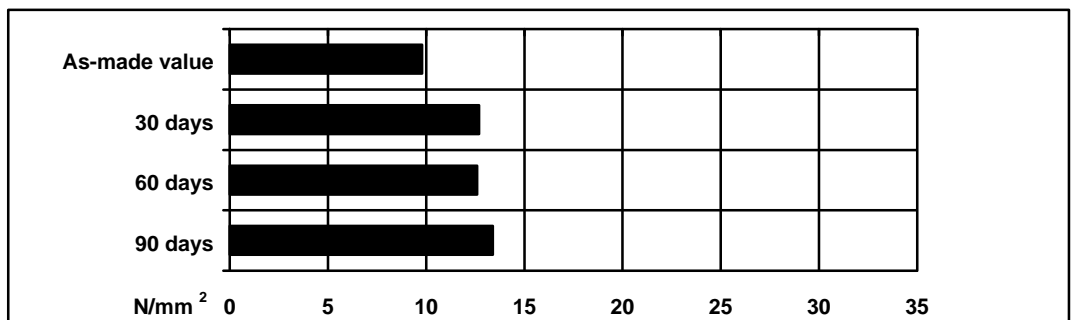
Lap shear strength versus heat ageing

Cure: 7 days at 23°C



Lap shear strength versus tropical weathering (40/92, DIN 50015; typical average values)

Cure: 7 days at 23°C



Storage

XW 1038 Resin with XW 1015-1 Hardener may be stored for up to 2 years at 2 - 40°C. The expiry date is indicated on the label.

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 in 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.

Vantico Adhesives and Tooling

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.

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