


Co-351 DLC®-A

1: Identification

Product identifier:	Co-351 DLC®-A	
Other means of identification:	Trimethylolpropane triacrylate on silicon dioxide	
Supplier:		NATROCHEM, Inc. P.O. Box 1205 Savannah, GA 31402-1205 912-236-4464
Recommended use:	Cross-linking agent	
Restrictions on use:	Not applicable.	
Emergency phone number:	CHEMTREC (USA)	800-424-9300
	CHEMTREC (Int'l)	202-483-7616

2: Hazard(s) identification

OSHA/HCS status: This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

GHS classification:

Hazard Classification	Category
Skin irritation	2
Eye irritation	2A
Skin sensitization	1A

GHS label elements

Signal word:

WARNING

Symbol(s):



Hazard statements:

H315: Causes skin irritation
 H317: May cause an allergic skin reaction
 H319: Causes serious eye irritation
 May form combustible dust concentrations in the air.

Hazards not otherwise classified:

Precautionary statements:

Prevention:

Avoid breathing dust/vapours.
 Do not get in eyes, on skin, or on clothing.
 Wash skin thoroughly after handling.
 Do not eat, drink or smoke when using this product.
 Contaminated work clothing should not be allowed out of the workplace.
 Avoid release to the environment.
 Wear protective gloves and eye/face protection.

Response:	<p>IF ON SKIN (or hair): Wash with plenty of soap and water. If skin irritation or a rash occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. IF exposed or concerned: Call a POISON CENTER/ doctor if you feel unwell. In case of fire: Use dry chemical, CO₂, water spray (fog), or foam to extinguish.</p>
Storage:	Store in a dry place. Store in a closed container.
Disposal:	Dispose of contents/container in accordance with applicable regulations.
Supplemental information:	Not applicable.

3: Composition

Substance/mixture: Mixture

Ingredient	Synonyms	CAS number	Concentration (%)
2-propenoic acid, 2-ethyl-2-[[[(1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl ester	Trimethylolpropane triacrylate, TMPTA	15625-89-5	70-74
Silica, amorphous, precipitated, and gel		112926-00-8	26-30

Contains no detectable crystalline silica (detection limit <0.01% by weight)

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

4: First-aid measures

If ingestion, irritation, any type of overexposure or symptoms of overexposure occur during or persists after use of this product, contact a POISON CONTROL CENTER, EMERGENCY ROOM, OR PHYSICIAN immediately; have SDS information available. Never give anything by mouth to an unconscious or convulsing person.

Description of necessary first aid measures

Eye contact: Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek immediate medical attention.

Inhalation:	Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular, or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
Skin contact:	Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Do NOT use solvents or thinners.
Ingestion:	If swallowed, seek medical advice immediately and show this container or label. Keep person warm and at rest. Do NOT induce vomiting.

Most important symptoms/effects, acute and delayed.

Potential acute health effects

Eye contact:	No significant irritation expected other than possible mechanical irritation.
Inhalation:	Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat, and lungs.
Skin contact:	Prolonged or repeated contact may dry skin and cause irritation.
Ingestion:	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact:	Adverse symptoms may include the following: Irritation Redness
Inhalation:	Adverse symptoms may include the following: Coughing Respiratory tract irritation
Skin contact:	Adverse symptoms may include the following: Dryness
Ingestion:	No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician:	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments:	No specific treatment.
Protection of first-aiders:	No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

5: Fire-fighting measures

Extinguishing media

Suitable extinguishing media:	Use dry chemical, CO ₂ , water spray (fog), or foam.
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Unsuitable extinguishing media:	Do not use a solid water stream as it may scatter and spread fire.
Specific hazards arising from the chemical:	Product forms a slippery surface when combined with water. Fine dust clouds may form explosive mixtures with air. Polymerization is exothermic and can degenerate into an uncontrolled reaction.
Hazardous thermal decomposition products:	In the event of a fire, hazardous decomposition products may include: Carbon monoxide Carbon dioxide Acrylates Other unidentified organic compounds
Special protective actions for firefighters:	No action shall be taken involving any personal risk or without proper training. Firefighting equipment should be thoroughly decontaminated after use.
Special protective equipment for firefighters:	Firefighters and others who may be exposed to products of combustion should wear full firefighting turn out gear (full bunker gear) and self-contained breathing apparatus (SCBA) operated in pressure-demand mode (MSHA/NIOSH approved or equivalent).

6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures

For non-emergency personnel:	Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Product forms slippery surface when combined with water. No action shall be taken involving any personal risk or without suitable training.
For emergency responders:	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information immediately above in "For non-emergency personnel".
Environmental precautions:	Avoid release to sewers, waterways, soil, or air. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil, or air).

Methods and materials for containment and cleaning up

Small spill:	Avoid generating dust. Vacuum or sweep up material and place in a designated, labeled waste container.
Large spill:	Avoid generating dust. Vacuum or sweep up material and place in a designated, labeled waste container.

See **Section 1** for emergency contact information.

See **Section 8** for information on appropriate personal protective equipment.

See **Section 13** for additional waste treatment information.

7: Handling and storage

Precautions for safe handling

Protective measures: Put on appropriate personal protective equipment (see **Section 8**).
Advice on general occupational hygiene: Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Workers should wash hands and face before eating, drinking, and smoking. Remove contaminated clothing and protective equipment before entering eating areas. When transferring material into flammable solvents, use proper grounding to avoid electrical sparks. Avoid alteration of product properties before use. Calcining (which may result in crystalline silica formation) or mixing with additives may alter toxicological properties.

Conditions for safe storage, including any incompatibilities:

See also **Section 8** for additional information on hygiene measures.
 Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool, and well-ventilated area away from incompatible materials (see **Section 10**) and food and drink. Keep container tightly closed and sealed until ready for use. Do not store in unlabeled containers.
 Do not store below 32°F (0°C) or above 100°F (38°C).
 Store separate from strong oxidizers, strong reducers, free radical generators, inert gas, oxygen scavengers, and peroxides.

8: Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient	OSHA PEL	ACGIH TLV	NIOSH REL
TMPTA	1 mg/m ³ TWA	Not available.	Not available.

Recommended monitoring procedures: If this product contains ingredients with exposure limits, personal, workplace atmosphere, or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Appropriate engineering controls: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure that they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters, or engineering modifications to process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures:	Wash hands, forearms, and face thoroughly after handling chemical products, before eating, smoking, and using the lavatory, and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection:	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases, or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: splash goggles.
<u>Skin protection</u>	
Hand protection:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. When handling hot material, wear heat-resistant gloves that are able to withstand the temperature of molten product.
Body protection:	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection:	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection:	Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.

9: Physical and chemical properties

Appearance

Physical state:	Powder, solid, or granular solid.
Color:	White to off-white.
Odor:	Acrylic-like.
Odor threshold:	Not available.
pH:	Not available.
Melting/freezing point:	Not available.
Boiling point and range:	Not available.
Flash point:	Not available.
Evaporation rate:	Not available.
Flammability:	Not available.

Flammability or explosive limits:	Not available.
Vapor pressure:	Not available.
Vapor density:	Not available.
Relative density:	Not available.
Solubility:	Not available.
Partition coefficient: n-octanol/water:	Not available.
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	Not applicable.

10: Stability and reactivity

Reactivity:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability:	This product chemically stable under normal and anticipated conditions of storage, handling, and processing; however, this material can undergo hazardous polymerization.
Possibility of hazardous reactions:	Hazardous polymerization may occur. Polymerization is exothermic and can degenerate into an uncontrolled reaction.
Conditions to avoid:	High temperature (>800°C) treatment (calcining), which may result in crystalline silica formation. Avoid alteration of product properties before use. Calcining or mixing with additives may alter toxicological properties. Avoid generating dust. This material polymerizes exothermically in the presence of heat, contamination, oxygen-free atmosphere, free radicals, peroxides, and inhibitor depletion, liberating heat. Avoid direct sunlight. Do NOT expose to UV light. Refer to protective measures listed in Sections 7 and 8 .
Incompatible materials:	Reactive or incompatible with the following materials: Acids Oxidizing materials Strong alkalis Strong reducing agents Free radical generators Inert gas Oxygen scavengers Peroxides
Hazardous decomposition products:	In the event of a fire, hazardous decomposition products may include: Carbon monoxide Carbon dioxide Acrylates Other unidentified organic compounds

11: Toxicological information

Information on toxicological effects

Acute toxicity

Conclusion/summary: No known significant effects or critical hazards.

Ingredient	Result	Species	Dose	Exposure
TMPTA	LD ₅₀ oral	Rat	>5,000 mg/kg	-
	LD ₅₀ dermal	Rabbit	5,170 mg/kg	-
	LD ₅₀ dermal	Rat	>2,000 mg/kg	-
	NOEC inhalation	Rat	0.55 mg/L	6 h

Irritation/corrosion

Conclusion/summary

Skin: Causes mild skin irritation (Rabbit) Irritation index 2.2-3.8 / 8 (4 h)
Causes skin irritation (Rabbit, 6 h repeated exposure)

Eyes: Causes serious eye irritation (Rabbit) Irritation index 44/110

Respiratory: No known significant effects or critical hazards.

Sensitization

Conclusion/summary:

Skin: May cause an allergic skin reaction. Repeated skin exposure (Guinea pig) Skin allergy was observed (Strong sensitizer).
Not a sensitizer – mouse ear swelling assay. No skin allergy was observed.

Respiratory: No known significant effects or critical hazards.

Mutagenicity:

Conclusion/summary: In vitro: both positive and equivocal responses have been reported in tests using bacteria. Genetic changes were observed in laboratory tests using animal cells.
In vivo: No genetic changes were observed in laboratory tests using mice.

Carcinogenicity

Conclusion/summary: No known significant effects or critical hazards.

Classification

Ingredient	OSHA	IARC	NTP
Silica, amorphous, precipitated, and gel	-	3	-

Carcinogen classification code:

IARC: 1, 2A, 2B, 3, 4

NTP: [Known/Reasonably anticipated] to be a human carcinogen

OSHA: +

Not listed/regulated: -

Reproductive toxicity

Conclusion/summary: Exposure during pregnancy (oral, rat) no birth defects were observed.

Teratogenicity

Conclusion/summary: No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Target organs

Contains material which may cause damage to the following organs: upper respiratory tract, eyes.

Aspiration hazard

Not available.

Information on the likely routes of exposure:

Routes of entry anticipated: oral, dermal, inhalation.

Potential acute health effects

Eye contact:

No significant irritation expected other than possible mechanical irritation.

Inhalation:

Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat, and lungs.

Skin contact:

Prolonged or repeated contact may dry skin and cause irritation.

Ingestion:

No known significant effects or critical hazards.

Symptoms related to the physical, chemical, and toxicological characteristics

Eye contact:

Adverse symptoms may include the following:

Irritation

Redness

Inhalation:

Adverse symptoms may include the following:

Coughing

Respiratory tract irritation

Skin contact:

Adverse symptoms may include the following:

Dryness

Ingestion:

No specific data.

Delayed and immediate effects and also chronic effects from short- and long-term exposure

Conclusion/summary:

An epidemiological study was conducted which included 165 precipitated silica workers who had been exposed an average time of 8.6 years. Of these 165 workers, 44 had been exposed for an average of 18 years. No adverse effects were noted in complete medical examinations (including chest roentgenograms) of these workers. Pulmonary function decrements were correlated only with smoking and age but not with the degree or duration of dust exposures. Laboratory studies have also been conducted in small animals via inhalation of levels of precipitated silica dust of up to 126 mg/m³ per periods from six months to two years. Although precipitated silica was temporarily deposited in animals' lungs, most of the deposited material was cleared soon after the dust exposure ended. The results of all studies performed by, or known to, PPG indicated a very low order of pulmonary activity for synthetic precipitated silicas. PPG recommends that persons with breathing problems or lung disease should not work in dusty areas unless a physician approves and certifies their fitness to wear respiratory protection.

Short-term exposure

Potential immediate effects	No significant irritation expected other than possible mechanical irritation.
Potential delayed effects	Prolonged or repeated contact may dry skin and cause irritation.

Long-term exposure

Potential immediate effects	Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.
Potential delayed effects	Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

Potential chronic health effects

General:	No known significant effects or critical hazards.
Carcinogenicity:	No known significant effects or critical hazards.
Mutagenicity:	No known significant effects or critical hazards.
Teratogenicity:	No known significant effects or critical hazards.
Developmental effects:	No known significant effects or critical hazards.
Fertility effects:	No known significant effects or critical hazards.

Numerical measures of toxicity**Acute toxicity estimates**

Not available.

12: Ecological information**Toxicity**

Ingredient	Result	Species	Exposure
Silica, amorphous, precipitated, and gel	NOEC > 1000 ppm	Daphnia – <i>daphnia magna</i>	24 hours
	Acute NOEC > 10000 ppm fresh water	Fish	96 hours static
	Acute NOEC > 10000 ppm	Fish – <i>brachydanio rerio</i>	4 days static
TMPTA	LL50 1.47 mg/L	Fish – <i>leuciscus idus</i>	96 h
	EC50 19.9 mg/L	Daphnia – <i>daphnia magna</i>	48 h
	EC50 4.86 mg/L	Algae – <i>desmodesmus subspicatus</i>	96 h
	EC20 625 mg/L	Activated sludge	30 m

Persistence and degradability

Ingredient	Aquatic half-life	Photolysis	Biodegradability
Silica, amorphous, precipitated, and gel	-	-	Not readily
TMPTA	-	-	Readily (86%, 28 d)

Bioaccumulative potential

Ingredient	LogP _{ow}	BCF	Potential
Silica, amorphous, precipitated, and gel	-	0	low
TMPTA	-	0	-

Mobility in soil

Soil/water partition coefficient (K_{oc}):	Not available.
Other adverse effects:	No known significant effects or critical hazards.

13: Disposal considerations

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions, and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Refer to Sections 6, 7, and 8 for additional information on accidental release measures, handling and storage, and exposure controls.

14: Transport information

	DOT	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.
Marine pollutant substances	Not applicable.	Not applicable.	Not applicable.
Additional information	-	-	-

Special precautions for user: **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code: Not available.

15: Regulatory information

Inventory status

United States inventory (TSCA 8b):	All components are listed or exempted.
Australia inventory (AICS):	All components are listed or exempted.
Canada inventory (DSL):	All components are listed or exempted.
China inventory (IECSC):	All components are listed or exempted.
Europe inventory (REACH):	All components are listed or exempted.
Japan inventory (ENCS):	Please contact your supplier for information on the inventory status of this material.
Korea inventory (KECI):	All components are listed or exempted.
New Zealand inventory (NZIoC):	All components are listed or exempted.
Philippines inventory (PICCS):	All components are listed or exempted.

United States

US Federal regulations:

SARA Title III

Section 302 – Extremely Hazardous Chemicals:

The components in this product are either not SARA Section 302 regulated or are regulated but present in negligible concentrations.

Section 311/312 – Hazard Categories:

The components in this product are either not SARA Section 311/312 regulated or are regulated but present in negligible concentrations.

Ingredient	Acute	Chronic	Fire	Pressure	Reactive
TMPTA	Yes	No	No	No	Yes

Section 313 – Toxic Chemicals:

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.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) – Reportable Quantity (RQ)

The components of this product are either not CERCLA regulated, regulated but present in negligible concentrations, or regulated with no assigned reportable quantity.

US State regulations:

Ingredient	NJ RTK	MA RTK	PN RTK	CA Prop. 65
Silica, amorphous, precipitate, and gel	Listed	-	-	-
TMPTA	Not listed	-	Listed	-
Benzene, methyl-	-	-	-	Listed

16: Other information

Hazardous Material Identification System (USA)

HEALTH	2
FLAMMABILITY	1
REACTIVITY	1
PERSONAL PROTECTION	

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1901.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the Nation Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J.J.Keller 800-327-6868.

* - chronic effects

The customer is responsible for determining the PPE code for this material.

Key to abbreviations:

ATE	Acute toxicity estimate
BCF	Bioconcentration factor
GHS	Globally Harmonized System of classification and labeling of chemicals
IATA	International Air Transport Association
IBC	Intermediate bulk container
IMDG	International Maritime Dangerous Goods
LogPow	Logarithm of the octanol/water partition coefficient
MARPOL 73/78	International convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978. (MARPOL = marine pollution)
UN	United Nations

Disclaimer:

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