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.

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 to the IPC J-STD-004B 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** Sn90.85/Ag3.8/Cu0.7/Sb1.5/Ni0.15/Bi3.0 (High reliability and high operating temperature)	206 - 218	2.2%
J-STD-006B	SAC305	217 - 221	1.1%, 2.2% & 3.3%
Proprietary	SACX Plus® 0307	217 - 228	2.2% & 3.3%
J-STD-006B	Sn99.3/Cu0.7	227	2.2% & 3.3%
J-STD-006B	Sn63/Pb37	183	1.1%, 2.2% & 3.3%

** TELECORE HF-850 may also 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 100ºC*

APPLICATION

A soldered 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. 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 dependant 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, NR205 No-Clean Low Residue Flux is recommended to maintain high electrical reliability and halogen-free residues. NR205 is available in Alpha's 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:	70ºC – 80ºC
Acid Value:	180 - 200 mg KOH/g flux (IPC-TM-650-2.3.13)
Halide Content:	<500 ppm (IPC-TM-650-2.3.28.1)
Classification:	ROL0 per IPC J-STD-004B

Electrical Reliability Test	**Requirements**	**Results**
Damp Heat Test (IEC 60068-2-78)	1.0×10^8 Ω minimum *	PASS
JIS SIR Test (JIS-Z-3197)	1.0×10^{11} Ω minimum	PASS
IPC SIR Testing (J-STD-004A)	1.0×10^8 Ω minimum	PASS
IPC SIR Testing (J-STD-004B)	1.0×10^8 Ω minimum	PASS
Bellcore SIR Test (GR-78-CORE)	1.0×10^{11} Ω minimum	PASS
Bellcore EM Test (GR-78-CORE)	SIR(initial)/SIR (Final) < 10	PASS

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

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

SAFETY

Observe standard precautions for handling and use. Use in well ventilated areas. DO NOT SMOKE during use.

ALPHA® Telecore HF-850 wire is not considered toxic. However, its use in typical soldering applications will generate a small amount of decomposition and fumes. These fumes should be adequately exhausted / vented for operator safety and comfort.

STORAGE

ALPHA Cored Solder Wires should be stored in dry conditions and within a temperature range of 0°C to 40°C. When stored under these conditions the product shelf life is indefinite. However, Alpha guarantees the product shelf life for three years from the date of manufacture when stored in dry conditions and within 0°C to 40°C.