

**Eastman(TM) DMCD**

ZSAMPLE00000162088

Version	Revision Date:	SDS Number:	Date of last issue: 10/05/2016
2.2	11/11/2018	150000001796	Date of first issue: 09/06/2016
PRD		SDSUS / Z8 / 0001	ZSF / 0038699517 / 0004249376

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**SECTION 1. IDENTIFICATION**

Product name : Eastman(TM) DMCD

Product code : P03041NT

**Manufacturer or supplier's details**

Company name of supplier : Eastman Chemical Company

Address : 200 South Wilcox Drive  
Kingsport TN 37660-5280

Telephone : (423) 229-2000

Emergency telephone : CHEMTREC: +1-800-424-9300, +1-703-527-3887 CCN7321

**Recommended use of the chemical and restrictions on use**

Recommended use : Chemical intermediate

Restrictions on use : None known.

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**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with 29 CFR 1910.1200**

Eye irritation : Category 2A

**GHS label elements**

Hazard pictograms :



Signal Word : Warning

Hazard Statements : H319 Causes serious eye irritation.

Precautionary Statements :

**Prevention:**P264 Wash skin thoroughly after handling.  
P280 Wear eye protection/ face protection.**Response:**P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337 + P313 If eye irritation persists: Get medical advice/ attention.

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**Other hazards**

None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture            :    Substance

CAS-No.                            :    94-60-0

**Ingredients**

Chemical name	CAS-No.	Concentration (% w/w)
dimethyl 1,4-cyclohexanedicarboxylate	94-60-0	93 - 100
methyl 1,4-cyclohexanedicarboxylate	32529-79-6	7
methyl 4-methylcyclohexanecarboxylate	51181-40-9	5
methanol	67-56-1	< 1

**SECTION 4. FIRST AID MEASURES**

If inhaled                            :    Move to fresh air.  
Treat symptomatically.  
Get medical attention if symptoms occur.

In case of skin contact            :    Wash off with soap and water.  
Get medical attention if symptoms occur.

In case of eye contact            :    In case of contact, immediately flush eyes with plenty of water  
for at least 15 minutes.  
Get medical advice/ attention.

If swallowed                        :    Seek medical advice.

Most important symptoms        :    Causes serious eye irritation.  
and effects, both acute and        Causes serious eye irritation.  
delayed

Notes to physician                :    Treat symptomatically.

**SECTION 5. FIRE-FIGHTING MEASURES**

Suitable extinguishing media    :    Use water spray to extinguish.  
Dry chemical  
Carbon dioxide (CO2)  
Foam

Unsuitable extinguishing        :    None known.  
media

Hazardous combustion prod-     :    No hazardous combustion products are known  
ucts

Further information                :    None known.

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Special protective equipment : Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Wear appropriate personal protective equipment. Local authorities should be advised if significant spillages cannot be contained.

Environmental precautions : Avoid release to the environment.

Methods and materials for containment and cleaning up : Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

**SECTION 7. HANDLING AND STORAGE**

Advice on safe handling : Avoid contact with eyes.  
Wash thoroughly after handling.  
Minimize exposure to air.  
After opening, purge container with nitrogen before reclosing.  
Periodically test for peroxide formation on long-term storage.

Conditions for safe storage : Keep container tightly closed.

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Ingredients with workplace control parameters**

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m <sup>3</sup>	NIOSH REL
		ST	250 ppm 325 mg/m <sup>3</sup>	NIOSH REL
		TWA	200 ppm 260 mg/m <sup>3</sup>	OSHA Z-1
		STEL	250 ppm 325 mg/m <sup>3</sup>	OSHA P0
		TWA	200 ppm 260 mg/m <sup>3</sup>	OSHA P0

**Biological occupational exposure limits**

Ingredients	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
methanol	67-56-1	Methanol	Urine	End of shift (As	15 mg/l	ACGIH BEI

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				soon as possible after exposure ceases)		
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**Engineering measures** : Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Personal protective equipment**

Respiratory protection : Wear respiratory protection.

Hand protection

Remarks : Wear protective gloves.

Eye protection : Wear safety glasses with side shields (or goggles).

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : liquid

Color : colorless

Odor : sweet

Odor Threshold : not determined

pH : not determined

Melting point/range : 64 - 72 °F / 18 - 22 °C

Boiling point/boiling range : 505 °F / 263 °C

Flash point : 201 °F / 94 °C

Method: Tag closed cup

Evaporation rate : not determined

Self-ignition : 730 °F / 388 °C  
Method: ASTM E659

Vapor pressure : 13.2 mbar (55.8 °F / 13.2 °C)

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Relative vapor density : 6.9

Relative density : 1.10 (95 °F / 35 °C)

Solubility(ies)  
Water solubility : slightly soluble

Partition coefficient: n-octanol/water : No data available

Autoignition temperature : not determined

Decomposition temperature : Method: DTA  
No exotherm to boiling

Viscosity  
Viscosity, dynamic : not determined

Explosive properties : No data available

Oxidizing properties : No data available

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**SECTION 10. STABILITY AND REACTIVITY**

Reactivity : Stable

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Forms peroxides of unknown stability.

Conditions to avoid : Incompatible materials

Incompatible materials : Strong oxidizing agents

Hazardous decomposition products : Carbon dioxide (CO<sub>2</sub>)  
Carbon monoxide

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**SECTION 11. TOXICOLOGICAL INFORMATION****Acute toxicity**

Not classified based on available information.

**Product:**

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

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**Ingredients:****dimethyl 1,4-cyclohexanedicarboxylate:**

Acute oral toxicity : LD50 Oral (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 2.91 mg/l  
Exposure time: 6 h

Acute dermal toxicity : LD50 Dermal (Guinea pig): > 10 mg/kg

**methanol:**

Acute oral toxicity : LD50 Oral (Rat): 5,600 mg/kg

Acute dermal toxicity : LD50 Dermal (Rabbit): 17,100 mg/kg

**Skin corrosion/irritation**

Not classified based on available information.

**Product:**

Remarks : No data available

**Ingredients:****dimethyl 1,4-cyclohexanedicarboxylate:**

Species : Guinea pig

Exposure time : 24 h

Result : slight

**methanol:**

Species : Rabbit

Exposure time : 72 h

Result : none

**Serious eye damage/eye irritation**

Causes serious eye irritation.

**Product:**

Remarks : No data available

**Ingredients:****dimethyl 1,4-cyclohexanedicarboxylate:**

Species : Rabbit

Result : slight

Remarks : Read-across from a similar material

**methanol:**

Species : Rabbit

Result : slight to moderate

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**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Product:**

Remarks : No data available

**Ingredients:****dimethyl 1,4-cyclohexanedicarboxylate:**

Species : Guinea pig  
Result : Not a skin sensitizer.  
Remarks : Read-across from a similar material

**methanol:**

Test Type : Skin Sensitization  
Species : Guinea pig  
Result : non-sensitizing

**Germ cell mutagenicity**

Not classified based on available information.

**Ingredients:****dimethyl 1,4-cyclohexanedicarboxylate:**

Genotoxicity in vitro : Test Type: Mutagenicity - Mammalian  
Metabolic activation: Metabolic activation  
Result: positive

Test Type: Chromosome aberration test in vitro  
Metabolic activation: Metabolic activation  
Result: positive

Test Type: Ames test  
Metabolic activation: with and without metabolic activation  
Result: negative

Test Type: Ames test  
Result: positive  
Remarks: National Toxicology Program Study

**methyl 4-methylcyclohexanecarboxylate:**

Genotoxicity in vitro : Test Type: Ames test  
Result: negative  
Remarks: National Toxicology Program Study

**Carcinogenicity**

Not classified based on available information.

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**Product:**

Remarks : This information is not available.

**IARC** No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.**NTP** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.**Reproductive toxicity**

Not classified based on available information.

**Product:**

Effects on fertility : Remarks: No data available

**STOT-single exposure**

Not classified based on available information.

**Product:**

Remarks : No data available

**Ingredients:****dimethyl 1,4-cyclohexanedicarboxylate:**

Assessment : Not classified

**methanol:**Target Organs : optic nerve, Central nervous system  
Assessment : Causes damage to organs.**STOT-repeated exposure**

Not classified based on available information.

**Product:**

Remarks : No data available

**Ingredients:****dimethyl 1,4-cyclohexanedicarboxylate:**

Assessment : Not classified

**Repeated dose toxicity****Ingredients:****dimethyl 1,4-cyclohexanedicarboxylate:**

Species : Rat, male

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Application Route	: >= 871 mg/kg
Exposure time	: Oral Study
Remarks	: 30 d
	: Read-across from a similar material
Species	: Rat, female
	: >= 894 mg/kg
Application Route	: Oral Study
Exposure time	: 30 d
Remarks	: Read-across from a similar material

**Aspiration toxicity**

Not classified based on available information.

**Product:**

No data available

**Information on likely routes of exposure****Product:**

Inhalation	: Remarks: None known.
Skin contact	: Remarks: None known.
Eye contact	: Remarks: Causes eye irritation.
Ingestion	: Remarks: None known.

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Ingredients:****dimethyl 1,4-cyclohexanedicarboxylate:**

Toxicity to fish	: LC50 (Pimephales promelas (fathead minnow)): 23 mg/l Exposure time: 96 h Remarks: Read-across from a similar material
Toxicity to daphnia and other aquatic invertebrates	: LC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Remarks: Read-across from a similar material
Toxicity to algae	: EC50 (Chlorella pyrenoidosa): > 124.6 mg/l Exposure time: 72 h  NOEC: (Chlorella pyrenoidosa): > 124.6 mg/l Exposure time: 72 h

**methanol:**

Toxicity to fish	: LC50 (Lepomis macrochirus (Bluegill sunfish)): 15,400 mg/l Exposure time: 96 h
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Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 10,000 mg/l  
Exposure time: 48 h

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (algae)): 22,000 mg/l  
Exposure time: 96 h

**Persistence and degradability****Ingredients:****dimethyl 1,4-cyclohexanedicarboxylate:**

Biodegradability : Biodegradation: 55 %  
Exposure time: 28 d  
Remarks: Not readily biodegradable.

**methanol:**

Biodegradability : Concentration: 10 mg/l  
Biodegradation: 95 %  
Exposure time: 20 d

Biochemical Oxygen Demand (BOD) : BOD-5:  
770 mg/g  
Incubation time: 5 d  
  
BOD-20:  
1,260 mg/g  
Incubation time: 20 d

Chemical Oxygen Demand (COD) : 1,410 mg/g

BOD/COD : BOD/COD: 54.6 %

ThOD : 1,500 mg/g

BOD/ThOD : 51.3 %

**Bioaccumulative potential****Ingredients:****dimethyl 1,4-cyclohexanedicarboxylate:**

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: 2.29

**methanol:**

Partition coefficient: n-octanol/water : Pow: 0.17  
log Pow: -0.77

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**Mobility in soil**

No data available

**Other adverse effects**

No data available

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : Dispose of in accordance with local regulations.

**SECTION 14. TRANSPORT INFORMATION****International Regulations****IATA-DGR**

Not regulated as a dangerous good

**IMDG-Code**

Not regulated as a dangerous good

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**Domestic regulation****49 CFR**

Not regulated as a dangerous good

**SECTION 15. REGULATORY INFORMATION****EPCRA - Emergency Planning and Community Right-to-Know****CERCLA Reportable Quantity**

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
methanol	67-56-1	100	100 (F003)
methanol	67-56-1	5000	*

\*: Calculated RQ exceeds reasonably attainable upper limit.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

This material does not contain any components with a section 304 EHS RQ.

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : Serious eye damage or eye irritation**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

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**California Prop. 65**

WARNING: This product can expose you to chemicals including methanol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

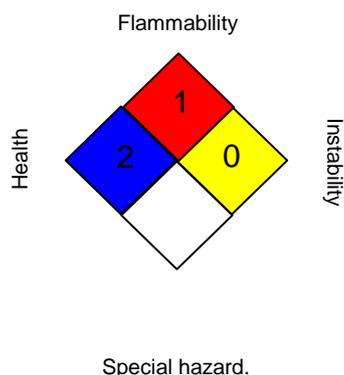
**The ingredients of this product are reported in the following inventories:**

TSCA	: Listed on TSCA
DSL	: All components of this product are on the Canadian DSL
AICS	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

**SECTION 16. OTHER INFORMATION****Further information****NFPA 704:****HMIS® IV:**

<b>HEALTH</b>	/	2
<b>FLAMMABILITY</b>		1
<b>PHYSICAL HAZARD</b>		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

**Full text of other abbreviations**

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	: ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	: USA. NIOSH Recommended Exposure Limits
OSHA P0	: USA. OSHA - TABLE Z-1 Limits for Air Contaminants -

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1910.1000

OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

ACGIH / TWA : 8-hour, time-weighted average

ACGIH / STEL : Short-term exposure limit

NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek

NIOSH REL / ST : STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday

OSHA P0 / TWA : 8-hour time weighted average

OSHA P0 / STEL : Short-term exposure limit

OSHA Z-1 / TWA : 8-hour time weighted average

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 11/11/2018

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only

# SAFETY DATA SHEET

**EASTMAN**

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to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8