## Product Name

# G790 PRIMER FOR WACKER RTV-2 ADDITION CURE SILICONE RUBBERS

## Product Description

G790 Primer is used with Wacker RTV-2 Addition Curing Silicone Rubbers. It is a low-viscosity liquid containing reactive silanes or silicone resins. After the solvent has evaporated, a rigid film of resin is formed on exposure to atmospheric moisture at room temperature or elevated temperatures. This resin film performs two functions: to adhere both to the substrate and to the coating of RTV-2 silicone rubber.

## Typical Applications

One of the most remarkable features of RTV-2 silicone rubber is its outstanding release properties. For this reason it is used as a mould-making material for casting plaster, waxes, polyester, epoxy and polyurethane rubbers, metal alloys etc. Special measures are therefore required for bonding RTV-2 silicone to other materials; coating the surface of the substrate with selected adhesion promoters, primers, has proved particularly effective.

The resin film can be bonded to the substrate by mechanical anchoring or by chemical reaction with the substrate surface. In principle, the substrate must be a rigid material that is not deformed in use since the primer film may be destroyed by expansion or compression. Therefore, the primer generally cannot be used on elastic and flexible substrates.

With absorbent materials (eg. plaster) or plastics that are swelled by solvents, the primer may penetrate into the surface. In such cases, the mechanical anchoring of the film is critical for the ultimate bonding strength. This mechanical anchoring can usually be promoted by roughening smooth surfaces. For priming metals or glass, chemical reactions with the oxide layer or the silicate structure play a significant role.

On the other hand, certain thermoplastics such as polyethylene and polypropylene remain completely unaffected by common primers; their surface therefore has to be oxidized by flame treatment. Adhesion to tetrafluoroethylene (eg, Teflon) can only be achieved by etching its surface with an alkali metal.

RTV-2 silicone rubbers will only form a permanent bond with the primer if the resin film is able to react chemically with the functional groups of the rubber while curing. If drying or stoving times become too long, the primer coating may lose its adhesive strength. Therefore, it is imperative to strictly observe the processing instructions for the primer. With addition-curing RTV-2 rubbers it has been found that curing at elevated temperatures (eg, at 100 &C) usually results in better adhesion than at room temperature. Additional heat treatment (at 70–150 &C) of the cured rubber may improve adhesion of addition-curing grades. Even if the adhesion is poor at first, a perfect bond may still be achieved after several days ageing at room temperature. If the rubber/substrate bond is to be subjected to high stresses (eg, high temperatures, steam, etc), preliminary tests should be carried out to check whether it will withstand these conditions. Surface films that have been applied to a substrate during its manufacture and may be difficult to remove (eg, mould release agents) have a significant effect on the adhesion strength. It is therefore only possible to give general guidelines here. The adhesion strength should be tested in each case.

## Primer G790

This primer is recommended for addition curing RTV-2 rubbers. Primer G790, undiluted: If the primer is applied undiluted, it is advisable to subsequently heat-treat the substrate. A stoving time of 15 minutes at 100 &C is recommended. Primer G790, diluted 1: 1 with white spirit: To achieve good adhesion, it is often sufficient to allow the solvent to evaporate and to cure the primer in air at room temperature for 30 minutes. Heating is then no longer necessary.

## Physical Properties

| Primer | | G790 |
|---|---|---|
| Colour | | yellowish |
| Solids Content, approx | [%] | 17 |
| Density, approx. | [g/cm$^3$] | 0.76 |
| Solvents | | aliphatic hydrocarbon |
| Flash point | [ºC] | 9 |
| Ignition Temperature | [ºC] | 420 |
| Storage Stability | Months | 6 |

These figures are intended as a guide and should be used in preparing specifications.

## Handling Properties

Surfaces to be primed should be dry and free from grease, oil or other contaminants. White spirit and/or acetone may be used for cleaning the surface. Loose particles must be removed and very smooth surfaces should preferably be roughened. The primer is best applied with a brush, although dipping and spraying are also possible. In any case, the primer film should be applied as thinly as possible and be free of air bubbles. With absorbent surfaces, it may be necessary to apply several coats of primer. The instructions concerning the drying or stoving time for each primer should be strictly observed. Drying time is 1 hour at room temperature (minimum 40% relative humidity) or 10 minutes at 120–150 &C. The catalysed silicone rubber should be applied to the primer coat, immediately after the drying or stoving process, if possible, but at the latest after five hours as otherwise a certain loss of adhesion may occur. Once opened, drums should be kept well sealed and stored in a dry place.

## Storage

All Wacker primers are guaranteed to have a shelf life of six months from the date on the delivery note, provided they are stored in tightly closed containers at temperatures not exceeding 25 &C and protected against moisture. If the material is kept beyond the shelf life recommended on the product label it is not necessarily unusable, but quality control should be performed on the properties relevant to the application.

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2

## Disclaimer