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MATERIAL SAFETY DATA SHEET

Product Name: DYNE TEST PENS

Formula: $\text{HCONH}_2 + \text{C}_2\text{H}_5\text{OC}_2\text{H}_4\text{OH}$

Chemical Family: Amide/Glycol Ethers

I. INGREDIENTS:

Constituent	CAS No.	TLV	OSHA PEL
2-ethoxyethanol (C)*	110-80-5	5 ppm	29CFR 1910.1000
Formamide (F)	75-12-7	20 ppm	
Methyl Violet 2B Dye	8004-87-3	n/a	
Water (H)	n/a	n/a	

**2-ethoxyethanol is also known as ethylene glycol monoethyl ether, cellosolve solvent, ethyl cellosolve, and glycol ether EE.*

II. HAZARD SPECIFICATIONS: (under 29 CFR 1910.1000)

These hazards are associated with the fluids contained in **DYNE TEST** Marker Pens:

Reproductive Toxin	Skin Hazard	TLV = 20 to 200 ppm
Eye Hazard	Kidney Toxin	PEL = 5 ppm (8 hr weighted avg)
Sensitizer	Toxic Agent	EPA Hazardous Waste Class: n/a
Combustible Liquid	Skin Irritant	DOT Hazard Class: n/a
NFPA Hazard Signal: Health - 2; Stability - 0; Flammability - 1; Special - C		

III. PHYSICAL DATA:			
Boiling Point (at 760 mm Hg)	135°C to 210°C	Freezing Point, (at 760 mm Hg)	-90°C to +2°C
Specific Gravity, at 20°C (H ₂ O = 1.0)	0.93 to 1.13	Vapor Pressure, mm Hg, at 20°C	0.08 - 4.00
Vapor Density, at 20°C (air = 1)	1.55 - 3.10	Solubility in Water, % by wt. at 20°C	Complete
Percent Volatiles (by volume)	100%	Evaporation Rate (Butyl Acetate = 1)	<0.1 to 0.32

Appearance and odor: Dark violet solution with mild, non-residual odor.

IV. FIRE AND EXPLOSION DATA:
 Flash Point: 108°F to 245°F, per ASTM D56; tag closed cup.
 Autoignition Temperature: n/a
 Flammability Limits in Air (by vol. at 200°F): 1.7% to 15.6%
 Extinguishing Media: Water fog recommended; CO₂, dry chemical, and universal foam media, as applied by manufacturer's recommendations, can also be used.
 Unusual Fire/Explosion Hazards: Can react with oxidizing materials.

V. HEALTH HAZARD DATA:
Inhalation: Vapors are irritating to eyes, nose, and respiratory tract. May cause headache, nausea, vomiting, weakness.
Skin Contact: May cause irritation. Wear protective gloves.
Ingestion: See inhalation; can also cause breathing difficulty. Kidney damage may result from ingestion of large quantities of test solution.
Skin absorption: Prolonged or widespread contact with skin may lead to absorption of harmful amounts of material resulting in symptoms as described under ingestion.
Eye Contact: Causes marked irritation.
SPECIAL WARNING: Pregnant women should not use this product; laboratory studies of animal subjects have shown birth defects, delayed fetal development, and increased fetal mortality at air concentrations of 150 to 200 ppm.

VI. EMERGENCY AND FIRST AID PROCEDURES:
Eyes Flush liberally with running water. Call a physician.
Skin Immediately remove contaminated clothing. Thoroughly wash affected area with soap and water.
Inhalation Remove to fresh air. If breathing is difficult, give oxygen and call a physician.
Ingestion Give large quantities of water. Induce vomiting. Call a physician.

VII. REACTIVITY DATA:
 Decomposes partially at temperatures above 180°C. Do not combine with concentrated alkali at elevated temperatures.
 Hazardous combustion or decomposition products: CO, NH_x.

VIII. SPILL OR LEAK PROCEDURES:
 Absorb spill with paper toweling or vermiculite. Once absorbed, evaporate outdoors or incinerate in a chemical burner equipped with an after-burner and scrubber.
 Dispose of waste product by high temperature incineration, as approved under appropriate federal, state, and local legislation. Do not discharge without prior written approval from the appropriate health and environmental authorities.

IX. SPECIAL PRECAUTIONS
 NOT FOR USE AS A CONSUMER PRODUCT. FOR INDUSTRIAL USE ONLY.
 Keep this product away from heat and flame. Always use with adequate ventilation. Do not allow fluid to contact skin; wear gloves.
WARNING TO PREGNANT WOMEN: Do not use DYNE TEST marker pens unless exposure is extremely low. Even small amounts, if repeatedly inhaled, ingested, or absorbed through skin, may cause fetal malformations.