

THIS MATERIAL SAFETY DATA SHEET
 IS "ESSENTIALLY SIMILAR" TO OSHA
 FORM 174 AND COMPLIES WITH
 CFR 1910.1200.

EMERGENCY: CHEMTREC (800) 424-9300

SECTION I PRODUCT IDENTIFICATION

NAME: KARNOVSKY FIXATIVE CATALOG#: 1215
 KARNOVSKY FIXATIVE VIALS 12151
CHEMICAL NAME: GLUTERALDEHYDE, GLUTAROL, GLUTARIC ALDEHYDE; PARAFORMALDEHYDE,
 PARAFORM, POLYOXYMETHYLENE; SODIUM HYDROXIDE, CAUSTIC SODA, SODIUM HYDRATE

SECTION II.A HAZARDOUS INGREDIENTS

NAME	%	CAS#	ACGIH (TWA/STEL)	OSHA (TWA/CEIL)
1. WATER	> 88	7732-18-5	NA	NA
2. GLUTERALDEHYDE	4-7	111-30-8	0.05 ppm / --	NA
3. PARAFORMALDEHYDE	3-5	30525-89-4	NA	NA
4. SODIUM HYDROXIDE	< 1	1310-73-2	2 mg/m ³ / --	2 mg/m ³ / --

SECTION II.B EMERGENCY OVERVIEW

DANGER: CORROSIVE AND HIGHLY TOXIC LIQUID! LIQUID CAN CAUSE IRRITATION AND BURNS TO BODY TISSUES, ESPECIALLY EYES AND RESPIRATORY TRACT. TOXIC AND POTENTIALLY FATAL IF SWALLOWED, INHALED, AND/OR ABSORBED THROUGH THE SKIN. MAY CAUSE ALLERGIC REACTIONS IN SOME INDIVIDUALS. PRODUCES FORMALDEHYDE, WHICH IS CONSIDERED TO BE A KNOWN MUTAGEN AND CANCER-CAUSING AGENT. WEAR CHEMICALLY RESISTANT GLOVES AND EYE PROTECTION AND WORK IN HOOD OR WELL-VENTILATED AREA.

SECTION II.C HAZARDOUS INGREDIENTS REGULATORY INFORMATION

NAME	EPA#	TSCA INVENTORY	SARA INFO
1. WATER	NA	LISTED	NA
2. GLUTERALDEHYDE	NA	LISTED	NA
3. PARAFORMALDEHYDE	NA	LISTED	NA
4. SODIUM HYDROXIDE	NA	LISTED	NA

SECTION III GENERAL PHYSICAL & CHEMICAL INFORMATION ABOUT THIS PRODUCT

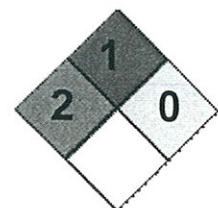
BOILING POINT: NA **%VOLATILES BY VOLUME:** 100
MELTING POINT: NA **SPECIFIC GRAVITY:** NA
VAPOR PRESSURE: NA **WATER SOLUBILITY:** SOLUBLE
pH AS SUPPLIED: NA **EVAPORATION RATE:** NA
PHYSICAL DESCRIPTION: SOLID () LIQUID (X) GAS () SUSPENSION () EMULSION ()
PHYSICAL APPEARANCE, ODOR, COLOR: TRANSLUCENT, COLORLESS LIQUID; PUNGENT ODOR

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE: NON **FLASH POINT:** NA **LEL:** NA **UEL:** NA

NFPA HAZARD CLASS:

HEALTH HAZARD	2	0 = LEAST
FLAMMABILITY	1	1 = SLIGHT
REACTIVITY	0	2 = MODERATE
OTHER		3 = HIGH
		4 = EXTREME



EXTINGUISHING MEDIA: MATERIAL IS NON-COMBUSTIBLE; USE MEDIA MOST APPROPRIATE TO EXTINGUISH SURROUNDING FIRE. EXAMPLES INCLUDE: CARBON DIOXIDE, DRY CHEMICAL, WATER SPRAY, AND "ALCOHOL RESISTANT" FOAM.

SPECIAL FIRE FIGHTING PROCEDURES: USE NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS, WITH FULL-FACE PIECE, IN POSITIVE PRESSURE MODE. USE WATER SPRAY TO KNOCK DOWN FUMES, TO COOL SURROUNDING CONTAINERS, AND TO DILUTE SOLUTION TO NONFLAMMABLE MIX.

UNUSUAL FIRE & EXPLOSION HAZARDS: EMITS TOXIC FUMES UNDER FIRE CONDITIONS; WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES.

SECTION V REACTIVITY DATA

STABILITY: STABLE AT ROOM TEMPERATURE, IN CLOSED CONTAINER, UNDER NORMAL STORAGE AND HANDLING CONDITIONS.

INCOMPATIBLE MATERIALS (AVOID CONTACT WITH): STRONG BASES, STRONG ACIDS, STRONG OXIDIZING AGENTS, STRONG REDUCING AGENTS, ALKALI METALS, AND ACID ANHYDRIDES.

HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE, SODIUM OXIDES, AND FORMALDEHYDE FUMES. MAY PRODUCE IRRITATING AND TOXIC FUMES WHEN HEATED.

HAZARDOUS POLYMERIZATION: NONE KNOWN

SECTION VI HEALTH HAZARD DATA

ROUTES OF ENTRY/SYMPTOMS:

EYE CONTACT: CORROSIVE; MAY CAUSE EYE IRRITATION IN THE FORM OF WATERING, REDNESS, SWELLING, AND/OR SEVERE BURNS.

SKIN CONTACT: SUBSTANCE IS CORROSIVE; MAY CAUSE SKIN IRRITATION, SENSITIZATION, REDNESS, PAIN, BLISTERS, AND/OR BURNS. MAY BE HARMFUL IF ABSORBED THROUGH THE SKIN.

INHALATION (BREATHING): CORROSIVE VAPORS ARE IRRITATING TO THE RESPIRATORY TRACT. MAY CAUSE COUGHING; CHOKING; NAUSEA; DIZZINESS; AND/OR IRRITATION OF THE NOSE, THROAT, AND RESPIRATORY TRACT.

INGESTION (SWALLOWING): CORROSIVE; MAY CAUSE IRRITATION, SWELLING OF THE THROAT, NAUSEA, VOMITING, KIDNEY DAMAGE, AND/OR BURNS TO THE MOUTH, THROAT, AND DIGESTIVE TRACT.

EMERGENCY FIRST AID PROCEDURES:

EYE CONTACT: REMOVE CONTACT LENSES IF PRESENT. IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES GENEROUSLY WITH WATER FOR AT LEAST 15 MINUTES. SEEK MEDICAL ATTENTION.

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING AND SHOES. WASH SKIN THOROUGHLY WITH SOAP AND WATER, SCRUBBING FOR AT LEAST 15 MINUTES. SEEK MEDICAL ATTENTION IF IRRITATION DEVELOPS AND/OR PERSISTS.

INHALATION (BREATHING): REMOVE TO WELL-VENTILATED AREA. IF NOT BREATHING, PROVIDE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. SEEK MEDICAL ATTENTION.



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INGESTION (SWALLOWING): DO NOT INDUCE VOMITING. GIVE LARGE QUANTITIES OF WATER. SEEK MEDICAL ATTENTION IF IRRITATION DEVELOPS AND/OR PERSISTS.

TOXICITY DATA: WATER: LD50 = > 90 ML/KG, ORAL, RAT. GLUTERALDEHYDE: LD50 = 1468 MG/KG, ORAL, RAT. PARAFORMALDEHYDE: LD50 = 800 MG/KG, ORAL, RAT. SODIUM HYDROXIDE: LD50 = NA. THESE COMPONENTS ARE NOT LISTED AS CARCINOGENIC BY THE ACGIH, IARC, NTP, OR OSHA.

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE

IN EVENT OF SPILL OR RELEASE: NEUTRALIZE SPILL WITH SODIUM BICARBONATE OR SODA ASH. WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT SKIN AND EYE CONTACT.

WASTE DISPOSAL METHOD: NEUTRALIZED MATERIAL MAY BE DISPOSED OF IN NORMAL TRASH OR FLUSHED DOWN DRAIN IF PERMITTED. FOLLOW ALL STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

STORAGE AND HANDLING PRECAUTIONS: WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT TO PREVENT SKIN AND EYE CONTACT. WASH THOROUGHLY AFTER HANDLING. WASH HANDS BEFORE EATING. STORE IN A TIGHTLY CLOSED CONTAINER IN A COOL, DRY, WELL-VENTILATED AREA AWAY FROM INCOMPATIBLE SUBSTANCES.

SECTION VIII CONTROL MEASURES

RESPIRATION PROTECTION: NONE GENERALLY REQUIRED UNDER ORDINARY LABORATORY CONDITIONS.

VENTILATION: WORK IN A FUME HOOD OR WELL-VENTILATED AREA TO CONTROL VAPOR CONCENTRATION

GLOVES: WEAR APPROPRIATE CHEMICAL GLOVES TO PREVENT SKIN CONTACT.

EYE PROTECTION: WEAR APPROPRIATE CHEMICAL GOGGLES TO PREVENT EYE CONTACT.

OTHER PROTECTION EQUIPMENT: NONE

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