



AMTECH
Advanced SMT Solder Products

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LF-4300 Lead-Free, Water Washable Solder Paste

Product Data Sheet

Product Highlights

- RELO flux classification in a Water Washable Solder Paste
- Tier I Military/Avionic OEM approved
- Exceptional print definition at high printing speeds up to 100mm/sec
- Residue can be left on the board in most assemblies (not recommended for high impedance assemblies)
- Clear Residue
- Low voiding, including LGA components
- RoHS II and REACH compliant
- Compatible with enclosed print heads
- Print and dispense grade solder paste available

Available Alloys

Alloy	Temp °C	Temp °F
42Sn/58Bi	138	280
42Sn/57Bi/Ag1	138	280
96.5Sn/3.0Ag/0.5Cu	217-220	423-428
99.0Sn/0.3Ag/0.7Cu	217-221	423-430
96.5Sn/3.5Ag	221	430
99.3Sn/0.7 Cu	227	441
95Sn/5Sb	235-240	455-464
95Sn/5Ag	221-245	430-473

Packaging

500 gram jars
 500 gram cartridges
 35 or 100 gram syringes
 ProFlow cassettes

Test Results

Test J-STD-004 or other requirements (as stated)	Test Requirement	Result
Copper Mirror	IPC-TM-650: 2.3.32	L: No breakthrough
Corrosion	IPC-TM-650: 2.6.15	L: No corrosion
Quantitative Halides	IPC-TM-650: 2.3.28.1	L: <.05%
Electrochemical Migration	IPC-TM-650: 2.6.14.1	L: <1 decade drop (no-clean)
Surface Insulation Resistance 85 °C, 85% RH@ 168 Hours	IPC-TM-650: 2.6.3.7	L: ≥100 MΩ (no-clean)
Tack Value	IPC-TM-650: 2.4.44	37g
Viscosity - Malcom @ 10 RPM/25 °C (x10 ³ mPa/s)- SAC305 T3/T4	IPC-TM-650: 2.4.34.4	Print: 155-215 Dispensing: 80-115
Visual	IPC-TM-650: 3.4.2.5	Clear and free from precipitation
Conflict Minerals Compliance	Electronic Industry Citizenship Coalition (EICC)	Compliant
REACH Compliance	Articles 33 and 67 of Regulation (EC) No 1907/2006	Contains no substance >0.1% w/w that is listed as a SVHC or restricted

LF-4300 Lead-Free, Water Washable Solder Paste

Printer Operation

The following are general guidelines for stencil printer optimization with LF-4300. Some adjustments may be necessary based on your process requirements.

Print Speed: 25-100 mm/sec

Squeegee Pressure: 70-250g/cm of blade

Under Stencil Wipe: Once every 10-25 prints, or as necessary

Stencil Life

> 8 hours @ 30-45% RH and 20-25 °C

~ 4 hours @ 45-75% RH and 20-25 °C

Cleaning

LF-4300 can be cleaned using deionized water at 40-60°C with a recommended water pressure of 30-50 PSI.

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Recommended Profile

This profile is designed to serve as a starting point for process optimization using LF-4300. To achieve better results with voiding or to reduce tombstoning, consider using a longer soaking zone, (170-220 °C) for 60-90 seconds, with a rapid pre-heat stage. If there is evidence of solder de-wetting, consider lowering the peak reflow temperature, or reduce the time above liquidus to <90 seconds.

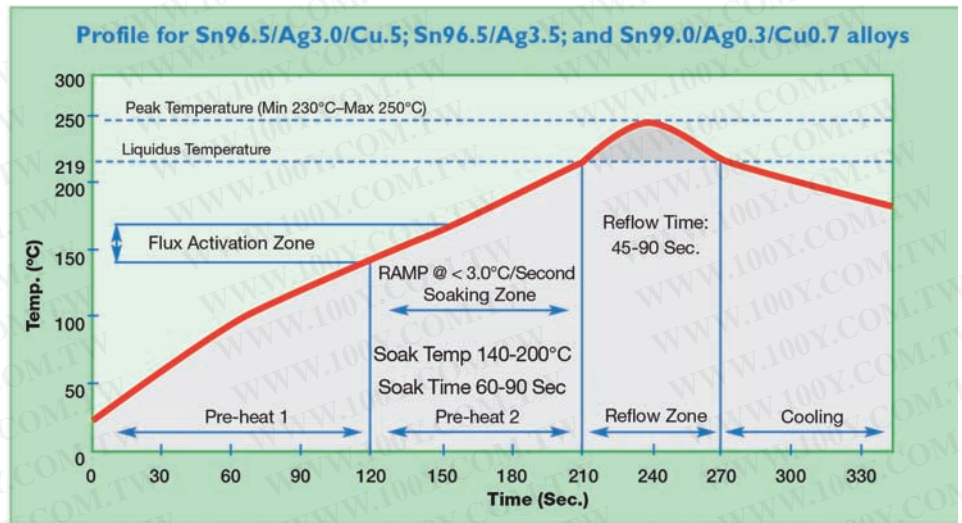
Amtech Low Oxide Powder Distribution

Micron Size	Type	Pitch Requirements
45-75μ	Type-2	24 mil and above
25-45μ	Type-3	16-24 mil
20-38μ	Type-4	12-16 mil
15-25μ	Type-5	8-12 mil
5-15μ	Type-6	5-8 mil
2-11μ	Type-7	< 5 mil

Note: Type-6 and Type-7 may not be available in certain alloys. Other powder distributions are available on request.

Storage

Solder paste should be stored between 3-8 °C (37-46 °F) to obtain the maximum refrigerated shelf life of six months. Unopened solder paste stored at room temperature, 25 °C (77 °F) will have a one month shelf life. Syringes and cartridges should be stored vertically in the refrigerator with the dispensing tip down. Allow 4-8 hours for solder paste to reach an operating temperature of 20-25 °C (68-77 °F). Keep the solder paste container sealed while warming the solder paste to operating temperature. **NEVER FREEZE SOLDER PASTE.**



Inventec Performance Chemicals USA, LLC

SAFETY DATA SHEET (MSDS)

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Amtech lead free Tacky Paste Flux :LF-4300-TF
SYNONYMS: Tacky Flux
MANUFACTURER: Inventec Performance Chemicals USA, LLC
ADDRESS: PO Box 989 Deep River, CT 06417 USA
PHONE: 860-526-8300
FAX: 860-526-8243
EMERGENCY: Infotrac-(800)535-5035
REVISION DATE: December 08, 2020
REVISION DATE: 4
DOCUMENT NAME: SDS-Chemicals TacFlux-003
PRODUCT USE: Bonding solder joints in production and repair of circuit boards

SECTION 2: HAZARDS IDENTIFICATION

CHEMICAL NAME: N/A
CHEMICAL FAMILY: Mixture
CHEMICAL FORMULA: N/A

ROUTES OF ENTRY: Inhalation, Ingestion, Skin/Eye Contact

GHS:



Signal Word: Warning

Hazard statement(s)

H302 Harmful if swallowed
H317 May cause an allergic skin reaction
H320 Causes eye irritation
H335 May cause respiratory irritation

Precautionary statement(s)

P102 Keep out of reach of children
P233 Keep container tightly closed
P264 Wash hands thoroughly after handling
P270 Do not eat, drink or smoke when using this product
P280 Wear protective gloves/protective clothing/eye protection/face protection
P302+P352 IF ON SKIN: Wash with plenty of soap and water
P305+P351 IF IN EYES: Rinse continuously with water for several minutes
P404 Store in a closed container
P501 Dispose of contents/containers in accordance with Federal, State/Provincial, and/or local regulations

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: May cause moderate irritation. Do not allow material to come in contact with eyes.
SKIN CONTACT: May cause moderate skin irritation.
INHALATION: May cause irritation to the respiratory tract.
INGESTION: Harmful if swallowed. May cause irritation to the mouth, throat, and stomach. May cause abdominal discomfort, nausea, vomiting, and/or diarrhea.
CHRONIC: Not established.

SECTION 2 NOTES:

Inventec Performance Chemicals USA, LLC does not recommend, manufacture, market, or endorse any of its products for human consumption.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS Number</u>	<u>Exposure Limits</u>
Modified Rosins	N/A	N/A
Pine Oil Derivatives	8000-41-7	N/A
Proprietary Ingredients	N/A	N/A
Mixed Carboxylic Acids	N/A	N/A

SECTION 3 NOTES:

Percentages of individual components are not listed as this information is considered a trade secret.

SECTION 4: FIRST AID MEASURES

EYES: Flush with plenty of water, contact a physician. If contact lenses can be removed easily, flush eyes without contact lenses.

SKIN: Wash affected area with plenty of warm, soapy water. If irritation persists, seek medical attention.

INGESTION: Call a physician or Poison Control Center immediately. Do not induce vomiting.

INHALATION: Remove to fresh air. If not breathing, seek immediate medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA:**SPECIAL FIRE FIGHTING PROCEDURES:**

Do not use water. Use NIOSH-approved self-

UNUSUAL FIRE AND EXPLOSION HAZARDS:

This product

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: If material spills or leaks, collect and place into a properly labeled waste container. Remove traces of tacky flux using cloth rags or paper towels moistened with Isopropyl Alcohol. Follow on-site personal protective equipment recommendations.

SECTION 6 NOTES:

See Sections 2, 4, and 7 for additional information.

SECTION 7: HANDLING AND STORAGE

HANDLING/STORAGE: Keep containers tightly closed when not in use. Use care to avoid spills. Avoid inhalation of fumes or dust. Avoid contact with eyes, skin, and clothing.

OTHER PRECAUTIONS: Empty containers may retain product residues in vapor, liquid, and/or solid form. All labeled hazard precautions should be observed.

WORK HYGIENIC PRACTICES: Cosmetics/Food/Drink/Tobacco should not be consumed or used in work areas. Always wash hands after handling material and before applying or using cosmetics/food/drink/tobacco.

SECTION 7 NOTES:

For industrial use only.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLVs.

RESPIRATORY PROTECTION: Use with adequate ventilation.

EYE PROTECTION: Use with appropriate safety glasses.

SKIN PROTECTION: Protective gloves and clothing should be worn when handling material. Wash hands thoroughly with soap and water upon leaving the work area.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

Clear, White, or Bright Yellow

ODOR:

Mild odor

ODOR THRESHOLD:

Not established

pH as SUPPLIED:

N/A

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (continued)

MELTING POINT:	Not established
FREEZING POINT:	Not established
INITIAL BOILING POINT:	Not established
BOILING RANGE:	Not established
FLASH POINT:	Not established
EVAPORATION RATE:	Not established
FLAMMABILITY (solid):	Not established
UPPER/LOWER FLAMMABILITY:	Not established
UPPER/LOWER EXPLOSIVE LIMITS:	Not established
VAPOR PRESSURE (mmHg):	N/A (°F/°C)
VAPOR DENSITY (AIR = 1):	N/A (°F/°C)
RELATIVE DENSITY:	Not established
SOLUBILITY IN WATER:	Partially
PARTITION COEFFICIENT (n-octanol/water):	Not established
AUTOIGNITION TEMPERATURE:	Not established
DECOMPOSITION TEMPERATURE:	Not established
VISCOSITY:	N/A (°F/°C)

SECTION 10: STABILITY AND REACTIVITY

STABILITY:	Stable
CONDITIONS TO AVOID (STABILITY):	Freezing temperatures. High temperatures.
INCOMPATIBILITY (MATERIAL TO AVOID):	Strong oxidizing materials
HAZARDOUS DECOMPOSITION/BY-PRODUCTS:	Harmful organic fumes and toxic oxide fumes may form at elevated temperatures.
POSSIBILITY OF HAZARDOUS REACTIONS:	Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:	Not available
SKIN CORROSION/IRRITATION:	Not established
SERIOUS EYE DAMAGE/IRRITATION:	Not available
RESPIRATORY OR SKIN SENSITIZATION:	Not established
GERM CELL MUTAGENICITY:	Not available
CARCINOGENICITY:	Not available
REPRODUCTIVE TOXICITY:	Not available
STOT-SINGLE EXPOSURE:	Not available
STOT-REPEATED EXPOSURE:	Not available
ASPIRATION HAZARD:	Not available

SECTION 12: ECOLOGICAL INFORMATION

TOXICITY:	Product not tested
PERSISTENCE AND DEGRADIBILITY:	Product not tested
BIOACCUMULATIVE POTENTIAL:	Product not tested
MOBILITY IN SOIL:	Product not tested
OTHER ADVERSE EFFECTS:	Product not tested

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Scrap and waste solder should be stored in a dry, sealed container for later disposal. Disposal must be in accordance with Federal, State/Provincial, and Local Regulations.

SECTION 14: TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

UN Number:	Not available
UN Proper Shipping Name:	Not available
Packaging Group:	Not applicable
Environmental Hazards:	None

TRANSPORT HAZARD CLASSES:

US DOT Hazardous Material Classification:	Tacky Flux is not listed as a DOT hazardous material
Water Transportation:	Tacky Flux is not listed as a hazardous material
IATA Hazardous Material Classification:	Tacky Flux is not listed as IATA hazardous material

SECTION 15: REGULATORY INFORMATION

All ingredients used to manufacture this product are listed on the EPA TSCA Inventory.

U.S. FEDERAL REGULATIONS: Not regulated
STATE REGULATIONS: Not regulated
INTERNATIONAL REGULATIONS: Not regulated

SECTION 16: OTHER INFORMATION

HMIS Rating: Health=1 Flammability=1 Physical Hazard=0 Personal Protection=X

KEY:

N/A: Not applicable
GHS: Global Harmonized System
OSHA: Occupational Safety and Health Administration
ACGIH: American Conference of Governmental Industrial Hygienists
NTP: National Toxicology Program
IARC: International Agency for Research on Cancer
CAS: Chemical Abstract Service
NIOSH: National Institute for Occupational Safety & Health
STOT: Specific target organ toxicity
TLV: Threshold limit value
US DOT: United States Department of Transportation
DOT: Department of Transportation
IATA: International Air Transport Association
EPA: Environmental Protection Agency
TSCA: Toxic Substance Control Act
HMIS: Hazardous Material Identification System

PREPARATION INFORMATION:

This update supersedes all previously released documents.

PREPARED BY: Wendy W. Gesick

APPROVED BY: Leigh W. Gesick

DISCLAIMER:

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