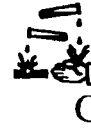


# Material Safety Data Sheet

Revision: 06/30/2010



Hazard information is provided for compliance with both the UK Chemicals (Hazard Information and Packaging) (CHIP) Regulations and the US Hazard Communication Standard (HCS)

## IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

PRODUCT NAME:  
Phenol: Chloroform: Isoamyl Alcohol (25:24:1)

PRODUCT CODE:  
75831

EEC NUMBER:  
None

### SUPPLIER:

USB<sup>®</sup> Products - Affymetrix, Inc., 26111 Miles Road, Cleveland, Ohio 44128 Phone: (216) 765-5000  
Please visit our website at [www.usbweb.com](http://www.usbweb.com) for contact information on USB product distributors within your area.

### Emergency Contact:

Chemtrec (800) 424-9300  
Outside USA & Canada 703 527 3887

## COMPOSITION/

### HAZARDOUS COMPONENTS

<u>HAZARD</u>	<u>CAS NO.</u>	<u>%WT</u>	<u>TLV</u>	<u>CHIP R &amp; S Phrases</u>
Phenol EEC#: 203-632-7	108-95-2	40-55%	5 ppm (OSHA, ACGIH)	<u>For the mixture/preparation:</u> R:23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
Chloroform EEC#: 200-663-8	67-66-3	40-50%	10 ppm (ACGIH) 50 ppm (OSHA)	R:34 Causes burns. R:48/20/21/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
Isoamyl Alcohol EEC#: 204-633-5	123-51-3	0-5%	100 ppm (OSHA, ACGIH)	R:40 Limited evidence of a carcinogenic effect. R:68 Possible risk of irreversible effects.
Alkaline Equilibration Buffer: Product# 75815 (Tris) EEC#: 201-064-4	77-86-1	Proprietary	—	S:24/25 Avoid contact with skin and eyes. S:26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S:28 After contact with skin, wash immediately with plenty of water. S:36/37/39 Wear suitable protective clothing, gloves and eye/face protection. S:45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible). R:36/37/38 Irritating to eyes, respiratory system and skin. S:23 Do not breathe vapour. S:36/37 Wear suitable protective clothing and gloves.

## HAZARDS IDENTIFICATION

### CHIP

Toxic; Corrosive; Mutagen, Category 3; Carcinogen, Category 3

### HCS

Toxic; Corrosive; Suspected Mutagen; Suspected Carcinogen; Combustible

## FIRST-AID MEASURES

**EYES:** Flush with water for 15 minutes. Seek medical advice if irritation persists.  
**SKIN:** Flush with water, then wash thoroughly with soap and water. Remove contaminated clothing and wash before reuse. Seek medical attention if irritation persists.  
**INHALATION:** Remove the victim from exposure and move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Keep victim quiet and warm. Seek immediate medical attention.  
**INGESTION:** Drink water and seek immediate medical attention. Avoid alcoholic beverages. Never give anything by mouth to an unconscious person.

## FIRE-FIGHTING INFORMATION

Use media suitable to extinguish the supporting or surrounding fire. Wear NIOSH (or equivalent) approved self contained breathing apparatus. For small fires only: use carbon dioxide, dry powder or foam. Isoamyl is combustible, keep product away from sources of heat. For Isoamyl Alcohol: Flammable under CHIP, Combustible under HCS. For Phenol: Emits toxic fumes if heated to decomposition. Combustible liquid. Autoignition Temperature = 715°C. NFPA Rating: H=3 F=1 R=1.  
Flash Point = Phenol: 79°C (closed cup). LEL = 1.7% (3%); UEL = 8.6% (10%).  
Flash Point = Isoamyl Alcohol: 43°C (closed cup). LEL = 1.2%; UEL = 9.0%.

**ACCIDENTAL RELEASE MEASURES**

Wear appropriate personal protective equipment and clothing including lab coat, safety goggles, gloves and NIOSH-approved respirator. Eliminate all sources of ignition. Collect in a manner that does not create dust and place in a suitable waste container. Avoid contact of material with skin or eyes. Use adequate ventilation.

**HANDLING AND STORAGE**

Wear appropriate personal protective equipment and clothing including lab coat, safety goggles, gloves and NIOSH-approved respirator. Avoid all sources of ignition. Ground all equipment. Avoid contact of material with skin or eyes. Use adequate ventilation. Protect from light and moisture. Store at +4°C away from incompatible materials.

**PERSONAL PROTECTION**

Wear appropriate personal protective equipment and clothing including lab coat, safety goggles, gloves and NIOSH-approved respirator. A qualified industrial hygienist should evaluate the need for respiratory protection. Use respiratory protection approved by NIOSH (or equivalent) and appropriate to the hazard. Avoid contact of material with skin or eyes. Mechanical ventilation or local exhaust as needed to control exposure to dust, vapors or mists. Access to a safety shower and eye-wash.

**PHYSICAL AND CHEMICAL PROPERTIES**

Chemical Formula: Mixture      Vapor Density: 3.24 (Phenol); 4.1 (Chloroform); >3.0 (Isoamyl Alcohol)  
Appearance: Clear liquid      Boiling Point: 182°C (Phenol); 61°C (Chloroform); 132°C (Isoamyl Alcohol)  
Solubility (Water): Soluble      Specific Gravity: 1.05 (Phenol); 1.48 (Chloroform); 0.81 (Isoamyl Alcohol)  
Melting Point: 41°C (Phenol)      Evaporation Rate: Slower than Ether  
Vapor Pressure (mmHg): 0.36 (20°C: Phenol); 160 (20°C: Chloroform); 2 (20°C: Isoamyl Alcohol)

**STABILITY AND REACTIVITY**

Product is stable. Air and light sensitive. May discolor on exposure to light. Incompatible with lithium, sodium, magnesium, bases, acids, acid chlorides, acid anhydrides and oxidizing agents. Hazardous decomposition products include phosgene gas, hydrogen chloride gas, chlorine and carbon oxides. Hazardous polymerization will not occur.

**TOXICOLOGICAL INFORMATION**

**EFFECTS OF OVEREXPOSURE:**

**EYES:** Contact causes severe irritation or burns. Permanent corneal damage or blindness may occur.  
**SKIN:** Toxic if absorbed through the skin. Phenol solutions may be absorbed through the skin rapidly to cause systemic poisoning and possible death. Contact causes irritation, ulcerations, burns and eczematous dermatitis.  
**INHALATION:** Toxic if inhaled. Causes severe irritation of upper respiratory tract with coughing, burning sensation, shortness of breath, dizziness, headache, wheezing and laryngitis. May be fatal if exposed to high concentrations.  
**INGESTION:** Toxic if swallowed. Chronic ingestion or excessive dosage may cause headache, excitement, fatigue, nausea, vomiting, stupor, and coma. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness and nausea. Advanced stages may cause collapse, unconsciousness, coma and possibly death due to respiratory failure or cardiac arrest. Causes digestive tract burns with pain, swelling of the throat, convulsions and possible coma. May cause liver and kidney damage. May alter genetic material. Exposure to high levels of chloroform has resulted in embryo toxic and teratogenic effects in lab animals.

**ADDITIONAL INFORMATION:** RTECS: Phenol = SJ3325000; Chloroform = FS9100000; Isoamyl Alc. = EL5425000; Tris = TY2900000.

Only select RTECS information is provided here. Please see actual RTECS entries for complete information.

**Toxicity data:**

Tris: Oral Rat LD50 = 5900 mg/kg.  
Phenol: Oral Human LDLo = 140 mg/kg; Oral Rat LD50 = 317 mg/kg; Inhalation Rat LC50 = 316 mg/m3.  
Isoamyl Alcohol: TClO Inhalation Human = 150 ppm; Oral Rat LD50 = 1300 mg/kg.  
Chloroform: Oral Human LDLo = 2514 mg/kg; Inhalation Human LCLo = 25000 ppm/5M; Oral Rat LD50 = 695 mg/kg.

**Carcinogenicity data:**

Phenol: Carcinogenic and neoplastic by RTECS criteria (1959).  
IARC Cancer Review: Animal - Inadequate evidence (1999). Human - Inadequate Evidence (1999).  
Group 3 - Agent is not classifiable as to its carcinogenicity to humans (1999).  
Chloroform: Carcinogenic and neoplastic by RTECS criteria (2003).  
IARC Cancer Review: Animal - Sufficient evidence (1999). Human - Inadequate Evidence (1999).  
Group 2B - agent is possibly carcinogenic to humans (1999).  
NTP 11<sup>th</sup> Report on Carcinogens, 2004: Reasonably anticipated to be a human carcinogen.  
Isoamyl Alcohol: Carcinogenic by RTECS criteria (1975).

**ECOLOGICAL INFORMATION**

No information available.

**DISPOSAL CONSIDERATIONS**

Dispose of material in accordance with applicable local, state, and federal regulations.

**TRANSPORTATION INFO.**

US DOT/IATA: Toxic liquid, organic, n.o.s. (Phenol, Chloroform Solution), Class 6.1, UN2810, PGII. Label: Toxic.

**REGULATORY INFORMATION**

RCRA - For Phenol & Chloroform: Hazardous Waste (U188-Phenol; U044-Chloroform).  
OSHA - For Phenol & Chloroform: Air Contaminant.  
SARA 302 - For Phenol: RQ = 1000 lb; TPQ = 500/10,000 lbs. For Chloroform: RQ = 10 lb; TPQ = 10,000 lbs.  
SARA 313 - For Phenol & Chloroform: Toxic Chemicals List.  
EPA TSCA Section 8(b) - For Tris, Phenol, Chloroform & Isoamyl Alcohol: Chemical Inventory.  
Exposure Limits - OSHA PEL (Gen Indu): Phenol:8H TWA 5 ppm (19 mg/m3) (skin).  
Chloroform:CL 50 ppm (240 mg/m3).  
Isoamyl Alcohol:8H TWA 100 ppm (360 mg/m3).  
NIOSH REL TO PHENOL-air:10H TWA 5 ppm (Sk); CL 15.6 ppm/15M (Sk).  
NIOSH REL TO CHLOROFORM-air:CA STEL 2 ppm/60M.  
NIOSH REL TO ISOAMYL ALCOHOL, primary-air:TWA 100 ppm;STEL 125 ppm.  
California Proposition 65 - This product is or contains chemical(s) known to the State of California to cause cancer.

This data sheet is based upon information believed to be reliable. The Company makes no statement or warranty as to the accuracy or completeness of the information contained herein which is offered for your consideration, investigation and verification. Any use of the information contained in this data sheet must be determined by the user to be in accordance with appropriate applicable regulations.