

Technical Data Sheet

PT 290 PLUS HM/LC

1-component, moisture-curing, direct glazing adhesive/sealant for repair
Product with high shear modulus and low conductivity
free from PVC and solvents

Base: Polyurethane

Product Description

PT 290 PLUS HM/LC is a 1-component, extremely sag-resistant direct glazing adhesive/sealant based on polyurethane, which crosslinks (cures) to a rubber-elastic material under the influence of atmospheric moisture. The skin formation time and the curing time depend on the moisture of the air and the temperature; in addition, the curing time depends on the depth of the joint. An increase in temperature and atmospheric humidity can accelerate skin formation and curing, whereas a lower content of atmospheric humidity and lower temperatures delay the reaction.

The direct glazing sealant is outstanding for the following properties:

- Very good sag resistance and stringing
- High cure rate
- High elasticity and shear modulus
- High tensile shear strength, even after ageing
- Very low electrical conductivity
- Good adhesion to the remaining material
- Excellent adhesion to glass, glass with a ceramic coating, encapsulation and to painted surfaces, in connection with PT All-in-1 PLUS
- High UV resistance in connection with PT All-in-1 PLUS

Application Areas

Bonding of front, rear and side windows into the body of motor vehicles (cars, trucks, busses, driver cabins of tractors/fork lift trucks and special-purpose vehicles). Bonding of side windows made of single-pane glass or insulating glass in bus and rail coach manufacture.

Furthermore, PT 290 PLUS HM/LC is suitable for all applications which require very high electrical insulation of the adhesive used for the bonding of windows (for example an adhesive compatible with aerials).

Technical Data

1. PT 290 PLUS HM/LC (adhesive)

Colour:	black
Odour:	weak
Consistency:	smooth, sag-resistant paste
Density:	approx. 1.25 g/cm ³
Solids:	100 %
Curing mechanism:	moisture curing
Cure rate:	approx. 3 - 4 mm/24 h
(DIN 50014 standard climate):	23 °C, 50 % rLf
Shore-A-hardness (DIN 53505):	approx. 60
Tensile strength (DIN 53504):	approx. 8,5 MPa
Stress (DIN 53504):	approx. 3 MPa at 100 % elongation
Shear modulus (according to DIN 54451):	approx. 2,5 MPa
Elongation to break (DIN 53504):	approx. 350 %
Shear strength:	approx. 3 MPa (after 24 h DIN 50014)
(layer thickness 5 mm based on DIN EN 1465)	5 - 6 MPa (fully cured)
Specific forward resistance (ASTM D 257-99 / DIN IEC 60093):	approx. 10 ⁹ Ω cm
Volume change (DIN 52451):	< 1 %
Glazing time:	maximum 15 minutes *
Application temperature:	5 °C to 35 °C
In service temperature range:	-40 °C to 90 °C
Short exposure (up to 1 hour):	120 °C

* period of time between beginning of material application until inserting of the pane

2. PT All-in-1 PLUS

Colour:	black
Density:	approx. 0,98 g/cm ³
Solids:	35 %
Optimum layer thickness:	25 µm wet
Evaporation time on glass, ceramic layer, paints:	approximately 5 minutes
Evaporation time on encapsulation and remaining bead:	approximately 15 minutes
Primer activity on encapsulation and remaining beads:	up to 60 minutes after application
Primer open time:	up to 8 hours after application

Preliminary statement

Prior to application it is necessary to read the **Safety Data Sheet** for information about precautionary measures and safety recommendations. Also, for chemical products exempt from compulsory labelling, the relevant precautions should always be observed.

1. Surface pre-treatment

The substrates to be bonded must be dry and free from oil, dust, grease and other dirt.

Glass, glass with a ceramic coating, encapsulation and painted surfaces are cleaned with a solvent based or alcoholic cleaner and then checked for any damages. To obtain an optimal adhesion we recommend abrading the windscreen's bond line with a smooth abrasive pad in order to have clean surface. Clean the bonding surfaces with a solvent-based cleaner after abrading and allow to dry for approx. 2 minutes. Alternatively you can also use alcoholic cleaner (Attention: Evaporation time: approx. 10 minutes). The layer remaining in the window cut-out need not to be cleaned (see below). If, however, cleaning of this remaining layer is indispensable, an evaporation time of at least 2 minutes (Attention: Evaporation time 30 minutes by the use of a alcohol based cleaner) has to be observed before the sealant can be applied, since the adhesive surfaces must have fully dried.

2. Priming

Apply evenly a thin layer of PT All-in-1 PLUS to the cleaned substrates (glass, ceramic-coated or painted surfaces). The thickness of the wet film should be approx. 0.025 mm. Let the primed surface evaporate for approx. 5 minutes before the direct glazing sealant is applied.

If a fresh bonding is made directly on the remaining material layer (left in the window cut-out of the body), this layer must not be primed. Provided that it is not contaminated with dust or grease, the remaining layer is the best adhesive surface, if PT 290 PLUS HM/LC is used for the new bond.

3. Activation of pre-coated screens

Screens which have been pre-coated by the glass manufacturer with a PUR based adhesive/sealant must be treated with PT All-in-1 PLUS to ensure trouble-free adhesion of PT 290 PLUS HM/LC on to the pre-coated layer.

PT All-in-1 PLUS is applied with a wool applicator in a thin layer and allowed to air dry for ca. 15 minutes. PT 290 PLUS HM/LC can then be applied in the normal manner but care must be exercised to take into account the 2 mm thickness of the pre-coating.

Screens pre-coated with PUR based adhesive/sealant are used for instance on many types of VW/Audi vehicles.

4. Processing

The direct glazing sealant PT 290 PLUS HM/LC is processed from cartridge using commercial equipment such as hand, battery driven or air-pressure guns.

In driving condition

If bonding is carried out in line with the US standard FMVSS 208, the vehicle can be used with airbags: 1 hour after the window has been bonded

Storage

Frost-sensitive:	no
Recommended storage temperature:	10 °C to 25 °C
Shelf life:	12 months in original packaging

Container/packaging units

PT 290 PLUS HM/LC is supplied in 310 ml cartridges, as well as in 400 ml and 600 ml bags. One case contains 12 individual cartridges à 310 ml or 20 bags à 400 ml or 600 ml.

Hazard Indications/ Safety Recommendations/ Transport Regulations

see Safety Data Sheet

This Technical Data Sheet supersedes all previous editions.

Disclaimer

Note:

The above information, in particular the suggestions for processing and use of our products, is based on our knowledge and experience in standard cases. To ensure that the above information in the technical data sheets can be complied with and the respective product used or processed properly, the products need to be stored correctly. In addition, the above information reflects our state of knowledge at the time of printing this note. We are constantly striving to improve our products, and as such reserve the right to make changes to product specifications and processing instructions. The most current technical data sheet at the time of processing/application shall apply. The user must therefore always check the suitability of the products for the intended application and obtain advance information of any changes to the product specifications at PMA/TOOLS. We would like to point out the following: In particular where our products are processed and used without observing the product specification and without complying with the current processing instructions, there will be no warranty for the processed or used product unless the customer (who processed the product) can prove that an alleged defect of the product was already present (i.e. independent of processing or use) when the risk passed from us to him as the customer. Due to the different materials, substrates and different working conditions when processing or using the product, no liability for any working results will be accepted in other regards, except where that we have provided an express assurance for a working result. We would like to point out that any such additional assurance would have to be presented and, if necessary, proved by the party relying on it, i.e. by the party asserting a warranty. In all other respects, our general terms and conditions apply.