

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: AEC Chromogen Concentrate (DynaChrome™)



MSDS NUMBER: 230078

GENERAL USE: Laboratory processing

PRODUCT DESCRIPTION: Tinge yellow to pinkish liquid, slight amine odor.

MANUFACTURER'S NAME Thermo Electron Corporation		DATE PREPARED: December 28, 2003	Page 1 of 4
ADDRESS (NUMBER, STREET, P.O. BOX) 171 Industry Drive (CITY, STATE AND ZIP CODE) Pittsburgh, PA 15275		SUPERSEDES: August 1, 2001	
COUNTRY USA		TELEPHONE NUMBER FOR INFORMATION (412) 788-1133	
DISTRIBUTOR'S NAME Thermo Electron Corporation		EMERGENCY TELEPHONE NUMBER CHEM • TEL (800) 255-3924 Outside USA (813) 248-0585	
ADDRESS (NUMBER, STREET, P.O. BOX) 93/96 Chadwick Road, Astmoor (CITY, STATE AND ZIP CODE) Runcorn, Cheshire WA7 1PR		TELEPHONE NUMBER FOR INFORMATION +44 (0) 1928 562547	
COUNTRY United Kingdom		EMERGENCY TELEPHONE NUMBER CHEM • TEL (800) 255-3924 Outside USA (813) 248-0585	

SECTION 2 - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENTS	% (by weight)	CAS #	EINECS #	Hazard Symbol	RISK PHRASES Full Text Section 16
Dimethylformamide (a,b)	95 - 98	68-12-2	200-679-5	T	R-61, 20/21, 36
3-Amino-9-ethylcarbazole	1 - 5	132-32-1	205-057-7	T	R-25

(a,b) See Section 15

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Slightly yellow to pinkish liquid, toxic if ingested, vapors are harmful to respiratory tract. Contact with eyes and skin may cause irritation. May be harmful if inhaled, ingested or absorbed through the skin. Hazard symbols for this product: T Risk Phrases - R 20/21, 36, 61

POTENTIAL HEALTH EFFECTS

INHALATION: High concentrations are irritating and harmful to the respiratory tract; may cause headache, dizziness, nausea, vomiting and malaise.

SKIN: Brief contact may cause irritation; prolonged contact may cause moderate reddening, swelling and possible necrosis, harmful if absorbed through the skin.

EYES: Contact causes severe irritation and pain associated with redness and swelling of the conjunctiva.

INGESTION: Toxic; may cause headache, dizziness, diarrhea and general weakness.

CARCINOGENICITY

NTP? No IARC MONOGRAPHS? Yes OSHA REGULATED? No

3-Amino-9-ethylcarbazole is listed on IARC as Group 3 carcinogen and ACGIH as Group 4A carcinogen.

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SECTION 4 - FIRST AID MEASURES

INHALATION: Remove affected person to fresh air; provide oxygen if breathing is difficult; if affected person is not breathing, administer CPR and seek emergency medical attention.

SKIN: Remove contaminated clothing; wash affected area with soap and water; launder contaminated clothing before reuse; if irritation persists, seek medical attention.

EYES: Remove contact lenses. Flush eyes with clear running water for 15 minutes while holding eyelids open; if irritation persists, seek medical attention.

INGESTION: Give two glasses of water for dilution; Do not induce vomiting; never give anything by mouth to an unconscious person; seek medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

GENERAL HAZARDS: Product is combustible. Products of combustion include compounds of carbon, hydrogen, nitrogen and oxygen, including carbon monoxide.

EXTINGUISHING MEDIA
Carbon dioxide, water, water fog, dry chemical, chemical foam

FIRE FIGHTING PROCEDURES
Self - contained respiratory equipment; cool containers to prevent pressure buildup and possible explosion when exposed to extreme heat.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Closed containers can explode due to buildup of pressure when exposed to extreme heat.

HAZARDOUS COMBUSTION PRODUCTS
Smoke, fumes, oxides of carbon and nitrogen

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: COMBUSTIBLE. Evacuate and ventilate area; confine and absorb into absorbent; place material into approved containers for disposal; for spills in excess of allowable limits (RQ) notify the National Response Center (800) 424 - 8802; refer to CERCLA 40 CFR 302 and SARA Title III, Section 313 40 CFR 372 for detailed instructions concerning reporting requirements. Do not discharge into lakes, ponds, streams or public waters.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: This material is combustible. It should be stored in tightly closed containers in a cool, well ventilated area. Vapor may form explosive mixtures in air. All sources of ignition should be controlled. This material may be classified as COMBUSTIBLE by DOT unless transported by vessel or aircraft. Refer to 49 CFR 173.120. Keep this and other chemicals out of reach of children. Avoid inhaling concentrated fumes or vapors.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

HAZARDOUS COMPONENTS	NIOSH				ACGIH			
	TWA ppm	TWA mg/m3	STEL ppm	STEL mg/m3	TWA ppm	TWA mg/m3	STEL ppm	STEL mg/m3
Dimethylformamide (a,b)		30		--		30		--
3-Amino-9-ethylcarbazole		Not established				Not established		

PERSONAL PROTECTION:

RESPIRATORY PROTECTION (SPECIFY TYPE): None required while threshold limits are kept below maximum allowable concentrations; if TWA exceeds limits, NIOSH approved respirator must be worn. Refer to 29 CFR 1910.134 or European Standard EN 149 for complete regulations.

PROTECTIVE GLOVES: Neoprene gloves, butyl or nitrile rubber gloves with cuffs.

EYE PROTECTION: Protective eyeglasses or chemical safety goggles. Refer to 29 CFR 1910.133 or European Standard EN166.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Coveralls, apron, or other equipment should be worn to minimize skin contact, safety eyewash station nearby.

WORK / HYGIENIC PRACTICES: Practice safe workplace habits. Minimize body contact with this, as well as all chemicals in general.

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SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR Tinge yellow to pinkish liquid, slight amine odor	VAPOR PRESSURE Not applicable
pH Not specified	SPECIFIC GRAVITY (WATER = 1) 1.850
BOILING POINT / BOILING RANGE 307.4° F (153° C)	SOLUBILITY IN WATER Soluble
FLASH POINT 136° F (57.8° C) TCC	VISCOSITY Solid
FLAMMABLE LIMITS LEL: 2.2% UEL: 15.2%	VAPOR DENSITY (AIR = 1) Not applicable
AUTOIGNITION TEMPERATURE Not determined	EVAPORATION RATE (WATER = 1) Not applicable

SECTION 10 - STABILITY AND REACTIVITY

STABILITY UNSTABLE: STABLE: XXX	CONDITIONS TO AVOID: Extreme temperatures, open flames
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers, strong acids	
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Decomposition will not occur if handled and stored properly. In case of a fire, oxides of carbon, nitrogen, hydrocarbons, fumes, and smoke may be produced.	
HAZARDOUS POLYMERIZATION MAY OCCUR: WILL NOT OCCUR: XXX	CONDITIONS TO AVOID: None

SECTION 11 - TOXICOLOGICAL INFORMATION

Hazardous Components	CAS # EINECS #	LD50 of Ingredient (Specify Species and Route)	LC50 of Ingredient (Specify Species)
Dimethylformamide (a,b)	68-12-2 200-679-5	2800 mg / kg Oral - rat	9400 mg / m3 Inhalation - mouse
3-Amino-9-ethylcarbazole	132-32-1 205-057-7	144 mg / kg Oral - rat	Not established

SECTION 12 - ECOLOGICAL INFORMATION

No data are available on the adverse effects of this material on the environment. Neither COD nor BOD data are available. Based on the chemical composition of this product it is assumed that the mixture can be treated in an acclimatized biological waste treatment plant system in limited quantities. However, such treatment should be evaluated and approved for each specific biological system. None of the ingredients in this mixture are classified as a Marine Pollutant.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: According to the European Waste Catalogue, waste codes are application specific and should be assigned by the user based on the application for which the product is used. Dispose of in accordance with Local, State, and Federal Regulations. This product may produce hazardous vapors or fumes in a closed disposal container creating a dangerous environment. Refer to "40 CFR Protection of Environment Parts 260 - 299" for complete waste disposal regulations. Consult your local, state, or Federal Environmental Protection Agency before disposing of any chemicals. Do not flush to sanitary sewer or waterway.

SECTION 14 - TRANSPORT INFORMATION

PROPER SHIPPING NAME: N,N-Dimethylformamide solution	IATA HAZARD CLASS / Pack Group: 3 / III
DOT HAZARD CLASS / Pack Group: 3 / III	IMDG HAZARD CLASS: 3 / III
REFERENCE: 49 CFR 173.150, .203, .242	RID/ADR Dangerous Goods Code: 3
UN / NA IDENTIFICATION NUMBER: UN 2265	UN TDG Class / Pack Group: 3 / III
LABEL: FLAMMABLE LIQUID	
HAZARD SYMBOLS: F	

Note: Transportation information provided is for reference only. Client is urged to consult CFR 49 parts 100 - 177, IMDG, IATA, EU, United Nations TDG, and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

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SECTION 15 - REGULATORY INFORMATION

TSCA (USA - Toxic Substance Control Act)

All components of this product are listed on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory) or are exempted from listing because a Low Volume Exemption has been granted in accordance with 40 CFR 723.50.

SARA TITLE III (USA - Superfund Amendments and Reauthorization Act)

311/312 Hazard Categories
Immediate health

313 Reportable Ingredients:

(a) Indicates a toxic chemical subject to annual reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372.

CERCLA (USA - Comprehensive Response Compensation and Liability Act)

(b) The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) has notification requirements for releases or spills to the environment of the Reportable Quantity (RQ for this mixture = 100 lbs) or greater amounts, according to 40 CFR 302.

CPR (Canadian Controlled Products Regulations)

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

IDL (Canadian Ingredient Disclosure List)

Components of this product identified by CAS number and listed on the Canadian Ingredient Disclosure List are shown in Section 2.

DSL / NDSL (Canadian Domestic Substances List / Non-Domestic Substances List)

Components of this product identified by CAS number are listed on the DSL or NDSL and may or may not be listed in Section 2 of this document. Only ingredients classified as "hazardous" are listed in Section 2 unless otherwise indicated.

EINECS (European Inventory of Existing Commercial Chemical Substances)

Components of this product identified by CAS numbers are on the European Inventory of Existing Commercial Chemical Substances.

WGK Water Quality Index: 2

VbK Index: All

RISK PHRASES:

R20/21 Harmful by inhalation and in contact with skin
R36 Irritating to eyes.
R61 May cause harm to the unborn child.

SYMBOL(S) REQUIRED FOR LABEL

Toxic



SAFETY PHRASES:

S53 Avoid exposure - obtain special instructions before use.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.)

SECTION 16 - OTHER INFORMATION

Notes & full R-Phrase text

R20/21 Harmful by inhalation and in contact with skin
R25 Toxic if swallowed.
R36 Irritating to eyes.
R61 May cause harm to the unborn child.

HMIS HAZARD RATINGS

HEALTH	2	0 = INSIGNIFICANT	3 = HIGH
FLAMMABILITY	2	1 = SLIGHT	4 = EXTREME
REACTIVITY	0	2 = MODERATE	
PERSONAL PROTECTIVE EQUIPMENT	C	Safety Glasses, Gloves, Apron	

REVISION SUMMARY:

This MSDS has been revised in the following sections: No revisions available

MSDS Prepared by: Chem-Tel, Inc.
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The information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.