

# CHEMTRONICS® Technical Data Sheet

**TDS # 1631**

## Flux-Off® Heavy Duty

### PRODUCT DESCRIPTION

Flux-Off® Heavy Duty is an excellent cleaner for the removal of all rosin and no clean flux types from electronic subassemblies, printed circuit boards and all other electronic components. Flux-Off® Heavy Duty will remove the toughest deposits of organic flux, soldering oils and organic handling oils. Flux-Off® Heavy Duty will also effectively remove other contaminants such as dirt, grease, and molding compounds.


- Quickly removes all rosin and no clean flux types
- Removes encrusted, hard, baked fluxes
- Fast drying
- Powerful cleaner leaves no residue
- Nonabrasive on most surfaces
- Contains no CFCs or HCFCs
- Nonflammable
- Noncorrosive

### TYPICAL APPLICATIONS

Flux-Off® Heavy Duty removes flux residues and cleans:

- Chip Carriers
- Heat Sinks
- Metal Housings and Chassis
- Motors and Generators
- Printed Circuit Boards
- Plugs
- Relays and Contacts
- Surface Mount Device Pads

### TYPICAL PRODUCT DATA AND PHYSICAL PROPERTIES

<b>Boiling Point</b>	102°F (Initial)
<b>Flash Point (TCC)</b>	None
<b>Solubility in Water @ 77°F/1 atm</b>	5% by weight
<b>Specific Gravity (water = 1 @ 77°F)</b>	1.32
<b>Evaporation Rate (butyl acetate=1)</b>	>1
<b>Appearance</b>	Clear, colorless liquid
<b>Odor</b>	Ethereal
<b>Surface Tension (dynes/cm @ 25°C)</b>	14.9
<b>Kauri-Butanol (KB) Number</b>	120
<b>Shelflife</b>	Aerosols 5 years Liquids 2 years after opening
<b>RoHS/WEEE Status</b>	

### COMPATIBILITY

Flux-Off® Heavy Duty is generally compatible with most materials used in printed circuit board fabrication, except acrylics, ABS Resins, Polycarbonates, Polystyrenes, and other resins. With any cleaning agent compatibility must be determined on a non-critical area prior to use.

<u>Material</u>	<u>Compatibility</u>
Buna-N	Not Recommended
Graphite	Good
HDPE	Good
Kynar™	Poor
LDPE	Good
Lexan™	Not Recommended
Neoprene	Poor
Noryl®	Poor
Cross-Linked PE	Good
Polyacrylate	Not Recommended
Polystyrene	Not Recommended
PVC	Poor
Silicone Rubber	Not Recommended
Teflon™	Good
Viton™	Poor

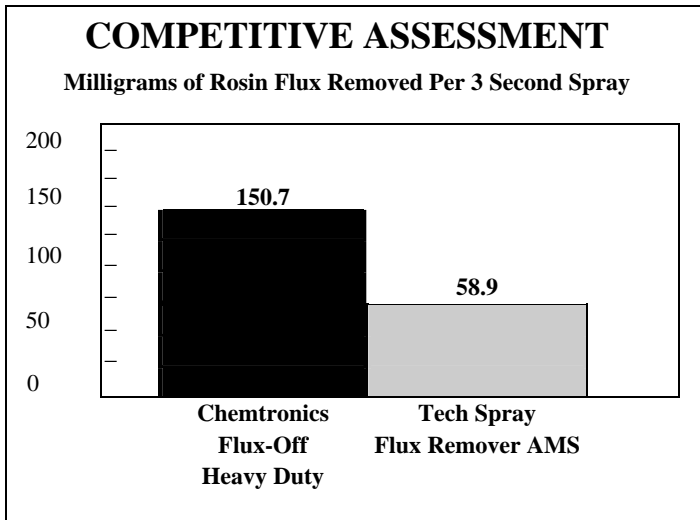
## AVAILABILITY

ES1631	12 oz. Aerosol
ES831B	5 oz. Brush Clean System
ES131	1 Gallon Liquid

### NOTE:

This information is believed to be accurate. It is intended for professional end users having the skills to evaluate and use the data properly.

CHEMTRONICS® does not guarantee the accuracy of the data and assumes no liability in connection with damages incurred while using it.



## USAGE INSTRUCTIONS

For industrial use only.

Read MSDS carefully prior to use.

Spray 4-6 inches from surface to clean.

Wash parts from top to bottom, allowing the liquid to flush away flux residue. For optimum performance and pin point control, Flux-Off® Heavy Duty should be used with the attached extension tube.

**SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Product Information: 800-TECH-401

**Product Identification**

**FLUX-OFF® HEAVY DUTY**

**Product Code: ES1631, ES831B, ES1631C, ES831BC**

**SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical Name	CAS#	Wt. % Range
Fluorinated Hydrocarbon (HFE)	163702-07-6/163702-08-7	30.0-50.0
trans-1,2-Dichloroethylene	156-60-5	30.0-50.0
Ethanol	64-17-5	1.0-5.0
1,1,1,2-Tetrafluoroethane	811-97-2	10.0-40.0
Carbon Dioxide	124-38-9	1.0-5.0

**SECTION 3: HAZARD IDENTIFICATION**

**Emergency Overview:** Clear, colorless liquid with faint ethereal odor. This product is nonflammable. Liquid may irritate eyes and skin under repeated or prolonged exposure. Breathing high concentrations of product vapor may produce dizziness and nausea.

**Potential Health Effects:**

**Eyes:** Liquid, aerosols and vapors of this product may be irritating and can cause pain, tearing, reddening and swelling accompanied by a stinging sensation.

**Skin:** Prolonged contact can cause skin irritation, including redness, burning, drying and/or cracking of skin..

**Ingestion:** May be harmful if swallowed. Swallowing this material may result in nausea, vomiting and weakness followed by central nervous system depression.

**Inhalation:** Can be harmful if inhaled. High concentrations of vapors in immediate area can cause dizziness, nausea, vomiting, unconsciousness and death.

**SECTION 4: FIRST AID MEASURES**

**Eyes:** Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Have eyes examined and tested by medical personnel if irritation develops or persists.

**Skin:** Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persist. Wash clothing before reuse.

**Ingestion:** If swallowed, do not induce vomiting. If conscious, give 2 glasses of water. Never give anything by mouth to an unconscious person. Keep head below knees to minimize chance of aspirating material into the lungs. Get medical attention immediately.

**Inhalation:** Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention.

**SECTION 5: FIRE FIGHTING MEASURES**

**Flash Point:** None to boiling(TCC)

**Extinguishing Media:** Use water spray or fog, CO2, dry chemical or water stream when fighting fires involving this material.

**Fire Fighting Instructions:** As in any fire, wear self-contained breathing apparatus (pressure-demand, MSHA/NIOSH approved or equivalent) and full protective gear.

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

**Spills:** Shut off leak if possible and safe to do so. Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container for proper disposal. Do not flush to sewer. Avoid runoff into storm sewers and ditches which lead to waterways.

**SECTION 7: HANDLING AND STORAGE**

Avoid prolonged or repeated contact with eyes, skin, and clothing. Wash hands before eating. Use with adequate ventilation. Avoid breathing product vapor or mist. Do not reuse this container. Store in a cool dry place away from heat, sparks and flame. Keep container closed when not in use. Do not store in direct sunlight.

**KEEP OUT OF REACH OF CHILDREN.**

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Exposure Guidelines:**

CHEMICAL NAME	ACGIH TLV	OSHA PEL	OTHER
Fluorinated Hydrocarbon(HFE)	NE	NE	750 ppm (3M)
trans-1,2-Dichloroethylene	200 ppm	200 ppm	
1,1,1,2-Tetrafluoroethane	NE	NE	1000 ppm (Dupont)
Ethanol	1,000ppm	1000ppm	

**NE = Not Established**

**NFPA and HMIS Codes:**

	NFPA	HMIS
Health	1	1
Flammability	1	1
Reactivity	1	1
Personal Protection	-	B

**Work/Hygienic Practices:** Good general ventilation should be sufficient to control airborne levels. If vapor concentration exceeds TLV, use NIOSH approved organic vapor cartridge respirator. Wear safety glasses with side shields (or goggles) and rubber or other chemically resistant gloves.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

Physical State: Clear, colorless liquid  
Odor: Ethereal Odor  
pH: NA  
Vapor Pressure: 450 mmHg@ 70F  
Boiling Point: 106°F (41C)

Solubility in Water: Negligible  
Specific Gravity: 1.32  
 (Water =1)  
Evaporation Rate: >1 (Butyl acetate=1)  
Percent Volatile: 100%

**SECTION 10: STABILITY AND REACTIVITY**

Stability - This product is stable.

Conditions to Avoid: Steam, oxidizers, elevated temperatures. Do not spray near open flames, red hot surfaces or other sources of ignition.

Incompatibility: Do not mix with alkali metals, pure oxygen, strong base, open flames, and welding arcs.

Products of Decomposition: Thermal decomposition may release hydrogen chloride, hydrogen fluoride, perfluoroisobutylene and small amounts of phosgene and chlorine. Solvent decomposition occurs when catalyzed by metal chlorides which can be produced by reaction of HCl and metals in the system. In the presence of aluminum and excessive water, the decomposition can proceed rapidly with production of large amounts of heat and HCl fumes.

Hazardous Polymerization: Will not occur

Conditions to Avoid: Finely divided active metals, alkali and alkaline earth metals

**SECTION 11: TOXICOLOGICAL INFORMATION**

Inhalation:

Fluorinated Hydrocarbons (HFE) LC50 rats > 100 000 ppm (4hr)\*  
 trans-1,2-Dichloroethylene LC50 rats 24,100 ppm (4hr)\*  
 Tetrafluoroethane Rats ALC 567,000ppm/4hrs  
 Ethanol LC50 rats 20,000ppm/10hr  
 Carbon Dioxide LCLo/Human 9pph/5min

Ingestion:

Fluorinated Hydrocarbon(HFE) LD50/rats >5000 mg/kg\*  
 trans-1,2-Dichloroethylene LD50/rats >5 000 mg/kg\*  
 Ethanol LD50 rat 7060mg/kg

Skin

Fluorinated Hydrocarbon(HFE) 500 mg/rats MLD\*  
 trans-1,2-Dichloroethylene LD50 rabbit >5,000 mg/kg  
 Ethanol rabbit 400 mg open MLD

Eye:

Fluorinated Hydrocarbon(HFE) 150 mg/rats/24H MLD\*  
 trans-1,2-Dichloroethylene MOD-SEV\*  
 Ethanol rabbit 500 mg SEV

\*Information provided by manufacturer.

Cancer Information: No ingredients in this product are listed as human carcinogens by IARC or NTP.

Reproductive effects: none

Teratogenic effects: none

Mutagenic effects: none

**SECTION 12: ECOLOGICAL INFORMATION**

Avoid runoff into storm sewers and ditches which lead to waterways. Water runoff can cause environmental damage.

**REPORTING**

US regulations require reporting spills of this material that could reach any surface waters.

The toll free number for the US Coast Guard National Response Center is: **1-800-424-8802**

**SECTION 13: DISPOSAL CONSIDERATIONS**

Dispose of in accordance with all federal, state and local regulations. Water runoff can cause environmental damage.

**SECTION 14: TRANSPORTATION INFORMATION**

Proper Shipping Name	UN Number	Class	Sub. Risk	Pkg. Group	Hazard Label	Pkg. Instr.	Max. Quantity
<u>Air:</u> Aerosols non-flammable	UN 1950	2.2	NA	NA.	Non-flammable	203	75 kg; 150 kg
<u>Ground:</u> Consumer Commodity	NA	ORM-D	NA	NA	ORM-D	Pkg. Auth.	173.306

**SECTION 15: REGULATORY INFORMATION**

**SECTION 313 SUPPLIER NOTIFICATION**

This product contains no chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372).

This information should be included on all MSDSs copied and distributed for this material.

TOXIC SUBSTANCES CONTROL ACT (TSCA).

All ingredients of this product are listed on the TSCA Inventory.

WHMIS: Class A; Class D2B

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

**SECTION 16: OTHER INFORMATION**

This product is a Level 1 aerosol. Do not puncture or incinerate containers. Normal ventilation for standard manufacturing practices is usually adequate. Local exhaust should be used when large amounts are released.

To the best of our knowledge, the information contained herein is accurate. However, all materials may present unknown hazards and should be used with caution. In particular, improper use of our products and their inappropriate combination with other products and substances may produce harmful results which cannot be anticipated. Final determination of the suitability of any material is the sole responsibility of the user. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that may exist.