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Laboratory Data Sheet

Product Crystal 400

Electronics Product, March 2002

No Clean Cored Solder Wire

PRODUCT DESCRIPTION

LOCTITE® Product Multicore™ Crystal 400 solid flux for cored solder wire has been specially formulated to complement high reliability No Clean wave and reflow soldering processes. It is also applicable to repair operations carried out after a cleaning process, eliminating the need for further cleaning.

- Clear residues for easy visual inspection
- Halide-Free
- Good spread on copper, brass, and nickel
- Heat stable – low spitting

TYPICAL PROPERTIES

Alloys:

The alloys used for Crystal cored solder wires conform to the purity requirements of the common national and international standards (QQ-S-571, J-STD-006A, JIS Z 3282). A range of wire diameters is available manufactured to close dimensional tolerances.

Flux:

Crystal 400 solid flux is based on modified rosin and carefully selected activators. In practice they exhibit a mild rosin odor and leave a small quantity of clear residue. Crystal 400 is available as 2 core solder wire (1% flux), 3 core (2% flux), and 5 core (3% flux).

Crystal 400 Flux Properties	
Acid Value, mg KOH/g	205-220
Halide Content, %	Zero
Multicore Code	C400
J-STD-004	
- Solder Spread	210
- Corrosion Test	Pass
SIR Test (without cleaning)	
- IPC-SF-818	Pass
- Bellcore TR-NWT-000078	Pass
Classification	
- EN 29454-1	1.1.3
- IPC-SF-818	LR3CN
- J-STD-004	ROLO
Area of spread of cored wire*, m2	
- Oxidized Copper	222
- Oxidized Brass	209
* flux value measured at 2.2 %	

GENERAL INFORMATION

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

Directions for Use

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 and 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 should be properly tinned and this may be achieved using Crystal 400 cored wire. Severely contaminated soldering iron tips should first be cleaned and pre-tinned using Multicore Tip Tinner/Cleaner TTC1, then wiped on a clean, damp sponge before re-tinning with Crystal cored wire.

Soldering Process

Multicore Crystal flux 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 Multicore Crystal 400 solder wire, recommended working practices 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 Crystal 400 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 workpiece 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 resin and flux systems are 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. In some situations, this may generate visible fuming but in all cases, rosin fumes must be removed from the breathing zone of operators.

Cleaning:

Multicore Crystal 400 flux cored solder wire has 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 and 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.

Should cleaning be required, this is best achieved using Multicore Prozone Solvent Cleaner (separate datasheet available).

Packaging:

Crystal 400 solid flux for cored solder wire is available in various diameter and flux percentages, and reel sizes.

Data Ranges

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

Note

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, **Loctite Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Loctite Corporation's products. Loctite 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 Loctite 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.