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LOCTITE®

Technical Data Sheet

LOCTITE® 661™

November 2021

Product description

LOCTITE® 661™ provides the following product characteristics:

Technology	Acrylic
Chemical type	Urethane methacrylate
Appearance (uncured)	Yellow to dark amber translucent to opaque liquid
Viscosity	Low
Cure	Anaerobic and Ultraviolet (UV) light
Secondary cure	Activator
Application	Retaining
Strength	High

LOCTITE® 661™ is designed for the bonding of cylindrical fitting parts. The product cures when confined in the absence of air between closefitting metal surfaces or when exposed to UV light of sufficient intensity to prevent loosening and leakage from shock and vibration. LOCTITE® 661™ provides robust curing performance. Typical applications include holding gears and sprockets onto gearbox shafts and rotors on electric motor shafts.

Typical properties of uncured material

Specific gravity @ 23°C	1.1
Viscosity, Brookfield - RVT, 25°C, mPa·s (cP): Spindle 3, speed 20 rpm	500
Viscosity, Cone & Plate, 25°C, mPa·s (cP): Shear rate, 129 s^{-1}, after 180 s	450

Typical curing performance

Fixture Time

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm².

UV Fixture time, Glass microscope slides, seconds:	
6 mW/cm², measured @ 365 nm	14

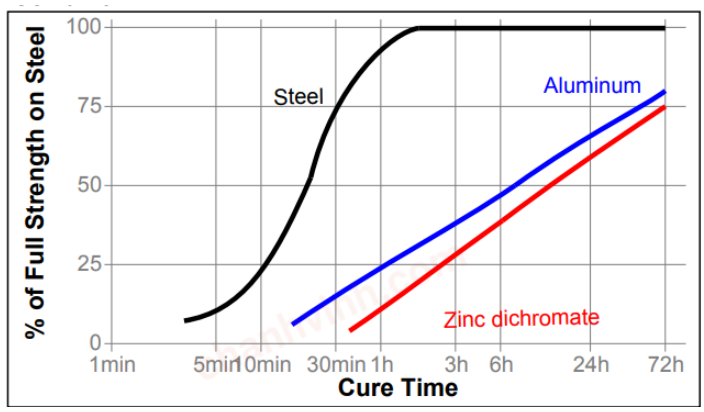
Tack free time

Tack Free Time is the time required to achieve a tack free surface.

Tack free time, seconds:	
60 mW/cm², measured @ 260 nm	45
100 mW/cm², measured @ 365 nm	45

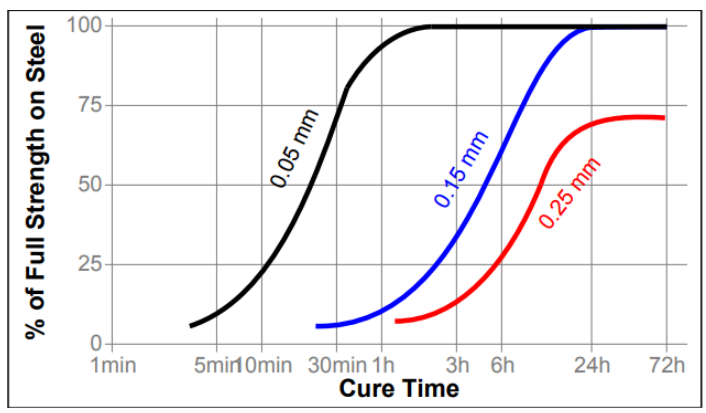
Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The graph below shows the shear strength developed with time @ 23 °C on steel pins and collars compared to different materials and tested according to ISO 10123.



Cure Speed vs. Bond Gap

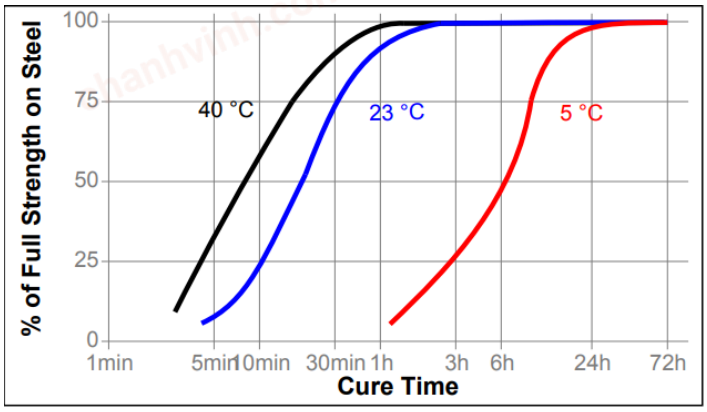
The rate of cure will depend on the bondline gap. The following graph shows shear strength developed with time @ 23°C on steel pins and collars at different controlled gaps and tested according to ISO 10123.



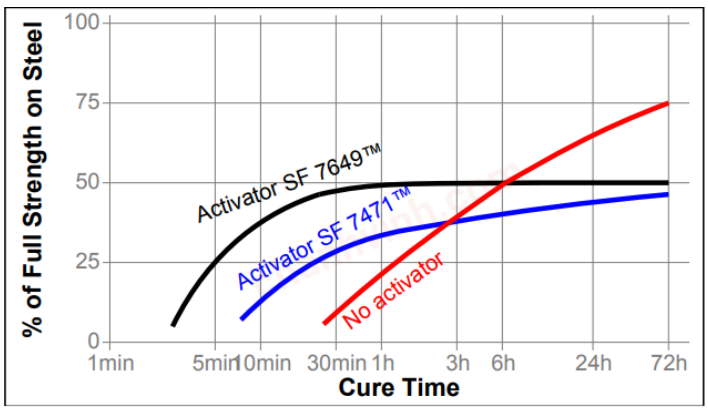
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Cure Speed vs. Temperature
The rate of cure will depend on the temperature. The graph below shows the shear strength developed with time at different temperatures vs @ 23 °C on steel pins and collars and tested according to ISO 10123.



Cure speed vs. activator
The graph below shows the shear strength developed with time @ 23 on steel pins and collars using Activator SF 7471™ and SF 7649™ and tested according to ISO 10123.



Typical performance of cured material
Cured for 24 hours @ 23 °C

Physical properties

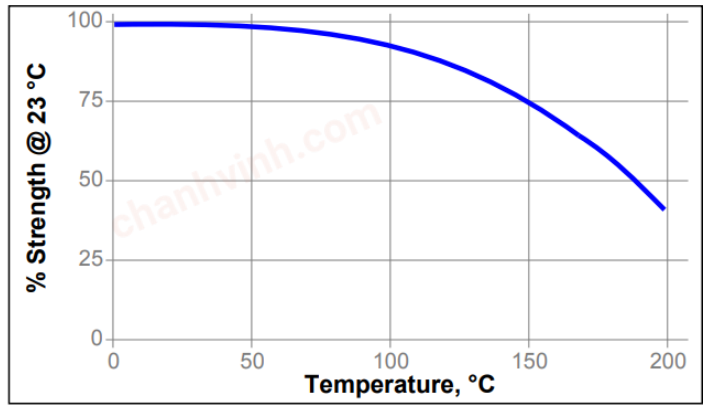
Coefficient of thermal expansion, ISO 11359-2, K^{-1}	80×10^{-6}
Coefficient of thermal conductivity ISO 8302, W/(m.K)	0.1
Specific heat, kJ/(kg·K)	0.3

Adhesive Properties
Cured for 24 hours @ 23°C

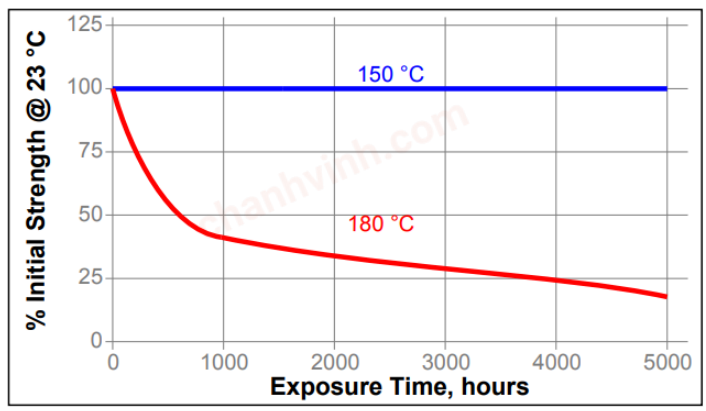
Compressive Shear Strength, ISO 10123:		
Steel pins and collars	N/mm² (psi)	15 (2,200)

Typical environmental resistance
Cured for 1 week @ 23°C
Compressive Shear Strength, ISO 10123:
Steel pins and collars

Hot strength
Tested at temperature



Heat aging
Aged at temperature indicated and tested @ 23 °C.



Chemical/solvent resistance
Aged under conditions indicated and tested @ 23°C.

		% of initial strength		
Environment	**°C**	**100 h**	**500 h**	**1000 h**
Motor oil (MIL-L-46152)	125	100	100	100
Unleaded petrol	23	100	100	100
Brake fluid	23	100	100	100
Water/glycol 50/50	87	100	90	75
Ethanol	23	100	100	100
Acetone	23	100	100	100

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).

Where aqueous washing systems are used to clean the surfaces before bonding, it is important to check for compatibility of the washing solution with the adhesive. In some cases these aqueous washes can affect the cure and performance of the adhesive.

This product is not normally recommended for use on plastics (particularly thermoplastic materials where stress cracking of the plastic could result). Users are recommended to confirm compatibility of the product with such substrates.

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Directions for use:

For Assembly

1. For best results, clean all surfaces (external and internal) with a LOCTITE® cleaning solvent and allow to dry.
2. To accelerate cure speed or where large gaps are present, use activator and allow to dry.
3. **For Slip Fitted Assemblies,** apply adhesive around the leading edge of the pin and the inside of the collar and use a rotating motion during assembly to ensure good coverage.
4. **For Press Fitted Assemblies,** apply adhesive thoroughly to both bond surfaces and assemble at high press on rates.
5. **For Shrink Fitted Assemblies**, the adhesive should be coated onto the part to produce a smooth, even film of material. If heating the hub for assembly, coat the pin. If the pin is to be cooled for assembly, coat the hub. If both heating and cooling is to be done, apply material to cooled part. Avoid condensation on cooled parts.
6. Parts should not be disturbed until sufficient handling strength is achieved.

For disassembly

1. Remove with standard hand tools.
2. If needed, apply localized heat to the assembly to approximately 250°C. Disassemble while hot.
3. If this temperature is not possible, heat as much as possible and use mechanical aids.

For Cleanup

1. Cured product can be removed with a combination of soaking in a LOCTITE® solvent and mechanical abrasion such as a wire brush.

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 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 Henkel representative.

Product specification

The technical data contained herein are intended as reference only and are not considered specifications for the product. Product specifications are located on the Certificate of Analysis or please contact Henkel representative.

Approval and certificate

Please contact Henkel representative for related approval or certificate of this product

Data ranges

The data contained herein may be reported as a typical value. Values are based on actual test data and are verified on a periodic basis.
Temperature/Humidity Ranges: 23°C / 50% RH = 23±2°C / 50±5% RH

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

Disclaimer

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