ALPHA® TELECORE® HF-850

Halogen-Free, Halide-Free, No-Clean Cored Solder Wire

DESCRIPTION

ALPHA Telecore HF-850 is the fastest wetting and lowest spattering, Halogen-free and Halide-free cored wire offering from Alpha. It performs admirably when benchmarked against Halogen and Halide containing competitive products available in the market and is a viable option to meet environmental requirements.

ALPHA Telecore HF-850's rapid wetting enables its use in drag soldering and minimizes cycle time in robotic and hand soldering applications. Its clear residue allows easy inspection of solder joints and the very low spatter rate ensures board cosmetics and user comfort are maintained. All this translates to a safe and environmentally compliant product that is operator friendly while maintaining high levels of productivity.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

Features	Benefits
Very fast wetting	Low cycle times for component touch-up and manual assembly
Very low flux spatter	Safe to use, Operator friendly, Less residues on boards
Good spread characteristics	Excellent first pass solder joints. JIS Spread ≥ 80%.
Very low levels of fumes	Cleaner working environment, Less extraction maintenance
Clear non-tacky residue	No-clean residues, Useful for all applications
Provides good joint appearance	Makes inspection easy
Halogen and Halide-free	Environmental compliance and high electrical reliability

ALPHA Telecore HF-850 is suitable for use in any electronic or industrial no-clean soldering application that specifies compliance with the IPC J-STD-004 ROL0 standard. It is ideal for electronic assemblies used in Automotive, Consumer Electronics, Computer and Peripherals, Mobile Devices, and all types of Household Appliance applications.

PRODUCT INFORMATION

Standard	Alloy Designation	Melting or Solidus / Liquidus Temp °C	Flux Amount
	Innolot Alloy** Sn90.85/Ag3.8/Cu0.7/Sb1.5/Ni0.15/Bi3.0 (High reliability & high operating temp)	206 / 218	2.2%
J-STD-006C	SAC305	217 / 221	1.1%, 2.2% & 3.3%
Proprietary	SACX Plus 0807	217 / 228	2.2% & 3.3%
Proprietary	SACX Plus 0307	217 / 228	2.2% & 3.3%
Proprietary	SnCX Plus 07	227 / 229	2.2% & 3.3%
J-STD-006C	Sn99.3/Cu0.7	227	2.2% & 3.3%
J-STD-006C	Sn63/Pb37	183	1.1%, 2.2% & 3.3%
ISO 9453	Sn99Cu1	227 / ~235	2.2% & 3.3%
J-STD-006C	Sn60/Pb40	183 / 190	1.1% & 2.2%

* ALPHA Telecore HF-850 may also be available in other alloys and flux amounts on request.

** All electronic components used with InnoLot solder alloy must be lead-free to eliminate the formation of tin/lead/bismuth intermetallic which has a melting point under 100 ºC.

Note: Flux content designated as P1 = 1.1%; P2 = 2.2%; P3 = 3.3%.

APPLICATION GUIDELINES

A solder joint is formed by heating the parts to be soldered to a temperature in excess of the melting point of the alloy to be used; in hand soldering this is how a soldering iron is used. By feeding the cored wire onto the parts, the flux is able to flow and remove oxidized metal, while the solder creates a thin inter-metallic bond which becomes the solder joint. ALPHA Telecore HF-850 is also ideal for robotic soldering applications.

Note the following tips:

- Use a soldering iron tip size and form to suit the operation: small tips for soldering large components may prevent the formation of a joint or slow the process down.

- Select a solder wire diameter to suit both the soldering iron tip and the parts/components to be soldered.
- Soldering iron systems should provide sufficient heat to satisfy the requirements of the points above.
- A typical solder tip temperature would be between 120 °C and 160 °C above the liquidus temperature of the alloy. The ideal temperature to use is dependent on how thermally demanding the assembly is.
- Cored solder wires can be provided in different grades of alloy so always ensures that you have selected the right grade for the application.
- Do not overheat as this causes an increase in the depth of the inter-metallic layer, which in turn weakens the joint.

If you choose to use a liquid rework flux, ALPHA NR205 No-Clean Low Residue Flux is recommended to maintain high electrical reliability and halogen-free residues. ALPHA NR205 is available in ALPHA Write Flux Pens for precision flux application.

HALOGEN STATUS

ALPHA TELECORE HF-850 is a Halogen-free product and passes the standards listed in the table below:

Halogen Standards			
Standard	**Requirement**	**Test Method**	**Status**
IEC 612249-2-21	Post Soldering Residues contain < 900 ppm each or total of < 1500 ppm Br or Cl from flame retardant source	**TM EN 14582**	Pass
JEDEC *A Guideline for Defining "Low Halogen" Electronics*	Post soldering residues contain < 1000 ppm Br or Cl from flame retardant source		Pass

TECHNICAL DATA

Physical Properties	Typical Values
Rosin Softening Point:	70 to 80 ºC
Acid Value:	180 to 200 mg KOH/g flux (IPC-TM-650 2.3.13)
Halide Content:	<500 ppm (IPC-TM-650 2.3.28.1)
Classification:	JIS - 1a3N Grade AA ROL0 per IPC J-STD-004A/B

Chemical Reliability Test	Requirements	Results
Copper Mirror Test (JIS)	No complete removal of copper	PASS
Copper Mirror Test (IPC-TM-650 2.3.32)	No complete removal of copper	PASS
Copper Corrosion Test (JIS)	No evidence of corrosion	PASS
Copper Corrosion Test IPC-TM-650 2.6.15	No evidence of corrosion	PASS

Electrical Reliability Test	Product Combination	Requirements	Results
Automotive Damp-Heat Cyclic Test (IEC 60068-2-78)	Telecore HF-850	$1.0 \times 10^8\ \Omega$ minimum *	PASS
	Telecore HF-850 + CVP-390 Solder Paste		PASS
JIS SIR Test (JIS-Z-3197)	Telecore HF-850	$1.0 \times 10^{11}\ \Omega$ minimum	PASS
JIS WER Test (JIS Z 3283:2006)	Telecore HF-850	WER Grade AA >1000 ohm-m	PASS
IPC SIR Testing (J-STD-004B)	Telecore HF-850	$1.0 \times 10^8\ \Omega$ minimum	PASS
	Telecore HF-850 + CVP-390 Solder Paste + EF-6100 Liquid Flux		PASS

Electrical Reliability Test	Product Combination	Requirements	Results
	Telecore HF-850 + CVP-390 Solder Paste + NR205 Liquid Flux		PASS
IPC SIR Testing (J-STD-004A)	Telecore HF-850	$1.0 \times 10^{8}\ \Omega$ minimum	PASS
Bellcore SIR Test (GR-78-CORE)	Telecore HF-850	$1.0 \times 10^{11}\ \Omega$ minimum	PASS
Bellcore EM Test (GR-78-CORE)	Telecore HF-850	SIR(initial)/SIR (Final) < 10	PASS

* IEC 60068-2-78 does not specify a minimum resistance value. Alpha has adopted the stated value.

RECYCLING SERVICES

We provide safe and efficient recycling services to help companies meet their environmental and legislative requirements and at the same time, maximize the value of their waste streams.

Our service collects solder dross, solder scrap, and various forms of solder paste waste. Please contact your local sales representative for recycling capabilities in your area or link here.

SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available at MacdermidAlpha.com/assembly-solutions/knowledge-base.**

STORAGE

ALPHA Cored Solder Wires should be stored in dry conditions and within a temperature range of 0 to 40 °C. Alpha guarantees the product's shelf life for three years from the date of manufacture when stored in the recommended conditions.

CONTACT INFORMATION

To confirm this document is the most recent version, please contact Assembly@MacDermidAlpha.com

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Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE. Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588

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