

Material Safety Data Sheet

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Section 1: Product Identification

MSDS Code: 416DFR **Name: Dry Film Photo Resist**

Related Part Numbers: 416DFR-5

Use: Image transfer in the manufacturing process of printed circuit boards.

Section 2: Hazardous Ingredients

CAS#	Chemical Name	Percentage by weight	ACGIH TVL	Osha TWA	Osha Stel
	Acrylate binder Polymers	50-70	N/a	N/a	N/a
	Acrylate Monomers	20-30	N/a	N/a	N/a
119-61-9	Benzophenone	2-5	N/e	N/e	N/e
10287-53-3	Ethyl 4-dimethylamino Benzoate	1-3	N/e	N/e	N/e
78-93-3	Methyl Ethyl Ketone	< 1.0	200 ppm	200 ppm	N/a
109-99-9	Tetrahydrofuran	< 0.5	200 ppm	200 ppm	N/e

Section 3: Hazards Identification

WHMIS Codes: N/a

NFPA Ratings: Health 0 Flammability 1 Physical Hazard 0

HMIS Ratings: Health 1 Flammability 1 Physical Hazard 0

Eyes: Not a likely route of entry prior to heating. During the lamination process vapors will be emitted that may possibly cause eye irritation with discomfort, tearing or possible blurring of vision

Skin: May possibly cause mild skin irritation

Inhalation: Not a possible route of entry prior to heating. During the lamination process vapors are given off that may cause irritation of the upper respiratory passages, with possible coughing and discomfort.

Ingestion: Not a likely route of entry. If the polymer is actually eaten, symptoms may include nausea, headache or weakness.

Chronic: N/a

Section 4: First Aid Measure

Eyes: Remove contact lenses. Flush with plenty of water. Get medical aid.

Skin: Wash skin with plenty of soap and water. Get medical aid if symptoms persist.

Inhalation: Immediately remove from exposure to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Ingestion: Ingestion is not an expected route of exposure. Get medical aid if symptoms persist.

Section 5: Fire Fighting Measures

Auto ignition Temperature: N/a **Flash Point:** N/d **LEL / UEL:** N/d
Extinguishing Media: Foam, dry chemical or CO₂
General Information: Thermal decomposition can lead to evaluation of irritating vapors or gases.

Section 6: Accidental Release Measures

Spill Procedure: Not applicable before product has been used because the product is a polymer sheet. If the resist has been dissolved in the developer or a stripper, and the mixture spills, soak up the spill with inert absorbent material and place in waste container for disposal

Section 7: Handling and Storage

Handling: Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Do not ingest or inhale. Do not expose container to heat or flame.
Storage: Ensure this product is always stored in lightproof packaging. Unintentional exposure to light will damage this product. Do not bend or crease packaging. Store in a cool, dry, area.

Section 8: Exposure Controls

Routes of entry: Eyes, inhalation, and skin.
Ventilation: Use adequate general or local exhaust ventilation to keep airborne concentrations below exposure limits.
Personal Protection: Wear protective gloves to prevent skin contact. Use a NIOSH approved respirator when necessary.

Section 9: Physical and Chemical Properties

Physical State:	Dry Film	Odor:	Mild acrylate odor	Solubility:	Insoluble	Evaporation Rate:	N/e		
Boiling Point:	N/a	Specific Gravity:	1.1	Vapor Pressure:	N/e	Vapor Density:	N/e	pH:	N/e

Section 10: Stability and Reactivity

Stability: Keep away from normal light. Remove from package only under safelight conditions.
Conditions to avoid: N/a
Incompatibilities: Solvents, Bases.
Polymerization: No hazardous polymerization will occur.
Decomposition: CO, CO₂ and oxidation intermediates are created from combustion or burning.

Section 11: Toxicological Information

Sensitization: (effects of repeated exposure)	Repeated exposure may cause skin sensitizes.		
Carcinogenicity: (risk of cancer)	No risk of Cancer		
Teratogenicity: (risk of malformation in an unborn fetus)	No		
Reproductive Toxicity: (risk of sterility)	No		
Mutagenicity: (risk of heritable genetic effects)	No		
Lethal Exposure Concentrations:	Ingestion (LD50):	Inhalation (LC50):	Skin (LD50):
Benzophenone	N/a	Inhalation 4 hour ALC (>330 ppm in rats)	3535 mg/Kg in rabbits
Ethyl 4-dimethylamino Benzoate	N/a	N/a	N/a
Methyl Ethyl Ketone	N/a	8000 ppm/8h	6480 mg/Kg
Tetrahydrofurane	2816 mg/Kg	21000 ppm/3h	

Section 12: Ecological Information

General Information: Avoid runoff into storms and sewers, which lead into waterways. Water runoff can cause environmental damage.

Environmental Impact Data: (percentage by weight)

CFC: 0 **HFC:** 0 **Cl.Solv:** 0 **VOC:** 8 **HCFC:** 0 **ODP:** 0

Section 13: Disposal Information

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

Section 14: Transportation Information

Ground: (all sizes 1 liter or less)

Non-Regulated

Air:

Non-Regulated

Sea:

Non-Regulated

Section 15: Regulatory Information

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations. SARA (Superfund Amendments and Reauthorization Act of 1986, USA, 40 CFR 372.4)

None of the chemicals in this product have a reportable quantity.

EPCRA (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45)

This product does not contain any chemicals subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

TSCA (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

CAA (Clean Air Act, USA)

This product does not contain any class 1-ozone depletors.

This product does not contain any class 2-ozone depletors.

This product does not contain any chemicals listed as hazardous air pollutants.



California Proposition 65 (Chemicals know to cause cancer or reproductive toxicity, May 1, 1997 revision, USA)

This product does not contain any chemicals listed.

Health Canada

Labeling and containers used in this product are listed in compliance with Consumer Chemicals and Container regulations

DSL (Domestic Substance List:

Chemicals in this product are listed on the Domestic Substances List in the Canadian Environmental Protection Act.

This product does not contain any ozone depleting substances.

Industry and Science Canada

Labeling, product identity, net quantity declaration, minimum printing type size heights, and packaging of this product is in compliance with the Consumer Packaging and Labeling Act and Regulations. This product is not slack filled in accordance to chapter 4 prohibitions

RoHS (The restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2004).

This product is RoHS compliant.

Section 16: Other Information

Definitions: N/a = not applicable, n/e = not established

Disclaimer: This material safety data sheet is provided as an information resource only. M.G. Chemicals believes the information contained herein is accurate and compiled from reliable sources. It is the responsibility of the user to verify its validity. The buyer assumes all responsibility of using and handling the product in accordance with federal, state, and local regulations.