ADHESIVES & SEALANTS

Weicon RK-1300 & RK-1500 Construction Adhesives

Weicon RK-1300 and RK-1500 Construction adhesives are 2-part adhesive systems that are based on methacrylate and cure at room temperature. These adhesives are easily processed using a “no-mix” procedure whereby polymerisation starts as soon as the adhesive and the activator-wetted components are joined together. This means there’s no measuring of portions, mixing or risk of cure failure due to issues with the mix.

Both RK-1300 and RK-1500 cure to form incredibly high strength bonds that exhibit fast initial bond strength, residual elasticity and impact resistance. They are also ageing resistant and withstand a large range of temperature and chemicals.

Both of these types of adhesive are used to bond a wide variety of materials. These include:

- Metals (such as coated metal, steel, aluminium, copper, zinc alloys and ferrites)
- Plastics* (such as ABS, polystyrene, hard PVC, polycarbonate, Pollyphenylene oxide and polyester moulding compounds)
- Fibre Composite Materials (including GRP, CRP and fibreglass)
- Wood and cellulose materials (e.g. MDF)
- Glass, Ceramics and Stone

*Please note Polyamide, PTFE and polyolefin may only be bonded after special treatment of the surface (e.g. low-pressure plasma, corona, flame impingement).

Weicon RK-1300 and RK-1500 Construction Adhesives are often used as a replacement or alternative to traditional fixing or fastening methods like screws or welding. Compared to these methods, they offer several advantages which include:

- They do not change or damage the material surface
- Tensioning of the material caused by thermal or mechanical stress is eliminated
- The specific material characteristics of the materials being bonded are not altered
- They often allow for the use of thinner and/or lighter and more cost-effective materials that cannot be joined using traditional fastening methods
- When cured, the adhesives automatically form a leak-proof coating which prevents fretting corrosion
- They eliminate contact corrosion which can occur when joining different materials

RK-1300

- Pasty viscosity
- Particularly suitable for bonding metals and hard plastics
- High impact, peel and shear strength
- Withstands continuous exposure to temperatures between -50ºC & +130ºC
- Tolerates short-term spikes (30 min.) up to 180ºC

RK-1500

- Liquid viscosity
- Particularly suitable for use with large bonding areas
- High impact, peel and shear strength
- Withstands continuous exposure to temperatures between -50ºC & +130ºC
- Tolerates short-term spikes (30 min.) up to 180ºC

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Properties

		RK-1300	RK-1500
Basis		Methyl Methacrylate	
Nature		Pasty	Liquid
Viscosity at 20ºC	Adhesive	21,000 MPa	4,500 MPa
	Activator	Very Thin Liquid	
Specific Weight	Adhesive	1.2 g/cm³	1 g/cm³
	Activator	0.87 g/cm³	
Colour	Adhesive	Beige, Opaque	Yellow, Transparent
	Activator	Colourless, Transparent	
Consumption (Depending on Surface Structure)	Adhesive	180 – 300 g/m²	
	Activator	30 – 150 g/m²	
Evaporation time of the activator at 20ºC		5 Minutes	
Effectiveness of the Activator after application at 20ºC		30 Days (maximum)	
Processing Temperature		+10ºC to +30ºC	
Curing Temperature		+6ºC to +40ºC	
Positioning Time of the parts coated with Activator and Adhesive (at 20ºC)		1 to 2 Minutes	
Maximum Gap Covering Power Bond lines of 0.15mm to 0.25mm have the highest strength		0.4mm (Activator on One Side)[1] 0.8mm (Activator on Both Sides)[1]	
Cure Time at 20ºC[2]	Handling Strength (35%)	6 Minutes	5 Minutes
	Mechanical Strength (50%)	9 Minutes	8 Minutes
	Final Strength (100%)	24 Hours	24 Hours
Average Tensile Shear Strength After 7 days at 20ºC One sided Activator application in accordance with DIN53281-83	Aluminium (sand-blasted)	25 N/mm²	26 N/mm²
	Steel (sand-blasted)	21 N/mm²	25 N/mm²
	Steel (galvanised)	6 N/mm²	4 N/mm²
	Stainless Steel (sand-blasted)	26 N/mm²	25 N/mm²
	Brass (sand-blasted)	25 N/mm²	26 N/mm²
	Copper (sand-blasted)	26 N/mm²	19 N/mm²
	Polycarbonate (roughened)	5 N/mm²	8 N/mm²
	ABS (roughened)	6 N/mm²	6 N/mm²
	Hard PVC (roughened)	7 N/mm²	11 N/mm²
	Polyamide 6.6 (roughened)	2 N/mm²	3 N/mm²
	GRP (polyester) (roughened)	8 N/mm²	7 N/mm²
	GRP (epoxy-resin) (roughened)	16 N/mm²	20 N/mm²
Temperature Resistance		-50ºC to +130ºC Continuous Short-term (30 Minutes) up to +130ºC	
Peel Resistance on Aluminium		6 N/mm²	
Linear Thermal Expansion Coefficient		70×10^{-6} K^{-1}	80×10^{-6} K^{-1}
Thermal Conductivity		0.2 W/m·K	
Electrical Resistance		10^{15} Ω/cm	
Dielectric Strength		10 kV/mm	

[1] This information is dependent on the type of materials being bonded and their respective properties. With porous materials or passive surfaces (such as chrome or nickel) the Activator should be applied to both sides. Bond lines between 0.15mm and 0.25mm have the highest stability.

[2] High temperature (e.g. +40ºC) shorten the positioning times by approximately 30%. Low temperatures (e.g. +10ºC) increase the respective times by approximately 50%. At temperatures below +5ºC almost no reaction occurs.

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RK-1300 and RK-1500 Chemical Resistance After Curing

Acetone	+
Acidic Vapours	+
Alcohol	+
Aliphatic Hydrocarbons	+
Alkaline Vapours	+
Ammonia, Ammonium Chloride	+
Aromatic Hydrocarbons	O
Benzoyl	O
Benzoyl Acid	+
Bile Medium (Bilge Water)	+
Brake Fluid	+
Bromide Solution	O
Butyl Alcohol (Isobutanol)	+
Calcium Chloride (Sea Salt)	+
Calcium Sulphate	+
Calcium Sulphite	+
Chlorinated Hydrocarbons	+
Chlorinated Salt Water	+
Chlorinated Solvents	-
Chlorinated Water	+
Chlorine Alcohol	+
Chlorine Bleach	-
Chlorine Gas (Liquid & Dry)	-
Chlorine Sulphuric Acid	-
Chlorine (Liquid & Dry)	-
Chloroform	+
Chromatic Acid (5%)	+
Cooling Lubricants	+
Corrosive Ammonium, Ammonium Hydroxide	O
Cylinder Oil	+
Dichloroethylene Ether	+
Epichlorohydrin	+
Freon	O
Fuel (Jet or Turbine)	+
Glycocol, Glycine	+
Heating Oil (Diesel)	+
Heptane	+
Hydrochloric Acid	O
Hydrocyanic Acid (Prussic Acid 5%)	+
Hydrogen Bromide (5%)	+
Hydrogen Chloride	+
Hydrogen Fluoride (Hydrofluoric Acid)	-
Hydrogen Peroxide	O
Hydrogen Sulphide (Wet & Dry)	+
Isobutyl Alcohol (Isobutene)	+
Isopropyl Acetate	+
Isopropyl Alcohol	+
Isopropyl Ether	+
Kerosene	+
Ketone	+
Lubricating Oils & Greases	+
Mercury	+
Methanol (Methyl Alcohol)	+
Methyl Benzoyl	+
Methyl Chloride	O
Methyl Ethyl Ketone	+
Methyl Isobutyl Ketone	+
Methylene Dichloride	+
Mineral Oil	+
Mineral Turpentine	+
Nitric Acid (5%)	+
Nitric Acid (Fuming)	-
Oxygen	-
Ozone	-
Paraffin oil (Kerosene)	+
Perchlomethylmercaptan	+
Persulfuric Acid (5%)	+
Petrol	+
Phenol (Carbolic Acid)	+
Phenol Resin	+
Phosphoric Acid (5%)	+
Phthalic Acid	+
Polyphosphoric Acid (5%)	+
Potassium Carbonate (Potash)	+
Propyl Alchol	+
Selenium Chloride	+
Silicon Oils	+
Sulphur Dioxide (Wet & Dry)	+
Sulphur Trioxide Gas	-
Sulphuric Acid	O
Sulphuric Acid (Fuming)	-
Tannic Acid	O
Toulene	O
Toulene Sulphuric Acid	O
Trichloroethylene	+
Turpentine, Turpentine Oil	+
Waste Water	+
Water	+
Water (Boiling)	O
Water (Distilled)	+
Xylene (Dimethylbenzoyl)	O

+ = Resistant O = Resistant for a Limited Time - = Not Resistant

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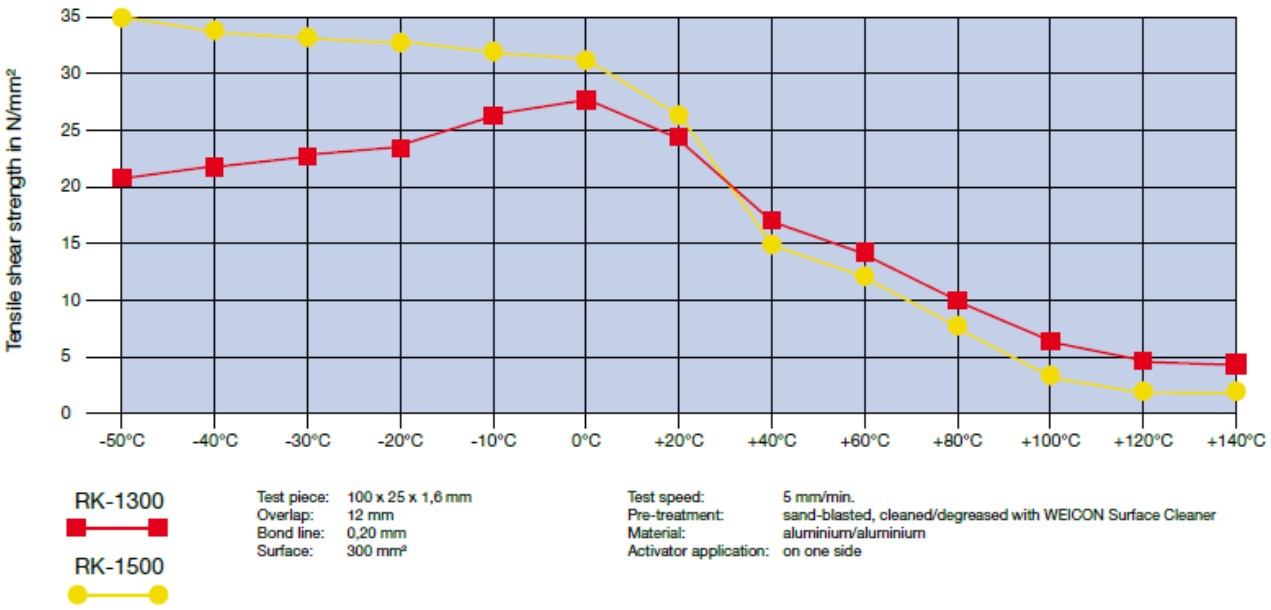
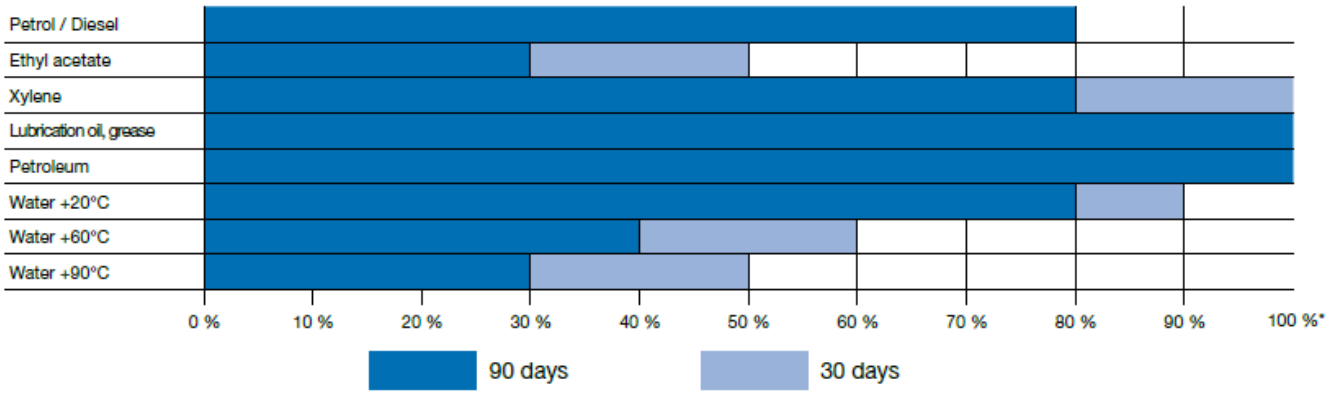
Tensile shear strength according to DIN 53283 depending on the test temperature

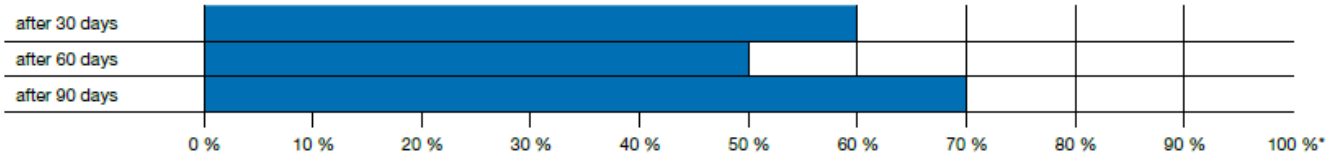


Test piece:	100 x 25 x 1,6 mm	Test speed:	5 mm/min.
Overlap:	12 mm	Pre-treatment:	sand-blasted, cleaned/degreased with WEICON Surface Cleaner
Bond line:	0,20 mm	Material:	aluminium/aluminium
Surface:	300 mm²	Activator application:	on one side

Tensile shear strength in % after storage in different media



Tensile shear strength in % after storage in tropical climate in accordance with DIN 50015 (+40°C and 92% humidity)



* Average tensile strength after 7 days at +20°C and one-sided Activator application in accordance with the stability.

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Preparation of the Surface
To ensure a perfect bond, the surface to which these adhesives will be applied must be clean and dry (Weicon Cleaner S or Weicon Plastic Cleaner may be ideal for this task).

Highest bond strength will be achieved through the use of additional surface pre-treatments such as roughening by blasting or through the use of abrasive agents. Several plastics (in particular, PTFE, polyamide, polyolefines) can only be bonded after special pre-treatment of their surface (e.g. fluoridation, low pressure plasma, chemical etching, corona, flame impingement).

Processing of the RK Activator (same for both RK-1300 and RK-1500)
Depending on the size of the bonding gap, the RK Activator should be applied to either one or both sides of the surfaces being bonded (brush, spray or dip). In cases of bond lines up to .4mm, the activator only needs to be applied to one side. For bond lines up to 0.8mm and/or on rough, porous or passive surfaces (e.g. chrome, nickel) the activator must be applied to both sides.

For smooth plastic and metal surfaces, approximately 30 g/m² is necessary. For rough and porous surfaces up to 150 g/m² may be required. The evaporation time at room temperature (20ºC) is at least 5 minutes.

A significant advantage is that components coated with the activator can be stored at room temperature (20ºC) for up to 30 days without compromising their ability to bond when they are joined with the adhesive.

Processing of the RK Adhesive (same for both RK-1300 and RK-1500)
The Adhesive is applied to just one side and normally on the surface that is not coated with the activator. The width of the bond line can be up to 0.8mm (if the activator has been applied to both surfaces). Bond lines between 0.15mm and 0.025mm will have the highest tensile shear strength.

Physiological properties / health and safety at work
Weicon RK Construction Adhesives, when properly handled and completely cured, are toxicologically harmless. When using this product, the physical, safety, technical, toxicological and ecological data and regulations in the SDS must be observed.

Storage
Weicon RK Construction Adhesives have a shelf-life of at least 12 months if stored in a dry room with a relatively constant temperature of about 20ºC. If stored in temperatures between +1ºC and +7°C, shelf life can be extended up to 24 months. This applies to the closed original containers which are not significantly exposed to UV. If stored in temperatures exceeding 40ºC and with high humidity, the shelf-life is shorted to 6 months.

Availability
Both RK-1300 and RK-1500 Construction Adhesives are available in a variety of sizes. These are listed below:

RK-1300

- 60gm Kit – Adhesive & Activator
- 330gm Cartridge – Adhesive Only
- 1kg Kit – Adhesive & 2 x 100gm Activator Spray
- 6kg Tin – Adhesive Only

RK-1500

- 60gm Kit – Adhesive & Activator
- 310gm Cartridge – Adhesive Only
- 1kg Kit – Adhesive & 2 x 100gm Activator Spray
- 6kg Tin – Adhesive Only

The **Activator** is also available separately in 100gm Spray Bottles or 1 Litre Bottles

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