VELSICOL CHEMICAL CORPORATION

Material Safety Data Sheet

HCS Risk Phrases
Not controlled under the HCS (United States).

Section I. Chemical Product and Company Identification

Common Name/ Trade Name	**Benzoflex® 2088**	In Case of Emergency	In the continental U.S.A. call CHEMTREC 800-424-9300 (24 hours) Outside the continental U.S.A. call CHEMTREC 703-527-3887 (24 hours)
Supplier	Velsicol Chemical Corporation 10400 W. Higgins Road Rosemont, IL 60018 U.S.A. Phone: 847-298-9000 Fax: 847-298-9015	Manufacturer	Velsicol Chemical Corporation 10400 W. Higgins Road Rosemont, IL 60018 U.S.A. Phone: 847-298-9000 Fax: 847-298-9015
Synonym	Not available.	Material Uses	Plasticizer
Chemical Name	Not applicable.		
Chemical Family	Aromatic Ester		
Chemical Formula	Not applicable.		

Section II. Composition and Information on Ingredients

Name	CAS#	% by Weight	TLV/PEL	OSHA Hazardous Ingredients
1) Benzoate Esters	Proprietary	100	Not established	None present

Section III. Hazards Identification

Emergency Overview	Clear. Colorless. Liquid. Ester-like odor. HANDLE IN ACCORDANCE WITH GOOD INDUSTRIAL HYGIENE AND SAFETY PRACTICES.
Potential Health Effects	Inhalation and skin contact are expected to be the primary routes of occupational exposure to Benzoflex 2088. This material is not expected to cause significant adverse human health effects when used in accordance when good industrial hygiene and safety practices are followed. Repeated or prolonged exposure to this material is not known to aggravate any existing medical conditions.

Section IV. First Aid Measures

Eye Contact	Flush with plenty of water. Seek medical attention if irritation persists.
Skin Contact	Flush the area with plenty of water. Remove material from clothing. Wash clothing before reuse.
Inhalation	Remove to fresh air.
Ingestion	If swallowed, induce vomiting as directed by medical personnel. Get medical attention. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

Section V. Fire and Explosion Data

Flammability of the Product	Combustible.
Auto-Ignition Temperature	Not available.
Flash Points	CLOSED CUP: 436°F (ASTM D92)
Flammable Limits	Not available.
Fire and Explosion Hazards	The products of combustion are carbon oxides (C0, C02)
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemicals, C02, water spray or foam. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. Firefighters and others who may be exposed to products of combustion should wear full firefighting turnout gear and self-contained breathing apparatus. Firefighting equipment should be thoroughly decontaminated after use.

Section VI. Accidental Release Measures	
Small Spill	Absorb with an inert material and put the spilled material in an appropriate waste disposal container.
Large Spill	Stop the leak, if possible. Remove all ignition sources. Ventilate the area involved. Absorb with an inert material and put the spilled material in an appropriate waste disposal container.

Section VII. Handling and Storage	
Handling	Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from eyes, skin, and clothing. Keep away from heat, sparks, and sources of ignition.
Storage	Store in well ventilated area away from sources of ignition.

Section VIII. Exposure Controls/Personal Protection	
Engineering Controls	Investigate engineering techniques to reduce exposures. Provide ventilation if necessary to minimize exposure. If practical use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.
Personal Protection	Splash goggles. Lab coat. Gloves.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Section IX. Physical and Chemical Properties	
Physical State / Appearance	Liquid.
Color	Clear, Colorless.
Odor	Ester-like odor.
Boiling Point	Not available.
Melting Point	16°C
Critical Temperature	Not available.
Specific Gravity	1.1598 (Water = 1)
Vapor Pressure	Not available.
Vapor Density	Not available.
Volatility	Not available
Odor Threshold	Not available.
Evaporation Rate	Not available.
Viscosity	90 cP at 25°C
Solubility	Not available.
pH (1% soln/water)	Neutral
Molecular Weight	326.5

Section X. Stability and Reactivity Data	
Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	No additional remark.
Incompatibility with Various Substances	Slightly reactive with oxidizing agents, acids and alkalies.
Corrosivity	Not considered to be corrosive for metals and glass according to our database.
Hazardous Polymerization	Will not occur.
Hazardous Decomposition Products	Not available.

Section XI. Toxicological Information	
Toxicity to Animals	Velsicol Chemical Corporation has not conducted toxicity studies on Benzoflex 2088. However, the components of this material have been tested and the results are summarized below. **Component 1** Acute oral LD50 Rat: 4,190 mg/kg, Slightly toxic. Acute Dermal LD50 Rat > 2000 mg/kg, No more than slightly toxic. Acute Inhalation LC50 4-hr: (mist) >200 mg/l, Practically non-toxic. No dermal reaction was reported following a single semi-occlusive application of Component 1 to intact rabbit skin for 4 hours. A single instillation of Component 1 into the eye of the rabbit elicited transient very slight conjunctival irritation only. No allergic skin reaction was reported in guinea pigs after repeated skin contact (intradermal and topical) using the Magnusson and Kligman method. Decreased body weight gain and blood, spleen and caecum effects were reported in rats

given up to 2500 mg/kg/day in their diet for 13 weeks. The non-toxicologically significant NOEL was judged to be 1000 mg/kg/day. All treatment related changes showed evidence of, or complete, recovery after 4 weeks without treatment. No effects were reported in dogs administered up to 300 mg/kg/day of Component 1 in their diet for 90 days.

Component 2
Acute oral LD50 Rat: 5,313 mg/kg, Practically non-toxic.
Acute Dermal LD50 Rat > 2000 mg/kg, No more than slightly toxic.
Acute Inhalation LC50 4-hr: (mist) >200 mg/l, Practically non-toxic.

No dermal reaction was reported following a single semi-occlusive application of Component 2 to intact rabbit skin for 4 hours. A single instillation of Component 2 into the eye of the rabbit elicited transient very slight conjunctival irritation only. No allergic skin reaction was reported in guinea pigs after repeated skin contact (intradermal and topical) using the Magnusson and Kligman method.

Decreased body weight gain and liver, spleen and caecum effects were reported in rats given up to 2500 mg/kg/day in their diet for 13 weeks. The non-toxicologically significant NOEL was judged to be 1000 mg/kg/day. All treatment related changes showed evidence of, or complete, recovery after 4 weeks without treatment. No effects were reported in dogs administered up to 1200 mg/kg/day Component 2 in their diet for 90 days.

Component 3
Acute oral LD50 Rat: 5,313 mg/kg, Practically non-toxic.
Acute Dermal LD50 Rat > 2000 mg/kg, No more than slightly toxic.

No dermal reactions were observed following a single semi-occlusive application of Component 3 to intact rabbit skin for 4 hours. A single instillation of Component 3 into the eye of the rabbit elicited transient very slight conjunctival irritation only. No allergic skin reaction was reported in guinea pigs after repeated skin contact (intradermal and topical) using the Magnusson and Kligman method.

Decreased body weight gain and blood, spleen and caecum effects were reported in rats given up to 2200 mg/kg/day in their diet for 13 weeks. The non-toxicologically significant NOEL was judged to be at least 1000 mg/kg/day. All treatment related changes showed evidence of, or complete, recovery after 4 weeks without treatment. Component 3 is readily and rapidly absorbed from the gastrointestinal tract of dogs and rats and its metabolites are rapidly excreted.

A more detailed toxicological summary can be attained through your sales representative.

Section XII. Ecological Information

Ecotoxicology

Velsicol Chemical Corporation has not conducted ecotoxicity tests on Benzoflex 2088. However, the components of this material have been tested and the results are summarized below.

Component 1
No Observed Effect Level: 1000 ppm, earthworm

EC50: >10 mg/l, Bacteria (Pseudomonas putida) 10 mg/l was the highest attainable concentration that could be prepared due to the limited solubility to the test material in water and auxiliary solvent and the limitations imposed by the addition of nutrient solutions and bacterial suspension to the test material stock solution.

Component 1 had no inhibitory effect on the respiration rate of activated sludge at concentrations up to 100 mg/l.

Component 2
No Observed Effect Level: 1000 ppm, earthworm

EC50: >10 mg/l, Bacteria (Pseudomonas putida) 10 mg/l was the highest attainable concentration that could be prepared due to the limited solubility of the test material in water and auxiliary solvent and the limitations imposed by the addition of nutrient solutions and bacterial suspension to the test material stock solution.

Component 2 had no inhibitory effect on the respiration rate of activated sludge at

	concentrations up to 100 mg/l. **Component 3** No Observed Effect Level: 1000 ppm, earthworm EC50: >10 mg/l, Bacteria (Pseudomonas putida) 10 mg/l was the highest attainable concentration that could be prepared due to the limited solubility of the test material in water and auxiliary solvent and the limitations imposed by the addition of nutrient solutions and bacterial suspension to the test material stock solution. Component 3 had no inhibitory effect on the respiration rate of activated sludge at concentrations up to 100 mg/l.
Chemical Fate	Velsicol Chemical Corporation has not conducted chemical fate tests on Benzoflex 20888. However, the components of this material have been tested and the results are summarized below. **Component 1** Component 1 is considered readily biodegradable in the C02 evolution test (modified Sturm test). The mean C02 production by mixtures of Component 1 was equivalent to 16% of the theoretical value (TC02, 106.4 mg C02) after 2 days of incubation and 63% after 10 days; a mean level of 83% degradation was achieved by the end of the test on Day 29. The mean BOD5 = 0.77 gO2/g Component 1 (34% of it's ThOD = 2.05 gO2/g) The mean COD = 2.22 gO2/g Component 1 (109% of the ThOD) The BOD5 of Component 1 was 32% of it's COD. Substances are generally considered readily biodegradable in the Closed Bottle test if the ratio of BOD5:COD or ThOD is >50. Component 1 therefore cannot be considered readily biodegradable in this screening test. Component 1 is considered ultimately biodegradable under anaerobic conditions in the biogas production test. The level of anaerobic biodegradation, based on biogas measurements alone, was equivalent to 65% by Day 60 and the total level of biodegradation (dissolved inorganic carbon plus biogas) was calculated to be 70% of the theoretical level. **Component 2** Component 2 is considered readily biodegradable in the C02 evolution test (modified Sturm test). The mean C02 production by mixtures of Component 2 was equivalent to 6% of the theoretical value (TC02, 106.4 mg C02) after 2 days of incubation and 62% after 12 days; a mean level of 87% degradation was achieved by the end of the test on Day 29. The mean BOD5 = 0.65 gO2/g Component 2 (30% of it's ThOD = 2.15 gO2/g) The mean COD = 2.23 gO2/g Component 2 (104% of it's ThOD) The BOD5 of Component 2 was 34% of it's COD. Substances are generally considered readily biodegradable in the Closed Bottle test if the ratio of BOD5:COD or ThOD is >50. Component 2 therefore cannot be considered readily biodegradable in this screening test. Component 2 is considered ultimately biodegradable under anaerobic conditions in the biogas production test. The level of anaerobic biodegradation, based on biogas measurements alone, was equivalent to 40% by Day 60 and the total level of biodegradation (dissolved inorganic carbon plus biogas) was calculated to be 46% of the theoretical level. The total level of biodegradation by Day 120 was 75% of the initial nominal carbon level (12 mg C/culture) and 90% of the level (10 mg C/culture) calculated assuming carbon was removed when samples were taken for dissolved inorganic content analysis. **Component 3** Component 3 is considered readily biodegradable in the C02 evolution test (modified Sturm test). The mean C02 production by mixtures of Component 3 was equivalent to 16% of the theoretical value (TC02, 106.4 mg C02) after 2 days of incubation and 62% after 7 days; a mean level of 92% degradation was achieved by the end of the test on Day 29. The mean BOD5 of Component 3 was 0.75 gO2/g (37% ThOD = 2.01 gO2/g) The mean COD of Component 3 was 2.15 gO2/g (107% of ThOD) The BOD5 of Component 3 was 35% of it's COD. Substances are generally considered readily biodegradable in the Closed Bottle test if the ratio of BOD5:COD or ThOD is >50.

	Component 3 therefore cannot be considered readily biodegradable in this screening test. Component 3 is considered ultimately biodegradable under anaerobic conditions in the biogas production test. The level of anaerobic biodegradation, based on biogas measurements alone, was equivalent to 61% by Day 60 and the total level of biodegradation (dissolved inorganic carbon plus biogas) was calculated to be 70% of the theoretical level at Day 60.

Section XIII. Disposal Considerations

Waste Disposal	Recycle, if possible. Consult your local or regional authorities for disposal options.

Section XIV. Transport Information

DOT Proper Shipping Name	Not regulated.
DOT Hazard Class	Not a DOT controlled material (United States).
UN Identification Number	Not applicable.
Packing Group	Not applicable.

Section XV. Other Regulatory Information and Pictograms

Federal and State Regulations	Each component of Benzoflex 2088 is on the TSCA Chemical Inventory				
Other Classifications	WHMIS (Canada)	Not controlled under WHMIS (Canada).			
	WHMIS (Canada) (Pictograms)	Not applicable			
	TDG (Canada) (Pictograms)	Not applicable			
HMIS (U.S.A.)	Health Hazard	1	National Fire Protection Association (U.S.A.)	Health	1
	Fire Hazard	1		Fire Hazard	1
	Reactivity	0		Reactivity	0
	Personal Protection			Specific Hazard	

Section XVI. Other Information

References	-REGISTRY Database, Chemical Abstract Service -CHEMLIST Database, Chemical Abstract Service -Registry of Toxic Effects of Chemical Substances (RTECS) -Chemical Hazard Response Information System (CHRIS), Micromedex Inc., Vol. 27 -LOLI Database, Chem Advisor via Micromedex Inc. -ICRMS European Database, Ariel Research Corporation -ICRMS Inventories Database, Ariel Research Corporation. -Velsicol Chemical Corporation, unpublished studies -Product Information Bulletin, Velsicol Chemical Corporation -Hazardous Substance Data Bank (HSDB), National Library of Medicine -MEDITEXT Medical Management Database, Micromedex Inc., Vol. 28 -Syracuse Research Corporation, EPI-WIN Estimation Programs.
Other Special Considerations	No additional remark.
Prepared By & Date	Emily Clark on 2/18/02
Supercedes	11/26/01
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