

LOCTITE[®] C 400

June 2021

PRODUCT DESCRIPTION

LOCTITE[®] C 400 provides the following product characteristics:

Technology	Cored solder wire
Application	Halogen free soldering

FEATURES AND BENEFITS

- Halogen-free flux, with no intentionally added halogen
- Halogen-free flux: passes IC with pretreatment as per IPC-TM-650, EN14582
- Clear residues
- Good wetting on copper and brass
- Heat stable - low fuming
- Mild odour
- Available in a range of alloys
- Fast soldering

PRODUCT RANGE

LOCTITE[®] C 400 cored solder wire has been specially formulated to complement no clean wave and reflow soldering processes. LOCTITE[®] C 400 wires provide fast soldering on copper, brass, and solder coated materials.

LOCTITE[®] C 400 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 standard. For details refer to document "Properties of Alloys used in Cored Solder Wires".

LOCTITE[®] C 400 cored wires are manufactured with a flux content between 2.2 and 3%. 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[®] C 400 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[®] C 400 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
60EN	Sn60Pb40	183 to 188
Sn63	Sn63Pb37	183
Sn62	Sn62Pb36Ag2	179
SAV1	Sn50Pb48.5Cu1.5	183 to 215
99C	Sn99.3Cu0.7	227
96S	Sn96.5Ag3.5	221
96SC	Sn95.5Ag3.8Cu0.7	217
97SC	Sn96.5 Ag3.0 Cu0.5	217
90iSC	Sn90.85Ag3.8Cu0.7Bi 3.0Sb1.5Ni0.15	205 to 218

Flux Properties

Acid Value, mgKOH/g	200
Halide Content, Cl %	0
Flux Content, %	2.2 to 3.0

RELIABILITY PROPERTIES

Test	Specification	Results
Corrosion	DTD-599A	Pass
	J-STD-004 (10 day)	Pass
Copper Mirror	J-STD-004	Pass
Chromate paper	J-STD-004	Pass
Surface Insulation	J-STD-004	Pass
Resistance (SIR)	Bell TR-NWT-000078 issue 3	Pass
Electromigration	Bell TR-NWT-000078 issue 3	Pass
Halogen Content	EN 14582	Pass
Flux	J-STD-004	ROL0
Activity	EN29454	1.1.3
Classification	IPC-SF-818	LR3CN

DIRECTIONS FOR USE

Soldering with LOCTITE[®] C 400 does not require any special methods or deviation from standard hand soldering practices.

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® C 400 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 400 cored wire.

Soldering Process:

LOCTITE® C 400 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 400 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 properly. This process should only take a fraction of a second.
- Apply LOCTITE® C 400 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. 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 400 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 400 flux cored solder wire means it is also well suited to soldering applications requiring higher melting lead free alloys.

Cleaning:

LOCTITE® C 400 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. 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 400 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 Corporation 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 0.4