

MATERIALS SAFETY DATA SHEET

SECTION 1 – PRODUCT IDENTIFICATION AND USE

PRODUCT IDENTIFIER: BAKELIT R (red) 11 20 02 / 11 20 05 CAS NUMBER: 108-95-2
PRODUCT USE: Embedding Medium for metallographic use CAS NAME: Phenol

CHEMICAL FAMILY: Phenolic molding compound with two stage resin
CHEMICAL NAME: Phenol-Formaldehyde polymeric molding compound

DISTRIBUTOR'S NAME: MICRO STAR 2000 INC. EMERGENCY PHONE NUMBER: 905-660-1754
DISTRIBUTOR'S ADDRESS: 225 Bradwick Drive, Unit 21
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L4K 1K7

SECTION 2 – HEALTH HAZARD DATA

AS SOLD:

The product is a plastic molding compound: A plastic resin (phenol-formaldehyde polymer) intimately mixed and reacted with one or more of a variety of organic and/or inorganic filling materials. The plastic resin is not believed or known to be hazardous. When fully "cured" or reacted, the plastic resin is insoluble, infusible and binds the well-dispersed, embedded filling materials. However, "As Sold" the plastic resin is not completely "cured" or reacted and contains some unreacted ingredients dissolved within it. So dissolved, these chemicals are extremely unlikely to pose a hazard; but because they are hazardous in their pure forms, OSHA requires that they be reported and described as hazardous ingredients (see below and section 7). Under normal conditions of storage and handling, no significant amount of hazardous vapors should evolve from the "As Sold" product. Because phenol is more soluble in the resin than in water, there is no likely significant health hazard through skin absorption. The great majority of filling materials are embedded within compound granules that are large enough not to constitute an inhalation hazard. Nevertheless, some particles of plastic resin and/or filling materials may be present in a size that constitutes a respirable dust (including, in some products, up to 1% inorganic filling material mixed in after compounding). This respirable dust may contain one or more of the following materials: carbon black, coal dust, fibrous glass, graphite, mica, mineral wool fiber, talc, and/or wood flour (soft). Chronic inhalation of each of the above has been associated with fibrotic lung disease. For most or all, it has been associated with increased risk of lung cancer, especially among smokers. Inhalation of dust should be avoidable with proper material handling procedures and good ventilation, but if not, respirators should be worn. The primary acute health risk from exposure to the product "As Sold" is irritation, especially from the dust. Ingestion, inhalation of dust, and contact with skin and eyes should be avoided.

AS USED:

During polymerization (eg., curing of the product during normal processing) or decomposition (eg., overheating or burning of the product) small amounts of gaseous ammonia, phenol and formaldehyde (as well as water vapor, carbon monoxide and carbon dioxide) are evolved. Breathing of the fumes can be harmful. If the odor of ammonia or formaldehyde is noticeable, then the airborne concentration of those chemicals should be carefully monitored and ventilation improvements considered; those chemicals begin to be detectable by odor at concentrations approaching or exceeding the pels. The odor of phenol begins to be noticeable at a concentration about one-fifth the pel. In any case, adequacy of ventilation can best be determined by use of instruments to monitor airborne concentrations of ammonia, phenol, and formaldehyde. Grinding or machining of cured molded material may create a dust that poses a respiratory hazard if inhaled (see above) and may release small amounts of gaseous ammonia.

ACUTE OR CHRONIC HEALTH HAZARD INFORMATION

Ordinary use of this product is unlikely to produce significant exposure to hazardous chemicals. Pels for these chemicals are set at levels designated to avoid any significant health risk and are achievable with proper material handling procedures, ventilation and housekeeping. Nevertheless, per OSHA requirement, we list the following possible health hazards if one were exposed to the following chemicals at levels much higher, or in a different form, than expected from ordinary use of this product:

1. PHENOL: Highly Toxic. Poisoning may occur via skin absorption, vapor inhalation, or ingestion. Inhalation of the vapors may cause severe irritation of the nose, throat, and respiratory tract. May cause liver, kidney and heart damage.
2. FORMALDEHYDE: Irritant to eyes, Lungs, and skin. Has been shown to cause cancer in laboratory animals. Listed as an IARC Carcinogen.
3. AMMONIA: Irritant to eyes, mucous membranes and respiratory tract.

SECTION 2 – HEALTH HAZARD DATA CONTINUED

POSSIBLE RESPIRABLE DUST COMPONENTS (up to 8% may go thru 100 MESH):

4. CARBON BLACK: Irritant to eyes and respiratory tracts. Exposure at high levels is associated with declines in pulmonary function and cardio vascular stress.
5. COAL DUST: Irritant to eyes, nose and throat. Can cause respiratory effects such as pneumoconiosis, bronchitis, emphysema and progressive massive fibrosis, with long exposure.
6. FIBROUS GLASS: Mechanical irritant to eyes, nose and skin. Can cause irritation and inflammation of the nasopharyngeal region and upper respiratory tract.
7. GRAPHITE: Irritant to eyes and respiratory tracts. Can cause pneumoconiosis, although studies suggest that pneumoconiosis is a mixed dust reaction.
8. MICA: Irritant to eyes. OSHA believes that the evidence strongly suggests that it is a pneumoconiotic agent.
9. MINERAL WOOL FIBER: Irritant to eyes and skin. Several studies have shown excess risk of non malignant respiratory disease.
10. TALC: Irritant to eyes, mucous membranes and respiratory tracts. Medical evidence is complicated by the fact that talcs contain amphiboles and other minerals.
11. WOOD FLOUR (SOFT): Irritant to eyes, mucous membranes and upper respiratory tracts. Various species of wood dust can elicit allergic contact dermatitis in sensitized individuals. May cause respiratory sensitization.

SECTION 3 – FIRST AID

EYE CONTACT: Immediately flush eyes with copious amounts of water for at least 15 minutes. Get medical attention.

SKIN CONTACT: Wash thoroughly with soap and water.

INHALATION: Use with adequate ventilation. If breathing is affected, remove to fresh air. If breathing stops, apply mouth to mouth resuscitation. Get medical attention.

INGESTION: If conscious, give water immediately and induce vomiting by placing finger down throat. Never give anything by mouth to an unconscious person. Get medical attention.

SECTION 4 – FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: No flash point

FLAMMABLE LIMITS – LEL: Dust 0.030 oz/per cubic foot UEL: No data

EXTINGUISHING MEDIA: Water spray, foam, dry chemical, carbon dioxide

SPECIAL FIRE FIGHTING PROCEDURES: MSHA/NIOSH approved self-contained breathing apparatus recommended. Avoid inhalation of gases.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Organic dust/air mixtures are highly flammable (explosive); avoid dust accumulations or dust-laden atmospheres and sources of ignition.

SECTION 5 – CONTROL MEASURES

WORK/HYGIENIC PRACTICES: Eye wash and shower facility should be available. Practice good hygiene and maintain a clean work environment.

VENTILATION: Point source exhaust recommended to remove dust and vapors evolved during use (dust collection system). Use explosion proof motors.

RESPIRATORY PROTECTION: NIOSH approved respirators recommended if TVLS are exceeded.

PROTECTIVE CLOTHING: Gloves recommended.

EYE PROTECTION: Safety glasses with side shields.

STORAGE: Store in a cool, dry place. Keep containers closed to avoid contamination. Prevent accumulations of dust. Avoid excessive heat and sources of ignition. Observe good housekeeping practices.

SECTION 6 – PHYSICAL DATA

BOILING POINT: N/A
(760 MM HG)

SPECIFIC GRAVITY: See technical data sheet
(H20 = 1)

VAPOR PRESSURE: N/A
(MM HG 20°C)

PERCENT VOLATILE: N/A
(By weight)

VAPOR DENSITY: N/A
(Air =1)

EVAPORATION RATE: N/A
(Butyl Acetate = 1)

HEAT OF VAPORIZATION: N/A
(Delta HV)

SOLUBILITY IN WATER: Negligible
(% by weight)

APPEARANCE AND ODOR: Granular, nodular, pellet or briquette with slight odor of phenol

SECTION 7 – HAZARDOUS INGREDIENTS

Chemicals marked with an asterisk (*) are subject to the reporting requirements of 313 of title III of the superfund amendments and reauthorization act of 1986 and 40 CFR part 372.

	<u>CAS#</u>	<u>PERCENT</u>	<u>TLV/PEL</u>
* PHENOL	108-95-2	<6.3	ACGIH-TWA/SKIN 5 ppm OSHA-TWA/SKIN 5 ppm
CARBON BLACK	1333-86-4	<12	ACGIH-TWA 3.5 mg/m ³ OSHA-TWA 3.5 mg/m ³
COAL DUST		<18	ACGIH-TWA 2 mg/m ³ OSHA-TWA <5%SiO2 2.4 mg/m ³ ----- OSHA-TWA >5%SiO2 %SiO2 +2 10 mg/m ³ ----- %SiO2 +2
GRAPHITE	7782-42-5	<40	ACGIH-TWA 2 mg/m ³ OSHA/TWA 15 mppcf

SECTION 7 – HAZARDOUS INGREDIENTS - CONTINUED

	<u>CAS#</u>	<u>PERCENT</u>	<u>TLV/PEL</u>	
MICA	12001-26-2	<60	ACGIH-TWA OSHA-TWA	3 mg/m ³ 20 mppcf
TALC	14807-96-6	<20	ACGIH-TWA OSHA-TWA	2 mg/m ³ 20 mppcf
PARTICULATES NOT OTHERWISE CLASSIFIED (PNOC)		<70	ACGIH-TWA/INHAL ACGIH-TWA/RESPIR OSHA-TWA/TOTAL OSHA-TWA/RESPIR	10 mg/m ³ 3 mg/m ³ 15 mg/m ³ 5 mg/m ³

SECTION 8 – REACTIVITY DATA

STABILITY: Stable. Avoid contamination, exposure to flame or heat, or storage at temperatures in excess of 100 °F.

INCOMPATIBILITY: Like most organic materials, this product is sensitive to strong oxidizing agents and may either decompose or ignite when mixed with same.

HAZARDOUS DECOMPOSITION PRODUCTS: Vapors evolved during polymerization may contain – Phenol, Formaldehyde, or Ammonia.

HAZARDOUS POLYMERIZATION: Should not occur.

SECTION 9 – SPILL, LEAK, AND DISPOSAL

SPILL OR LEAK PROCEDURE: Vacuum or sweep with sweeping compound, sawdust or sand. Avoid generating dust. Vacuums with explosion proof motors are recommended. This product contains free Phenol which is subject to effluent limits under the clean water act.

WASTE DISPOSAL: Bury or incinerate in accordance with local, state, and federal regulations.

SECTION 10 – TRANSPORTATION INFORMATION

SHIPPING CLASSIFICATION

Plastic Materials Viz:
Powdered form NMFC item #156200

D.O.T. HAZARD CLASS

Non-Hazardous

SECTION 11 – ADDITIONAL INFORMATION

N/A = Not Applicable
TOTAL = Total Dust
RESPIR = Respirable Dust

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MICRO STAR 2000 INC.

SECTION 12 – PREPARATION OF MATERIAL SAFETY DATA SHEET

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