a nanowire technology builder

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Single-Walled Carbon Nanotube (SWNT) Conductive Pastes N1 (in NMP)

Catalog Number: NovaCP-SWNT-N1

Supplier: Novarials Corporation
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2. HAZARDS IDENTIFICATION

Emergency Overview

GHS Classification
Flammable liquids (Category 4), H227
Skin irritation (Category 2), H315
Eye irritation (Category 2A), H319
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
Carcinogenicity (Category 2), H351
Reproductive toxicity (Category 1B), H360

GHS Label elements, including precautionary statements

Pictogram 

Signal word Danger

Hazard statement(s)

H227	Combustible liquid.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H360	May damage fertility or the unborn child.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304+P340+P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/attention.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

NFPA Ratings

Health Hazard:	2
Fire Hazard:	2
Reactivity Hazard:	0

HMIS Ratings

Health Hazard:	2
Chronic Health Hazard:	*
Flammability:	2
Physical Hazard:	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Single-walled carbon nanotubes

Component		Concentration
Single-walled carbon nanotubes		
CAS-No.	308068-56-6	
***N*-Methyl-2-pyrrolidone**		
CAS-No.	872-50-4	
EC-No.	212-828-1	

4. FIRST AID MEASURES

General advice
Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse eyes thoroughly with plenty of water. Consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions – Carbon oxides, Nitrogen oxides

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Avoid inhalation of vapor or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment

Respiratory protection
For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridge. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	
Form	paste
Color	black
Safety data	
pH	no data available
Melting point/freezing point	no data available
Boiling point	no data available
Flash point	no data available
Ignition temperature	no data available
Auto ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	no data available
Density	no data available
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
Heat, flames and sparks.

Materials to avoid
Strong acids, Strong oxidizing agents, Strong reducing agents

Hazardous decomposition products
Other decomposition products -no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50
no data available

Inhalation LC50
no data available

Dermal LD50
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC:	2B - Group 2B: Possibly carcinogenic to humans (Single-walled carbon nanotubes) 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Single-walled carbon nanotubes)
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Teratogenicity
no data available

Specific target organ toxicity -single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity -repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Additional Information
RTECS: UY5790000

Prolonged or repeated exposure can cause: vomiting, diarrhoea, abdominal pain. Rats exposed to 1-methyl-2-pyrrolidinone at a concentration of 1 mg/L as an aerosol for 10 days showed depletion of hematopoietic cells in the bone marrow and atrophy of the lymphoid tissues of the thymus, spleen, and lymph nodes.

Bone marrow - Irregularities - Based on Human Evidence
Bone marrow - Irregularities - Based on Human Evidence

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly

investigated.

12. ECOLOGICAL INFORMATION

Toxicity
no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
no data available

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
NA-Number: 1993 Class: NONE Packing group: III
Proper shipping name: Combustible liquid, n.o.s. (N-methyl-2-pyrrolidone)
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

SARA 302 Components
Not required

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:
N-methyl-2-pyrrolidone CAS-No. 872-50-4

SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard.

Massachusetts Right To Know Components

N-methyl-2-pyrrolidone	CAS-No. 872-50-4

Pennsylvania Right To Know Components

Single-walled carbon nanotubes	CAS-No. 308068-56-6
N-methyl-2-pyrrolidone	CAS-No. 872-50-4

New Jersey Right To Know Components

Single-walled carbon nanotubes	CAS-No. 308068-56-6
N-methyl-2-pyrrolidone	CAS-No. 872-50-4

California Prop. 65 Components

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

N-methyl-2-pyrrolidone	CAS-No. 872-50-4

16. DISCLAIMER

Novarials Corporation believes that the information in this Safety Data Sheet is accurate and represents the best and most current information available to us. Novarials Corporation makes no representations or warranties either express or implied, regarding the suitability of the materials for any purpose or the accuracy if the information contained within this document. Accordingly, Novarials Corporation and its affiliates shall not be held liable for any damage resulting from shipping, handling, storage, use of the above product.