

SAFETY DATA SHEET

1. Identification of the substance or mixture and of the company

This Safety Data Sheet is for informational purposes only, and represents a preliminary assessment for a new pre-commercial substance that has not been tested in safety evaluations. The information provided is based on the best available published and unpublished data for similar substances, as listed below.

Product identifier

Product name:	<u>Re:ancel CNC Powder</u>
Product Description:	Cellulose NanoCrystals (CNC), NanoCrystalline Cellulose
Chemical Name:	Cellulose sulphate sodium salt
Recommended uses:	As a chemical additive for: ● Rheology modification ● Enhanced properties of materials ● Polymer and composite processing

Details of the Supplier of the Safety Data Sheet

Company:	ANPOLY Inc.
Address:	#303, 66, Yunghapgisul-ro, Heunghae-eup, Buk-gu, Pohang-si, Gyeongsangbuk-do, Republic of Korea
Phone number:	+82-54-262-0222
Email:	info@anpolyinc.com
Homepage:	www.anpolyinc.com

Emergency phone number

Republic of Korea	+82-54-262-0222
International	Call your national poison center, or a doctor/physician

2. Hazard identification

Classification of the substance or mixture

Component	CAS No.	Signal Word/Pictogram	Hazard Statement	GHS Classification
Combustible Dust (OSHA Defined Hazard)		WARNING 	May form combustible dust concentration in air	H228 (Flammable solid)

Precautionary statements

Prevention:	P210: Keep away from heat/sparks/open flames. No smoking. P281: Use personal protective equipment as required.
Storage:	Not applicable
Disposal:	P501: Dispose of contents in accordance with Federal, Provincial/State and local regulations.

Other Hazards: Not available

Unknown acute toxicity: Not available

Additional information: Not available

3. Composition/information on ingredients

◉ Substances

Chemical name:	Cellulose sulphate sodium salt
CAS-No.:	9005-22-5
Composition:	100%

4. Description of first aid measures

◉ First aid measures

General Information :	Call 911 or emergency medical service.
Following inhalation:	- Move victim to fresh air if it can be done safely. - Give artificial respiration if victim is not breathing. - Administer oxygen if breathing is difficult.
Following skin contact:	- In case of contact with substance, immediately flush skin with running water for at least 20 minutes. - Remove and isolate contaminated clothing and shoes. - Wash contaminated clothing before reuse.
Following eye contact:	- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. - Call 911 or emergency medical service.
Following ingestion:	- Never give anything by mouth to an unconscious person. - Seek medical attention.

◉ Most important symptoms and effects, both acute and delayed

Over-exposure signs/symptoms:	Not available
Potential acute health effects:	Not available

◉ Indication of any immediate medical attention and special treatment needed

Note for the doctor:	Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves
Special treatment:	No specific treatment

5. Firefighting measures

Extinguishing media:	- Suitable extinguishing media : DRY sand, Dry chemical, Alcohol-resistant foam, Water spray, Regular foam , CO2 - Unsuitable extinguishing media : Not available
Special hazards arising from the substance or mixture:	- Containers may explode when heated. - May cause toxic effects if inhaled. - Vapors may cause dizziness or asphyxiation without warning. - May burn but does not ignite readily. - Fire may produce irritating and/or toxic gases. - Hazardous combustion products : Not available
Advice for firefighters:	- Wear self-contained breathing apparatus for firefighting if necessary. - If it can be done safely, move undamaged containers away from the area around the fire. - Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out. - Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:	For non-emergency personnel : All equipment used when handling the product must be ground. Keep unauthorized personnel away. 1) Protective equipment : Wear proper protective equipment and avoid contact with skin or inhalation of dust. 2) Emergency procedures : Evacuate personnel to safe areas. Ensure adequate ventilation. Use personal protective equipment.
Environmental precautions:	Prevent entry into waterways, sewers, basements or confined areas.
Methods and materials for containment and cleaning up:	For containment - With clean shovel place material into clean, dry container and cover loosely; move containers from spill area. - Small Spill: Absorb with earth, sand or other non-combustible material. For cleaning up - Remove residue with high-efficient cleaner - Flush area with large amounts of water. Other information : Wet down with water and dike for later disposal.
Reference to other sections:	- See Section 1 for emergency contact information. - See also sections 8 and 13 of the Safety Data Sheet.

7. Handling and storage

Precautions for safe handling:	Protective measures : Pay attention to incompatible materials and conditions. Advice on general occupational hygiene : - When using, do not eat, drink or smoke. - Wash thoroughly after handling.
Conditions for safe storage, including any compatibilities:	- Keep container tightly closed in a dry and well-ventilated place. - Pay attention to incompatible materials and conditions. - Store in a cool, dark and dry place.
Specific end use(s)	Recommendations : Avoid prolonged exposure. Wash thoroughly after handling. Industrial sector specific solutions : - See section 1

8. Exposure controls/personal protection

Occupational exposure limits

ACHIH (TLV-TWA):	PNOS(Particles (insoluble or poorly soluble) Not Otherwise Specified) 10 mg/m ³ – inhalable 3 mg/m ³ - respirable
NIOSH (REL-TWA):	10 mg/m ³ – total dust 5 mg/m ³ – respirable
OSHA (PEL-TWA):	15 mg/m ³ – total dust 5 mg/m ³ – respirable

Exposure controls

Appropriate engineering controls:	- Ensure adequate ventilation, especially in confined areas. - Ensure compliance with applicable exposure limits and operate local exhaust ventilation when working.
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Personal protection equipment:	Eye and face protection Wear chemical goggles and face shield where dusting or splash hazard is possible. Contact lenses should not be worn. Maintain eye wash station in work area.
	Skin protection Chemical protective clothing – if extremely dusty. Safety footwear.
	Respiratory protection If the exposure limit is exceeded and engineering controls are not feasible, a half mask particulate respirator (NIOSH type N95 or better filters) may be worn at up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face particulate respirator (NIOSH type N100 filters) may be worn at up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.
	Other information <i>In case of risk of overexposure to dust (during product processing), it is recommended that a local exhaust system be placed above the conversion equipment (a fume hood); the working area must be properly ventilated.</i>
	Work/hygiene practices <i>Wash hands thoroughly after handling of chemical product before eating, smoking and using the lavatory, and at the end of the working period. Ensure the eyewash stations and safety showers are near the workstation location. Avoid generation of dust, avoid ignition sources, and use approved local exhaust ventilation or handle product in fume hood. Wash hands after handling product.</i>

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state:	Solid(dry powder)
Appearance:	White crystalline powder
Color:	White
Odor:	Odorless
Odor threshold:	Not applicable
pH:	5 – 7 for a 1 wt% dispersion at 24°C
Relative evaporation rate: (butylacetate [BuAc] = 1)	Negligible
Melting point:	Not applicable
Freezing point:	Not applicable
Boiling point:	Not applicable
Flash point:	No data available
Auto-ignition temperature:	410°C
Flammability (solid, gas):	No data available
Vapor density (Air = 1):	Not applicable
Vapor pressure (mm Hg):	Not applicable
Evaporation rate (BuAc = 1):	Not applicable
Octanol/water partition coefficient:	Log Pow -2.5
Solubility:	Dispersible in water
Viscosity:	Not available
% Volatiles by volume @ 21°C (70°F):	Not applicable
Gram molecular weight:	14,700 – 27,850
Weight percent < 1,000 Daltons:	0.6
Weight percent < 500 Daltons:	<0.1

Bulk density:	0.7 g/cc
Minimum ignition energy, MIE:	55 mJoule (ASTM E2019)
Dust deflagration index, Kst:	185 bar·m/s (ST class 1) (ASTM E1226)
Pmax:	8.8 bar (128 psig) (ASTM E1226)

10: Stability and reactivity

Reactivity:	Flowing product can create electrical charge, resulting sparks may ignite dust or cause an explosion in some concentration ranges.
Chemical stability:	Stable under normal temperatures and pressures.
Possibility of hazardous reactions:	As with cellulose dust, a high concentration of dust may form an explosive mixture in air (see section 9).
Conditions to avoid:	Ignition sources as heat, spark, flame, etc.
Incompatible materials:	Strong oxidizing agents. Product may ignite at temperatures in excess of 400°C.
Hazardous decomposition products:	Hazardous decomposition products formed under fire conditions: carbon oxides, CO, and CO ₂ .

11. Toxicological information

Information on hazard classes as defined in Regulation(EC) NO 1272/2008

Acute toxicity :	Route: Oral Inhalation Skin Species: Rat (4-d), Rat (4-h), Rabbit (4-h; dose 0.5 g NCC) Acute Toxic Value: ● LD50 > 2,000 mg NCC/kg ● LC50 > 0.3 mg NCC/L* ● Primary irritation index: 0.0 ● Response category: negligible
Ingestion effects:	None known.
Skin corrosion/irritation:	Not expected to cause skin irritation.
Serious eye damage/irritation:	Not expected to cause more than slight eye irritation.
Respiratory or skin sensitization:	Contact with this product is not expected to cause respiratory tract sensitization, based upon the available data and the known hazards of the components.
Germ cell mutagenicity:	Not mutagenic at 5 mg NCC/plate to S. typhimurium strains TA98, TA100, TA1535, TA1537 and E. coli strain WP2 uvrA. Does not induce chromosome aberration at 5 mg NCC/mL in cultured WBL Chinese hamster ovary cells. No effect in mouse micronucleus test at 2,000 mg NCC/kg.
Carcinogenicity:	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by IARC, ACGIH, NTP or OSHA.
Reproductive toxicity:	This product is not known to contain any components that have been shown to cause reproductive toxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a reproductive toxin.
Teratogenicity/embryotoxicity:	This product is not known to contain any components that have been shown to cause teratogenicity and/or embryotoxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a teratogen/embryotoxin.
Target organs:	No specific hazards expected.
Toxicologically synergistic	None known.

materials:	
Specific target organ toxicity – single exposure:	No specific hazards expected.
Specific target organ toxicity - repeated exposure:	No specific hazards expected.
Aspiration hazard:	Data not available.
Chronic effects:	Data not available; studies ongoing.

12. Ecological information

The content of this section is not enforced under the United States Regulations 29 CFR 1910.1200 – Hazard Communication Standard (HCS) and the Canadian Hazardous Products Regulations (HPR), because it falls outside of its jurisdiction.

Toxicity

Mobility/migration:	None detected.
Persistence and degradability:	Ready biodegradability: 42%
Bioaccumulative potential:	No data available on product.
Ecotoxicity:	Acute lethal toxicity fish – Rainbow trout (<i>Oncorhynchus mykiss</i>) (96-h) LC50: > 10 gNCC/L Acute lethal toxicity invertebrate – Daphnia magna (48-h) LC50: > 1 g NCC/L Ceriodaphnia dubia (48-h) LC50: > 1 g NCC/L Chronic, sublethal growth inhibition algae – Pseudokirchneriella (<i>Raphidocelis</i>) subcapitata (72-h) IC25: > 2.5 g NCC/L Chronic, sublethal reproduction inhibition invertebrates – C. dubia (7-d) IC25: > 1 g NCC/L

13. Disposal considerations

The content of this section is not enforced under the United States Regulations 29 CFR 1910.1200 – Hazard Communication Standard (HCS) and the Canadian Hazardous Products Regulations (HPR), because it falls outside of its jurisdiction.

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. Disposal regulations may vary with jurisdiction. Dispose of container and unused contents in accordance with federal, provincial/territorial and local requirements. For safety of persons disposing of the material, refer to section 8.

14. Transport information

TDG Classification:	Not regulated for ground transport in Canada.
DOT Classification:	Not regulated as a hazardous material.
Classification for SEA Transport:	Not Regulated for Transport
Classification for AIR Transport:	Not Regulated for Transport

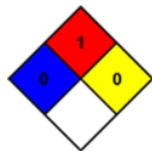
15. Regulatory information

The content of this section is not enforced under the United States Regulations 29 CFR 1910.1200 – Hazard Communication Standard (HCS) and the Canadian Hazardous Products Regulations (HPR), because it falls outside of its jurisdiction.

Canada: 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.

WHMIS Classification:	Non-controlled.
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16. Other information

NFPA (Scale 0-4):	○ NFPA health hazard : 0 ○ NFPA fire hazard : 1 ○ NFPA reactivity : 0 								
HMIS (Scale 0-4):	<table border="1"> <tr> <td>HEALTH</td><td>0</td></tr> <tr> <td>FLAMMABILITY</td><td>1</td></tr> <tr> <td>PHYSICAL HAZARD</td><td>1</td></tr> <tr> <td>PERSONAL PROTECTION</td><td>X</td></tr> </table> NFPA and HMIS ratings legend : Severe = 4; Serious = 3; Moderate = 2; Slight = 1; Minimal = 0 NFPA fire hazard rating 1 : Must be preheated before ignition can occur. HMIS flammability rating 1 : Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 °F. (Class IIIB). HMIS physical hazard rating 1 : Materials that are normally stable but can become unstable(self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors. HMIS personal protection code X : Site-specific label. Ask your supervisor or safety specialist for handling instructions. <i>Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.</i>	HEALTH	0	FLAMMABILITY	1	PHYSICAL HAZARD	1	PERSONAL PROTECTION	X
HEALTH	0								
FLAMMABILITY	1								
PHYSICAL HAZARD	1								
PERSONAL PROTECTION	X								
Glossary of Acronyms and Abbreviations:	○ ACGIH : American Conference of Governmental Industrial Hygiene ○ NIOSH : National Institute of Occupational Health and Safety ○ OSHA : Occupational Safety and Health Administration, 29 CFR 1910.1000 Table Z-1 ○ TLV : Threshold Limit Value ○ REL : Recommended Exposure Limit ○ PEL : Permissible Exposure Limit ○ TWA : Time Weighted Averages are based on 8h/day or 10h/day, 40h/week exposures ○ LD50 : Lethal Dose; dose (given all at once) of a material causing death in 50% of a group of test organisms ○ LC50 : Lethal Concentration; concentration of a material in air or water causing death in 50% of a group of test organisms during a specific observation period following exposure of the organisms to the concentration for a set period of time (typically 4 hours) ○ GHS : Globally Harmonized System of Classification and Labeling of Chemicals ○ NFPA : National Fire Protection Association ○ TDG : Transportation of Dangerous Goods ○ DOT : Department of Transportation ○ HMIS : Hazardous Material Identification System								

Disclaimer:

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