

# MATERIAL SAFETY DATA SHEET

**PRODUCT NAME** (number): Science Marker

Cat. NO. Series SM-1B, SM-1BL, SM-1G, SM-1R, SM-2B

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**NFPA HAZARD Rating:**

Health 1; Fire 2; Reactivity 0

## I. PRODUCT COMPOSITION/INFORMATION

Tradename: Science Marker™

Chemical Name: NA

Chemical Family: NA

CAS Registry No.: NA

**PACKAGE FORM:** Science Markers are available in a choice of four ink colors and two writing nib types. Basic package is a plastic bag containing six markers of a single color and nib type. Each marker is an assembly of various thermoplastic fitments consisting of a barrel, ink-filled reservoir, end plug, writing/nib assembly and a protective cap. An individual marker has an approximate composition of 82% polymetric parts and 18% ink by weight.

Science Markers™ are “articles” as defined in CFR 29 section 1910-1200. They do not expose the user to excessive chemicals in their normal course of use as surface marking instruments. Each marker contains a propriety chemical mixture known as P-10 ink (black, blue green or red). The ink has a typical composition as follows: hydrocarbon solvents, colorants and resin/binders. Exposure to ink vapor is minimized by the design/function of the marker that uses an absorptive reservoir connected to a capillary writing nib.

## II. HAZARDOUS INGREDIENTS: (Permissible Exposure limits in ppm)

No exposure limits have been established for the ink as a whole/ It is presumed to present the same health hazards as do the following components in the liquid mixture at 0.1% or greater by weight. The actual ink mixture including weight percent information is considered a trade secret.

INGREDIENTS	CAS#	OSHA	NIOSH	ACGIH	CANADA
<b>Ink Solvents:</b>					
Xylene <sup>1</sup>	1330-20-7	TWA: 100	100	100	100 (434 mg/m3)
		STEL: NE	150	150	150 (652mg/m3)
Ethylene glycol monopropyl ether	2807-30-9	NE	NE	NE	NE

<sup>1</sup> Typically: 80% o, m, p-isomers, 20% ethylbenzene, and less than 0.1% benzene

### **Ink Colorants:**

Black contains <0.1% of the following: 2-naphthalenol-1- (phenylazo) (CAS 842-07-9) and 2-naphthalenol-1- {(2-methylphenyl) azo} (CAS 2646-17-4). These compounds have been classified as group 3 and group 2B carcinogens respectively by IARC. It also contains Solvent Blue 99 (CAS 71832-15-0)\*. Green contains Solvent yellow (CAS 67990-27-6) and Solvent Blue 98 (CAS 74499-36-8)\*\*. Red contains Solvent red 68 (CAS 68555-82-8)\*. Blue ink contains no hazardous dyes.

\*PEL (OSHA) and TLV (ACGIH) not established. \*\*positive in Ames salmonella test for mutagenesis.

**Ink/Resins/Binders:** Classified as non-hazardous

Abbreviations used: NA: not applicable; NDA: no data available; NE: not established

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### **III. PHYSICAL DATA:** (for ink solvent composite all colors)

Boiling Point: 281° to 301° F

Vapor Pressure: 1.3-21.0 mmHg @ 20° C

Vapor Density (Air=1) @ 20(C): 3,7

Solubility in Water v/v @20 (C): Negligible to moderate

Appearance and Odor: black, blue green or red liquid with aromatic odor

Specific Gravity (H2O = 1): 0.9

Percent, Volatile by Volume (%): 77 (black), 75 (blue), 69 (green), and 79 (red)

Evaporation Rate (Butyl Acetate = 1): 0.22-0.6

### **IV. Fire and Explosion Hazard Data:** (ink only)

#### FLASH POINT AND METHOD

27.2° To 49° C/81° to 120° F TCC

#### FLAMMABLE LIMITS

LEL: 1.0-1.26 UEL: 7.0-15.8

EXTINGUISHING MEDIA: Use foam, CO2, dry chemical or water spray. If individual marker should catch fire, douse with or immerse in plain water.

FIRE FIGHTING PROCEDURE-SPECIAL: (for bulk packages) wear self-contained breathing apparatus and protective clothing for hair, skin, and eyes.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Burning product will emit toxic fumes (refer to Section VI).

### **V. HEALTH HAZARD DATA:**

No exposure limits have been established for the ink as formulated

THRESHOLD LIMIT VALUE: Short Term Exposure Limit (STEL): 150 ppm as xylene and 125 ppm as ethyl benzene

EFFECTS OF OVER EXPOSURE: NE

INHALATION: Prolonged inhalation of ink vapor may cause dizziness, headache, and incoordination. LC 50 xylene (rat) >6350 ppm (4 hours). LC 50 ethylene glycol monopropyl ether (rat) 2132 ppm (6 hours).

EYE: NE. Liquid ink expected to cause moderate to severe eye irritation

SKIN: Ink will stain skin. Expected to cause slight to moderate skin irritation. May cause permanent tattooing in puncture skin

INGESTION: Oral toxicity NE for the ink as a whole. LD 50 xylene (rat) > 5200 mg/kg. LD 50 ethylene glycol monopropyl ether (rat) 3089 mg/kg.

CHRONIC HEALTH HAZARDS: No chronic health hazard information is available. Excessive inhalation of ink vapor or widespread skin absorption expected to affect liver, kidneys, bone marrow, vision and nervous system.

EMERGENCY FIRST AID PROCEDURES: Discontinue exposure

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**INHALATION:** If subject is dizzy or drowsy, remove to fresh air. Loosen tight clothing.

**SKIN CONTACT:** Quick-drench with water, promptly wash with soap. Ink stain on skin: remove by gently rubbing with a swab containing a mixture of one part vegetable oil (e.g. soybean) and two parts iso-propanol, or use small amount of fingernail polish remover (acetone-oil type) followed by soap and water.

**EYE CONTACT:** Not a foreseeable emergency during the course of normal usage except possible injury due to marker's projectile-like shape. Treat as applies to any foreign material in eye.

**INGESTION:** Not a foreseeable emergency during course of normal use, but should ink have been removed somehow for its reservoir and swallowed, DO NOT induce vomiting. Breathing of vomit into lungs must be avoided. Get medical help immediately. May cause abdominal pain, severe GI distress, and diarrhea.

**MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:** Prolonged inhalation of solvent vapor may aggravate asthma and inflammatory or fibrotic pulmonary disease. Ink/skin contact may aggravate allergy, eczema, or a preexisting skin condition.

## **VI. REACTIVITY DATA**

**STABILITY:** Article is stable under reasonable, foreseeable conditions. Ink is sensitive to strong oxidizing agents

**INCOMPATIBILITY:** Contact with highly reactive chemical oxidants or ignition sources should be avoided.

**HAZARDOUS DECOMPOSITION PRODUCTS:** In a fire situation the article is expected to emit acrid smoke, irritating and toxic fumes, e.g. aldehyde, oxides of carbon, oxides of nitrogen, oxides or propylene, and perhaps other toxic vapors.

**HAZARDOUS POLYMERIZATION:** Will not occur.

## **VII. SPILL OR LEAK PROCEDURES**

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Broken packages or leaking markers: sweep into closable container for disposal.

**FIRE/EXPLOSION HAZARD:** Bulk burning packages/master cartons may erupt with sudden flammable force.

**POTENTIAL ENVIROMENTAL HAZARD:** NDA

**WASTE DISPOSAL METHOD:** Consult local, county, state, or provincial officials for proper disposal method.

## **VIII. SPECIAL PROTECTION INFORMATION:**

**RESPIRATORY PROTECTION:** NA. This article contains propriety ink in hydrocarbon solvent(s) at approx. 2.2 grams per marker. Brief exposure to its vapor is not liable to be hazardous, but it is prudent to maximize the user's breathing zone when using the uncapped marker.

**VENTILATION:** General ventilation as required for worker protection (usually 10 air changes per hour).

**OTHER PROTECTIVE EQUIPMENT:** NA.

**EYE PROTECTION:** NA

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SKIN PROTECTION: As required in regular professional use with good laboratory practices.

## **IX. REGULATORY INFORMATION**

**California safe drinking water and toxic enforcement act of 1986 – Proposition 65**: Ingredient chemicals known to the state of California to cause cancer, reproductive toxicity, or developmental toxicity: 2-naphthalenol-1-(phenylazo) and 2-naphthalenol-1 {(2- methylphenyl)azo} and benzene (xylenes typically contain benzene as an endogenous substance at less than 0.1%).

The five predominant materials in this marker, without respect to any potential hazard are: acetal copolymer, xylene(s), cellulose, acetal homopolymer, and ethylene glycol monopropyl ether.

**TSCA status**: Components of Science Marker comply with all TSCA Inventory requirements.

**DOT Hazard Class**: Non-regulated.

## **X. OTHER INFORMATION**

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE**: Store in a well-ventilated, cool, dry place. Storage below 77 °F (25 °C) is optimal for maximum shelf life.

**OTHER PRECAUTIONS**: Testing is recommended prior to marking on critical surfaces/substrates.

**CONDITIONS TO AVOID**: (in use)

- Avoid leaving marker uncapped when not in actual use
- Avoid leaving near source of heat or ignition
- Avoid skin contact with liquid ink. Accidental contact should be cleanses immediately (refer to Section V).
- Avoid getting marker ink on clothing. On skin or eyes. Ink is known to contain solvents/resins that cause slight moderate skin and eye irritation on contact.

## **DISCLAIMER:**

The information in the Material Safety Data Sheet is offered for use by technically qualified personnel at their discretion and risk. The availability data is believed currently reliable, but the accuracy and completeness of the data is not guaranteed and no representation or warranty is either expressed or implied. Since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material.