MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **ECCOSORB® CR, PART Y**

DESCRIPTION: Aromatic Amine Catalyst

INTENDED USE: **Load Absorber -** Two-part, castable, magnetically-loaded epoxy series.

COMPANY NAME: **Emerson & Cuming Microwave Products, Inc.**
ADDRESS: **28 York Ave, Randolph, MA 02368**

EMERGENCY PHONE NUMBER CHEMTREC USA: 1-800-424-9300
INTERNATIONAL: 703-527-3887 (COLLECT)

CONTACT (TITLE): Elizabeth Sinkiewicz
Production Manager
781-437-1731

DATE OF MSDS REVISION: **09-19-2011**

SECTION 2. COMPOSITION AND INFORMATION ON INGREDIENTS

COMPONENT	CAS NUMBER	WEIGHT PERCENT	OSHA PEL* (mg/m^3)	
			TWA	STEL
m-Phenylenediamine (1,3-Benzenediamine)	108-45-2	70-80%	NE [0.1]	NE
n-Methyl Pyrrolidone	872-50-4	20-30%	NE	NE

*ACGIH TLVs different from OSHA PELs are shown in brackets. NE = Not Established.
(*) Regulated by the SARA Section 313 amendments to RCRA

SECTION 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Warning! May cause severe eye irritation and possible injury. May cause respiratory tract irritation. May cause liver and kidney damage. May be harmful if swallowed, inhaled, or absorbed through the skin. May cause harm to the unborn child. Repeated contact may cause allergic reactions. Other symptoms include severe irritation, nausea, vomiting, abdominal pain, other asssociated GI disturbances tearing, blurred vision, shortness of breath or

	difficulty breathing, headache, weakness, runny nose, cough and asthma-like reactions such as wheezing. Combustible liquid and vapor. Hygroscopic (absorbs moisture from the air). Light sensitive.
POTENTIAL HEALTH EFFECTS	
INHALATION:	Contact can result in headache. Inhalation may also cause respiratory sensitization, liver and kidney effects. Provide fresh air and rest.
INGESTION:	Do not eat, drink, or smoke while working with this chemical. May cause gastric disturbances, diarrhea, and nausea. Harmful if swallowed. Swallowing liquid may cause aspiration into the lungs with the risk of chemical pneumonitis.
SKIN:.	May be absorbed through the skin. Contact results in dry skin and redness. May cause delayed irritation and blistering, resulting in severe dermatitis. Substance is considered a defating agent.
EYES:	This compound is moderately irritating to the eyes and mucous membranes of the nose and throat. Liquid or mist contact can cause redness, pain, and blurred vision as well as tearing, a burning sensation and swelling. Contact can also cause corneal damage or corneal clouding.
CHRONIC HEALTH EFFECTS:	Extensive, prolonged, repeated exposures could result in significant irritation, skin rashes and dermatitis. Also long-term exposure may cause bladder inflammation.
TARGET ORGANS:	Liver, kidneys, respiratory system, digestive system, bladder, skin, eyes, nose
CARCINOGENICITY:	Neither component is listed by ACGIH, IARC, NTP, or CA Prop 65 as carcinogen.
CONDITIONS AGGRAVATED BY EXPOSURE:	Persons with pre-existing skin disorders such as allergies or eczema, eye problems or impaired liver, kidney or respiratory tract functions may be more susceptible to the effects of this chemical. **Note**: N-Methyl-2-Pyrrolidone enhances the skin permeability for other substances. Insufficient data are available on the effect of this substance on human health; therefore utmost care must be taken

SECTION 4. EMERGENCY AND FIRST AID MEASURES

INHALATION:	Remove victim to fresh air. Provide oxygen if breathing is difficult. Give artificial respiration if not breathing and allow to rest in a half-upright position. Get immediate medical attention.
INGESTION:	If victim is conscious and alert, give 2-4 cups of milk or water. If vomiting should occur keep head below hips. (**NOTE:** Never give a fluid or attempt to induce

vomiting if patient is unconscious or has convulsions.) Wash mouth out with water. Get medical aid and/or call the poison control center immediately.

SKIN: Immediately remove contaminated clothing and foot wear. Wash contaminated areas thoroughly with mild soap and copious amounts of water. Then flush washed areas with copious amounts of lukewarm water for at least 15 minutes. If contaminating material is sticky, first use water-less hand cleaner on contaminated areas. Seek immediate medical attention if patient is ill, or if irritation develops.

EYES: Remove contact lenses if easy and possible. Flush eyes with copious amounts of fresh running water for at least 15 minutes, occasionally lifting or retracting the upper and lower eyelids. Hold eyelids open if possible. Get medical aid immediately.

MEDICAL TREATMENT: Treat symptoms and eliminate overexposure.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point: 91^{o}C (195^{o}F) for N-Methyl Pyrrolidone (Note: m-Phenylene Diamine has a fire point of 175^{o}C and is a combustible material. It may burn but does not ignite readily.)

Explosive Limits: **Lower:** 1.3% for N-Methyl Pyrrolidone.
Upper: 9.5% for N-Methyl Pyrrolidone

Extinguishing Media: Dry chemical, "alcohol" foam, and carbon dioxide

Special Firefighting Procedures: Firefighters/rescue personnel should wear positive pressure self-contained breathing apparatus and full protective equipment. Cool exposed containers with water to prevent pressure buildup. If large quantities of material are involved, evacuate area and fight fire from a safe distance.

Unusual Fire/Explosion Hazards: Decomposition and combustion products may be toxic. Closed containers may violently rupture under fire conditions.

NFPA and HMIS Rating:

Flammability:	2	Health:	2
Reactivity:	0	Special Hazards:	none

Autoignition Temperature: 245^{o}C (473^{o}F) for N-Methyl Pyrrolidone.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill response operations must be conducted in accordance with the provisions of OSHA 29 CFR 1910.120. Review the entire MSDS before proceeding with spill response.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Provide ventilation.

SECTION 7. HANDLING AND STORAGE

The recommendations described in this section are provided as general guidance for minimizing exposure when handling this product. Because usage conditions will vary depending on customer application, specific safe

handling procedures should be developed by a person knowledgeable in the intended usage conditions and equipment. Employees must be properly trained in safe handling of this product prior to use.

No special storage, ventilation, or personal hygiene precautions necessary.

Personal Protection: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep away from heat and flame. Avoid breathing vapor or mist.

Ventilation Recommendations and Respiratory Protection:
Good local ventilation should be used to avoid breathing in vapor or mist.

Storage: Keep away from sources of ignition. Store in a tightly closed container. Store protected from light in a cool, dry area away from incompatible substances.

SECTION 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Use general or local exhaust ventilation to keep dust and vapor concentrations as low as possible. At elevated temperatures, specific ventilation may be required even if the flash point has not been exceeded.

RESPIRATORY PROTECTION: Follow the OSHA respirator regulations found in 29 CFR 1910.134. Where exposures through inhalation may occur and may exceed recommended exposure limits or if irritation or other symptoms are experienced, an appropriate NIOSH/MSHA approved respirator is required. A NIOSH/MSHA approved respirator with a High Efficiency Dust Filter (HEPA) and organic vapor/mist cartridge or canister may be used. Also, a chemical protective suit with breathing air supply unit can be used.

PROTECTIVE GLOVES: Wear appropriate, impervious protective gloves to prevent skin exposure.

EYE PROTECTION: Wear appropriate eyeglasses or chemical splash/safety goggles, meeting ANSI criteria and as described by the OSHA eye and face protection regulations in 29 CFR 1910.133.

OTHER PROTECTIVE EQUIPMENT: Wear apron, boots, head protection and face shield to prevent skin contact. (**NOTE:** Full protective clothing. Wear appropriate protective clothing to

prevent skin exposure. Suggestions are rubber boots, acid suit, or nylon protective clothing.)

OTHER REQUIREMENTS: ANSI approved eye washing station and deluge shower.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Dark brown liquid
Odor:	Not available
Volatile Organic Compound content:	Not available
Physical State:	Liquid
Boiling Point:	Not available
Vapor Pressure:	Not available
Evaporation Rate:	Not available
Specific Gravity:	1.02 - 1.14
Vapor Density:	Not available.
Solubility in Water:	Not available.

SECTION 10. STABILITY AND REACTIVITY

Stability:	Cured material: Non-reactive
Incompatibility:	Strong oxidizing agents, strong acids.
Hazardous Decomposition Products:	Nitrogen oxides, carbon monoxide, carbon dioxide.
Hazardous Polymerization:	Will not occur.
Reactivity:	Conditions to Avoid: Light, ignition sources, excess heat, exposure to moist air or water.

SECTION 11. TOXICOLOGICAL INFORMATION

m-Phenylenediamine

Organism	Test	Route	Reported Dose (Normalized Dose)
bird - wild	LD50	oral	562mg/kg (562 mg/kg)
guinea pig	LD50	oral	450mg/kg (450 mg/kg)
mouse	LD50	oral	67700ug/kg (67.7 mg/kg)
rabbit	LD50	oral	437mg/kg (437 mg/kg)
rat	LD50	oral	280mg/kg (280 mg/kg)

Carcinogenicity: CAS# 108-45-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Reproductive Effects: TDLo (Intraperitoneal, rat) = 375 mg/kg; Effects on Embryo or Fetus - fetal death.

Mutagenicity: Mutation in microorganisms (Salmonella typhimurium) = 250 ug/plate Mutation in microorganisms. (Salmonella typhimurium) = 10 ug/plate

N-Methylpyrrolidone

Organism	Test	Route	Reported Dose (Normalized Dose)
rat	LCLo	inhalation	1gm/m3 (1000 mg/kg)
mouse	LD50	oral	5130mg/kg (5130 mg/kg)
rabbit	LD50	skin	8gm/kg (8000 mg/kg)
rat	LD50	oral	3914mg/kg (3914 mg/kg)

Carcinogenicity: CAS# 872-50-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Teratogenicity: California's Proposition 65 lists an N-methylpyrrolidone maximum allowable developmental toxicity dose level of 3200 ug/day for the inhalation and 17,000 ug/day for the dermal exposure.

Reproductive Effects: See actual RTECS entries for complete information on m-Phenylenediamine or N-Methyl-pyrrolidone.

Mutagenicity: See actual RTECS entries for complete information on m-Phenylenediamine or N-Methyl-pyrrolidone.

SECTION 12. ECOLOGICAL INFORMATION

m-Phenylenediamine (1,3-Benzenediamine):

1,3-Benzenediamine may be released to the environment in various waste streams from its production and use in the manufacture of dyes, as a rubber curing agent, in ion-exchange resins, decolorizing resins, formaldehyde condensates, resinous polyamides, block polymers, textile fibers, urethanes, petroleum additives, rubber chemicals, corrosion inhibitors, photography, as a reagent for gold and bromine and as a component of hair-dye formulations. If released to the atmosphere, 1,3-benzenediamine is expected to exist solely as a vapor in the ambient atmosphere based on an extrapolated vapor pressure of 2.1X10-3 mm Hg at 25 deg C. Vapor-phase 1,3-benzenediamine is rapidly degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals (estimated half-life 1.9 hours). 1,3-Benzenediamine absorbs light in the environmental spectrum, which suggests a potential for direct photolysis in the environment. If released to soil, 1,3-benzenediamine is expected to have very high mobility based on an estimated Koc of 16. However, anilines are expected to bind strongly to humus or organic matter in soils due to the high reactivity of the aromatic amino group; therefore, mobility may be much lower in some soils. 1,3-Benzenediamine is not expected to volatilize from wet or dry soil surfaces, based on an estimated Henry's Law constant of 1.3X10-9 atm-cu m/mol and this compound's extrapolated vapor pressure, respectively. Limited data indicate 1,3-benzenediamine may be resistant to biodegradation in soil. If released into water, volatilization of 1,3-benzenediamine is not expected to occur, based on its estimated Henry's Law constant. 1,3-Benzenediamine may exist partially in the ionized form at environmental pH's based on pKa values of 2.65 and 4.88 at 25 deg C. Volatilization of the ionized form is not expected to be an important fate process. The potential for bioconcentration in aquatic organisms is expected to be low based on measured BCF values ranging from 1.3 to 24 in carp. Based on its structure, aromatic amine, 1,3-benzenediamine may adsorb strongly to suspended solids and sediment in water. As a class, aromatic amines react relatively rapidly in sunlit natural water via reaction with photochemically produced hydroxyl radicals and peroxy radicals (typical half-lives for peroxy radical and hydroxyl radical reactions are on the order of 19 and 30 sunlight hours, respectively). Hydrolysis is not expected to be an important process. Aqueous screening studies indicate 1,3-benzenediamine may be susceptible to biodegradation by acclimated

activated sludge.

SECTION 13. DISPOSAL CONSIDERATIONS

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

SECTION 14. TRANSPORT INFORMATION

DOT Hazardous Material Description	Phenylenediamines Solution
Proper Shipping Name	
Hazard Class	6.1
ID Number	UN1673
Packing Group	PG III (contains N-Methypyrrolidone)(ERG 153)

Canadian Transportation of Dangerous Goods Classification

Canada - WHMIS

CAS# 108-45-2 has a WHMIS classification of D1B, D2B

CAS# 872-50-4 has a WHMIS classification of B3, D2A, D2B

SECTION 15. REGULATORY INFORMATION

US FEDERAL

TSCA

CAS Numbers 108-45-2 and 872-50-4 are listed on the EPA Commercial Chemical Inventory.

TSCA Health & Safety Reporting List

Section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. 1,3-Benzenediamine is included on this list.

TSCA Chemical Test Rules

CAS Numbers 108-45-2 & 872-50-4 are subject to the Section 4 Chemical Test Rule.

TSCA Section 12b

CAS Numbers 108-45-2 & 872-50-4 require TSCA Section 12b export notification.

TSCA Significant New Use Rule

None of the chemicals in this material have a TSCA SNUR listed in 40 CFR 721 Subpart E.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this product have an assigned Reportable Quantity.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ (Threshold Planning Quantity).

SARA Section 313

m-Phenylenediamine (CAS# 108-45-2) and N-Methyl Pyrrolidone (CAS#872-50-4) are subject to reporting requirements of Section 313 of SARA Title III and 40 CFR 372 if annual used is more than 10000 lb. or annual

amount processed is more that 25000 lb.

Clean Air Act:

This material does not contain any listed Hazardous Air Pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances.
None of the chemicals in this product are listed as Priority Pollutants.
None of the chemicals in this product are listed as Toxic Pollutants.

OSHA:

None of the chemicals in this product are listed as Highly Hazardous under the Process Safety standard.

STATE

Right-to-Know Laws:

CAS# 108-45-2 is listed by New Jersey, Minnesota and Massachusetts; while CAS# 872-50-4 is listed by Pennsylvania, Minnesota, Massachusetts.

California Prop 65: WARNING! CAS# 872-50-4 is listed as causing developmental reproductive toxicity.

California No Significant Risk Level: None of the chemicals in this product are listed.

EUROPEAN/INTERNATIONAL REGULATIONS

European Labeling in Accordance with EC Directives

Hazard Symbols:

T N

Risk Phrases:

- R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
- R 36/37/38 Irritating to eyes, respiratory system and skin.
- R 43 May cause sensitization by skin contact.
- R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- R 61 May cause harm to the unborn child.
- R 68 Possible risk of irreversible effects.

Safety Phrases:

- S1/2 Keep locked up and out of the reach of children.
- S 36/37 Wear suitable protective clothing and gloves.
- S 41 In case of fire and/or explosion do not breathe fumes.
- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S 60 This material and its container must be disposed of as hazardous waste (**according to European regulations).**
- S 28A After contact with skin, wash immediately with plenty of water.
- S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 108-45-2: 2 and CAS# 872-50-4: 1

Canada - DSL/NDSL

CAS# 108-45-2 & 872-50-4 are on the Canadian DSL List.

Canada - WHMIS

CAS# 108-45-2 has a WHMIS classification of D1B, D2B

CAS# 872-50-4 has a WHMIS classification of B3, D2A, D2B

Canadian Ingredient Disclosure List

CAS# 108-45-2 & 872-50-4 are on the Canadian Ingredient Disclosure List.

SECTION 16. OTHER INFORMATION

Abbreviations: NA = Not Applicable NE = Not Established ND = Not Determined
ppm = Parts per Million mg/m^3 = Milligrams Per Cubic Meter
C = Ceiling Concentration STEL = Short Term Exposure Limit

Safety Information and additional MSDS: 781-961-9600

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