

ALPHA[®] VACULOY[®] SACX 0307, 0300 HASL

Lead Free Hot Air Solder Level Alloy

DESCRIPTION

ALPHA Vaculoy SACX0307 HASL is a lead-free alloy suitable for use as a replacement for Sn63 alloy in the hot air solder level process. The **ALPHA Vaculoy SACX0300 HASL** variant is used to stabilize / reduce the copper content in the hot air solder level machine solder bath, this requirement will depend on process conditions. As with all Alpha's bar solder, Alpha's proprietary Vaculoy alloying process is used to remove impurities, particularly oxides. The product is further enhanced with the addition of 2 minor elements to reduce copper dissolution rates and improve the pad cosmetics.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

Features:

- Copper Dissolution Rate – Low copper dissolution rate, reduced solder-pot maintenance and improved bath life
- Wetting Speed – 0.75sec typical wetting speed compares to SAC305 at 0.65sec and superior to Sn99.3/Cu0.7 based alloys at 1.0sec
- Flat Uniform Deposits – Less thickness variance than Sn63/Pb37

Benefits:

- Lowers Total Cost of Ownership due to the lower material cost, high yields and low copper dissolution rates
- Gives very good solderability due to the fast wetting speed
- Compatible with all assembly SAC (Sn/Ag/Cu) based alloys SACX, SAC305 etc.
- Excellent shelf life and ultimate solderability – Improve hole fill on multiple reflow boards

The proprietary Vaculoy process is a highly effective method for removing included oxides from solder. This is extremely important because included oxides generate excessive drossing and increase the viscosity of the solder. Solder with higher viscosity can result in increased soldering defects (i.e. solder bridging).

PRODUCT INFORMATION

ALPHA Vaculoy SACX0307, 0300 HASL is available in 1kg (2.2lb) Bar , Chunks , Feeder Ingots and Autofeed Wire.

APPLICATION GUIDELINES

ALPHA Vaculoy SACX0307 HASL is suitable for both vertical and horizontal hot air leveling processes.

TECHNICAL DATA

Complies with all requirements of RoHS Directive (Article 4.1 of the European Directive 2011/65/EU). Alloy specification for Maximum Lead (Pb) Content = 0.1%

Material Property	ALPHA Vaculoy SACX0307
Solidus (°C)	217
Liquidus (°C)	228
Hardness (HV)	14.1
Density (g/cc)	7.33
Specific Heat Capacity (J/kg °C)	0.17
Stress at MAX load (N/mm ²)	Mean: 29.5
	Std Dev: 0.64
Elongation at Failure (%)	Mean: 21.8
	Std Dev: 8.8
Thermal Expansion Coefficient (1/ °C x 10 ⁻⁵)	(30 to 100°C): 1.79
	(100 to 150°C): 2.30
Silver Content (%)	0.3 +0.15/-0.05
Copper Content (%)	0.70 ± 0.1
Lead Content (%)	Max 0.1

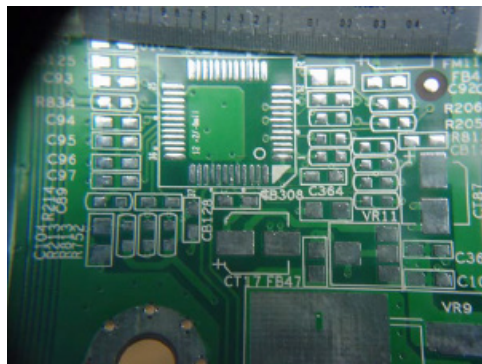
MANAGEMENT OF COPPER LEVELS IN THE SOLDER BATH
Copper Dissolution Rates

Management of the copper level in the hot air solder level machine is important to ensure consistent leveling. Testing shows that the SACX HASL alloy dissolves copper at a lower rate than SAC305.

Copper Dissolution Test		
Measurement	SACX	SAC305
Area of Copper Exposed (m ²)	76	76
Copper % Increase (%)	0.14	0.29
Mass of Solder in Bath (kg)	210	210
Mass of Copper Dissolved (kg)	0.294	0.609
Density of Copper (g/cm ³)	8.96	8.96
Volume of Copper (cm ³)	32.81	67.968
Thickness of Copper Dissolved (µm)	0.43	0.89

To control Copper levels in the machine, top up with copper free ALPHA Vaculoy SACX0300 HASL.

Solder pot analysis service is available, contact your local office for details.



RECOMMENDED SOLDER PROCESS SETTINGS

Vertical Hot Air Solder Level Machine	
Process Parameter	Suggested Setting
Solder Temperature (°C)	260 to 265
Total Contact Time Top (sec)	2.5
Total Contact Time Bottom (sec)	5
Air Pressure Front (psi)	38
Air Pressure Back (psi)	40
Knife Gap (mm)	11
Knife Off Set (mm)	5
Knife Temperature (°C)	295 to 310
Insertion Speed (cm/sec)	40
Withdrawal Speed (cm/sec)	70

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**

CONTACT INFORMATION

To confirm this document is the most recent version, please contact
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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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