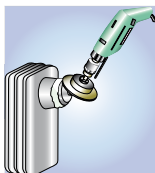
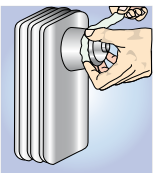




Repair Sticks

- durable
- versatile
- high strength



New Repair Sticks Concrete and Stainless Steel

NSF Repair Sticks Steel, Stainless Steel, Copper and Plastic

WEICON Repair Sticks

The uncomplicated solution for all repair and maintenance work.

Easy to use:

Cut off - knead - use

Always the right portion, even for small repairs.

WEICON Repair Sticks are temperature resistant from -50°C (-58°F) up to $+120^{\circ}\text{C}$ ($+248^{\circ}\text{F}$) (briefly up to $+150^{\circ}\text{C}$ / $+302^{\circ}\text{F}$). They resist to alcohol, ester, salt water, oils, most acids and lyes, are free of solvents and cure with almost no shrinkage.

The cured product can be machined (drilled, filed, tapped) and overpainted without pre-treatment.

WEICON Repair Sticks bond:

- metal
- hard-plastics*
- fibre-reinforced materials
- wood
- glass / ceramic / stone

For various applications there are nine different Repair Sticks to chose from.

* Except for plastics such as polyethylene, polypropylene, polyacetal, polytetrafluoroethylene and other fluorinated hydrocarbons with naturally adhesive-rejecting surfaces.



Sealing of a radiator leakage

Repair Stick Aqua

Ideal for quick repairs on damp and wet surfaces and for underwater applications.

Patches and seals cracks, holes, leakages and surface damages on:

- fuel and water tanks
 - radiators
 - electrical switchboards
 - sanitary installations
 - swimming pools
- and in the marine sector.

Repair Stick Aluminium

For quick non-rusting repairs and bonds of metal parts. Patches and seals cracks, holes, leakages and surface damages on:

- car bodies
- transmission casings
- window frames and profiles
- boats
- model making (e.g. trains, cars, etc.)

Suitable as an universal repair compound in the whole hobby and garden sector.



Repair of an aluminium housing

Repair Stick Concrete New

Especially for quick repairs and reconditioning of all concrete, stone and ceramic surfaces. Fills and closes cracks and defect parts on:

- masonry
- stone slabs, concrete slabs and tiles
- bricks
- borders and kerbstones
- statues
- gravestones and ornaments

Also for additional fixings of pegs, screws and anchors indoors and outdoors.



Repair of a cherub

Repair Stick Steel



Preferably used for quick and high strength repairs and bonds of metal parts. Patches and seals cracks, holes, leakages and surface damages on:

- machine parts
- tanks and conduit pipes
- vessels, pumps and housings
- balcony grids
- stair railings
- stripped threads

Suitable as an universal repair compound in the whole D.I.Y. and household sector.



Repair of a filling installation

Repair Stick Titanium

For permanent, high-temperature (briefly +300°C / +572°F) and wear resistant repairs and bonds of metal parts. Patches and seals cracks, holes, leakages and surface damages on:

- tanks and conduit pipes
- aluminium, light metal and diecast parts
- shafts, bearings, pumps and casings
- reconditioning of defective threads

Suitable as a universal repair compound for high-temperature use.



Repair of an outgoing air pipe

New Repair Stick Stainless Steel

For non-corroding repairs and reconditioning of stainless steel and other rust-proof metals, e.g. on:

- tanks and vessels
- filling machines and packing machines
- pipes and tubes
- pumps and pump housings



Due to the quick mechanical loading capacity of the mended parts (approx. 60 minutes), expensive and longer downtimes are avoided.



Repair of a labelling machine

Repair Stick Copper



For very quick (pot life 3 min.) repairs of cracks, holes and leakages even on damp and wet surfaces such as:

- pipes and elbows
 - fittings and flanges
 - copper gutters and sheets
 - water heaters and water tanks
 - hot and cold water piping
 - refrigerating and air conditioning equipment
- and as a repair compound for the installation and maintenance sector.



Sealing of a copper tube

Repair Stick Wood

For permanent and elastic, non-shrink repairs of wooden parts. Patches cracks and bore holes, fills broken out or broken off wooden parts, seals gaps on:

- window and door frames
- veneers
- timber boards and planks
- model making (airplanes, ships, etc.)
- wooden toys

Suitable as an universal repair compound in the whole household and hobby sector.



Restoration of a picture frame

Repair Stick Plastic



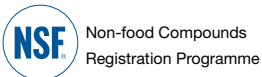
Especially for durable repairs of plastic parts* and fibre reinforced materials (GFRP, CFRP, fibre glass) with residual elasticity as well as for bondings of metal parts.

- pipes and pipe elbows
- fittings and flanges
- water tanks
- window and door frames
- pumps and pump housings
- coverings and bumpers

* except for plastics such as PE, PP, PTFE, etc.



Repair of a PVC pipe



Type selection table

| | Aluminium | Aqua | Concrete | Stainless Steel | Wood | Plastic | Copper | Steel | Titanium |
|--|-----------|------|----------|-----------------|------|---------|--------|-------|----------|
| Metals (e.g. aluminium, cast iron, brass, stainless steel) | ++ | ++ | + | ++ | + | + | ++ | ++ | ++ |
| Hard plastics* (e.g. epoxy resin, rigid PVC) | + | ++ | + | + | + | ++ | + | + | + |
| Fibre-reinforced materials (e.g. GFRP, CFRP, fibreglass) | + | + | + | + | + | ++ | + | + | + |
| Wood (e.g. oak, beech, spruce, balsa) | + | + | + | + | ++ | + | + | + | + |
| Derived timber products (e.g. plywood, MDF) | + | + | + | + | ++ | + | + | + | + |
| Glass, ceramics | + | ++ | + | + | + | + | + | + | + |
| Stone (e.g. marble, granite, brick, concrete) | + | ++ | ++ | + | + | + | + | + | + |
| Rubber / elastomers | - | - | - | - | - | - | - | - | - |

(++) Highly suitable (+) Suitable (-) Not suitable

* Except for plastics such as polyethylene, polypropylene, polyacetal, polytetrafluoroethylene and other fluorinated hydrocarbons with naturally adhesive-rejecting surfaces. Within the framework of the above type recommendations, bonding of dissimilar material pairs such as metals and plastics is also possible.

Technical data

| | | WEICON Repair-Sticks in non-cured condition | | | | | | | | |
|--|---|--|---------------------------------|---------------------------------|--|---------------------------------|---------------------------------|---------------------------------|--------------------------------|----------------------------------|
| Product | | Aluminium | Aqua | Concrete | Stainless Steel | Wood | Plastic | Copper | Steel | Titanium |
| Properties | | Aluminium | Aqua | Concrete | Stainless Steel | Wood | Plastic | Copper | Steel | Titanium |
| Basis: | | Epoxy resin and aluminium fillers | Epoxy resin and ceramic fillers | Epoxy resin and ceramic fillers | Epoxy resin and stainless steel fillers | Epoxy resin and mineral fillers | Epoxy resin and plastic fillers | Epoxy resin and copper fillers | Epoxy resin and steel fillers | Epoxy resin and titanium fillers |
| Nature: | | putty | | | | | | | | |
| Supplied in: | | Stick | | | | | | | | |
| Contents: | | 57 g / 115 g | 57 g / 115 g | 57 g / 115 g | 57 g / 115 g | 28 g / 56 g | 57 g / 115 g | 57 g / 115 g | 57 g / 115 g | 57 g / 115 g |
| Mixing proportion by volume resin / hardener (automatically): | | 1 : 1 | | | | | | | | |
| Pot life with 25 g material and at +20°C (in minutes): | | 4 | 15 | 6 | 4 | 15 | 20 | 3 | 4 | 70 |
| Density of the mixture (g/cm³): | | 1,6 | 1,9 | 1,9 | 2,0 | 0,9 | 1,6 | 1,9 | 2,0 | 1,9 |
| Temperature °C / °F | Processing *1: | +10 to +35 (+50 to +95) | +10 to +40 (+50 to +104) | +10 to +35 (+50 to +95) | +10 to +35 (+50 to +95) | +10 to +40 (+50 to +104) | +10 to +40 (+50 to +104) | +10 to +30 (+50 to +86) | +10 to +35 (+50 to +95) | +10 to +50 (+50 to +122) |
| | Curing: | +6 to +40 (+43 to +104) | +6 to +40 (+43 to +104) | +6 to +40 (+43 to +104) | +6 to +40 (+43 to +104) | +6 to +40 (+43 to +104) | +6 to +40 (+43 to +104) | +6 to +40 (+43 to +104) | +6 to +40 (+43 to +104) | +6 to +40 (+43 to +104) |
| Colour after curing: | | aluminium | white | concrete-grey | grey | light beige | light-blue | copper | dark-grey | grey-green |
| Gap covering power to maximum *2: | | 15 mm | | | | | | | | |
| Cure time at +20°C (+68°F) | Handling strength (35% strength) after: | 10 min. | 30 min. | 15 min. | 10 min. | 45 min. | 40 min. | 10 min. | 10 min. | 2 hours |
| | Capable of bearing mechanical loads (50% strength) after: | 60 min. | 60 min. | 60 min. | 60 min. | 60 min. | 3 hours | 60 min. | 60 min. | 8 hours |
| | Final strength (100%) after: | 24 hours | 24 hours | 24 hours | 24 hours | 24 hours | 36 hours | 24 hours | 24 hours | 72 hours (24 h at +65°C) |
| | | WEICON Repair-Sticks in fully-cured condition | | | | | | | | |
| Pressure (DIN 53281-83): | | 80 N/mm² | 75 N/mm² | 80 N/mm² | 80 N/mm² | 75 N/mm² | 65 N/mm² | 80 N/mm² | 80 N/mm² | 80 N/mm² |
| Shore hardness D: | | 75 | 65 | 80 | 75 | 70 | 65 | 80 | 75 | 80 |
| Average tensile shear strength after 7 days at +20°C in accordance with DIN 53283: | | Aluminium sandblasted 4,2 N/mm² | Steel sandblasted 6,2 N/mm² | Concrete 4,8 N/mm² | Stainless Steel sandblasted 3,9 N/mm² | Beech sanded 6,2 N/mm² | PVC roughened 2,4 N/mm² | Copper sandblasted 4,8 N/mm² | Steel sandblasted 4,1 N/mm² | Steel sandblasted 5,1 N/mm² |
| Temperature resistance °C / °F: | | -50 to +120 (briefly +150) -58 to +248 (briefly +302) | | | | | | | | -50 to +280 (briefly +300) |
| Thermal conductivity (ASTM D 257): | | 0,65 W/m·K | 0,50 W/m·K | 0,50 W/m·K | 0,60 W/m·K | 0,30 W/m·K | 0,40 W/m·K | 0,70 W/m·K | 0,60 W/m·K | 0,50 W/m·K |
| Linear shrinkage: | | < 1% | | | | | | | | |
| Electrical resistance (ASTM D257) | | 5 · 10 ¹¹ Ω/cm | | | | | | | | |
| Dielectric strength (ASTM D 149): | | 3,0 kV/mm | | | | | | | | |
| Thermal expansion coefficient (ISO 11359): | | 30-40 x 10 ⁻⁶ k ⁻¹ | | | | | | | | |

*1 For easier workability when ambient temperatures are low, the sticks should be warmed up to room temperature (20°C) before application.

*2 Max. 15 mm per procedure

Test Results

We have conducted a series of laboratory tests to compare sticks from various countries.

Some of the test results are summarised in the tables shown below.

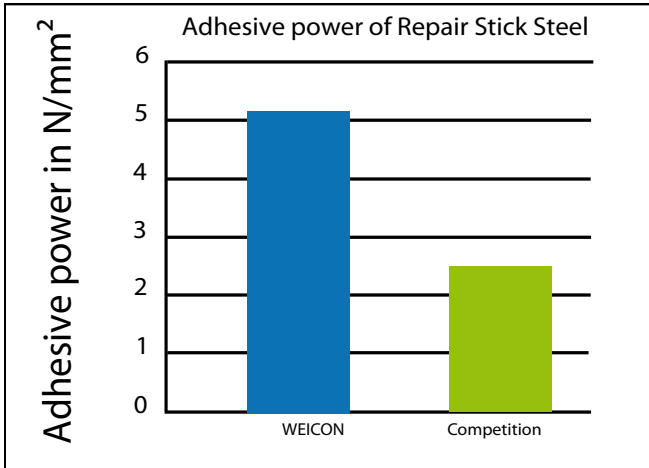


Table 1

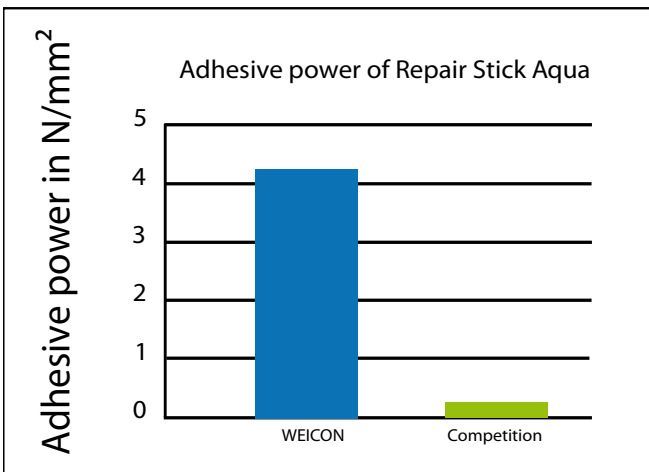


Table 2

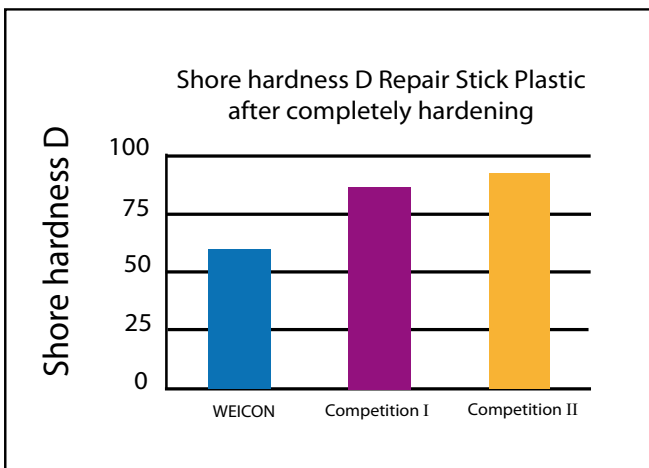


Table 3

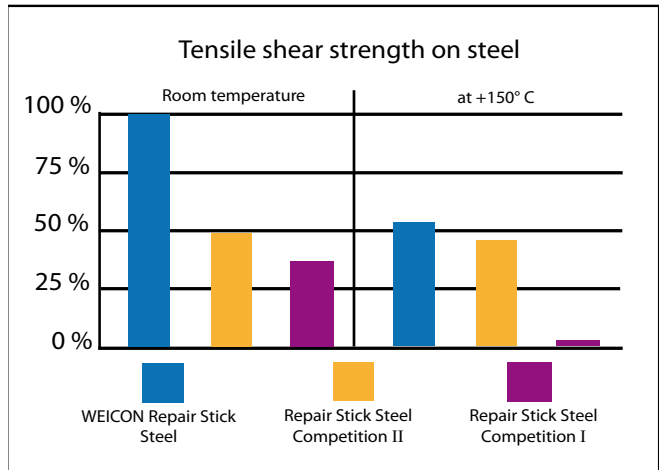
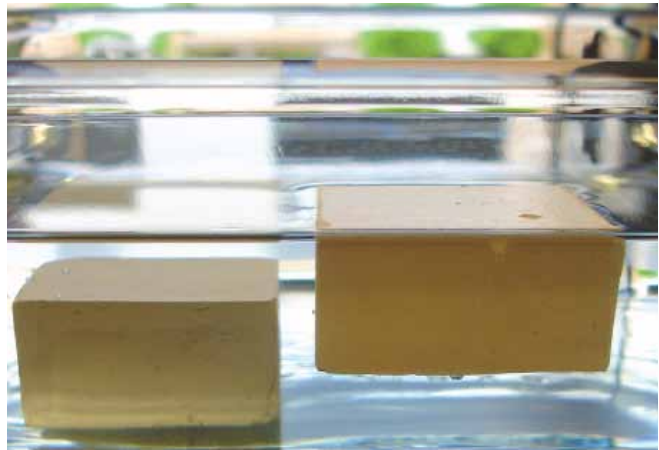


Table 4

WEICON Repair Stick Wood

A special item in the product range is the Repair Stick Wood. It was developed for carrying out repairs on furniture, shelving, etc. To enable a "seamless" repair, it was given the same density as wood. Following hardening it can be processed like wood, e.g. sanded and painted over. In the test shown below the WEICON Repair Stick floats on the surface like wood, while competitive products sink to the bottom due to their high density.

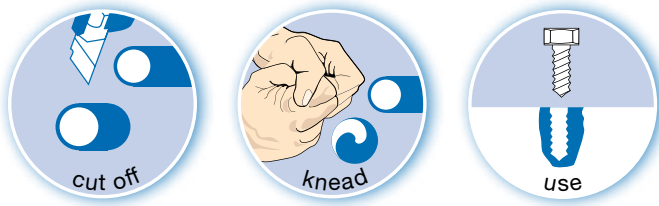


Competition

WEICON Repair Stick Wood



Determination of tensile shear strength



Instructions for use

To ensure a perfect bond, the surfaces to be joined must be clean and dry (e.g., clean and degrease using Cleaner S or Plastic Cleaner). Smooth surfaces should be roughened, e.g. by sandblasting.

WEICON Repair-Sticks cover gaps of max. 15 mm per procedure. The pot life given is for a material quantity of 25 g at room temperature. If larger quantities are used, the curing time will be faster due to the typical reaction heat of epoxy resins (exothermic reaction).

Similarly, higher ambient temperatures shorten the cure time (as a rule of thumb, every +10°C increase above room temperature will halve working and curing time). Temperatures below +16°C will extend working and curing times considerably, while below about +5°C, no reaction will take place at all.

Physiological properties / health and safety at work

WEICON Repair Sticks, when properly handled and completely cured, are toxicologically essentially harmless. When using these adhesives, the physical, safety technical, toxicological and ecological data and regulations in our EC safety data sheets (www.weicon.de) must be observed.

Storage

When kept at a constant room temperature of about +20°C and unopened in dry conditions, WEICON Repair Sticks will keep for at least 18 months. Avoid direct sunlight.

Chemical resistance of WEICON Repair Sticks after curing *

| | | | |
|---|---|---|---|
| Acetic acid dilute < 5% | + | Hydrocarbons, aliphatic (crude oil derivatives) | + |
| Acetone | 0 | Hydrocarbons, aromatic (benzene, toluene, xylene) | - |
| Alkalis (basic materials) | + | Hydrochloric acid < 10% | + |
| Amyl acetate | + | Hydrochloric acid 10 - 20% | + |
| Amyl alcohols | + | Hydrofluoric acid dilute | 0 |
| Anhydrous ammonia 25% | + | Hydrogen peroxide < 30% (hydrogen superoxide) | + |
| Barium hydroxide | + | Impregnating oils | + |
| Butyl acetate | + | Magnesium hydroxide | + |
| Butyl alcohol | + | Maleic acid (cis-butenedioic acid) | + |
| Calcium hydroxide (slaked lime) | + | Methanol (methyl alcohol) < 85% | 0 |
| Carbolic acid (phenol) | - | Milk of lime | + |
| Carbon disulphide | + | Naphthalene | - |
| Carbon tetrachloride (tetrachloromethane) | + | Naphthene | - |
| Caustic potash solution | + | Nitric acid < 5% | 0 |
| Chlorinated water | + | Oils, minerals | + |
| Chloroacetic acid | - | Oils, vegetable and animal | + |
| Chloroform (trichloromethane) | 0 | Oxalic acid < 25% (ethanedioic acid) | + |
| Chlorosulphonic acid | - | Paraffin | + |
| Chromic acid | + | Perchloroethylene | 0 |
| Chroming baths | + | Petrol (92 - 100 octane) | + |
| Creosote oil | - | Phosphoric acid < 5% | + |
| Cresylic acid | - | Phthalic acid, phthalic acid anhydride | + |
| Crude oil | + | Potassium carbonate (potash solution) | + |
| Crude oil and crude oil products | + | Potassium hydroxide (caustic potash) 0-20% | + |
| Diesel fuel oil | + | Soda lye | + |
| Ethanol < 85% (ethyl alcohol) | 0 | Sodium bicarbonate (sodium hydrogen carbonate) | + |
| Ethyl alcohol | 0 | Sodium carbonate (soda) | + |
| Ethyl benzole | - | Sodium chloride (cooking salt) | + |
| Ethyl ether | + | Sodium hydroxide < 20% (caustic soda) | 0 |
| Exhaust gases | + | Sulphur dioxide | + |
| Formic acid >10% | - | Sulphuric acid < 5% | 0 |
| Glycerine (trihydroxypropane) | + | Tannic acid dilute < 7% | + |
| Glycol | 0 | Tetralin (tetrahydronaphthalene) | 0 |
| Grease, oils and waxes | + | Toluene | - |
| Heating oil, diesel | + | Trichloroethylene | 0 |
| Humic acid | + | Turpentine substitute (white spirit) | + |
| Hydrobromic acid < 10% | + | Xylene | - |

+ = resistant 0 = resistant for a limited time - = not resistant

* Storage of all WEICON Epoxy Adhesives was at +20°C chemical temperature

Repair Sticks

- durable
- versatile
- high strength

Distributed by:



Demo part (Art-No.: 99950004)



Sealing of a siphon



Sealing of a crack in concrete



Restoration of an ancient rocking horse

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