

# LOCTITE<sup>®</sup> C 502

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## PRODUCT DESCRIPTION

LOCTITE<sup>®</sup> C 502 provides the following product characteristics:

<b>Technology</b>	Cored solder wire
<b>Application</b>	Soldering

## FEATURES AND BENEFITS

- No-clean
- Clear residues
- Fast soldering
- Good wetting on copper, brass and nickel
- Heat stable - low fuming
- Mild odour
- Available in a range of alloys

## PRODUCT RANGE

LOCTITE<sup>®</sup> C 502 cored solder wire has been specially formulated to complement no clean wave and reflow soldering processes. LOCTITE<sup>®</sup> C 502 wires provide fast soldering on copper, brass, and solder coated materials.

LOCTITE<sup>®</sup> C 502 cored wires are manufactured with a flux content between 2 and 3% and are available in a variety of alloys conforming to J-STD-006 and EN 29453 or 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<sup>®</sup> C 502 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<sup>®</sup> C 502 solid flux is based on a blend of carefully selected activators and modified resin. It has a mild rosin odour and leaves a small quantity of clear, pale residue.

## TYPICAL PROPERTIES

### Solder Alloy

Henkel Code	Alloy	Melting Point, °C
Sn62	Sn62Pb36Ag2	179
Sn63	Sn63Pb37	183
60EN	Sn60Pb40	183-188
96SC (SAC387)	Sn95.5Ag3.8Cu0.7	217
97SC (SAC305)	Sn96.5Ag3Cu0.5	217
99C	Sn99.3Cu0.7	227

### Flux Properties

Acid Value, mgKOH/g	165
Halide Content, Cl %	0.2
Flux Content, 5 core, %	3.0
Flux Content, 3 core, %	2.0

## RELIABILITY PROPERTIES

Test	Specification	Results
Corrosion	DTD-599A	Pass
	J-STD-004 (10 days)	Pass
Surface Insulation Resistance (SIR)	J-STD-004	Pass
	Bell TR-NWT-000078 issue 3	Pass
Electromigration	Bell TR-NWT-000078 issue 3	Pass
Flux	J-STD-004	ROM1
Activity Classification	EN29454	1.1.2
	IPC-SF-818	MR3CN

## DIRECTIONS FOR USE

Soldering with LOCTITE<sup>®</sup> C 502 does not require any special methods or deviation from standard hand soldering practices.

**Soldering Iron:**

Good results can 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 extensive periods of time. A high tip temperature may 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® C 502 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® C 502 cored wire.

**Soldering Process:**

LOCTITE® C 502 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® C 502 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® C 502 flux 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. The flux system is designed to leave relatively low residues and to minimize residual activity. This is achieved by ensuring some decomposition and volatilization takes place during the soldering process.
- LOCTITE® C 502 flux cored solder wires provide fast soldering on copper and brass surfaces as well as solder coated materials. The good thermal stability of LOCTITE® C 502 flux cored solder wire means it is also well suited to soldering applications requiring higher melting lead free alloys.

**Cleaning:**

LOCTITE® C 502 flux cored solder wires have been formulated to leave pale flux residues and to resist spitting and fuming. In most industrial and consumer electronics applications, cleaning will not be required. Should cleaning be required, this is best achieved using LOCTITE MSC 01 cleaner. The product may therefore be used to complement a no-clean wave soldering or reflow process or to allow repairs to cleaned boards without the need for a second cleaning process. If cleaning is 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

may 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® C 502 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**

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

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## Reference 0.3