SAFETY DATA SHEET
NYACOL® DP5540

REVISION: 7/17/2013
SUPERSEDES: 10/7/2010

Section 1: Identification:

Identification of Substance:	Ethylene Glycol and Silica
Product Name:	NYACOL® DP5540
Synonym:	Colloidal Silica in Ethylene Glycol
CAS Number:	107-21-1. See Section 3.
Company Identification:	Nyacol Nano Technologies, Incorporated Megunko Road, P.O. Box 349, Ashland, MA 01721 U.S.A. 508-881-2220
In Case of Emergency:	CHEMTREC: 800-424-9300 24 Hours/Day: 7 Days/Week
E-mail Contact:	info@nyacol.com
Internet:	www.nyacol.com
Recommended Use:	Polymers and Ceramics.
Restrictions on Use:	For industrial use only, not for food, drug or home use.

Section 2: Hazard(s) Identification

Health	Environmental	Physical
Acute toxicity, dermal (Category 4) Corrosion/Damage/Irritation Eye (Category 2B) Acute toxicity, inhalation (Category 5) STOT, Repeated Exposure (Category 1) Acute toxicity, oral (Category 3)	None known.	None known.

GHS label element including precautionary statements: P102 Keep out of reach of children.

Signal Word / Pictogram: Danger.

Emergency Overview: Translucent white liquid. Slight sweet odor. Harmful if swallowed. Keep spills out of surface waters.

Contains ethylene glycol which is toxic when swallowed. A lethal dose for an adult is 1-2 ml per kilogram, or about 4 ounces (one-half cup or 120 ml.). Symptoms include headache, weakness, confusion, dizziness, staggering, slurred speech, loss of coordination, faintness, nausea and vomiting, increased heart rate, decreased blood pressure, difficulty breathing and seeing, pulmonary edema, unconsciousness, convulsions, collapse, and coma. Symptoms may be delayed. Decreased urine output and kidney failure may also occur. Severe poisoning may cause death. Aspiration may occur during swallowing or vomiting, resulting in lung damage.

OSHA Hazards:	Ethylene Glycol is a "Hazardous Chemical" as defined by OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Primary routes of entry:	Eyes. Skin. Inhalation. Ingestion.
Target organs:	Eyes, Skin, Respiratory System. Kidneys.

Hazard Statement(s): List Out	Precautionary Statement(s): List Out
H301 – Toxic if swallowed.	P264 – Wash face, hands and any exposed skin thoroughly after handling. P270 – Do not eat, drink or smoke when using this product. P301+P310 – IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P321 – Specific Treatment: If person is conscious and can swallow, immediately give two glasses of water (16 oz. or 500 ml.) but do not induce vomiting. If vomiting occurs, give fluids again. Have physician determine if condition of person will permit induction of vomiting or evacuation of stomach. Do not give anything by mouth to an unconscious or convulsing person. P330 – Rinse mouth. P405 – Store locked up. P501 – Dispose of contents/container to an approved incineration plant.
H312 – Harmful in contact with skin.	P280 – Wear protective gloves/clothing/eye/face protection. P302+P352 – IF ON SKIN: Wash with plenty of soap and water. P312 – Call a POISON CENTER or doctor/physician if you feel unwell. P322 – See Section 4 First Aid. P363 – Wash contaminated clothing before reuse. P501 – Dispose of contents/container to an approved incineration plant.
H320 – Causes eye irritation.	P264 – Wash face, hands and any exposed skin thoroughly after handling. P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. P337+P313 – If eye irritation persists: Get medical advice/attention.
H333 – May be harmful if inhaled.	P304+P312 – IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.
H372 – Causes damage to the lungs and kidneys through prolonged or repeated exposure by ingestion and inhalation.	P260 – Do not breathe vapor/mist. P264 – Wash face, hands and any exposed skin thoroughly after handling. P270 – Do not eat, drink or smoke when using this product. P314 – Get medical attention/advise if you feel unwell. P501 – Dispose of contents/container to an approved incineration plant.

Section 3: Composition / Information on Ingredients

Component Name:	CAS Number	Exposure Limits	Percent By Weight
Ethylene Glycol:	107-21-1	10 mg/M^3 TWA	70
Silicon Dioxide:	7631-86-9	5 mg/M^3 TWA	30
Component Name:	EINECS Number	RTECS Number	REACH Number
Ethylene Glycol:	203-473-3	KW2975000	05-2117294572-36-0000
Silicon Dioxide:	231-545-4	VV7310000	05-2117294571-38-0000
Impurities:	None.		
Stabilizing Additives:	None.		

Section 4: First-Aid Measures

Eye Contact:	Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of the eye and lids with water. Get medical attention.
Skin Contact:	Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.
Inhalation:	If inhaled, remove to fresh air. If not breathing, clear person's airway and give artificial respiration. If breathing is difficult, qualified medical personnel may administer oxygen. Get medical attention immediately.
Ingestion:	If a person is conscious and can swallow, immediately give two glasses of water (16 oz. or 500 ml.) but do not induce vomiting. If vomiting occurs, give fluids again. Have physician determine if condition of person will permit induction of vomiting or evacuation of stomach. Do not give anything by mouth to an unconscious or convulsing person.
Advice to Physicians:	Ethylene glycol poisoning may initially produce behavior changes, drowsiness, vomiting, diarrhea, thirst and convulsions. End-stage signs of poisoning are renal damage/failure with metabolic acidosis. Immediate treatment, supplemented with hemodialysis if indicated, may limit the progression and severity of toxic effects. Intravenous ethanol in sodium bicarbonate solution is a recognized antidotal treatment; other antidotal treatments also exist for ethylene glycol poisoning. Contact a POISON CENTER for further treatment information. Aspiration of this product during induced emesis may result in severe lung injury. If evacuation of stomach is necessary, use method least likely to cause aspiration, such as gastric lavage after endotracheal intubation. Contact a POISON CENTER for additional information.
First Aid Facilities:	Eye wash station.

Section 5: Fire-Fighting Measures

Flammability of the product:	Combustible, material will burn in a fire. Containers can build pressure if exposed to heat or fire.
Extinguishing Media:	Use water spray, dry chemical, foam or carbon dioxide to extinguish flames. Use water spray to cool fire-exposed containers. Water or foam may cause frothing.
Not Suitable:	None known.
Protective Equipment:	Wear standard full firefighter turn-out gear (full bunker gear) and respiratory protection (SCBA).
Special Hazard Arising from the Chemical:	None known.

Section 6: Accidental Release Measures

Personal Precautions and PPE:	Eye protection and impervious gloves. An approved air-purifying respirator should be worn if dust or mist is present.
Environmental Precautions:	Prevent entry into sewers and waterways.

Method for Cleaning Up:

Spill: Ventilate area. Avoid breathing vapor. Wear appropriate personal protective equipment, including appropriate respiratory protection. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

If more than 1 pound of product is spilled, then report spill according to SARA 304 and CERCLA 102(A) requirements.

Section 7: Handling and Storage

Precautions During Handling: Minimum feasible handling, and temperatures should be maintained. Avoid generating mist or dust during use.

Storage: Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

Section 8: Exposure Controls / Personal Protection

Ingredient(s): Nyacol® DP5540 – Ethylene Glycol and Silicon Dioxide

Engineering Controls: Ventilation adequate to meet occupational exposure limits. The OSHA ceiling is 50 ppm: ACGIH ceiling is 50 ppm.

Hygiene Measures: Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned.

Personal Protective Equipment (PPE):

Respiratory: Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air-supplied respirators should always be worn when airborne concentrations of the contaminant or oxygen content is unknown.

Hands: Wear impervious gloves such as neoprene.

Eyes: Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.

Skin: Wear clean body-covering clothing; impervious gloves such as neoprene. Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned.

Environmental Exposure Controls: Adverse effects of this material on the environment have not been evaluated. Proper disposal techniques to isolate and recover material should be implemented.

Section 9: Physical and Chemical Properties

Appearance (Physical State, Color): Translucent white liquid. NYACOL DP5540 is an ethylene glycol-based material.

Odor: Slight sweet.

Vapor Pressure: 0.1 mm Hg at 20° C.

Density:	1300 kg/M^3
pH:	Not applicable.
Boiling Point:	198° C (388° F) (Ethylene Glycol)
Freezing Point:	−13° C (8° F) (Ethylene Glycol)
Flashpoint:	118°C (244°F)
Solubility in Water:	100%
Specific Gravity:	1.3
Volatile by Weight:	70%
Viscosity:	Not available.
Partition Coefficient:	Not determined.
Explosion Limits:	Not determined.
Oxidizing Properties:	Not an oxidizer.
Evaporation Rate:	Slow.

Section 10: Stability and Reactivity

Chemical Stability:	Stable.
Conditions to Avoid:	No recommendation.
Incompatible Materials:	None known.
Hazardous Decomposition Products:	Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and ketones may be formed on burning. Heating in air may produce irritating aldehydes, acids and ketones.
Hazardous Polymerization:	Does not occur.

Section 11: Toxicological Information

Acute Toxicity Values:

Ethylene Glycol:

LD50, Rat Oral: Greater than 4700 mg/kg. See Section 4: Ingestion.

Silicon Dioxide:

3160 mg/kg.

Acute Effects:

Skin Contact:	(Draize) Believed to be >.50 - 1.00/80 (rabbit) slightly irritating. Brief contact may cause slight irritation. Prolonged contact, as with clothing wetted with material, may cause more severe irritation and discomfort, seen as local redness and swelling. Other than the potential skin irritation effects noted, acute (short term) adverse effects are not expected from brief skin contact.
Eye Contact:	(Draize) Believed to be 15.00 - 25.00/110 (rabbit) slightly irritating. May cause irritation, experienced as mild discomfort and seen as slight excess redness of the eye.
Inhalation:	Not determined. Vapors or mist in excess of permissible concentrations, or in unusually high concentrations generated from spraying, heating the material or as from exposure in poorly ventilated areas or confined spaces may cause irritation of the nose and throat, headaches, nausea and drowsiness. Prolonged over-exposure may result in absorbance of potentially harmful amounts of material.

Ingestion:	Contains ethylene glycol which is toxic when swallowed. A lethal dose for an adult is 1-2 ml per kilogram, or about 4 ounces (one-half cup or 120 ml.). Symptoms include headache, weakness, confusion, dizziness, staggering, slurred speech, loss of coordination, faintness, nausea and vomiting, increased heart rate, decreased blood pressure, difficulty breathing and seeing, pulmonary edema, unconsciousness, convulsions, collapse, and coma. Symptoms may be delayed. Decreased urine output and kidney failure may also occur. Severe poisoning may cause death. Aspiration may occur during swallowing or vomiting, resulting in lung damage.
Target Organ Effects:	Eyes, Skin, Respiratory System. Kidneys.
Chronic Effects:	Repeated ingestion may cause kidney damage.
Carcinogenicity:	No data available.

Section 12: Ecological Information

Ecotoxicity (aquatic and terrestrial):	LC50-96 hr. Aquatic toxicity rating is believed to be >100.00 mg/liter; practically non-toxic.
Persistence and degradability:	This product is reported to have a moderate rate of biodegradation; greater than or equal to 30% degradation over a test period of 28 days or less.
Bioaccumulative potential:	This product is reported to have a low potential bioconcentrate.
Mobility in Soil:	Not determined.

Section 13: Disposal Considerations

This information presented only applies to the materials as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the property waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

Disposal Considerations:	DP5540 should be recycled or burned in an incinerator or scrubber approved for chemical waste.
United States:	DP5540 is not a RCRA hazardous waste.

Section 14: Transport Information

U.S. Department of Transportation (DOT):

Proper Shipping Name:	NYACOL® DP5540
Hazard Class:	Not regulated United Nations (UN) Number. Not applicable.
UN/NA Number:	Not applicable, does not meet dangerous goods criteria.
Transport Hazard Class(es):	
Packing Group:	Not applicable, does not meet dangerous goods criteria.
ICAO/IATA:	Not applicable, does not meet dangerous goods criteria.

IMO/IMDG:

Shipping Name	Hazard Class	Packing Group	UN Number
Other regulated substances, Liquid NOS (Ethylene Glycol)	9	PG III	NA3083

IATA:	Not applicable, does not meet dangerous goods criteria.
ADR:	Not applicable, does not meet dangerous goods criteria.

RID:	Not applicable, does not meet dangerous goods criteria.
Labels Required:	Not applicable.
Special Precautions:	None.

Section 15: Regulatory Information

U.S. Federal Regulations:

Comprehensive Environmental Response and EPA TSCA Act:	All ingredients listed.

Superfund Amendments and Reauthorization Act (SARA) Title III Information:

SARA Section 311/312 (40 CFR 370) Hazard

Immediate Hazard:	Acute Health Hazard, Chronic Health Hazard
Known Synergists:	None known.
Fire Hazard:	Material will burn in a fire.
Explosion Hazard:	None known.
Corrosion Hazard:	None known.
SARA 313, 304 and CERCLA 102 (A):	This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372:

Chemical Name	CAS #	Percent By Weight
Ethylene Glycol	107-21-1	70

If more than one (1) pound of Ethylene Glycol (2.8 pounds of DP5540) is spilled, then report the spill according to SARA 304 CERCLA 102 requirements.

FDA:

21 CFR 175.105 – Silicon Dioxide may be used as a component of adhesives used to prepare articles intended for the use in packaging, transporting or holding food.

21 CFR 177.1200 – Silicon Dioxide may be used as a component of a polymer used as a base sheet or as a coating applied to a base sheet for use in food packaging.

21 CFR 182.90 – Silicon Dioxide is generally recognized as safe (GRAS) as a substance migrating to food from paper and paper board products used in food packaging.

U.S. State Regulations:

California Proposition 65:	No label required.
State Right-to-Know Laws:	Section 3 of this SDS lists all components of DP5540.
International Regulations:	Check with governmental or regional regulations.

Canadian Regulations:

Domestic Substance List:	All ingredients listed.
WHMIS:	Class D, Division 1, Division 2, material causing other toxic effects and teratogenic effects.
Transportation of Dangerous Goods:	Not applicable. DP5540 does not meet dangerous goods criteria.

Controlled Products Regulations:	This SDS contains all the information items specified in Schedule 1, Column 3 of the Controlled Products Regulations in a 16-heading format.
International Inventory Status:	
Ingredients are included:	
Ethylene Glycol	Australia (AICS); Canada (DSL); Europe (EINECS); Japan (ENCS); Korea (ECL); Philippines (PICCS); Asia-PAC; SWISS; Israel
Silicon Dioxide	Australia (AICS); Canada (DSL); Europe (EINECS); Japan (ENCS); Korea (ECL); Philippines (PICCS); Asia-PAC; SWISS

Section 16: Other Information

National Fire Protection Association (U.S.A.)	Health-2, Flammability-1, Reactivity-0, Special-None
HMIS® Hazard Rating:	Health-2, Flammability-1, Reactivity-0, Protective Equipment - I; safety glasses, gloves, combination respirator.
Recommended Use:	DP5540 is recommended for use as an additive for polymers and ceramics. Other uses have not been investigated and may have other hazards. For industrial use only, not for food, drug or home use.
Work Alert:	Workers using DP5540 should read and understand this SDS and be trained in the proper use of this material.
Other Special Considerations:	None known.
SDS Prepared By:	Robert J. Nehring Nyacol Nano Technologies, Incorporated Telephone: 508-881-2220 U.S.A.
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Supersedes:	October 7, 2010

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