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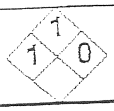
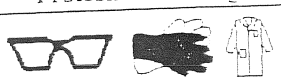
VELSICOL CHEMICAL CORPORATION

Material Safety Data Sheet

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

Section I. Chemical Product and Company Identification

Common Name/ Trade Name: Benzoflex® 9-88	In case of Emergency: In the continental U.S.A. call CHEMTREC 800-424-9300 (24 Hours) Outside of 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: Dipropylene Glycol, Dibenzoate	Material Uses Coatings: Plasticizer for adhesives, caulks, flooring and paints.
Chemical Name: Propanol, oxybis-, dibenzoate	
Chemical Family: Ester	
emical Formula: C20 H22 O5	

Section II. Composition and Information on Ingredients

Name	CAS #	% by Weight	TLV/PEL	OSHA Hazardous Ingredients
Dipropylene glycol dibenzoate	27138-31-4	89.4	Not established.	No
Dipropylene glycol monobenzoate	32686-95-6	4.98	Not established.	No
Propenyl Propyl Benzoate	197178-94-2	2.35	Not established.	No
Propylene glycol dibenzoate	19224-26-1	2.29	Not established.	No
Propylene glycol monobenzoate	37086-84-3	0.28	Not established.	No

Section III. Hazards Identification

Emergency Overview	Off-white. Clear oily liquid Mild ester odor. HANDLE IN ACCORDANCE WITH GOOD INDUSTRIAL HYGIENE AND SAFETY PRACTICES
Potential Health Effects	Inhalation and skin contact are epxected to be the primary routes of occupational exposure to Benzoflex 9-88. This material is not expected to cause significant adverse human health effects when good industrial hygiene and safety practices are followed.

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.
gestion	If swallowed, induce vomiting as directed by medical personnel. Get medical attention. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

Continued on Next Page

Section V. Fire and Explosion Data

ammability of the Product	Combustible.
Auto-Ignition Temperature	>400°C (752°F)
Flash Points	CLOSED CUP: 192°C (377.6°F).
Flammable Limits	Not applicable.
Fire and Explosion Hazards	Products of combustion are carbon oxides (CO, CO2). Slightly flammable in presence of open flames and sparks, of heat. Not considered to present risks of explosion.
Fire Fighting Media and Instructions	Use DRY chemicals, CO2, water spray or foam. Water or foam may cause frothing. Firefighters and others who may be exposed to products of combustion should wear full firefighting turn out 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 place 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

andling	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 controls to reduce exposures. If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Provide ventilation if necessary to minimize exposure.
Personal Protection	Safety glasses. Lab coat. Gloves.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. 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.

Section IX. Physical and Chemical Properties

Physical state and appearance	Clear oily liquid
Color	Off-white.
Odor	Mild ester odor.
Boiling Point	Decomposes at >270°C (518°F) without boiling
Melting Point	Not available.
ritical Temperature	Not available.
Specific Gravity	1.12 (Water = 1)
Vapor Pressure	0.0000012 mm of Hg (@ 25°C)

Continued on Next Page

Benzoflex® 9-88

Vapor Density	11.8 (Air = 1)
Volatility	Volatile Organics Concentration (VOC) = 5.90+/- 0.75% (ASTM Method D2369; EPA Method 24)
or Threshold	Not available.
Evaporation rate	Lower than 1. compared to Butyl acetate.
Viscosity	Approximately 110 cP @ 250 C
Solubility	8.96 mg/l for Dipropylene Glycol Dibenzoate component. Dipropylene glycol monobenzoate is significantly soluble relative to the dibenzoate.
pH (1% soln/water)	Not available.
Molecular Weight	342

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 to reactive with oxidizing agents, acids and alkalis.
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

xicity to Animals

Velsicol Chemical Corporation has conducted toxicity tests on Benzoflex 9-88. The results are summarized below.
Oral LD50 Rat: 5,313 mg/kg, Practically non-toxic
Dermal LD50 Rat: > 2,000 mg/kg, No more than slightly toxic
Inhalation LC50: (mist) > 200 mg/l, Practically non-toxic

No dermal reaction was reported following a single semi-occlusive application of Benzoflex 9-88 to intact rabbit skin for 4 hours. A single instillation of Benzoflex 9-88 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. All treatment releated changes showed evidence of, or complete, recovery after 4 weeks without treatment. No effects were reported in dogs administered up to 1.2% Benzoflex 9-88 in their diet for 90 days.

Benzoflex 9-88 did not induce mutagenic activity in bacteria (Salmonella or E.coli) or mammalian cells (mouse lymphoma). This material did not induce clastogenic activity (chromosome aberrations) in Chinese hamster lung (CHL) cell in vitro.

Benzoflex 9-88 did not induce vaginal cornification at doses up to 2000 mg/kg/day for 7 days, by oral gavage, in ovariectomized adult rats. Benzoflex 9-88 did not increase uterine weight or uterine weight to final body weight ratio at doses up to 2000 mg/kg/day for 7 days, by oral gavage, in ovariectomized adult rats. This demonstrates that 9-88 does not exhibit estrogenic activity up to and including the maximum tolerated dose (MTD).

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Section XII. Ecological Information

Ecotoxicology	Velsicol Chemical Corporation has conducted ecotoxicity tests. The results are summarized below. 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. Benzoflex 9-88 had no inhibitory effect on the respiration rate of activated sludge at concentrations up to 100 mg/l.
Chemical Fate	Velsicol Chemical Corporation has conducted chemical fate studies on Benzoflex 9-88. The results are summarized below. Benzoflex 9-88 is considered readily biodegradable in the CO2 evolution test (modified Sturm test). The mean CO2 production by mixtures of Benzoflex 9-88 was equivalent to 6% of the theoretical value (TCO2, 106.4 mg CO2) 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 BOD5 of Benzoflex 9-88 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. Benzoflex 9-88 therefore cannot be considered readily biodegradable in this test. Benzoflex 9-88 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 (12mg 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.

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local or regional authorities for proper disposal methods.

Section XIV. Transport Information

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

Continued on Next Page

Section XV. Other Regulatory Information and Pictograms

Federal and State Regulations

On TSCA Inventory
Dipropylene Glycol Dibenzoate
Propylene Glycol Dibenzoate
Propylene Glycol Monobenzoate

Not listed on the TSCA Inventory (By products of production process, not subject)
Dipropylene Glycol Monobenzoate
Propenyl Propyl Benzoate

Flavor and Extract Manufacturers' Association. FEMA. Generally Recognized as Safe (GRAS) listing.
Propylene Glycol Dibenzoate

Other Classifications

WHMIS (Canada) Not controlled under WHMIS (Canada).

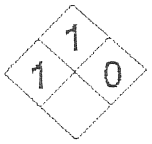
WHMIS (Canada) (Pictograms)

TDG (Canada) (Pictograms)

HMIS (U.S.A.)

Health Hazard	1
Fire Hazard	1
Reactivity	0
Personal Protection	

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



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.
-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

Other Special Considerations Not applicable.

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