

MANUFACTURE INFORMATION

*Bill*

MANUFACTURE: WARD'S NATURAL SCIENCE ESTABLISHMENT, INC.  
 ADDRESS 1...:5100 W.HENIETTA RD. EMERGENCY PHONE.....: 716-359-2502  
 ADDRESS 2...:PO BOX 92912 PREPARATION/REVISION DATE: 2/20/90  
 CITY/ST/ZIP.:ROCHESTER NY 14692 LOCATION...: DIST.

OTHER LOCATIONS  
 DIST.

CONTACT/PREP KENNETH G.RAINIS (SAFTEY DIRECTOR)

TRADE NAME/SYNONYMS...: DNA STAIN MSDS# 1280  
 CHEMICAL NAME/SYNONYMS: N/A  
 CHEMICAL FAMILY.....: N/A  
 FORMULA.....: MIXTURE  
 PRODUCT CODE.....: 38W9012 500 ML

\*\*\*\*\*  
 \* HAZARDOUS MATERIALS IDENTIFICATION SYSTEM \*  
 \* RATING \*  
 \* HEALTH 2 \*  
 \* FIRE 0 \*  
 \* REACTIVITY 0 \*  
 \* PERSONAL PROTECTION \*  
 \*\*\*\*\*

\*\*\*\*\* HAZARDOUS INGREDIENTS \*\*\*\*\*

THIS PRODUCT CONTAINS HAZARDOUS INGREDIENTS (Y,N,N/A,N/I) : Y  
 CHEMICAL/Common Name CAS-NUMBER % PEL-OSHA TLV-ACGIH  
 PROPRIETARY INFORMATION < 1.0 N/A  
 IDENTITY PROVIDED PER 29CFR 19.10.1200  
 DISTILLED WATER

THIS PRODUCT CONTAINS CARCINOGENS (NTP, IARC, OR OSHA) (Y,N,N/A,N/I): N

\*\*\*\*\* HEALTH HAZARD DATA \*\*\*\*\*

HEALTH EFFECTS (ACUTE AND CHRONIC)  
 AVOID CONTACT WITH SKIN, EYES, AND MUCOUS MEMBRANES. PROLONGED OR REPEATED CONTACT MAY CAUSE IRRITATION.

PRIMARY ROUTES OF ENTRY  
 EYES: CONTACT MAY CAUSE IRRITATION. (HAVE EYE WASH STATION WITHIN A 15 SEC. WALK FROM WORK AREA.)

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE  
 TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

EMERGENCY FIRST AID PROCEDURES  
 EYES/SKIN: IMMEDIATELY FLUSH EYES OR SKIN WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES, BE SURE TO WASH UNDER EYELIDS. FOR EYES, GET IMMEDIATE MEDICAL ATTENTION.

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INGESTION: IF CONCIIOUS, GIVE ONE OR TWO GLASSES OF WATER TO DRINK, INDUCE VOMITING AND CALL PHYSICIAN.

INHALATION: NOT AN INHALATION HAZARD.

\*\*\*\*\* CHEMICAL DATA \*\*\*\*\*

BOILING POINT(F)....	212	SPECIFIC GRAVITY(WATER=1).....	1.00
VAPOR PRESSURE(MMHG)	14	PERCENT VOLATILE BY VOLUME(%).....	N/A
VAPOR DENSITY(AIR=1)	0.7	EVAP RATE( ETHER =1)	> 1

SOLUBILITY IN WATER.. COMPLETE

APPEARANCE AND ODOR INFORMATION

DARK AQUA; NO ODOR

\*\*\*\*\* PHYSICAL HAZARD DATA \*\*\*\*\*

FLASH POINT (METHOD USED) NON FLAM FLAMMABLE LIMITS-LEL= N/A UEL= N/A

EXTINGUISHING MEDIA

USE BEST FOR SURROUNDING FIRE

SPECIAL FIRE FIGHTING PROCEDURES

IN FIRE CONDITIONS WEAR A NIOSH-APPROVED SELF-CONTAINED BREATING APPARATUS AND FULL PROTECTIVE CLOTHING.

UNUSUAL FIRE AND EXPLOSION HAZARDS

FIRE OR EXCESSIVE HEAT MAY PRODUCE HAZARDOUS DECOMPOSITION PRODUCTS; SUCH AS BROMINE, CHLORIDES, OXIDES OF NITROGEN.

\*\*\*\*\* REACTIVITY DATA \*\*\*\*\*

INCOMPATIBILITY (MATERIALS TO AVOID)

STRONG OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS

COMBUSTION WILL PRODUCE CARBON DIOXIDE AND CARBON MONOXIDE.

WILL HAZARDOUS POLYMERIZATION OCCUR

NO

CONDITIONS TO AVOID/POLYMERIZATION

NOT APPLICABLE

IS THE PRODUCT STABLE

YES

CONDITIONS TO AVOID/STABILITY

PROTECT FROM LIGHT AND EXCESSIVE TEMPERATURE AND HEAT.

\*\*\*\*\* SPILL AND LEAK PROCEDURES \*\*\*\*\*

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

AESORB IN VERMICULITE, SAND, EARTH. SCOOP UP AND PLACE IN A SUITABLE CONTAINER.

WASTE DISPOSAL METHOD

MATERIAL MAY BE FLUSHED TO A SANITARY SEWER ALONG WITH COPIOUS AMOUNTS OF WATER. BE AWARE THAT DISCHARGE, TREATMENT, OR DISPOSAL MAY BE SUBJECT TO FEDERAL, STATE, OR LOCAL LAWS.

\*\*\*\*\* EXPOSURE CONTROL INFORMATION \*\*\*\*\*

VENTILATION

LOCAL EXHAUST	NOT NEEDED	MECHANICAL (GEN)	NO
SPECIAL.....	NOT NEEDED	OTHER.....	NO

RESPIRATORY PROTECTION

NONE REQUIRED

PROTECTIVE GLOVES

RUBBER (NITRILE/BUTYL) GLOVES.

OTHER PROTECTIVE EQUIPMENT

SMOCK, APRON, PROPER RUBBER GLOVES, CHEMICAL GOGGLES, AND AN EYE WASH STATION WITHIN A 15 SEC. WALK FROM WORK AREA.

OTHER ENGINEERING CONTROLS

NONE

WORK PRACTICES

WEAR PROTECTIVE EQUIPMENT: APRON, SMOCK, RUBBER GLOVES, AND CHEMICAL GOGGLES MAINTAIN GOOD LABORATORY HYGIENE PRACTICES. HAVE AN EYE WASH STATION IN CLOSE PROXIMITY, NO MORE THAN A 15 SEC. WALK FROM WORK AREA. AVOID CONTACT WITH EYES, SKIN, AND CLOTHING.

HYGENIC PRACTICES

WASH HANDS WITH SOAP AND WATER FOLLOWING THE HANDLING OF THIS MATERIAL.

\*\*\*\*\* SPECIAL PRECAUTIONS \*\*\*\*\*

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

STORE IN A COOL, DRY PLACE. WASH THOROUGHLY AFTER HANDLING. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. STORAGE CODE-->GREEN (GENERAL LABORATORY STORAGE).

MAINTENANCE PRECAUTIONS

NOT APPLICABLE

OTHER PRECAUTIONS

READ LABEL ON CONTAINER BEFORE USING. FOR LABORATORY USE ONLY. NOT FOR FOOD DRUG, HOUSEHOLD, OR IN VITRO DIAGNOSTIC USE. KEEP OUT OF REACH OF CHILDREN.

OTHER COMMENTS

THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF THE MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS

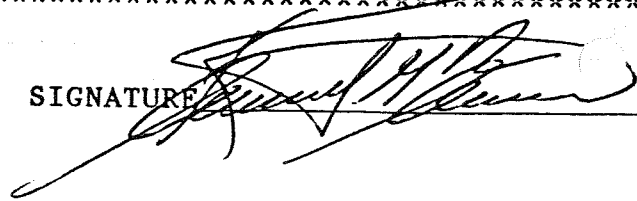
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SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES. THE IDENTITY OF THIS SUBSTANCE MAY BE MADE AVAILABLE AS PROVIDED IN 29 CFR 1910.1200 (1).

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UN#: N/A  
DOT HAZARD CLASSIFICATION: NON-HAZARD  
KENNETH G. RAINIS SAFETY DIRECTOR 3/2/90

SIGNATURE



**WARD'S TECHNICAL INFORMATION**  
**WARD'S POLYCHROME DNA STAIN FACTS**

(con't)

**DIRECTIONS FOR USE:**

**PERSONAL PROTECTIVE EQUIPMENT:** Wear protective rubber gloves, chemical goggles, apron, and have an eye wash station within 15 second walk from work area.

1. Use directly from bottle. Do not dilute. Place electrophoresed gel into staining tray and pour into tray (NOT DIRECTLY OVER GEL) approximately 75-100 ml of Ward's DNA stain or enough to just cover the gel.
2. Allow the gel to stain for 3 hours; Staining times exceeding 3 hours will lengthen destaining time, and may result in a darker background.
3. Carefully decant the stain from the staining tray. Use a spatula ("gel handler") to hold the gel flat against the bottom of the staining tray. Do not reuse DNA stain. The used stain may be disposed directly to sink drain followed by copious quantities of water.
4. Add distilled water to the staining tray (do not pour directly onto the gel) to a depth of 1 inch. Allow the gel to destain overnight. Generally, a 12-18 hour period is required; or you may destain until all DNA bands are clearly visible. Replace once or twice the colored water with fresh distilled water. Use of an orbital shaker is recommended to lessen the destaining time. Excessive destaining may cause the small DNA fragment bands to fade.
5. Following destaining, remove gel from tray and carefully wrap in clear plastic wrap. Bands will appear mauve-colored and can be viewed in available light.
6. Gel may be stored in refrigerator for at least 3 weeks before fading, since nucleic acids are not fixed.

**FIRST AID DIRECTIONS:**

**INHALATION:** Not an inhalation hazard in the form provided.

**SKIN:** Flush with water, if irritation occurs seek medical attention.

**EYES:** Immediately flush with plenty of water for at least 15 minutes. (including eyelids). Get medical attention.

**INGESTION:** If conscious, give 1 or 2 glasses of water, induce vomiting. Immediately contact physician.

Store in a cool, dry place. Wash thoroughly after handling. Keep container tightly closed when not in use.

**STORAGE CODE:** Green (General Laboratory Storage)

*For technical information or assistance, call Toll-free : 1-800-962-2660 or Fax: 1-716-334-6174*

**WARD'S**

Natural Science Establishment, Inc.  
5100 West Henrietta Rd. • P. O. Box 92912 • Rochester, NY 14692-9012

**WARD'S TECHNICAL INFORMATION**  
**WARD'S POLYCHROME DNA STAIN FACTS**

TRADE NAME /SYNONYMS: WARD'S POLYCHROME DNA stain MSDS#1301  
CHEMICAL NAME/SYNONYMS: N/A  
CHEMICAL FAMILY: N/A  
FORMULA: Polychrome Aqueous Solution  
PRODUCT CODE: (250 mL) 38W9013 - Product Sample  
(500 mL) 38W9012

**HAZARDOUS MATERIALS IDENTIFICATION SYSTEM:**

	Rating
Health	2
Fire	0
Reactivity	0

**CHEMICAL DATA:**

Boiling point (F)	212	Specific Gravity(water=1)	1.00
Vapor pressure	14	Percent Volatile by volume(%)	n/a
Vapor Density (air=1)	0.7	Evaporation Rate (ether=1)	>1

**SOLUBILITY IN WATER:** Complete

**APPEARANCE AND ODOR INFORMATION:** Dark aqua; No Odor

**ABSTRACT:**

Ward's DNA stain provides clear imaging of DNA fragments without the use of hazardous chemicals. In comparison to the other types of DNA stains, Ward's DNA stain provides several considerable advantages. Although it is not as sensitive as Silver Nitrate, it will image 1.0 to 1.4ug of DNA per well. Silver Nitrate's disadvantages lie in the complexity of the staining protocol. It uses a laborious and rather complex protocol, up to 14 steps resembling wet plate photography, that may not be suitable for all students. The method must be followed very closely to obtain good results. Ward's economical 2 step DNA imaging system will provide even a beginner with consistent and accurate results. Ethidium bromide is another sensitive DNA stain and will image 0.2 to 0.5ug of DNA, however, this too, uses several hazardous chemicals. It also requires the use of a UV light source that fluoresces the stain and the taking of a photographic image for analysis. Ward's DNA stain even has clear advantages over the biological stain, methylene blue, which is the stain normally used in imaging DNA at the educational level. Numerous experiments have been performed to compare the methylene blue with the Ward's DNA stain and we have concluded that Ward's DNA stain will provide an improved contrast of bands, that are visible without the use of a light table, which is usually required to observe faint DNA bands that have been stained with methylene blue. Ward's DNA stain will only stain the DNA and not the gel matrix and thus, it will destain easier, provide a clearer background and permit more bands to be identified with greater ease. Ward's DNA stain provides a distinct and measurably clear alternative to the above mentioned DNA staining options. This stain protocol requires no other chemicals and provides clear DNA fragment band imaging. Ward's DNA stain can be used with either agarose or PAGE gels.

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