

LOCTITE TCP 4000 D

Known as PSX-D
December 2014

PRODUCT DESCRIPTION

LOCTITE TCP 4000 D provides the following product characteristics:

Technology	Phase Change Thermal Interface Material
Appearance	gray
Phase change temperature	45 °C
Product Benefits	<ul style="list-style-type: none"> • Reworkable • Highly efficient thermal transfer • Thixotropic above phase change temperature
Application Method	Stencil, Needle dispensed, Screen print or Manually apply
Typical Assembly Applications	Microprocessors, GPUs, Multichip modules, ASICs, IGBT, FBDIMM/Memory, Lidded processor applications and Active heat sinks in electronic applications
Application	Thermal management
Substrate	None

LOCTITE TCP 4000 D is a reworkable and repeatable phase change thermal interface material suitable for use between a heat sink and a variety of heat dissipating components

This material offers the enhanced performance and reliability of a phase change thermal interface material with the application ease of thermal grease

TYPICAL PROPERTIES

Shelf Life @ 25°C, months ≥6

Printed Material:

Casson Base Viscosity @ 25 °C, mPa·s (cP):

Haake 550, PK1, 1° :

@ 1 rpm	100,000
@ 10 rpm	60,000

Specific Gravity 1.8

Solid Material:

Specific Gravity 2.0

Thermal Conductivity, W/(m·K) 3.4

Volumetric Expansion, % 15

TYPICAL DRYING PERFORMANCE

Recommended Drying Conditions

@ 0.025 mm Thickness	2 hours @ 22°C
@ 0.051 mm Thickness	5 hours @ 22°C
@ 0.102 mm Thickness	9 hours @ 22°C
@ 0.203 mm Thickness	24 hours @ 22°C

The above drying profile is a guideline recommendation. Conditions (time and temperature) may vary based on customers' experience and their application requirements, as well as customer drying equipment, oven loading and actual oven temperatures.

GENERAL INFORMATION

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

DIRECTIONS FOR USE

1. Once the compound is applied, it will dry to a solid phase change material. Drying is required for optimal thermal performance.
2. The material flows at the phase change temperature and conforms to the surface features of the heat sink and component.
3. Upon flow, air is expelled from the interface, reducing thermal impedance and the material performs as a highly efficient thermal transfer material.

Storage

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

Optimal Storage: Below 27°C. Storage greater than 27°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.

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.

Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{kV/mm} \times 25.4 = \text{V/mil}$
 $\text{mm} / 25.4 = \text{inches}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N/mm} \times 5.71 = \text{lb/in}$
 $\text{psi} \times 145 = \text{N/mm}^2$
 $\text{MPa} = \text{N/mm}^2$
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$

Disclaimer

Reference 1

Note:

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Corporation, Resin Technology Group, Inc., or Henkel Canada, Inc. the following disclaimer is applicable:

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

Trademark usage

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.