

## Structural Adhesives

### XD 4664 A/B

### Two component toughened methacrylate adhesive system

#### Key properties

- Excellent bond to plastics, composites and certain metals
- Tough resilient bond with minimum pretreatment
- Excellent water and environmental resistance
- Fast curing at room temperature
- Good gap filling properties

#### Description

XD 4664 A/B is a two component room temperature curing methacrylate adhesive for rapid assembly operations on a wide range of substrates.

#### Typical product data

	XD 4664 A	XD 4664 B	Mixed
Colour (visual)	Off white	Off white	Neutral
Specific gravity	0.92	1.16	ca 1
Viscosity (Pas)	ca 140	ca 125	-
Pot Life (100 gm at 25°C)	-	-	4 - 5 minutes
Flash point (°C)	10	>100	-

#### Processing

##### Pretreatment

The strength and durability of a bonded joint are dependant on proper treatment of the surfaces to be bonded, however the methacrylate adhesives can be used effectively with little surface preparations.

Ideally joint surfaces should be cleaned with a good degreasing agent such as acetone, iso-propanol (for plastics) or other proprietary degreasing agents in order to remove all traces of oil, grease and dirt.

Low grade 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
XD 4664 A	100	100
XD 4664 B	12.5	10

Resin and hardener are available in cartridges incorporating mixers and can be applied as ready-to-use adhesive with the aid of the tool recommended by Huntsman Advanced Materials.

##### Application of adhesive

The resin/hardener mix is applied directly to the pretreated and dry joint surfaces.

A layer of adhesive 0.10 to 0.20 mm thick will normally impart the greatest lap shear strength to the joint.

Note that layers of adhesive thicker than 4 mm will react very vigorously during cure generating large amounts of heat.

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. We 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	23	40	60
Cure time to reach	hours	-	-	-	-	-
LSS > 1N/mm <sup>2</sup>	minutes	45	30	15	8	4
Cure time to reach	hours	-	-	-	-	-
LSS > 10N/mm <sup>2</sup>	minutes	80	55	20	12	7

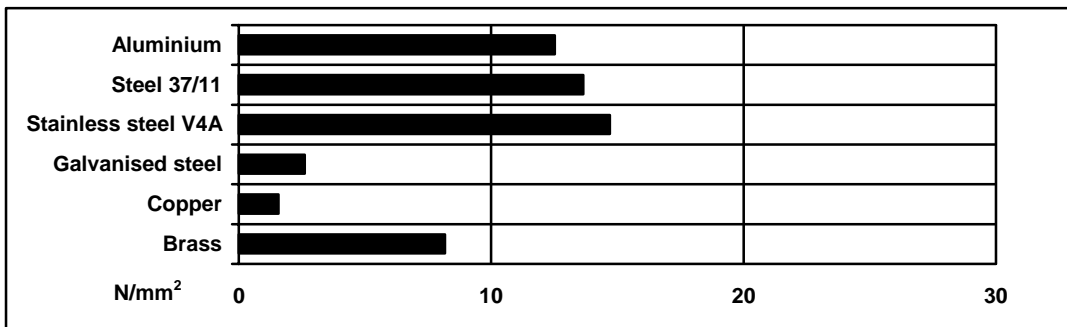
LSS = Lap shear strength. Note that the adhesive will reduce in volume by ca. 10% during cure.

**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.

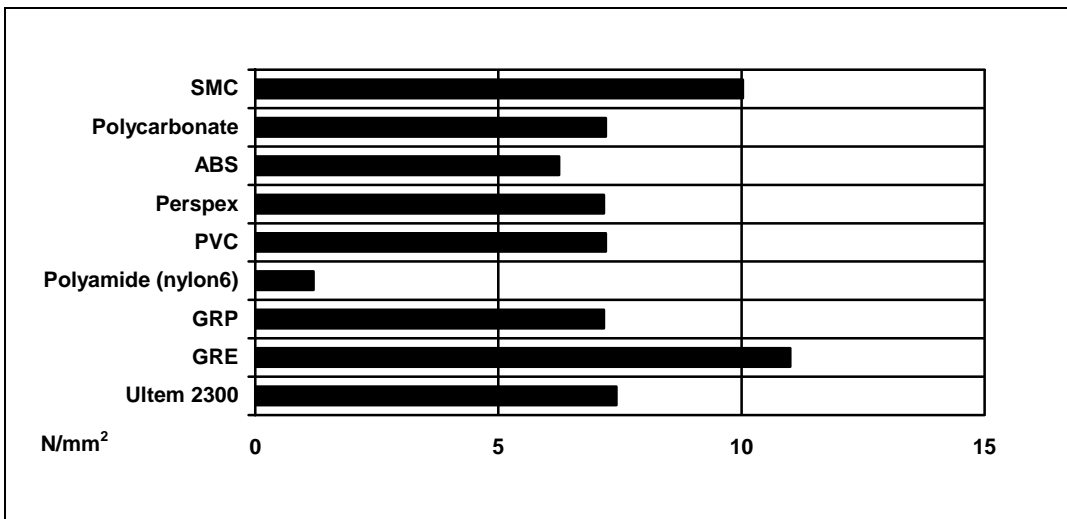
**Average lap shear strengths of typical metal-to-metal joints (ISO 4587)**

Cured for 7 days at 23°C and tested at 23°C. Pretreatment - Sand blasting



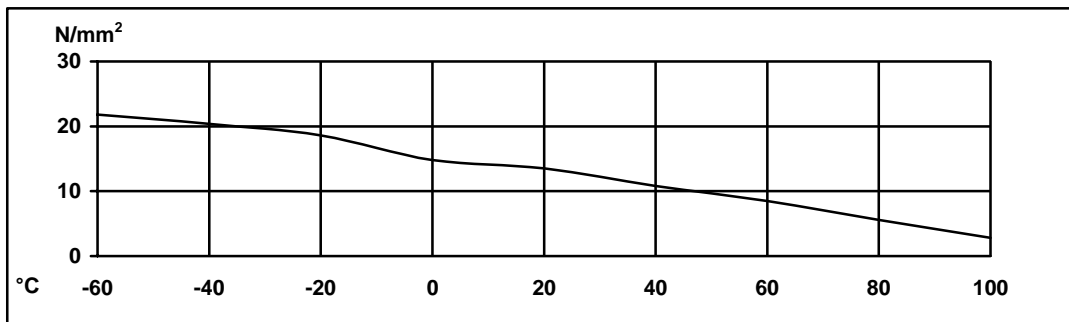
**Average lap shear strengths of typical plastic-to-plastic joints (ISO 4587)**

Cured for 7 days at 23°C and tested at 23°C. Pretreatment - Lightly abrade and alcohol degrease.



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

Cure: 7 days at 23°C



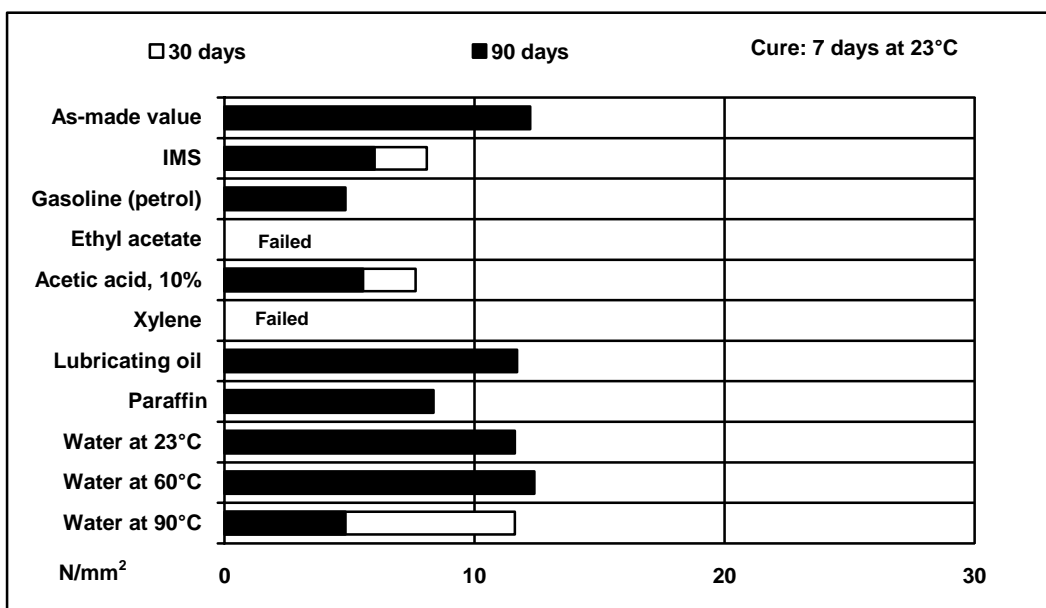
**Roller peel test (ISO 4578) 6 N/mm**

Shore hardness D72

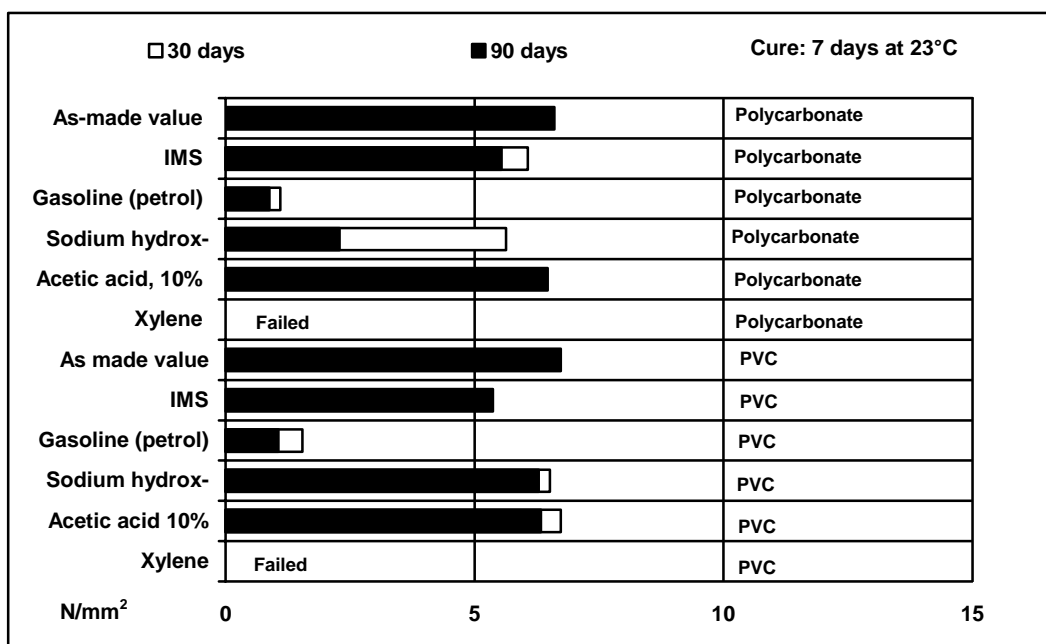
Elongation at break 100 - 140%

**Lap shear strength versus immersion in various media at 23°C (typical average values)**

Substrate - aluminium

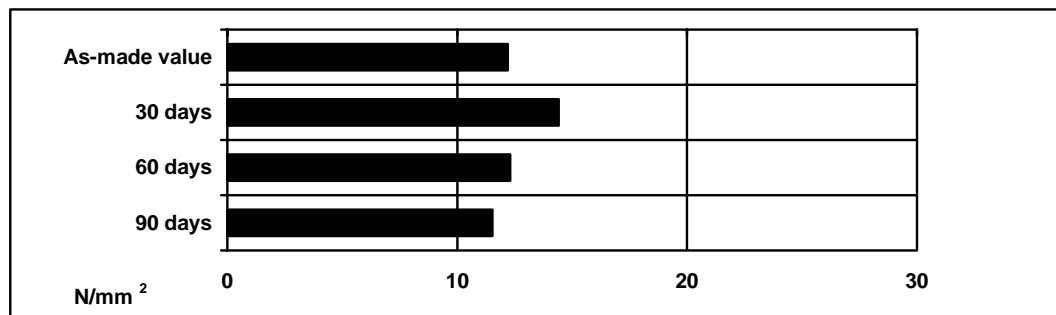


Substrate - plastics

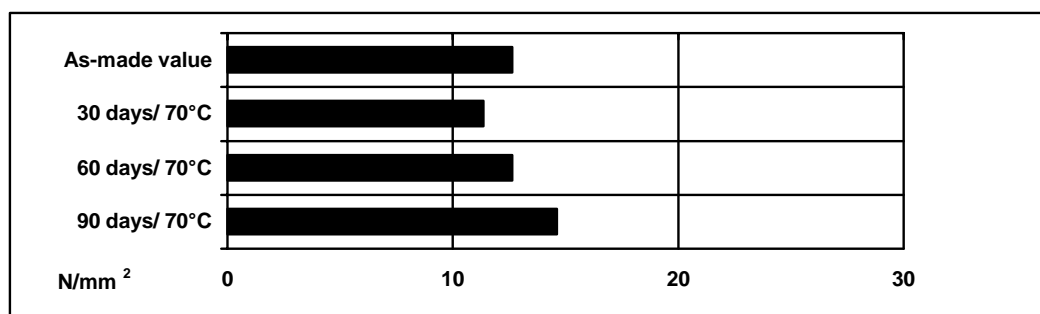


### Lap shear strength versus tropical weathering (40/92, DIN 50015; typical average values)

Cure: 7 days at 23°C



### Lap shear strength versus heat ageing Cure: 7 days at 23°C



### Thermal cycling

100 cycles of 6 hour duration from -30°C to 70°C: 14.5N/mm<sup>2</sup>

## Storage

XD 4664 A and XD 4664 B may be stored for up to 12 months at 0-8°C, provided that the components are stored in sealed containers. The life at 15 - 25°C is a maximum of 6 months. The combined expiry life when cold stored and then stored at 15 - 25°C should not exceed 12 months total. The expiry date, assuming 0-8°C storage, is indicated on the packaging.

## Handling precautions

### Caution

Our 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 the Material Safety Data sheets for the individual products and should be referred to for fuller information.

### Huntsman Advanced Materials

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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