



EMULATION TECHNOLOGY, INC.

Material Safety Data Sheet

Section 1. Chemical Product and Company Identification	
Common Name	CQ2000E, CQ123E, CQ4.5E, CQ08E, CQ16E, CQ32E
Supplier	Emulation Technology, Inc.
Synonym	Bi./In./Pb./Sn.
Trade name	CQ2000E, CQ123E, CQ4.5E, CQ08E, CQ16E, CQ32E
Material Uses	Metal industry: Metallurgy. Low melting alloy
Manufacturer	Emulation Technology, Inc. 2344 Walsh Ave., Bld F, Santa Clara, CA 95051

Code	Not available.
MSDS#	Not available.
Validation Date	5/20/98
Print Date	8/20/99
In case of Emergency	USA: Infotrac (800)535-5053 INTERNATIONAL: Infotrac (708)918-1900 CANADA: not available

Section 2. Composition and Information on Ingredients				
Name	CAS #	% by Weight	TLV/PEL	LC ₅₀ /LD ₅₀
Indium	7440-74-6	10-30	TWA: 0.1 (mg/m ³) from ACGIH (TLV) [1986] Total. TWA: 0.1 (mg/m ³) from ACGIH	Not available.
Lead	7439-92-1	10-30	TWA: 0.1 (mg/m ³) from NIOSH TWA: 0.05 (mg/m ³) from ACGIH (TLV) TWA: 0.05 (mg/m ³) from ACGIH	Not available.
Tin	7440-31-5	7-13	TWA: 0.1 (mg/m ³) from NIOSH TWA: 2 STEL: 0.2 (mg/m ³) from OSHA (PEL) [1997] Respirable. TWA: 2 (mg/m ³) from OSHA (PEL) [1993] Respirable. TWA: 2 STEL: 0.2 (mg/m ³) from ACGIH [1994] Respirable. TWA: 2 (mg/m ³) from NIOSH	Not available.

Section 3. Hazards Identification	
Routes of Entry	Eye contact. Ingestion. Inhalation. Skin contact.
Potential Acute Health Effects	Fumes and/or dusts produced by this product may be hazardous in case of eye contact (irritant), of ingestion, of inhalation. Inflammation of the eye is characterized by redness, watering, and itching. This product may be hazardous in case of skin contact (irritant, sensitizer).
Potential Chronic Health Effects	Fumes and/or dusts produced by this product may be hazardous in case of eye contact (irritant), of ingestion, of inhalation. This product may be hazardous in case of skin contact (irritant, sensitizer). CARCINOGENIC EFFECTS: [LEAD]: Classified + (Proven) by OSHA, A3 (Proven for animal) by ACGIH, 2B (Possible for human) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: PROVEN [Lead] The product may be toxic to blood, kidneys, liver, heart, upper respiratory tract, skin, eyes, the nervous system, the reproductive system, spleen, brain, digestive system, gastro-intestinal tract, lungs. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to toxic material may produce general deterioration of health by an accumulation in one or many human organs.

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Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. DO NOT use an eye ointment. Seek medical attention.
Skin Contact	Prolonged and repeated contact with bare skin may cause irritation. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap.
Hazardous Skin Contact	MOLTEN METAL causes SEVERE BURNS! In case of BURNS: DO NOT USE WATER. Cover with antiseptic ointment and steril gauze. Seek IMMEDIATE medical attention.
Inhalation	Allow the victim to rest in a well ventilated area. Seek immediate medical attention.
Hazardous Inhalation	No additional information.
Ingestion	DO NOT induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.
Hazardous Ingestion	No additional information.

Section 5. Fire and Explosion Data

Flammability of the Product	Non-flammable.
Auto-Ignition Temperature	Not applicable.
Flash Points	Not applicable.
Flammable Limits	Not applicable.
Products of Combustion	Not applicable.
Fire Hazards in Presence of Various Substances	Not applicable.
Explosion Hazards in Presence of Various Substances	Non-explosive in presence of open flames and sparks, of shocks, of heat.
Fire Fighting Media and Instructions	Not applicable.
Special Remarks on Fire Hazards	Massive metal is nonflammable.
Special Remarks on Explosion Hazards	No additional remark.

Section 6. Accidental Release Measures

Small Spill	MOLTEN METAL: Let cool before picking up and returning to process or recycling. OTHER: Use appropriate tools to put the spilled solid in a container reserved to that effect.
Large Spill	MOLTEN METAL: Let cool before picking up and returning to process or recycling. OTHER: Use appropriate instruments to put the spilled material in a container reserved to that effect.

Section 7. Handling and Storage

Handling	Wear suitable protective clothing. Use in a well ventilated area. When using do not eat, drink or smoke. Avoid contact with skin and eyes. After handling, always wash hands thoroughly with soap and water.
Storage	Keep container tightly closed. Keep in a cool and well-ventilated area. Highly toxic or infectious materials should be stored in a separate locked safety storage cabinet or room.

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Section 8. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection	HANDLING: gloves, safety glasses, dust respirator REMELTING: heat resistant gloves, splash goggles or face-shield, coveralls, dust and fume respirator. Wear suitable respirator if ventilation is inadequate. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Chemical Name or Product Name	CAS #	Exposure Limits
Iridium	7440-74-6	TWA: 0.1 (mg/m ³) from ACGIH (TLV) [1986] Total TWA: 0.1 (mg/m ³) from ACGIH
Lead	7439-92-1	TWA: 0.1 (mg/m ³) from NIOSH TWA: 0.05 (mg/m ³) from ACGIH (TLV) TWA: 0.05 (mg/m ³) from ACGIH TWA: 0.1 (mg/m ³) from NIOSH
Tin	7440-31-5	TWA: 2 STEL: 0.2 (mg/m ³) from OSHA (PEL) [1997] Respirable. TWA: 2 (mg/m ³) from OSHA (PEL) [1993] Respirable. TWA: 2 STEL: 0.2 (mg/m ³) from ACGIH [1994] Respirable. TWA: 2 (mg/m ³) from NIOSH

Section 9. Physical and Chemical Properties

Physical state and appearance	Solid.	Odor	Odorless.
Molecular Weight	Not applicable.	Taste	Not applicable.
pH (1% soln/water)	Not applicable.	Color	Silver-grey.
Boiling Point	Not available.		
Melting Point	58°C (136.4°F)		
Critical Temperature	Not available.		
Specific Gravity	9.24 (Water = 1)		
Vapor Pressure	Not available		
Vapor Density	Not available.		
Volatility	Not available.		
Odor Threshold	Not available.		
Evaporation rate	Not available.		
Viscosity	Not available.		
Water/Oil Dist. Coeff.	The product is insoluble in water and oil.		
Ionicity (in Water)	Non-ionic.		
Dispersion Properties	Is not dispersed in cold water, hot water, methanol, diethyl ether, n-octanol, acetone.		
Solubility	Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol, acetone.		
Physical Chemical Comments	Not available.		

Section 10. Stability and Reactivity Data

Chemical Stability	The product is stable.
Conditions of Instability	Over melting point, toxic metallic oxides may be evolved.
Incompatibility with various substances	Molten metal reacts violently with water.
Hazardous Decomposition Products	Not available.
Hazardous Polymerization	No.

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Section 11. Toxicological Information

Toxicity to Animals	LD50: Not available. LC50: Not available.
Chronic Effects on Humans	CARCINOGENIC EFFECTS: [LEAD]: Classified + (Proven) by OSHA, A3 (Proven for animal) by ACGIH, 2B (Possible for human) by IARC. DEVELOPMENTAL TOXICITY: PROVEN [Lead] The product may be toxic to blood, kidneys, liver, heart, upper respiratory tract, skin, eyes, the nervous system, the reproductive system, spleen, brain, digestive system, gastro-intestinal tract, lungs.
Other Toxic Effects on Humans	Fumes and/or dusts produced by this product may be hazardous in case of eye contact (irritant), of ingestion, of inhalation. This product may be hazardous in case of skin contact (irritant, sensitizer).
Special Remarks on Toxicity to Animals	No additional remark.
Special Remarks on Chronic Effects on Humans	Human: LEAD crosses the placental barrier. CHRONIC OVEREXPOSURE EFFECTS; Increase of LEAD LEVEL in blood, muscle soreness, metallic taste, abdominal cramps, headaches. Overexposure to tin oxide fumes may result in benign pneumoconiosis (stannosis). Overexposure to fumes may cause irritation to the respiratory tract, digestive system and to the eyes. Repeated and prolonged contact with bare skin may cause irritation, dermatitis and/or an allergic reaction (sensitization) in susceptible individuals.
Special Remarks on other Toxic Effects on Humans	MOLTEN METAL can cause severe BURNS!

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The products of degradation are more toxic.
Special Remarks on the Products of Biodegradation	No additional remark.

Section 13. Disposal Considerations

Waste Disposal	Recycle, if possible. Consult your local or regional authorities.
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Section 14. Transport Information

DOT Classification	Not a DOT controlled material (United States).
Proper Shipping Name	Not applicable.
DOT Identification Number	Not applicable.
Packing Group	Not applicable.
Hazardous Substances Reportable Quantity	Not available.
Special Provisions for Transport	Not applicable.
TDG Classification	Not controlled under TDG (Canada).
IMDG Classification	Not controlled under IMDG.
IATA Classification	Not controlled under IATA.

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Section 15. Regulatory Information**Federal and State Regulations**

California prop. 65: This product contains [LEAD] for which the State of California has found to cause cancer, birth defects or other reproductive harm (female, male), which would require a warning under the statute.
California prop. 65 (no significant risk level): **Lead** 0.0005 mg/day (inhalation)

Rhode Island RTK hazardous substances: **Lead, Tin**
Pennsylvania RTK: **Indium; Lead, Tin**
Florida: **Indium; Lead, Tin**
Minnesota: **Indium; Lead, Tin**
Michigan critical material: **Lead**
Massachusetts RTK: **Indium; Lead, Tin**
New Jersey: **Lead, Tin**

TSCA inventory: **Bismuth; Indium; Lead, Tin**
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: **Lead** delayed health hazard;
SARA 313 toxic chemical notification and release reporting: **Lead** 0.1%;
CERCLA hazardous substances: **Lead** 10 lbs. (4.536 kg);

NOTE:
BE AWARE THAT THESE REGULATIONS MAY NOT APPLY TO THE PARTICULAR FORM IN WHICH THIS PRODUCT IS SOLD.
PLEASE CHECK WITH YOUR LOCAL AUTHORITIES.

Other Classifications

WHMIS (Canada) WHMIS CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC) R33- Danger of cumulative effects.
R61- May cause harm to the unborn child.
R62- Possible risk of impaired fertility.
R20/22- Harmful by inhalation and if swallowed.

Section 16. Other Information**HMIS (U.S.A.)**

Health Hazard	*	1
Fire Hazard		0
Reactivity		0
Personal Protection		j

National Fire Protection Association (U.S.A.)

Health	1	0	Fire Hazard
			Reactivity
			Specific hazard

References

-ACGIH, Threshold Limit Values, 1994-1995. -Canada Gazette Part II, Vol. 122, No. 2 Registration SOR/88-64 31 December, 1987 Hazardous Products Act "Ingredient Disclosure List". -CFR29, OSHA's Permissible Exposure Limits, revision July, 1993. -CFR29, part 1910.1200, Hazard Communication. -Components' manufacturer's Material Safety Data Sheet. -CRC Handbook of chemistry and physics, 67 th edition, CRC Press inc., Boca Rota, Florida. -CSST (Commission de Santé et Sécurité au Travail), document #RT-12: Classification of Certain Chemical Substances. -NFPA, Fire Protection Guide to Chemical Hazards, 11th edition. -NIOSH, Pocket Guide to Chemical Hazards, revision June 1994. -TSCA (Toxic Substance Control Act), Chemical Substance Inventory List, 1985. - IATA, Dangerous Goods Regulations, 37th edition (January 1, 1996) - LOLIPRO vol. 13, Environmental Health & Safety Series II, Micromedex Inc.

Other Special Considerations

-ALL INGREDIENTS WITH SUSCEPTIBLE HAZARDS THAT ARE PRESENT IN A CONCENTRATION GREATER THAN 1 % (GREATER THAN 0.1 % FOR CARCINOGENS) HAVE BEEN DISCLOSED IN THIS SAFETY DOCUMENT.

Validated by C. Gosselin on 5/20/98.

Verified by C. Gosselin.

Printed 8/20/99.

USA: Infotrac (800)535-5053

INTERNATIONAL: Infotrac (708)918-1900

CANADA: not available

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