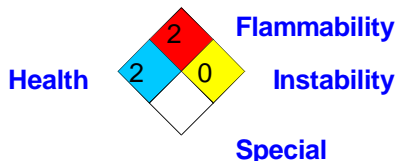


Material Safety Data Sheet

Emergency phone: CHEMTREC Number
(800) 424-9300



Health	2
Fire hazard	2
Reactivity	0
Personal protection	C

Section 1. Chemical product and company identification

Product name : ENTHONE® 50-770R
Product code : 135709
Material uses : Specialty chemicals for the electronics and surface finishing industries.
Manufacturer : Enthone Inc
 Enthone OMI de Mexico S.A. de C.V.
 350 Frontage Road
 West Haven, CT 06516
 Phone: (203) 799-4917
 Fax: (203) 799-8179
 www.cooksonelectronics.com
 Norte 59 No. 896
 Col. Industrial Vallejo
 Mexico, D.F. 02300
 Mexico
 Phone: 52 55 5078 3904
 Fax: 52 555 567 6326
 www.cooksonelectronics.com
 Tel. local de emergencias: 080
 Tel. de emergencias en
 transportacion: 01 800 0021 400 ;
 (55) 5559 1588

Validation date : 4/21/2006. **Supersedes Date** : No Previous Validation.

Prepared by : A. Rath
(203)-799-4917

Section 2. Composition, Information on Ingredients

<u>Name</u>	<u>CAS number</u>	<u>% by weight</u>
c.i. pigment black 28	68186-91-4	30-40
Proprietary Resins and Polymers		20-30
di ethylene glycol monoethyl ether acetate	112-15-2	10-20
dipropylene glycol methyl ether	34590-94-8	5-10
2-methoxy-1-methylethyl acetate	108-65-6	5-10
silica, amorphous, fumed	7631-86-9	5-10

Any component not listed in Section 2 is non-regulated or present in the product in concentrations below legal disclosure limits

All ingredients comply with applicable rules or orders under United States TSCA and Canadian CEPA regulations.

Section 3. Hazards identification

Physical state	: Liquid.
Odor	: Mild.
Emergency overview	: Warning! CANCER HAZARD CONTAINS MATERIAL WHICH CAN CAUSE CANCER CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: RESPIRATORY TRACT, EYE, LENS OR CORNEA. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CONTAINS MATERIAL WHICH MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, MUCOUS MEMBRANES, SKIN, CENTRAL NERVOUS SYSTEM. COMBUSTIBLE LIQUID AND VAPOR. VAPOR MAY CAUSE FIRE. Do not ingest. Avoid prolonged contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.
Routes of entry	: Dermal contact. Inhalation. Ingestion.
Potential acute health effects	
Eye contact	: Irritating to eyes.
Skin contact	: Harmful in contact with skin. Irritating to skin. May cause sensitization by skin contact.
Inhalation	: Irritating to respiratory system.
Ingestion	: Harmful if swallowed.
Potential chronic health effects	
Target organs	: Contains material which causes damage to the following organs: upper respiratory tract, eye, lens or cornea. Contains material which may cause damage to the following organs: kidneys, liver, mucous membranes, skin, central nervous system (CNS).
Over-exposure signs/symptoms	: dipropylene glycol methyl ether : May be slightly toxic by inhalation, in contact with skin or if swallowed. Can cause dizziness, lightheadedness, headache, nausea, and blurred vision. Prolonged exposure may cause narcotic effect. Proprietary Resins and Polymers : Irritating to eyes, respiratory system and skin. MAY BE HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED. Material is irritating to mucous membranes and upper respiratory tract. May cause allergic skin reactions with repeated exposure. Di ethylene glycol monoethyl ether acetate : Inhalation and Ingestion: stomach pains, nausea/vomiting, diarrhea and central nervous system depression. Harmful if absorbed through the skin. Repeated or prolonged exposure to the substance can produce kidney damage. 2-Methoxy-1-methylethyl acetate : May be irritating to eyes, skin and respiratory system. Absorbed through skin. May be harmful if inhaled. May be harmful if swallowed. May cause damage to the following organs: liver, kidneys c.i. pigment black 28 : Eyes: May cause irritation. Skin: May cause irritation. Inhalation: Dust may cause irritation to mucous membranes and respiratory tract. Dust or fumes may cause a metallic taste in the mouth. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage. and nausea/vomiting. Ingestion: May cause gastrointestinal irritation, nausea, vomiting and diarrhea. Large quantities may be toxic. Contains chromium (III) and Copper Compounds. silica, amorphous, fumed : Inhalation: coughing, shortness of breath/breathing difficulty

**Carcinogenicity
Special remarks on chronic
effects on humans**

- . These hazards are associated with airborne exposure to the particulate form of this chemical. If this product is a liquid, exposure to this particulate is unlikely under ordinary conditions of use.
- : Classified 3 (Not classifiable for human.) by IARC [silica, amorphous, fumed].
 - : **silica, amorphous, fumed:** Carcinogen status based on inhalation of particulate form of this chemical Because this product is a liquid, exposure to this particulate is unlikely under ordinary conditions of use.

See toxicological information (section 11)

Section 4. First aid measures

First aid

Eye contact

- : Provide a readily accessible eyewash facility and quick drench safety shower. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention immediately.

Skin contact

- : Evacuate the victim to a safe area as soon as possible. Ensure that eyewash stations and safety showers are proximal to the work-station location. In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Inhalation

- : If inhaled, remove to fresh air. If exposed person is not breathing, give artificial respiration or oxygen applied by trained personnel. Get medical attention.

Ingestion

- : Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately.

Protection of first-aiders

- : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wear suitable protective clothing.

Section 5. Fire fighting measures

**NFPA Hazard identification
number Flammability**

- : 2

Auto-ignition temperature

- : The lowest known value is 260°C (500°F) (Di ethylene glycol monoethyl ether acetate).

Flash point

- : Closed cup: 62.78°C (145°F).

Flammable limits

- : Not available.

Products of combustion

**Fire hazards in presence of
various substances**

- : These products are carbon oxides (CO, CO₂). Some metallic oxides. Not available.

Hazardous polymerization

- : Will not occur.

**Explosion hazards in
presence of various
substances.**

- : Not available.

**Fire fighting media and
instructions**

- : In case of fire, use water spray (fog), foam, dry chemicals, or CO₂.

Combustible liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas, travel considerable distance to source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

**Special protective
equipment for fire-fighters**

- : Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode.

Section 6. Accidental release measures

- Personal precautions** : Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Do not touch or walk through spilled material.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : Do not clean-up or dispose except under supervision of a specialist. Keep unnecessary and unprotected personnel from entering. Follow your company's spill procedures. Avoid all possible sources of ignition (spark or flame). Avoid contact with eyes, skin and clothing. Wear suitable protective clothing. Avoid breathing vapors of this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. For small spills add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion proof means to transfer material to a sealed, appropriate container for disposal. Dike large spills and use a non-sparking or explosion proof means to transfer material to an appropriate container for disposal. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of according to all federal, state and local applicable regulations.

Section 7. Handling and storage

- Handling** : Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling.
- Storage** : Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).
- Incompatibility with various substances:** : Reactive with oxidizing agents.
- Hazardous decomposition products:** : carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...)

Section 8. Exposure Controls, Personal Protection

- Engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any explosive limits. Use explosion-proof ventilation equipment.
- Personal protection**
- Eyes** : Avoid contact with eyes. Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Skin** : Avoid contact with skin and clothing. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Avoid contact with skin. Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protection in case of a large spill : Do not clean-up or dispose except under supervision of a specialist. Keep unnecessary and unprotected personnel from entering. Follow your company's spill procedures. Avoid contact with eyes, skin and clothing. Wear suitable protective clothing and eye/face protection. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Avoid breathing vapors of this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

<u>Ingredient name</u>	<u>CAS number</u>	<u>Exposure limits</u>
c.i. pigment black 28	68186-91-4	<p>ACGIH TLV (United States, 6/2005). TWA: 0.5 mg/m³ 8 hour(s). Form: (as chromium (III)) TWA: 1 mg/m³ 8 hour(s). Form: Dusts and Mists (As copper) TWA: 0.2 mg/m³ 8 hour(s). Form: Fume (As copper) OSHA PEL (United States, 6/2005). TWA: 0.5 mg/m³ 8 hour(s). Form: (as chromium (III)) TWA: 1 mg/m³ 8 hour(s). Form: Dusts and Mists (As copper) TWA: 0.1 mg/m³ 8 hour(s). Form: Fume (As copper)</p>
dipropylene glycol methyl ether	34590-94-8	<p>ACGIH TLV (United States, 9/2004). Skin STEL: 909 mg/m³ 15 minute(s). Form: All forms STEL: 150 ppm 15 minute(s). Form: All forms TWA: 606 mg/m³ 8 hour(s). Form: All forms TWA: 100 ppm 8 hour(s). Form: All forms NIOSH REL (United States, 6/2001). Skin STEL: 900 mg/m³ 15 minute(s). Form: All forms STEL: 150 ppm 15 minute(s). Form: All forms TWA: 600 mg/m³ 10 hour(s). Form: All forms TWA: 100 ppm 10 hour(s). Form: All forms OSHA PEL (United States, 6/1993). Skin TWA: 600 mg/m³ 8 hour(s). Form: All forms TWA: 100 ppm 8 hour(s). Form: All forms OSHA PEL 1989 (United States, 3/1989). Skin STEL: 900 mg/m³ 15 minute(s). Form: All forms STEL: 150 ppm 15 minute(s). Form: All forms TWA: 600 mg/m³ 8 hour(s). Form: All forms TWA: 100 ppm 8 hour(s). Form: All forms</p>
2-Methoxy-1-methylethyl acetate	108-65-6	<p>AIHA WEEL (United States, 1/2004). TWA: 100 ppm 8 hour(s). Form: All forms</p>
silica, amorphous, fumed	7631-86-9	<p>NIOSH REL (United States, 6/2001). TWA: 6 mg/m³ 10 hour(s). Form: All forms</p>

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Physical state	: Liquid.
Color	: Black.
Odor	: Mild.
pH	: Not available.
Boiling/condensation point	: 160°C (320°F)
Melting/freezing point	: May start to solidify at -75°C (-103°F) based on data for: 2-Methoxy-1-methylethyl acetate. Weighted average: -79.2°C (-110.6°F)

Continued on next page

Critical temperature	: Not available.
Specific gravity	: 1.73 (Water = 1)
Vapor pressure	: The highest known value is 0.3 kPa (2.4 mm Hg) (at 20°C) (2-Methoxy-1-methylethyl acetate).
Vapor density	: Not available.
Odor threshold	: Not available.
Evaporation rate	: Not available.
VOC	: 28.8 %
Ionicity (in water)	: Not available.
Dispersion properties	: Not available.
Solubility	: Insoluble in cold water, hot water.

Section 10. Stability and reactivity

Stability and reactivity	The product is stable.
Incompatibility with various substances:	: Reactive with oxidizing agents.
Other hazardous decomposition products	: carbon oxides (CO, CO ₂), nitrogen oxides (NO, NO ₂ ...)
Hazardous polymerization	: Will not occur.

Section 11. Toxicological information

Toxicity data

<u>Ingredient name</u>	<u>CAS number</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Proprietary Resins and Polymers		LD50	>2000 mg/kg	Oral	Rat
		LD50	>2000 mg/kg	Dermal	Rabbit
Di ethylene glycol monoethyl ether acetate	112-15-2	LD50	4400 mg/kg	Oral	Rabbit
		LD50	3930 mg/kg	Oral	Guinea pig
		LD50	11000 mg/kg	Oral	Rat
		LD50	15000 mg/kg	Dermal	Rabbit
dipropylene glycol methyl ether	34590-94-8	LD50	7500 mg/kg	Oral	Dog
2-Methoxy-1-methylethyl acetate	108-65-6	LD50	8532 mg/kg	Oral	Rat
silica, amorphous, fumed	7631-86-9	LD50	>5000 mg/kg	Oral	Rat
		LD50	>2000 mg/kg	Dermal	Rabbit

IDLH : Not available.

Chronic effects on humans : **CARCINOGENIC EFFECTS:** Classified 3 (Not classifiable for human.) by IARC [silica, amorphous, fumed].
Contains material which causes damage to the following organs: upper respiratory tract, eye, lens or cornea.
Contains material which may cause damage to the following organs: kidneys, liver, mucous membranes, skin, central nervous system (CNS).

Special remarks on chronic effects on humans : **silica, amorphous, fumed:** Carcinogen status based on inhalation of particulate form of this chemical Because this product is a liquid, exposure to this particulate is unlikely under ordinary conditions of use.

California prop. 65

: **WARNING:** This product contains chemical(s) known to the state of California to cause cancer, birth defects or other reproductive harm: Benzene
WARNING: This product contains chemical(s) known to the state of California to cause reproductive harm (male): Benzene
 California prop. 65 (no significant risk level): Benzene
 California prop. 65 (acceptable daily intake level): Benzene
WARNING: This product contains chemical(s) known to the state of California to cause birth defects or other reproductive harm.: Benzene
WARNING: This product contains chemical(s) known to the state of California to cause cancer.: Benzene

Enthone has not conducted specific studies on the toxicity of this product.

Section 12. Ecological information

Ecotoxicity data

<u>Ingredient name</u>	<u>Species</u>	<u>Period</u>	<u>Result</u>
2-methoxy-1-methylethyl acetate	Fish (LC50)	96 hour(s)	161 mg/l
	Daphnia (EC50)	48 hour(s)	500 mg/l

Enthone has not conducted specific studies on the ecotoxicity or environmental fate of this product.

Section 13. Disposal considerations

Waste disposal : Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Consult your local or regional authorities.

Section 14. Transport information

<u>Regulatory information</u>	<u>UN number</u>	<u>Proper shipping name</u>	<u>Class</u>	<u>Packing group</u>	<u>Label</u>	<u>Additional information</u>
DOT Classification	Not regulated.	-	-	Not available.		Not available.

Section 15. Regulatory information

United States

U.S. Federal regulations : All ingredients comply with applicable rules or orders under United States TSCA and Canadian CEPA regulations.

TSCA 12(b) annual export notification: No products were found.
 TSCA 12(b) one time export: No products were found.
 TSCA 5(a)2 final significant rules: No products were found.
 Clean air act (CAA) 112 accidental release prevention: No products were found.
 Clean air act (CAA) 112 regulated flammable substances: No products were found.
 Clean air act (CAA) 112 regulated toxic substances: No products were found.

Product name CAS number Concentration

Continued on next page

SARA 313	:	di ethylene glycol monoethyl ether acetate	112-15-2	10-20
State regulations	:	WARNING: This product contains chemical(s) known to the state of California to cause cancer, birth defects or other reproductive harm: Benzene WARNING: This product contains chemical(s) known to the state of California to cause reproductive harm (male): Benzene California prop. 65 (no significant risk level): Benzene California prop. 65 (acceptable daily intake level): Benzene WARNING: This product contains chemical(s) known to the state of California to cause birth defects or other reproductive harm.: Benzene WARNING: This product contains chemical(s) known to the state of California to cause cancer.: Benzene		
WHMIS (Canada)	:	Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). Class D-2B: Material causing other toxic effects (TOXIC). All ingredients in this product are found on the CEPA DSL.		

Section 16. Other information

Definition of Terms

ACGIH	American Conference of Governmental Industrial Hygienists
Ceiling	Maximum exposure limit defined by OSHA
CAS	Chemical Abstract Service
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
REL	Recommended Exposure Limit
RTK	Right to Know
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TLV	ACGIH Threshold Limit Value
TLV-C	ACGIH Threshold Limit Value, Ceiling
TRADE SECRET	Claimed as allowed under 29CFR§1910.1200
TSCA	Toxic Substances Control Act
PPE	Personal Protection Equipment
CEPA	Canadian Environmental Protection Act
DSL	Domestic Substance List
NDSL	Non-Domestic Substance List
NSN	New Substance Notification Rules

Disclaimer

This Material Safety Data Sheet may be used to comply with OSHA's Hazard Communication Standard, 29CFR§1910.1200. This Material Safety Data Sheet may also be used to comply with the requirements of Workplace Hazardous Materials Information System, of the Controlled Products Regulations, under the Hazardous Products Act. Enthone furnishes the data contained herein in good faith without liability or legal responsibility for same whatsoever, and no warranty or guarantee, express or implied, is made with respect to such data; nor does Enthone grant permission, recommendation, or inducement to infringe any patent whether owned by Enthone or others. The data is offered solely for your information and consideration. Since conditions of use are beyond Enthone's control, user assumes all responsibility and risk.



Cookson Electronics