MATERIAL SAFETY DATA SHEET


Product Name: GC STATIC FREE FLUX REMOVER

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product Type: Flux Remover
Product Name: GC STATIC FREE FLUX REMOVER
Part Number(s): 19-7522-A
Emergency Contact: Chemtrec
Phone: (800) 424-9300

NFPA RATINGS

Health: 2
Flammability: 0
Reactivity: 0
Specific Hazard: --

SECTION 2. HAZARDOUS INGREDIENTS

Principal Hazardous Component(s)

<table>
<thead>
<tr>
<th>CHEMICAL AND COMMON NAME(S)</th>
<th>CAS. #</th>
<th>OSHA</th>
<th>ACGIH</th>
<th>VAPOR PRESSURE @ 25 DEG C</th>
<th>LE L</th>
<th>UEL</th>
<th>POINT DEG. F</th>
<th>% By</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Propyl Bromide</td>
<td>106-94-5</td>
<td>N/A</td>
<td>N/A</td>
<td>111 mmHg</td>
<td>4.0</td>
<td>7.8</td>
<td>None</td>
<td>70-75</td>
</tr>
<tr>
<td>Difluoroethane</td>
<td>75-37-6</td>
<td>1000ppm*</td>
<td>1000ppm*</td>
<td>62 psig</td>
<td>3.9</td>
<td>16.9</td>
<td>-58</td>
<td>20-30</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>124-38-9</td>
<td>5000ppm</td>
<td></td>
<td>1 atm.</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>&lt;5</td>
</tr>
</tbody>
</table>

Warning: Contains Bromopropane (n-propyl bromide) which is known to the State of California to cause reproductive toxicity

*Limit established by The E.I. DuPont Company is 1000ppm
NOTE: This product does not contain any ingredients subject to Section 313 of SARA Title III.
N/A is not available or not applicable
GC ELECTRONICS
1801 Morgan Street
Rockford, IL 61102
Phone: (815) 968-9661
Fax: (815) 968-9731
www.gcelectronics.com

MATERIAL SAFETY DATA SHEET

Product Name: GC STATIC FREE FLUX REMOVER

SECTION 3. PHYSICAL AND CHEMICAL CHARACTERISTICS (FIRE AND EXPLOSION DATA)

BOILING POINT (Deg. F): Concentrate Range: 75
SPECIFIC GRAVITY (Water = 1): Concentrate: 1.2
                     Propellant: -109.2
VAPOR PRESSURE (mmHg): See Section 2
PERCENT VOLATILE BY WEIGHT (%): 75%
VAPOR DENSITY (Air = 1): >1
EVAPORATION RATE (BA = 1): >1
SOLUBILITY IN WATER: Negligible
REACTIVITY IN WATER: None
APPEARANCE AND ODOR: CONCENTRATE: Clear liquid, irritating odor at high concentrations; PROPELLANT: Colorless, odorless gas; FINISHED PACKAGE: Pressurized containers.
FLASH POINT: See Section 2
FLAMMABLE LIMITS IN AIR - % BY VOLUME: See Section 2
EXTINGUISHER MEDIA: Water fog, dry chemical, carbon dioxide
AUTO-IGNITION TEMPERATURE: Unknown
SPECIAL FIRE FIGHTING PROCEDURES: Water may be used to cool closed containers to prevent pressure build-up and possible bursting when exposed to high temperatures. Firemen should wear self-contained, positive pressure, respiratory equipment.

SECTION 4. PHYSICAL HAZARDS
STABILITY: Stable
CONDITIONS TO AVOID: Avoid any excessive heat, ignition sources, open flames, or other high temperatures which induce thermal decomposition.
INCOMPATIBILITY (Materials to Avoid): Strong Oxidizers, Strong Bases.
HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen Bromide, Carbon Dioxide, and Carbon Monoxide. See SECTION 5 - HEALTH HAZARDS: Signs and Symptoms of Exposure.
HAZARDOUS POLYMERIZATION: Will not occur.
CONDITIONS TO AVOID: Not Applicable
SECTION 5. HEALTH HAZARDS

THRESHOLD LIMIT VALUE: See Section 2

SIGNS AND SYMPTOMS OF EXPOSURE: EYE CONTACT: Contact with liquid or mist may cause irritation. Vapors may irritate eyes; SKIN CONTACT: Prolonged contact may cause irritation, defatting of skin; INHALATION: Overexposure to vapor may cause dizziness, loss of concentration and irritation. Repeated inhalation of high concentrations may cause lung, kidney, liver, urinary, blood, bone marrow, central nervous system, and reproductive effects. Product vapors displace air and can cause suffocation especially in confined space. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS OF THE CAN MAY BE HARMFUL OR FATAL; INGESTION: Not expected to be a hazard in normal industrial use. Aspiration may cause rapid absorption through the lungs, which may result in systemic effects.

IMPORTANT NOTE: REPEATED AND PROLONGED OVEREXPOSURE TO SOLVENTS MAY LEAD TO PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. EYE WATERING, HEADACHES, NAUSEA, DIZZINESS AND LOSS OF COORDINATION ARE SIGNS THAT SOLVENT LEVELS ARE TOO HIGH. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.

CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN:
NATIONAL TOXICOLOGY PROGRAM: No
L.A.R.C. MONOGRAPHS: No
OSHA: No

OSHA PERMISSIBLE EXPOSURE LIMIT: See Section 2
ACGIH THRESHOLD LIMIT VALUE: See Section 2
OTHER EXPOSURE LIMIT USED: None

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove to fresh air. If affected, get medical assistance. EYES: Flush with water for at least 15 minutes. Get medical assistance if irritation persists. SKIN: Wash off in flowing water or shower. Remove contaminated clothing and wash before reuse.

INGESTION: Do not induce vomiting. Call a physician immediately.
MATERIAL SAFETY DATA SHEET

Product Name: GC STATIC FREE FLUX REMOVER

SECTION 6. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: NIOSH or Bureau of Mines approved organic vapor-type respirator is required in absence of proper environmental control.

VENTILATION:
LOCAL EXHAUST: To keep below TLV
MECHANICAL (General): To keep below TLV
SPECIAL: None
OTHER: None

PROTECTIVE GLOVES: Solvent resistant gloves - impervious gloves
EYE PROTECTION: Safety glasses or goggles
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: None reasonably foreseeable.

SECTION 7. SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Do not store above 110 deg. F. Avoid breathing vapors. Avoid prolonged or repeated contact with skin.

OTHER PRECAUTIONS: Contents under pressure. Do not puncture or incinerate. Vapors are heavier than air and will collect in low areas.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: SMALL SPILLS: Remove ignition sources. Mop up, wipe up, or soak up immediately. Use proper protective equipment. LARGE SPILLS: Evacuate area. Remove ignition sources. Contain liquid; transfer to closed containers; keep out of water supplies.

WASTE DISPOSAL METHODS: Dispose in accordance with Federal, State, and Local regulations. Do not incinerate closed or empty containers.

SECTION 8. NFPA HAZARD RATINGS

Health = 2  Flammability = 0  Reactivity = 0
MATERIAL SAFETY DATA SHEET

Product Name: GC STATIC FREE FLUX REMOVER

SECTION 9. OTHER INFORMATION

TRANSPORTATION INFORMATION – DOMESTIC GROUND
Shipping Name: Consumer Commodity
Hazard Class: ORM-D
UN Number: N/A
Packing Group: N/A
Hazard Label: None
Carton Marking: Consumer Commodity, ORM-D

SECTION 10. DISCLAIMER

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MATERIAL SAFETY DATA SHEET

Product Name: STATIC FREE FLUX REMOVER

Product Type: Flux Remover
Product Name: GC STATIC FREE FLUX REMOVER
Part Number(s): 19-7522
19-7518 Discontinued

Emergency Contact: Chemtrec
Phone (24 hours): (800) 424-9300

Section 1 - Identification of Product

COMMON NAME (used on label) (Trade Name & Synonyms): GC STATIC FREE FLUX REMOVER
CAS. NUMBER: See Section 2
CHEMICAL NAME: Trichloroethylene & Isopropanol
CHEMICAL FAMILY: N/A
FORMULA: N/A

HMIS RATINGS

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>0</td>
<td>B</td>
</tr>
</tbody>
</table>

Section 2 - Hazardous Ingredients

Principal Hazardous Component(s)

<table>
<thead>
<tr>
<th>CHEMICAL AND</th>
<th>OSHA</th>
<th>ACGIH</th>
<th>VAPOR PRESSURE</th>
<th>FLASH</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON NAME(S)</td>
<td>CAS. #</td>
<td>PEL</td>
<td>TLV</td>
<td>@ 25 DEG. C.</td>
</tr>
<tr>
<td>Isopropyl Alcohol**</td>
<td>67-63-0</td>
<td>400ppm</td>
<td>400ppm</td>
<td>31 mmHg</td>
</tr>
<tr>
<td>Trichloroethylene**</td>
<td>79-01-6</td>
<td>50 ppm</td>
<td>50 ppm</td>
<td>60 mmHg</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>124-38-9</td>
<td>5000ppm</td>
<td></td>
<td>1 atm</td>
</tr>
</tbody>
</table>

**NOTE: This product contains an ingredient subject to Section 313 of SARA Title III.
WARNING: This product contains Trichloroethylene which is known to the state of California to cause cancer, birth defects or other reproductive harm.

N/A is not available or not applicable.
Section 3 - Physical Data

BOILING POINT (Deg. F): Concentrate Range: 170 - 200
SPECIFIC GRAVITY (Water = 1): Concentrate: 1.1

VAPOR PRESSURE (mmHg): See Section 2
PERCENT VOLATILE BY WEIGHT (%): 95%
PERCENT VOLATILE ORGANIC COMPOUNDS: 15%
VAPOR DENSITY (Air = 1): >1
EVAPORATION RATE (BA = 1): >1
SOLUBILITY IN WATER: Negligible
REACTIVITY IN WATER: None

APPEARANCE AND ODOR: CONCENTRATE: Clear liquid, irritating odor at high concentrations; PROPELLANT: Colorless, odorless gas; FINISHED PACKAGE: Pressurized containers.

Section 4 - Fire & Explosion Hazard Data

FLASH POINT: See Section 2
FLAMMABLE LIMITS IN AIR - % BY VOLUME: See Section 2
EXTINGUISHER MEDIA: Water fog, dry chemical, carbon dioxide
AUTO-IGNITION TEMPERATURE: Unknown

SPECIAL FIRE FIGHTING PROCEDURES: Water may be used to cool closed containers to prevent pressure build-up and possible bursting when exposed to high temperatures. Firemen should wear self-contained, positive pressure, respiratory equipment.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Although aerosols are classified as nonflammable under ASTM D 3065-77 Flame Projection Test, this product should not be used or stored near any open flames or ignition sources. Contents under pressure. Self-pressurized aerosol containers. Keep temperature of containers below 120 deg. F. to prevent bursting. Hazardous decomposition products.

Section 5 - Health Hazard Data

THRESHOLD LIMIT VALUE: See Section 2

SIGNS AND SYMPTOMS OF EXPOSURE:

EYE CONTACT: Contact with liquid or mist may cause irritation. Vapors may irritate eyes;
Prolonged contact may cause irritation, defatting of skin; INHALATION: Overexposure to vapor may cause dizziness, loss of concentration and irritation. With high exposure levels, effects can include central nervous system (CNS), depression (intoxication), cardiac arrhythmia, and death. Product vapors displace air and can cause suffocation especially in confined space.
INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS OF THE CAN MAY BE HARMFUL OR FATAL;

INGESTION: Aspiration may cause rapid absorption through the lungs, which may result in systemic effects.
IMPORTANT NOTICE: REPEATED AND PROLONGED OVE REEXPOSURE TO SOLVENTS MAY LEAD TO PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. EYE WATERYING, HEADACHES, NAUSEA, DIZZINESS AND LOSS OF COORDINATION ARE SIGNS THAT SOLVENT LEVELS ARE TOO HIGH. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth. If breathing is difficult, give oxygen. Do not give epinephrine or similar drugs. Call a physician.

EYES: Flush with water for at least 15 minutes. Get medical assistance if irritation persists.

SKIN: Wash off in flowing water or shower. Remove contaminated clothing and wash before reuse.

INGESTION: Do not induce vomiting. Call a physician immediately. Do not administer sympathomimetic drugs unless absolutely necessary. No specific antidote

NOTE TO PHYSICIANS: BECAUSE OF POSSIBLE DISTURBANCES OF CARDIAC RHYTHM, CATECHOLAMINE DRUGS, SUCH AS EPINEPHRINE, SHOULD ONLY BE USED WITH SPECIAL CAUTION IN SITUATIONS OF EMERGENCY LIFE SUPPORT.

NOTE TO PHYSICIAN: BECAUSE RAPID ABSORPTION MAY OCCUR THROUGH LUNGS IF ASPIRATED AND CAUSE SYSTEMIC EFFECTS, THE DECISION OF WHETHER TO INDUCE VOMITING OR NOT SHOULD BE MADE BY AN ATTENDING PHYSICIAN. IF LAVAGE IS PERFORMED, SUGGEST ENDOTRACHEAL AND/OR ESOPHAGEAL CONTROL. DANGER FROM LUNG ASPIRATION MUST BE WEIGHED AGAINST TOXICITY WHEN CONSIDER EMPTYING THE STOMACH. EXPOSURE MAY INCREASE "MYOCARDIAL IRRITABILITY". DO NOT ADMINISTER SYMPATHOMIMETIC DRUGS UNLESS ABSOLUTELY NECESSARY. NO SPECIFIC ANTIDOTE. SUPPORTIVE CARE. TREATMENT BASED ON JUDGMENT OF THE PHYSICIAN IN RESPONSE TO REACTIONS OF THE PATIENT.

Section 6 - Reactivity Data

STABILITY: Stable

CONDITIONS TO AVOID: Avoid any excessive heat, ignition sources, open flames, or other high temperatures which induce thermal decomposition. Gross contamination with water may cause hydrolysis which will produce small amounts of hydrochloric acid.

INCOMPATIBILITY (Materials to Avoid): Chemically Active Metals. Oxidizing agents. Sodium, Potassium, Calcium, etc. Alkali or alkaline earth metals. Powdered Aluminum, Zinc, Magnesium, Beryllium, etc.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride, small amounts of Phosgene and Chlorine.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Not Applicable
Section 7 - Spill or Leak Procedures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILLS: Remove ignition sources. Mop up, wipe up, or soak up immediately. Use proper protective equipment.

LARGE SPILLS: Evacuate area. Remove ignition sources. Contain liquid; transfer to closed containers; keep out of water supplies.

WASTE DISPOSAL METHODS: Dispose in accordance with Federal, State, and Local regulations. Do not incinerate incinerate closed or empty containers.

Section 8 - Special Protection Information

RESPIRATORY PROTECTION: NIOSH or Bureau of Mines approved organic vapor-type respirator is required in absence of proper environmental control.

VENTILATION:
- LOCAL EXHAUST: To keep below TLV
- MECHANICAL (General): To keep below TLV
- SPECIAL: None
- OTHER: None

PROTECTIVE GLOVES: Solvent resistant gloves - impervious gloves

EYE PROTECTION: Safety glasses or goggles

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: None reasonably foreseeable.

Section 9 - Special Precautions

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Do not store above 110 Deg. F. Do not use or store near any open flames or ignition sources. Avoid repeated contact with skin.

OTHER PRECAUTIONS: Contents under pressure. Do not puncture or incinerate. Exposure to temperatures above 120 Deg. F may cause can to burst with violence and cause injury. Vapors are heavier than air and will collect in low areas.

Section 10 - Regulatory Information

SUBJECT TO SECTION 313 OF SARA TITLE III: Yes. Trichloroethylene, Isopropyl Alcohol

ALL CHEMICAL COMPONENTS ARE LISTED IN THE TSCA INVENTORY.

CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN: NATIONAL TOXICOLOGY PROGRAM: No.
I.A.R.C. MONOGRAPHS: Yes - Trichloroethylene
OSHA: No.
CANCER INFORMATION: A positive carcinogenic response has occurred only in mice given large doses of trichloroethylene. Data suggest a nonmutagenic mechanism for tumor formation implying that nontoxic doses of trichloroethylene should pose little or no carcinogenic hazard for man. Trichloroethylene is listed as a potential carcinogen by IARC.

OSHA PERMISSIBLE EXPOSURE LIMIT: See Section 2
ACGIH THRESHOLD LIMIT VALUE: See Section 2
OTHER EXPOSURE LIMITED USED: None

### Section 11 - Other Information

**TRANSPORTATION INFORMATION – DOMESTIC GROUND**
- **Shipping Name:** Consumer Commodity
- **Hazard Class:** ORM-D
- **UN Number:** N/A
- **Packing Group:** N/A
- **Hazard Label:** None
- **Carton Marking:** Consumer Commodity, ORM-D

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