Technical Data Sheet

LOCTITE® PC 7210™

Known as LOCTITE® 7210™
October 2019

PRODUCT DESCRIPTION

LOCTITE® PC 7210™ provides the following product characteristics:

Technology	Epoxy
Chemical Type	Epoxy
Appearance (Resin)	Light gray
Appearance (Hardener)	Transparent, Red-Brown
Appearance (Mixture)	Light Orange Paste
Components	Two part - Resin & Hardener
Mix Ratio, (by volume) Resin : Hardener	100 : 55
Mix Ratio, by weight - Resin : Hardener	100 : 40
Cure	Room temperature cure after mixing
Application	Industrial Maintenance
Product Benefits	• Structural, toughened epoxy • Room temperature cure, post cure possible • Chemical resistant • Corrosion resistant • Temperature resistant

LOCTITE® PC 7210™ is a two-component, room temperature curing toughened epoxy adhesive. This product can be combined with LOCTITE® PC 5085, a multi-plycarbon-glass fabric, for a fiber-reinforced plastic composite. It is used as a composite repair system to repair damaged and corroded parts where high strength is required, together with corrosion protection and chemical resistance.

ISO 24817 - Composite Repairs for Pipework - Qualification and Design, Installation, Testing and Inspection.
The composite repair system is developed to repair and protect metal pipes and tanks e.g. in the petroleum, petrochemical, and natural gas industry. Typical applications include the repair and the reinforcement of damaged tanks, pipes and pipe components.

The standard ISO 24817 gives requirements and recommendations for the qualification and design, installation, testing and inspection for the external application of composite repairs to corroded or damaged pipework used in the petroleum, petrochemical and natural gas industries. The composite repair system consisting of LOCTITE® PC 7210, LOCTITE® PC 5085, LOCTITE® EA 3478, and LOCTITE® PC 5090 is certified according to ISO 24817 up to 80°C. Note: Please contact your Henkel partner for further information on the requirements of certified repair applications.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Resin

Specific Gravity @ 25 °C	1.32
Viscosity, Cone & Plate, mPa·s (cP):	
Temperature: 25 °C	14,000

Hardener

Specific Gravity @ 25 °C	0.97
Viscosity, Cone & Plate, mPa·s (cP):	
Temperature: 25 °C	11,500

Mixed

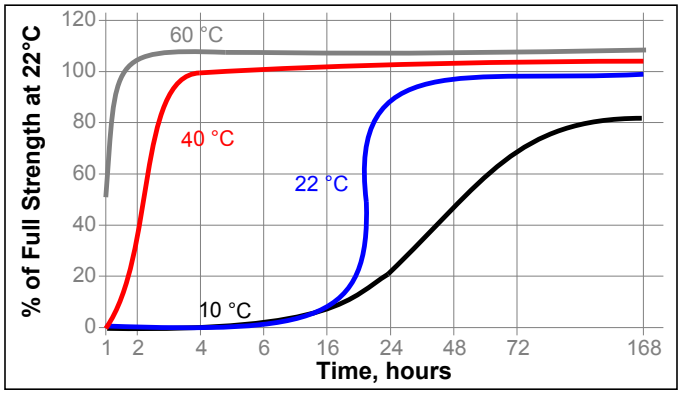
Specific Gravity @ 25 °C	1.2
Vertical Sag Resistance, ASTM D 4400, mm:	
25 °C	1.3
40 °C	1.3
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Working Life @ 25 °C, minutes	30
Working Life @ 40 °C, minutes	20

Cure Speed vs. Time, Temperature

The rate of cure will depend on the ambient temperature, elevated temperatures may be used to accelerate the cure. The graph below shows shear strength developed with time at various temperatures on grit blasted steel lap shears and tested according to ISO 4587.



TYPICAL PROPERTIES OF CURED MATERIAL

Cured for 7 days @ 22 °C

Physical Properties:

Glass Transition Temperature , °C:	
(Tg) by DMA , ASTM E 1640	100
Shore Hardness, ISO 868 , Shore D	77

TYPICAL PERFORMANCE OF CURED MATERIAL

Cured for 7 days @ 22 °C

Tensile Lap Shear Strength, :

Aluminum (grit blasted)	N/mm²	35
	(psi)	(5,000)
Aluminum (grit blasted)	N/mm²	29
	(psi)	(4,200)
Stainless steel (grit blasted)	N/mm²	27
	(psi)	(4,000)

TYPICAL PROPERTIES OF CURED REPAIR SYSTEM

The following properties were tested on the cured repair system consisting of LOCTITE® PC 7210 and LOCTITE® 5085

Cured for 7 days @ 22 °C

Physical Properties:

Poisson's Ratio , ISO 527-5		0.16
Elongation, ISO 527-5, %		2.0
Tensile Strength, ISO 527-5	N/mm²	330
	(psi)	(47,000)
Young's Modulus, ISO 527-5	N/mm²	17,000
	(psi)	(2,500,000)
Shear Strength, ASTM D 5379 (V-notched beam)	N/mm²	29
	(psi)	(4,200)
Shear Modulus, ASTM D 5379	N/mm²	1,400
(V-notched beam)	(psi)	(205,000)

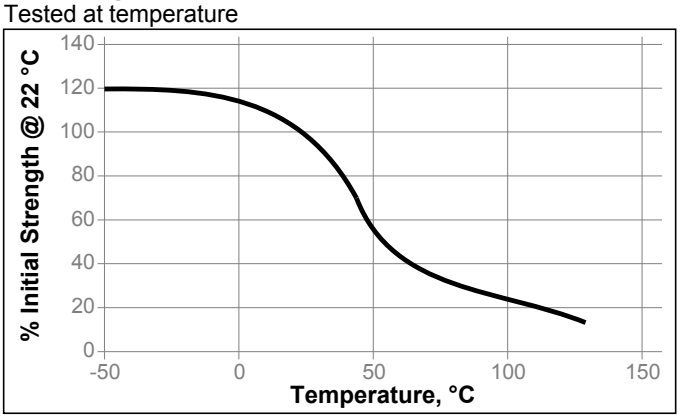
TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 7 days @ 22 °C

Tensile Lap Shear Strength,

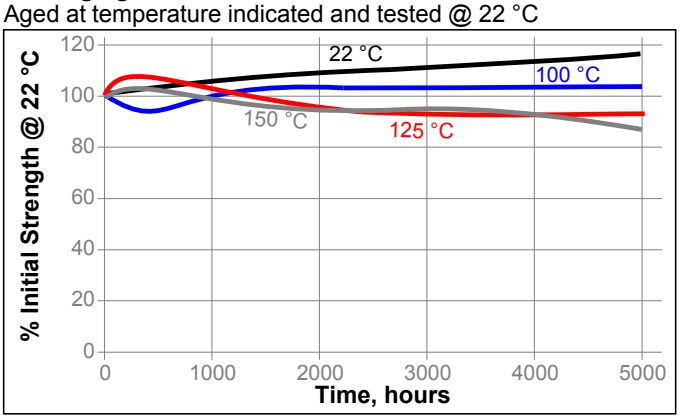
Hot Strength

Tested at temperature



Heat Aging

Aged at temperature indicated and tested @ 22 °C



Chemical Resistance

Tables below show chemical resistance @ 22°C. Tested on product specimens, immersed up to 5,000 hours @ 22°C in fluids indicated.

Acids

10 % hydrochloric	Continuous long term immersion
36 % hydrochloric	Short term or intermittent immersion
10 % sulphuric	Short term or intermittent immersion
10 % nitric	Continuous long term immersion
5 % phosphoric	Short term or intermittent immersion

Alkalis

40 % sodium hydroxide	Continuous long term immersion
25 % ammonium hydroxide	Continuous long term immersion
36 % ammonium sulphate	Continuous long term immersion
30 % hydrogen peroxide	Spill, splash with immediate cleanup

Solvents

Deionized Water	Continuous long term immersion
10% Salt Water	Continuous long term immersion
Methanol	Short term or intermittent immersion
Methylethylketone (MEK)	Spill, splash with immediate cleanup
Xylene	Short term or intermittent immersion

Petrochemicals

ATF - Maxol Gear Oil 80W90 @120 °C	Continuous long term immersion
Mineral Oil - Fortech Mineral Engine Oil @150 °C	Continuous long term immersion
Motor Oil - Synthetic - Shell Helix Ultra 5W30 @120 °C	Continuous long term immersion
Motor Oil - Synthetic - Shell Helix Ultra 5W30 @150 °C	Continuous long term immersion
Kerosene	Continuous long term immersion
Crude Oil	Continuous long term immersion
Ether Petroleum (Naphta)	Continuous long term immersion

TYPICAL ENVIRONMENTAL RESISTANCE OF CURED REPAIR SYSTEM

The following properties were tested on the cured repair system consisting of LOCTITE® PC 7210 and LOCTITE® 5085

Cured for 7 days @ 22 °C

Chemical/Solvent Resistance

The table below shows chemical resistance. Tested on product specimens, immersed up to 1,000 hours in fluids and temperature indicated

All these fluids have been successfully tested according to ISO 24817

		% of initial strength
Environment	**°C**	**1000 h**
Water	40	80
Benzine	40	90
Fuel	40	90
Hydrochloric Acid, 37%	23	90

GENERAL INFORMATION

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

For safe handling information on this product, consult the Safety Data Sheet (SDS).

Directions For Use:

NOTE: Composite repairs according to ISO 24817 or ASME PCC-2 have to be calculated and designed by Henkel. The application process for certified repairs is to be carried out exclusively by qualified personnel trained and approved by Henkel. Please contact your Henkel partner for further information on the requirements of certified repair applications. The following text gives only a brief summary on the application process in general.

Surface Preparation

Proper surface preparation is critical to the long-term performance of this product. The exact requirements vary with the severity of the application, expected service life, and initial substrate conditions.

1. Remove dirt, oil, grease etc with a suitable cleaner, e.g. high pressure water cleaning system using LOCTITE® 7840™ or LOCTITE® Natural Blue® cleaner/degreaser.
2. Blast all surfaces to be coated with a sharp edged angular grit to a depth of profile of 75 to 100 microns (3 to 4 mils), and a degree of cleanliness of SA 2.5 to SA 3.0.
3. After blasting, metal surfaces should be cleaned, e.g. with LOCTITE® SF 7063™ or LOCTITE® ODC Free Cleaner and Degreaser, and be coated with LOCTITE® 7515 before any oxidation or contamination takes place.
4. Metal that has been in contact with salt solutions, e.g. seawater, should be grit blasted and high-pressure water blasted, left for 24 hours to allow any salts in the metal to sweat to the surface. A test for chloride contamination should be performed. The procedure should be repeated until chloride ions concentration on the surface is below 3 µg/cm² .

Mixing:

1. Add hardener completely to resin. Mix material vigorously until uniform in color. Continue mixing for another 3 to 5 minutes. Be sure to mix along the bottom and sides of mixing container..
2. Heat buildup during and after mixing is normal. To reduce the likelihood of exothermic reaction or excessive heat buildup, mix less than 1,000 grams at a time. Mixing smaller amounts will minimize heat buildup..

Impregnation

1. Start the impregnation process immediately after mixing.
2. Impregnate the multi axial, multi-ply fabric, LOCTITE® 5085 thoroughly with mixed LOCTITE® PC 7210™.

Application:

1. Ensure component temperature is between 15 to 30°C (60 to 85F).
2. For non-through-wall defects, use LOCTITE® EA 3478 to rebuild external part design. .
3. Apply a layer of LOCTITE® PC 7210™ at least 200 microns (8 mil) thick onto the surface of the repair area by spatula..
4. Press the impregnated fabric firmly onto the surface. Ensure that no air is trapped between the surface and the fabric..
5. A minimum of two layers is needed to seal the surface properly. .
6. Application of the product must proceed quickly so as not to exceed the working time of 30 minutes (depending on temperature)..
7. To improve weathering resistance, fire resistance or esthetical aspects, a layer of LOCTITE® PC 7255 should be applied on top by spraying or brushing.

Clean-up:

Immediately after use clean tools with suitable cleaner, e.g. TEROSON® PU 8550 or BONDERITE® C-MC 21130. Once cured, the material can only be removed mechanically

Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

Optimal Storage: 8 °C to 21 °C. Storage below 8 °C or greater than 28 °C can adversely affect product properties. Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Conversions

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
µm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

Reference 0.3