

# Material Safety Data Sheet

## DCI Activator

### 1. PRODUCT AND COMPANY IDENTIFICATION

<b>Product Name:</b>	DCI Activator, 0.25 M DCI in Acetonitrile		
<b>Synonyms/Generic Names:</b>	Dicyanoimidazole in Acetonitrile, Activator, DCI Activator		
<b>Product Use:</b>	Laboratory use		
<b>Manufacturer:</b>	Roche NimbleGen, Inc. 500 S. Rosa Rd, Madison, WI 53719		
<b>For More Information Call:</b>	608-218-7600 x4 (Monday – Friday 8:00-4:30)	<b>IN CASE OF EMERGENCY CALL:</b> (24 Hours/Day, 7 Days/Week)	CHEMTREC 800-424-9300

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight %	Component	CAS #	EINECS# / ELINCS#	EC Classification*
95-97%	Acetonitrile **	75-04-8	200-835-2	F, Xn, Xi ; R11, R20/21/22, R36
3-5%	4,5-Dicyanoimidazole	1122-28-7	214-344-6	F, Xn ; R11, R20/21/22, R16, R36

\* Symbol and R phrase according to EC Annex1

\*\* Subject to the reporting requirements of SARA Title III Section 313

### 3. HAZARDS IDENTIFICATION

Clear, colorless solution with a strong ether-like odor.

R11 – Highly Flammable

R20/21/22 – Harmful by inhalation, in contact with skin and if swallowed.

R16 – Explosive when mixed with oxidizing substances

R36 – Irritating to eyes.

S1/2, S16, S36/37

**Routes of Entry:** Skin, inhalation, material is absorbed through the skin.

**Ingredients found on carcinogen lists:**

INGREDIENT NAME	NTP STATUS	IARC STATUS	OSHA LIST	ACGIH
Acetonitrile	Class D Not Classified	Not Listed	Not Listed	A-4 Not Classified
4,5-Dicyanoimidazole	Not Listed	Not Listed	Not Listed	Not Listed



### 4. FIRST AID INFORMATION

**MAY BE FATAL IF INHALED, SWALLOWED OR ABSORBED THROUGH SKIN IN LARGE QUANTITIES.**

**Inhalation:** Causes respiratory tract irritation. May cause chemical pneumonitis, bronchitis, and pulmonary edema. Inhalation may also cause rhinitis, sneezing, coughing, oppressive feeling in the chest or chest pain, dyspnea, wheezing, tachypnea, cyanosis, salivation, nausea, giddiness, muscular weakness. The systemic effects appear to be attributable to the conversion of acetonitrile to cyanide. Blood cyanide and thiocyanate levels are elevated during acute intoxication. Move casualty to fresh air and keep at rest. Get medical attention immediately.

**Eyes:** Irritating to eyes. Causes eye irritation, lacrimation, redness, and pain, blurred vision and conjunctivitis. In case of eye contact, rinse with plenty of water and seek medical attention.

**Skin:** Irritating to skin and absorbed through skin. Causes skin irritation (reddening and itching, inflammation). Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and wash using soap. Get medical attention immediately.

**Ingestion:** **Do Not Induce Vomiting!** Toxic. Irritant. Causes gastrointestinal tract irritation (coughing, nausea, abdominal spasms, vomiting, hematemesis, diarrhea. Symptoms may be delayed. The systemic effects appear to be attributable to the conversion of acetonitrile to

cyanide. Blood cyanide and thiocyanate levels are elevated during acute intoxication. May also lead to shock, coma and death. Wash out mouth with water and give 1-2 glasses of water or milk. Get medical attention immediately.

## 5. FIRE-FIGHTING MEASURES

### FLAMMABLE PROPERTIES: (Acetonitrile)

<b>Flash Point:</b>	6°C (42°F)
<b>Flash Point method:</b>	Closed cup
<b>Autoignition Temperature:</b>	524°C (975°F)
<b>Upper Flame Limit (volume % in air):</b>	4.4%
<b>Lower Flame Limit (volume % in air):</b>	16%

**Extinguishing Media:** Use alcohol foam, dry chemical or carbon dioxide. Water is not effective for extinguishing fires of this material. Cool containers with water.

**Special fire-fighting procedures:** Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots.

**Hazardous combustion products:** Emits toxic fumes under fire conditions. Emits highly toxic fumes of hydrogen cyanide when heated to decomposition or reacted with acids or oxidizing agents.(See also Stability and Reactivity section).

**Unusual fire and explosion hazards:** Vapor may travel considerable distance to source of ignition and flashback. Container explosion may occur under fire conditions.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:** See section 8 for recommendations on the use of personal protective equipment.

**Environmental precautions:** Cleanup personnel need personal protection from inhalation and skin/eye contact. Evacuate and ventilate the area, shut off ignition sources. Prevent spillage from entering drains. Absorb spill with vermiculite or other inert absorbent material, then place in a suitable container for disposal. Clean surfaces thoroughly with water to remove residual contamination. Any release to the environment may be subject to federal/national or local reporting requirements. Dispose of all waste or cleanup materials in accordance with local regulations. Containers, even when empty, will retain residue and vapors.

## 7. HANDLING AND STORAGE

**Normal handling:** See section 8 for recommendations on the use of personal protective equipment. Use with adequate ventilation. Wash thoroughly after using. Keep container closed when not in use.

**Storage:** Store in cool, dry well ventilated area. Keep away from incompatible materials (see section 10 for incompatibilities).

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Occupational exposure controls:** (consult local authorities for acceptable exposure limits)

Chemical name	Regulatory List	Value and type
Acetonitrile	UK OES	70 mg/m <sup>3</sup>
	STEL	105 mg/m <sup>3</sup> (10 minutes)
	USA OSHA PEL	40 mg/m <sup>3</sup> TWA
	USA ACGIH	20 mg/m <sup>3</sup> TLV (skin)
	USA NIOSH	34 mg/m <sup>3</sup> REL
	OSHA IDLH	500 ppm
4,5-Dicyanoimidazole	Poland NDS	70 mg/m <sup>3</sup>
	Poland NDSCh	140 mg/m <sup>3</sup>
	USA ACGIH	60 ppm STEL
	USA ACGIH	40 ppm TWA
	USA MSHA	70 mg/m <sup>3</sup> TWA
	USA OSHA.	40 ppm PEL
	New Zealand	40 PPM OEL 8H TWA (70 mg/m <sup>3</sup> )
	USA NIOSH	20 ppm TWA

TWA: Time Weighted Average over 8 hours of work.

TLV: Threshold Limit Value over 8 hours of work.

REL: Recommended Exposure Limit

**Product Name: DCI Activator**

Created on 8/1/2008 2:47:00 PM, reformatted on 8/4/2008 11:19:00 AM

Page 2 of 5

STEL: Short Term Exposure Limit during x minutes.

IDLH: Immediately Dangerous to Life or Health

**Ventilation:** Provide local exhaust, preferably mechanical.

**Respiratory protection:** If necessary use an approved respirator with acid vapor cartridges.

**Eye protection:** Wear chemical safety glasses with a face shield for splash protection.

**Skin and body protection:** Wear neoprene or rubber gloves, apron and other protective clothing appropriate to the risk of exposure.

**Other Recommendations:** Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, colorless liquid
Physical state:	Liquid
Odor:	ether like
Odor Threshold:	Not Available
Specific Gravity:	0.7850
pH:	Not Available
Melting Point/Freezing Point:	Not Available
Boiling Point/Range:	Not Available
Flammability:	Flammable (See section 5)
Flash point:	Flammable (See section 5)
Evaporation Rate (Butyl Acetate =1):	5.79 (Acetonitrile)
Explosive Limits:	Explosive (See section 5)
Vapor Pressure (at 20°C):	Not Available
Vapor Density (air =1):	Not Available
Solubility:	Completely soluble in water
Partition coefficient/n-octanol/water:	Not Available
% Volatile:	Not Available
Auto ignition Temperature:	524°C (975°F) (See section 5)

## 10. STABILITY AND REACTIVITY

**Stability:** Stable

**Conditions to avoid:** Heat, ignition sources, incompatible materials and moisture.

**Incompatibility:** Oxidizing and reducing agents, acids, alkali metals, chlorosulfonic acid, explosives, sulfites.

**Hazardous decomposition products:** Carbon oxides, nitrogen oxides and cyanides

**Hazardous polymerization:** Will not occur.

## 11. TOXICOLOGICAL INFORMATION

**Acute Effects:** See section 4 for symptoms of exposure and effects. Likely routes of exposure are skin, skin absorption and inhalation.

Target organs: Kidney, heart, central nervous system, blood, liver and lungs.

### Acute Toxicity Data:

Acetonitrile	LD50 [oral, rat]; 2460 mg/kg
	LC50 [rat]; >16000 (4 hour)
	LD50 Dermal [rabbit]; 1250 mg/kg

**Chronic Effects:** May have long term effects on liver, kidneys, central nervous system and lungs.

**Teratogenicity:** Not classified

**Mutagenicity:** Not Classified.

**Embryotoxicity:** Not Available

**Synergistic Products/Effects:** Not Available

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity (aquatic and terrestrial):** LD50 (96 hrs) ; 185 mg/L (Lepomis macrochiras)

EC50 (24 hours): >10000 mg/L (Daphnia Magna)

**Persistence and Degradability:** Not Available

### Product Name: DCI Activator

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**Bioaccumulative Potential:** Not expected to accumulate.

**Mobility in Soil:** Not Available

**Other Adverse Effects:** Not Available

### 13. DISPOSAL CONSIDERATIONS

**RCRA:** Hazardous waste? Yes                      RCRA ID number: D001

**Waste Residues:** Carefully cleanup per spill procedures in section 6. Users should review their operations in terms of the applicable federal/nation or local regulations and consult with appropriate regulatory agencies before disposing of waste material.

**Product containers:** Containers, if thoroughly cleaned, preferably by rinsing three times and handling the rinse water as waste residues, may be disposed of or recycled as non-hazardous waste. Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies before discharging or disposing of waste material.

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods.

### 14. TRANSPORTATION INFORMATION

**DOT:** UN1648, Acetonitrile solution, 3, pg II

**TDG:** UN1648, Acetonitrile solution, 3, pg II

**PIN:** Not Available

**IDMG:** UN1648

**Marine Pollutant:** No

**IATA/ICAO:** UN1648, class 3

**RID/ADR:** UN1648, Acetonitrile solution, 3, II    Classification F1

### 15. REGULATORY INFORMATION

**TSCA Inventory Status:** All ingredients are listed on the TSCA inventory.

**Federal and State Regulations:**

RTK hazardous substances: Acetonitrile

SARA 302/304/311/312 extremely hazardous substances: No

SARA 313 toxic chemical notification and release reporting: Acetonitrile

CERCLA: Hazardous Substances: Acetonitrile, 5000lbs.

**California Proposition 65:**    No

**WHMIS Canada:**                      CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).  
CLASS D-1B: Material causing immediate and serious toxic effects, Toxic.  
CLASS D-2B: Material causing other toxic effects, Toxic.

**DSCL (EEC):**                              R11 – Highly flammable  
R23/24/25 - Toxic by inhalation, in contact with skin and if swallowed.

**HMIS (U.S.A.)**

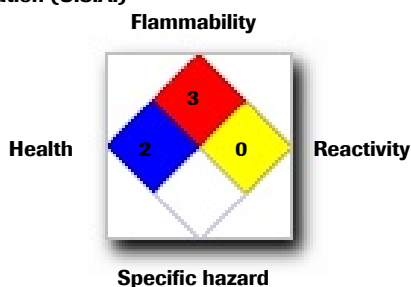
Health Hazard	2
Fire Hazard	3
Reactivity	0

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Created on 8/1/2008 2:47:00 PM, reformatted on 8/4/2008 11:19:00 AM

Page 4 of 5

**National Fire Protection Association (U.S.A.)**



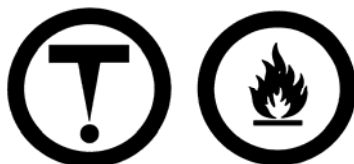
**Protective Equipment:**



**ADR (Europe):**



**TDG (Canada):**



**DSCL (Europe):**



**16. OTHER INFORMATION**

**Current Issue Date:** February 20, 2006

**Previous Issue Date:** N/A

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