Technical Data Sheet

LOCTITE® 309

May 2021

PRODUCT DESCRIPTION

LOCTITE® 309 provides the following product characteristics:

Technology	Cored solder wire
Application	Soldering

FEATURES AND BENEFITS

- Rosin based
- Fast soldering
- Pale residues
- Solders difficult surfaces
- Good spread on nickel, stainless steel, chromel, monel, constantin, etc.
- Heat stable - low fuming
- Mild odor
- Halide activated

PRODUCT RANGE

LOCTITE® 309 cored wires are manufactured with a nominal flux content of 3%. LOCTITE® 309 cored wires are available in a variety of alloys conforming to J-STD-006 and EN 29453 or alloys conforming to similar national or international standards. For details refer to document “Properties of Alloys used in Cored Solder Wires". Alternative flux contents and alloys may be manufactured to special order.

TECHNICAL SPECIFICATION

A full description of test methods and detailed test results are available on request.

Alloys: The alloys used for LOCTITE® 309 flux cored solder wires conform to the purity requirements of the common national and international standards. A wide range of wire diameters is available manufactured to close dimensional tolerances. For details refer to document “Properties of Alloys used in Cored Solder Wires”.

Flux: LOCTITE® 309 solid flux is based on a blend of novel activators and resins. It has a mild characteristic odour and leaves a clear, pale residue.

TYPICAL PROPERTIES

Solder Alloy

Henkel Code	Alloy	Melting Point, °C
60EN	Sn60Pb40	183-188
Sn63	Sn63Pb37	183
99C	Sn99.3Cu0.7	227
96SC	Sn95.5Ag3.8Cu0.7	217
97SC	Sn96.5Ag3Cu0.5	217
SAC0307	Sn99Ag0.3Cu0.7	217-227

Flux Properties

Acid Value, mgKOH/g	200
Halide Content, Cl %	0.95
SIR Test (without cleaning), J-STD-004	PASS
Classification, J-STD-004	ROM1
Classification, EN 29454-1	1.1.2
Flux Content, %	3.0

SPECIAL PROPERTIES

Surface Insulation Resistance

LOCTITE® 309 flux passes the J-STD-004 SIR test and other elements of J-STD-004 test protocols associated with the flux classification ROM1.

Electromigration Test

LOCTITE® 309 passes the Bellcore GR-78-CORE electromigration test.

RECOMMENDED OPERATING CONDITIONS

Soldering Iron:

Good results should be obtained using a range of tip temperatures. However, the optimum tip temperature and heat capacity required for a hand soldering process is a function of both soldering iron design and the nature of the task. Care should be exercised to avoid unnecessarily high tip temperatures for excessive times. A high tip temperature will increase any tendency to flux spitting and it may produce some residue darkening. The soldering iron tip should be properly tinned and this may be achieved using LOCTITE® 309 cored wire. Severely contaminated soldering iron tips should first be cleaned and pre-tinned using LOCTITE® TTC-LF Tip Tinner/Cleaner, then wiped on a clean, damp sponge before re-tinning with LOCTITE® 309 cored wire.

Soldering Process:
LOCTITE® 309 cored wires contain a careful balance of resins and activators to provide clear residues, maximum activity and high residue reliability without cleaning in most situations. To achieve the best results from LOCTITE® 309 solder wires, recommended working practices for hand soldering should be observed as follows:

- Apply the soldering iron tip to the work surface, ensuring that it simultaneously contacts the base material and the component termination to heat both surfaces adequately. This process should only take a fraction of a second.
- Apply LOCTITE® 309 flux cored solder wire to a part of the joint surface away from the soldering iron and allow to flow sufficiently to form a sound joint fillet – this should be virtually instantaneous. Do not apply excessive solder or heat to the joint as this may result in dull, gritty fillets and excessive or darkened flux residues.
- Remove solder wire from the work piece and then remove the iron tip. The total process will be very rapid, depending upon thermal mass, tip temperature and configuration and the solderability of the surfaces to be joined. LOCTITE® 309 flux cored solder wires provide fast soldering on copper and brass surfaces as well as solder coated materials. Activity on nickel is also good depending on the state of oxidation of the nickel finish. The good thermal stability of LOCTITE® 309 flux cored solder wire means it is also well suited to soldering applications requiring higher melting lead free alloys.

Cleaning:
LOCTITE® 309 flux cored solder wires have been formulated to leave pale flux residues and to resist spitting and fuming. Cleaning will not be necessary in most situations but if required this is best achieved using LOCTITE® MCF800 solvent cleaner (see separate technical data sheet). Other proprietary solvent or semi-aqueous processes may be suitable. Saponification can be suitable but customers must ensure that the desired level of cleanliness can be achieved by their chosen system.

STORAGE AND SHELF LIFE

Storage:
It is recommended to store LOCTITE® 309 in a dry environment at room temperature.

Shelf Life:
The cored solder wire is classified as a non-shelf life item. Thus, no expiry date is required to be printed on the labels. However, the quality and manufacturing records for cored solder wire is only maintained no longer than 2 years from the date of manufacture. Thus, any quality feedback after that stipulated period cannot be addressed.

DATA RANGES

The data contained herein may be reported as a typical value and/or a range. Values are based on actual test data and are verified on a periodic basis.

GENERAL INFORMATION

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

Not for Product Specifications
The technical information contained herein is intended for reference only. Please contact Henkel Technologies Technical Service for assistance and recommendations on specifications for this product.

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

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, or Henkel Canada Corporation, 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.

Reference 1