

**HAZARDOUS WASTE SECTION - COMPLIANCE BRANCH  
FILE TRANSMITTAL & DATA ENTRY FORM**

**Your Name:** Phil Orozco

**Facility ID Number:** NCD981014749

**Facility Name:** Cree - Durham

**Document Group:** General (G)

**Document Type:** G - Correspondence (C)

**File Description/Comments:** Request for Waste determination/recycling of used solvents.

**Date of Document:** 5/5/2015

**Author(s) of Document:** Donna Lazzari, Environmental Manager, Cree

**Inspector ID #:** NC018

**Suborganization:** Eastern Region

**County (if not on report):** DURHAM

May 5, 2015

NCDENR – Division of Waste Management  
ATT: Phillip G. Orozco – Hazardous Waste Section  
1646 Mail Service Center  
Raleigh, NC 27699-1646



Dear Mr. Orozco,

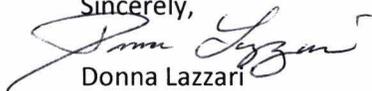
I am requesting a hazardous waste determination for the stream reviewed below and in the attached production chart. Please review and provide written confirmation of the assessment or explain any inaccuracies. The purpose of the review is to determine if the stream can be shipped to American Distillation, Inc. (ADI) in Leland, NC on a bill of lading for reclamation. The facility is not a permitted Hazardous Waste Treatment, Storage and Disposal facility and cannot receive and process hazardous waste.

Cree is a manufacturer of computer chips for the LED lighting industry. The stream in question is approximately 25-30% isopropyl alcohol (IPA), 25% - 30% acetone with the remainder water. It is generated by first adding IPA to a reaction chamber to act as a carrying agent for 1-Methoxy-2-propanol acetate and cresol novolak resin (MSDS attached) associated with the LED chips. When the process is completed, the stream is sent to a storage tank. Water is subsequently added to the process as a cleaning agent with rinsate being sent to the POTW. Acetone is then added to the process to remove water and remaining IPA, and serves as a drying agent. When the reaction is completed the acetone mixture is sent to the storage tank and the chips undergo further processing. The IPA/acetone/water mixture in the storage tank can be sold to American Distillation where the IPA and acetone can be reclaimed and sold.

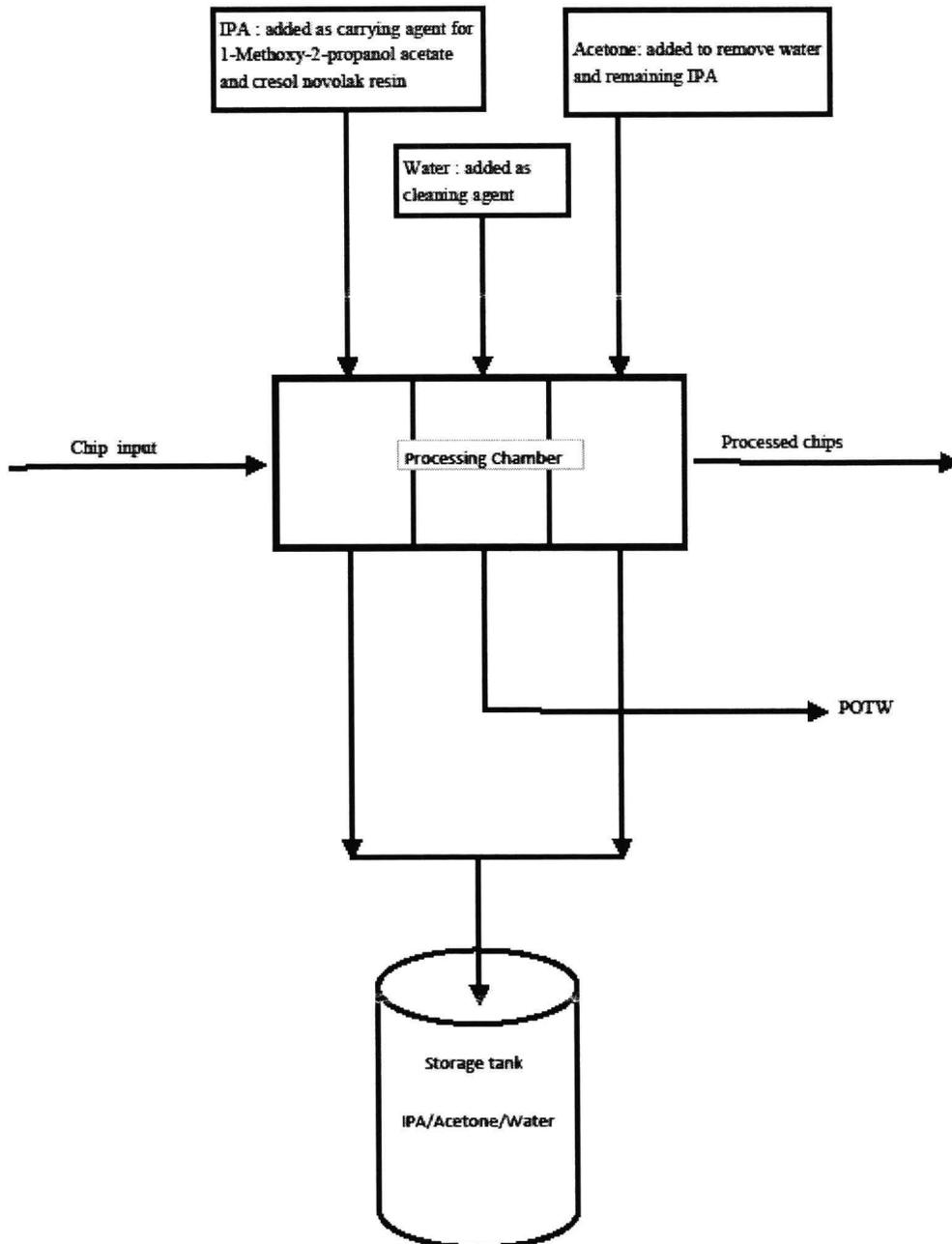
Cree has previously characterized this mixture as a hazardous waste, but believe that it can be considered a by-product exhibiting a characteristic of hazardous waste per 40CFR 261.2 (c) (3) and Table 1 of 40CFR 261.2. Under the by-product classification, it would not be considered a solid waste because it would be sold as a product with a known market. If a material is not a solid waste, it cannot be a hazardous waste. Therefore the streams can be shipped via bill of lading to ADI for reclamation and resale. Any hazardous waste that is generated at ADI is shipped under a manifest to a properly permitted hazardous waste TSD facility. We plan to maintain documentation that the material is not solid waste in accordance with 40CFR 261.2(f).

Thank you for your review. I look forward to hearing from you and will be glad to answer any questions.

Sincerely,

  
Donna Lazzari  
Environmental Manager  
Cree, Inc.

## LED Process Chart





Substance key: SXR100615  
Version 1

REVISION DATE: 01/05/2010  
Print Date: 02/19/2010

### Section 01 - Product Information

**Identification of the company:**

AZ Electronic Materials USA Corp.  
70 Meister Avenue  
Somerville, NJ 08876  
Telephone No.: 800-515-4164

**Information on the substance/preparation**

Product Safety: 908-429-3562

**Emergency Tel. number:** 800-424-9300 CHEMTREC

**Trade name:** AZ 1518 Photoresist IN (US)

### Section 02 - Composition information

**Hazardous ingredients:**

Chemical Name	CAS-no. (Trade secret no.)	Concentration [%]
1-Methoxy-2-propanol acetate	108-65-6	70.00 - 75.00
Diazonaphthoquinonesulfonic ester	68510-93-0	5.00 - 10.00

**Non-hazardous ingredients:**

Chemical Name	CAS-no. (Trade secret no.)	Concentration [%]
Cresol novolak resin	67829000004-5653P	20.00 - 25.00

### Section 03 - Hazardous identification

**Emergency overview:**

Amber-red liquid with characteristic odor., Partially dissolves in water leaving a floating viscous mass., OSHA combustible liquid; DOT flammable liquid., Irritating on contact or inhalation.

**Expected route of entry**

**Skin contact:** yes  
**Ingestion:** no  
**Inhalation:** yes  
**Eye contact:** Contact with liquid and vapors.  
**Skin absorption:** yes

**Health effects of exposure:**



**Component information:**

Eye: Causes eye irritation. Skin: Causes skin irritation. Ingestion: May be harmful if swallowed. Inhalation: Single exposure unlikely to be hazardous. High vapor concentration causes irritation to the nose, throat, and lungs. Systemic Effects: No hazard in normal industrial use. Reproductive & birth defects: Exposures having no adverse effect on the mother should have no effect on the fetus.

**1-Methoxy-2-propanol acetate (108-65-6)**

1-Methoxy-2-propanol acetate (PGMEA) can cause skin, eye, and respiratory irritation. Extreme or prolonged exposure may cause gastric and central nervous system effects. Long term, high level exposure to PGMEA has resulted in adverse effects to the livers and kidneys of experimental animals. PGMEA is readily absorbed through intact skin.

**Diazonaphthoquinonesulfonic esters (167933-51-9)**

Diazonaphthoquinone esters are self-reactive substances which may cause skin, eye and respiratory tract irritation.

**Known effects on other illnesses:** Preexisting skin, eye, and respiratory conditions may be aggravated.

**Listed carcinogen:** IARC: NO NTP: NO OSHA: NO

**HMIS:**

Health: 2 Flammability: 2 Reactivity: 0 Personal protection: X

**NFPA:**

Health: 2 Flammability: 2 Reactivity: 0 Special notice: NONE

**Section 04 - First aid measures**

**After inhalation:** Remove victim to fresh air.  
Consult physician.

**After contact with skin:** Immediately remove contaminated clothing and wash affected area thoroughly with soap and water.  
Consult physician if exposure is extensive or if irritation occurs.

**After contact with eyes:** Immediately flush the eyes with large amounts of water, occasionally lifting the upper and lower eyelids, for at least 15 minutes. Seek medical attention immediately.

**After ingestion:** If person is conscious, give water or milk to dilute stomach contents.  
Never give anything by mouth to an unconscious person.  
Consult physician.  
Do not induce vomiting.

**Advice to doctor / Treatment:** Administer oxygen if there is difficulty in breathing.



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### Section 05 - Fire fighting measures

<b>Flash point:</b>	112 °F Method: closed cup
<b>Suitable extinguishing media:</b>	Carbon dioxide, water, alcohol resistant foam, dry chemical.
<b>Special fire fighting procedure:</b>	Use self-contained breathing apparatus and full protective clothing. Use water spray to cool drums in fire area.
<b>Special hazards from the substance itself, its combustion products or from its vapours:</b>	Solvent vapors. Emits toxic fumes under fire conditions.
<b>Unusual fire and explosion hazards:</b>	Solvent vapors., Emits toxic fumes under fire conditions.

### Section 06 - Accidental release measures

<b>Steps to be taken in case of spill or leak:</b>	Wearing appropriate personal protective equipment, contain spill, ventilate area of spill or leak, remove all sparking devices or ignition sources, collect onto inert absorbent, and place in a suitable container.
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### Section 07 - Handling and Storage

#### Advice on safe handling:

Keep away from heat and flame.  
Avoid breathing vapors and contact with skin, eyes, and clothing.  
Use only with adequate ventilation and proper protective eyewear, gloves, and clothing.  
Wash thoroughly after handling.  
Keep container closed.

#### Further information for storage conditions:

Store in original container.  
Transport and store under dry conditions tightly closed.  
May liberate combustible solvent vapors.



**Section 08 - Exposure Control / personal protection**

**Occupational exposure limits:**

Components	CAS number	Regulatory list	Type of value	Value 1	Value 2
1-Methoxy-2-propanol acetate	108-65-6	ZUS_AIHAS	Time Weighted Average (TWA)	50 ppm	

**Respiratory protection:** If airborne concentrations pose a health hazard, become irritating, or exceed recommended limits, use a NIOSH approved respirator in accordance with OSHA respiratory protection requirements under 29CFR1910.134.

**Hand protection:** Chemical resistant gloves.

**Eye protection:** Safety eyewear to protect against splashes.

**Body protection:** Clothing suitable to prevent skin contact.

**Additional advice on system design:** Use local exhaust ventilation.

**Section 09 - Physical and chemical properties**

**Form:** Liquid

**Color:** Clear, amber-red

**Odor:** Strong, characteristic odor.

**Density:** 1 g/cm<sup>3</sup>  
20 °C

**Starts to boil:** from 145 °C

**Evaporation number:** 0.33 (PGMEA)

**Vapor pressure:** 2.6 Torr  
Method: calculated

**Viscosity, dynamic:** approx. 35 mPas  
20 °C

**Loss on drying:** 73 %



### Section 10 - Stability and reactivity

- Thermal decomposition:** Stable at ambient temperature.
- Hazardous reactions:** Stable.
- Hazardous polymerization:** Will not occur.
- Conditions to avoid:** Avoid contact with oxidizing agents. Avoid contact with strong acids. Avoid contact with alkaline materials.

### Section 11 - Toxicological information

- Acute oral toxicity:** Based on data from components this material is considered, not harmful (rat acute oral LD50 > 5000 mg/kg).
- Acute inhalation toxicity**  
Based on data from components, this material is considered, not harmful (LC50 greater than 10,000 ppm or 200 mg/L), Based on component data, material is considered irritating to the respiratory tract.
- Acute dermal toxicity:** The acute toxicity via the dermal route of exposure, based on component data, suggest that this material should be considered not harmful (rabbit or rat dermal LD50 greater than 2000 mg/kg)
- Skin irritation:** Based on data from components, this material is considered a non-irritant; however, the product is considered to be a human skin irritant.
- Eye irritation:** Based on data from components, this material is considered to be a mild eye irritant.
- 1-Methoxy-2-propanol acetate (108-65-6)**  
**Acute oral toxicity:** LD50 rat (male)  
8,500 mg/kg
- 1-Methoxy-2-propanol acetate (108-65-6)**  
**Acute oral toxicity:** LD50 rat (female)  
10,000 mg/kg
- Diazonaphthoquinonesulfonic esters (167933-51-9)**  
**Acute oral toxicity:** LD50 rat  
> 5,000 mg/kg  
By analogy with a similar product.



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**1-Methoxy-2-propanol acetate (108-65-6)**  
Acute inhalation toxicity LC50 rat  
> 4350 ppm

**1-Methoxy-2-propanol acetate (108-65-6)**  
Acute dermal toxicity: LD50 rabbit  
> 5,000 mg/kg

### Section 12 - Ecological information

**Biodegradability:** No information.

**Fish toxicity:** Based on data from components, this material is classified as:  
Not Harmful (LC50 > 100 mg/L).

**Toxicity of aquatic invertebrates:** Based on data from components, this material is classified as:  
Not Harmful (EC50 greater than 100 mg/L).

**Algae toxicity :** No data available.

**Further ecological information:** No ecological testing was carried out on the preparation

**1-Methoxy-2-propanol acetate (108-65-6)**  
Fish toxicity: (Fathead minnow)  
161 mg/l

**Diazonaphthoquinonesulfonic esters (167933-51-9)**  
Fish toxicity: LC50  
20-50 mg/l  
Exposure time: 96 h  
By analogy with a similar product.

**1-Methoxy-2-propanol acetate (108-65-6)**  
Toxicity of aquatic invertebrates: (Daphnia magna)  
400 mg/l

**Diazonaphthoquinonesulfonic esters (167933-51-9)**  
Further ecological information: Apart from the information given in this Safety Data Sheet on environmental effects, there are no additional data on mobility, persistence, degradability and bioaccumulation available.

### Section 13 - Disposal considerations



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**Product:** Consult local, state, and federal regulations.  
For disposal, this material is a flammable hazardous waste under RCRA.

**Uncleaned packaging:** Packaging that cannot be cleaned should be disposed of as product waste

**RCRA hazardous waste:** RCRA number: D001  
Yes -- If it becomes a waste as sold.

### Section 14 - Transport information

#### Land transport

- **DOT:**  
Not restricted

#### Sea transport

- **IMDG:**  
UN-No: 1993  
Proper technical name: FLAMMABLE LIQUID, N.O.S. (2-Methoxy-1-methylethyl acetate)  
Class: 3  
Packaging group: III  
Marine pollutant:  
EmS: F-E, S-E  
MFAG:  
Labels: 3

#### Air transport

- **ICAO/IATA-DGR:**  
UN/ID No.: UN 1993  
Proper technical name: FLAMMABLE LIQUID, N.O.S. (2-Methoxy-1-methylethyl acetate)  
Class: 3  
Packaging group: III  
Labels: 3

### Section 15 - Regulatory information

**TSCA Status:** All components of this product are listed on the TSCA Inventory.



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<b>SARA (section 311/312):</b>	Reactive hazard: no Pressure hazard: no Fire hazard: yes Immediate/acute: yes Delayed/chronic: no
<b>SARA 313 information:</b>	This product is not subject to SARA Title III Section 313 reporting requirements under 40 CFR 372.
<b>Clean water act:</b>	This product is not a Clean Water Act priority pollutant.
<b>Volatile organic compounds:</b>	Content VOC (g/l): 740 g/l Method: calculated

## Section 16 - Other information

### Label information

#### CAUTION!

COMBUSTIBLE LIQUID AND VAPOR HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN Contains material that, based on animal data, can cause skin, eye, and respiratory irritation. Prolonged or repeated overexposure may cause gastric and central nervous system effects.

Keep away from heat and flame. Avoid breathing vapor. Avoid contact with skin, eyes, and clothing. Use only with adequate ventilation, and proper protective eyewear, gloves, and clothing. Wash thoroughly after handling. Keep container closed.

In case of contact, flush eyes with plenty of water for 15 minutes. Get medical attention immediately. Flush affected skin areas with water, and wash with mild soap and water. Remove contaminated clothing. If INHALED, remove individual to fresh air. If breathing is difficult, give oxygen. If ingested, give water or milk to dilute stomach contents. Never give anything by mouth to an unconscious person. Get medical attention immediately for ingestion or breathing problems or if skin contact is extensive.

In case of fire, use water, alcohol resistant foam, dry chemical, or CO<sub>2</sub>.

If spilled, wear protective clothing, remove ignition sources, prevent sparks, and ventilate area. Absorb with inert material, collect, and place in a chemical waste container.

Keep sealed in original container. Store between 30 and 75 °F (-1 and 24 °C). Refrigerate whenever possible to extend shelf life. Allow product to reach ambient temperature prior to use. Empty container may contain harmful residue.

The solvent in this product is not photochemically reactive per Rule 102 of the California South Coast Air Quality Management District.

MATERIAL SAFETY DATA SHEET  
**AZ 1518 Photoresist IN (US)**



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This information is supplied under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and is offered in good faith based on data available to us that we believe to be true and accurate. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable to the material. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate for that use. No warranty, express or implied, is made regarding the accuracy of this data, the hazards connected with the use of the material, or the results to be obtained from the use thereof. We assume no responsibility for damage or injury from the use of the product described herein. Data provided here are typical and not intended for use as product specifications. (R) and TM indicate trademarks of AZ Electronic Materials USA Corp., its business partners and suppliers.

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