



SIGMA-ALDRICH

Material Safety Data Sheet

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Version 1.40

Section 1 - Product and Company Information

Product Name: AEC Staining Kit
Product Number: AEC101
Brand: Sigma Chemical
Company: Sigma-Aldrich
Street Address: 3050 Spruce Street
City, State, Zip, Country: SAINT LOUIS, MO 63103 US
Technical Phone: 800-325-5832
Fax: 800-325-5052

Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

Table with 5 columns: Substance Name, CAS#, SARA 313, EC no, Annex I Index Number. Row 1: AEC CHROMOGEN, None, Yes, 616-001-00-X

Table with 4 columns: Ingredient Name, CAS#, Percent, SARA 313. Row 1: DIMETHYLFORMAMIDE, 68-12-2, 99.600%, No. Row 2: 3-AMINO-9-ETHYL CARBAZOLE, 132-32-1, 0.400%, No.

Formula
Synonyms

Section 3 - Hazards Identification

Emergency Overview

Toxic. May cause harm to the unborn child. Harmful by inhalation and in contact with skin. Irritating to eyes and skin. Combustible. Readily absorbed through skin. Target organ(s): Liver, Kidneys.

HMIS Rating: Health: 2, Flammability: 2, Reactivity: 0

NFPA Rating: Health: 2, Flammability: 2, Reactivity: 0

*additional chronic hazards present. For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure: If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

Inhalation Exposure: If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Dermal Exposure

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

Eye Exposure

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

Autoignition Temp: N/A

Extinguishing Media

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill

Evacuate area.

Procedure(s) of Personal Precaution(s)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Wear disposable coveralls and discard them after use.

Methods for Cleaning Up

Cover with dry lime or soda ash, pick up, keep in a closed container, and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling

User Exposure

Do not breathe vapor. Do not breathe mist. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

Storage

Suitable

Keep tightly closed. Keep away from heat and open flame. Store in a cool dry place. Store at 2-8°C

Section 8 - Exposure Controls / PPE

Engineering Controls

Use only in a chemical fume hood. Safety shower and eye bath.

Personal Protective Equipment

Respiratory

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate, use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand

Compatible chemical-resistant gloves.

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Eye

Chemical safety goggles.

General Hygiene Measures

Wash thoroughly after handling. Wash contaminated clothing before reuse. Discard contaminated shoes.

Exposure Limits, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	10 PPM
USA	MSHA Standard-air	TWA	10 PPM (30 MG/M3) (SKIN)
USA	OSHA	PEL	8H TWA 10 PPM (30 MG/M3) (SKIN)
New Zealand	OEL		
USA	NIOSH	TWA	10 PPM (SK)

Remarks: Skin

Remarks: check ACGIH TLV

Section 9 - Physical/Chemical Properties**Appearance****Physical State**
Liquid**Molecular Weight** N/A**pH** N/A**BP/BP Range** N/A**MP/MP Range** N/A**Freezing Point** N/A**Vapor Pressure** N/A**Vapor Density** N/A**Saturated Vapor Conc.** N/A**SG/Density** N/A**Bulk Density** N/A**Odor Threshold** N/A**Volatile%** N/A**VOC Content** N/A**Water Content** N/A**Solvent Content** N/A**Evaporation Rate** N/A**Viscosity** N/A**Partition Coefficient** N/A**Decomposition Temp.** N/A**Flash Point °F** N/A**Flash Point °C** N/A**Explosion Limits** N/A**Flammability** N/A**Autoignition Temp** N/A**Solubility** N/A

N/A = not available

Section 10 - Stability and Reactivity**Stability****Materials to Avoid**

Strong oxidizing agents, Acids

Hazardous Decomposition Products**Hazardous Decomposition Products**

Carbon monoxide, carbon dioxide, and nitrogen oxides

Hazardous Polymerization**Hazardous Polymerization**

Will not occur.

Section 11 - Toxicological Information**Route of Exposure****Skin Contact**

Causes skin irritation.

Skin Absorption

Harmful if absorbed through skin.

Eye Contact

Causes eye irritation.

Inhalation

Harmful if inhaled.

Ingestion

May be harmful if swallowed.

Target Organ(s) or System(s)

Liver, Kidneys, Central nervous system, Cardiovascular system, Blood.

Signs and Symptoms of Exposure

Warning: intolerance for alcohol can occur up to 4 days after dimethylformamide exposure. N,N-dimethylformamide is considered to be a potent liver toxin. Exposure can cause: Stomach pains, vomiting, diarrhea. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

RTECS Number:**Toxicity Data**

Oral - Rat: 2800 mg/kg (LD50)

Intraperitoneal - Rat: 1400 MG/KG (LD50)

Remarks: Behavioral: Somnolence (general depressed activity).

Behavioral: Muscle weakness.

Nutritional and Gross Metabolic: Weight loss or decreased weight gain.

Subcutaneous - Rat: 3800 MG/KG (LD50)

Intravenous - Rat: 2 GM/KG (LD50)

Oral - Mouse: 2900 mg/kg (LD50)

Inhalation - Mouse: 9,400 mg/m³ (LC50)

Remarks: Behavioral: Convulsions or effect on seizure threshold.

Behavioral: Muscle weakness.

Lungs, Thorax, or Respiration: Dyspnea.

Intraperitoneal - Mouse: 650 MG/KG (LD50)

Subcutaneous - Mouse: 4500 MG/KG (LD50)

Intravenous - Mouse: 2500 MG/KG (LD50)

Intramuscular - Mouse: 3900 MG/KG (LD50)

Intravenous - Dog: 470 MG/KG (LD50)

Intraperitoneal - Cat: 500 MG/KG (LD50)

Remarks: Liver: Other changes.
Kidney, Ureter, Bladder: Other changes in urine composition.
Blood: Changes in cell count (unspecified).

Oral - Rabbit: 5000 mg/kg (LD50)

Skin - Rabbit: 4720 mg/kg (LD50)

Intraperitoneal - Rabbit: 1 GM/KG (LD50)

Remarks: Liver: Other changes.
Kidney, Ureter, Bladder: Other changes in urine composition.
Blood: Changes in cell count (unspecified).

Intravenous - Rabbit: 1800 MG/KG (LD50)

Intravenous - Guinea pig: 1050 MG/KG (LD50)

Irritation Data

Skin - Human: 100 % 24H

Remarks: Mild irritation effect

Eyes - Rabbit: 100 mg

Remarks: Rinsed

Chronic Exposure - Carcinogen

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC Carcinogen List

Rating

Group 3

ACGIH Carcinogen List

Rating

A4

Chronic Exposure - Teratogen

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
Rat	5330 UL/KG	Oral	(6-15D PREG)
Result: May cause congenital malformation in the fetus.			
Rat	300 PPM/6H	Inhalation	(6-15D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.			
Rat	3600 MG/KG	Skin	(11-13D PREG)
Result: Effects on Embryo or Fetus: Fetal death.			
Rat	7552 MG/KG	Skin	(6-15D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Embryo or Fetus: Other effects to embryo.			
Mouse	1820 MG/KG	Oral	(6-15D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).			
Mouse	15120 MG/KG	Intraperitoneal	(1-14D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Other developmental abnormalities.			
Rabbit	2600 MG/KG	Oral	(6-18D PREG)
Result: Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Body wall. Specific Developmental Abnormalities: Musculoskeletal system.			
Rabbit	2600 MG/KG	Oral	(6-18D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).			

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Rabbit 450 PPM/6H Inhalation (7-19D PREG)

Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Specific Developmental Abnormalities: Body wall.

Specific Developmental Abnormalities: Musculoskeletal system.

Rabbit 5200 MG/KG Skin (6-18D PREG)

Result: Effects on Embryo or Fetus: Other effects to embryo.

Chronic Exposure - Mutagen

<u>Species</u>	<u>Dose</u>	<u>Route</u>	<u>Mutation test</u>
Human	12300 UG/M3/Y	Inhalation	Cytogenetic analysis
Human	100 NMOL/L		lymphocyte Cytogenetic analysis
Rat	10700 UG/M3	Inhalation	Dominant lethal test
Mouse	500 UG/KG	Intraperitoneal 24H	Micronucleus test
Mouse	40 UMOL/KG	Intraperitoneal	Cytogenetic analysis
Mouse	5 GM/L		lymphocyte Mutation in mammalian somatic cells.
Mouse	4250 UG/KG		S. typhimurium Host-mediated assay

Chronic Exposure - Reproductive Hazard

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
Rat	5030 MG/KG	Oral	(6-15D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord) Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).			
Rat	800 PPM/6H	Inhalation	(13W PRE)
Result: Maternal Effects: Other effects. Endocrine: Effect on menstrual cycle.			
Rat	50 PPM/6H	Inhalation	(13W MALE)
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).			
Rat	4 MG/M3/4H	Inhalation	(1-19D PREG)
Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus) Effects on Embryo or Fetus: Fetal death.			
Rat	600 MG/M3/24H	Inhalation	(1-19D PREG)
Result: Effects on Newborn: Behavioral.			
Rat	287 PPM/6H	Inhalation	(0-19D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord) Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).			
Rat	20 GM/KG	Skin	(6-15D PREG)
Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).			
Rat	20 GM/KG	Skin	(1-20D PREG)
Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated). Effects on Newborn: Delayed effects.			
Mouse	200 PPM/6H	Inhalation	(13W PRE)
Result: Maternal Effects: Other effects. Endocrine: Effect on menstrual cycle.			
Mouse	2100 MG/KG	Intraperitoneal	(11D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).			
Rabbit	450 PPM/6H	Inhalation	(7-18D PREG)
Result: Maternal Effects: Other effects. Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Gastrointestinal system.			

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material.
Observe all federal, state, and local environmental regulations.

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Section 14 - Transport Information

DOT

Proper Shipping Name: N,N-Dimethylformamide
UN#: 2265
Class: 3
Packing Group: Packing Group III
Hazard Label: Flammable liquid
PIH: Not PIH

IATA

Proper Shipping Name: N,N-Dimethylformamide
IATA UN Number: 2265
Hazard Class: 3
Packing Group: III

Section 15 - Regulatory Information

EU Directives Classification

Symbol of Danger: T

Indication of Danger

Toxic.

Risk Statements R: 61 20/21 36

May cause harm to the unborn child. Also harmful by inhalation and in contact with skin. Irritating to eyes.

Safety Statements S: 53 45

Restricted to professional users. Attention - Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US Classification and Label Text

Indication of Danger

Toxic.

Risk Statements

May cause harm to the unborn child. Harmful by inhalation and in contact with skin. Irritating to eyes and skin.

Safety Statements

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Wear suitable protective clothing, gloves, and eye/face protection. Do not breathe vapor.

US Statements

Combustible. Readily absorbed through skin. Target organ(s): Liver, Kidneys.

United States Regulatory Information

SARA Listed: Yes

Demimis: 1 %

Notes: This product is subject to SARA section 313 reporting requirements.

TSCA Inventory Item: Yes

Canada Regulatory Information

WHMIS Classification

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: No

NDSL: No

Section 16 - Other Information

Disclaimer

For R&D use only. Not for drug, household or other uses.

Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. SigmaAldrich Inc., shall not be held liable for

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