

## SAFETY DATA SHEET

### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name NanoSuit® Solution II (For Pathological specimen / Cultured cells)  
Company name NanoSuit Co.,Ltd.  
Address c/o Hamamatsu University School of Medicine  
1-20-1 Handayama, Higashi-ku, Hamamatsu, Shizuoka  
431-3192 Japan  
Department in charge Quality Assurance Department  
Telephone number +81-53-435-2317  
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Mail Address nanosuit1@nanosuit.jp  
Recommended use of the product Electron microscope observation

### 2. HAZARDS IDENTIFICATION

GHS Classification

Physical and chemical hazardousness:

Flammable liquid Class 2  
Pyrophoric liquid Not classified  
Self-heating substance Not classified  
Corrosive to metal Not classified

Harmfulness for human health:

Acute toxicity (oral) Not classified  
Acute toxicity (dermal) Cannot Be Classified  
Acute toxicity (vapor) Not classified  
Acute toxicity (inhalation: mist) Not classified  
Dermal corrosion/irritation Not classified  
Serious eye damage/irritation Class 2A-2B  
Respiratory sensitization Cannot Be Classified  
Skin sensitization Cannot Be Classified  
Germ cell mutagenicity Class 1B  
Carcinogenicity Not classified  
Reproductive toxicity Class 1A  
Specific target organ systemic toxicity - single exposure  
Class 3 (respiratory tract irritability, narcotic)  
Specific target organ systemic toxicity - repeated exposure

Class 1 (liver), Class 2 (nerve)

Inhalation respiratory hazard Cannot Be Classified

Environmental effects:

Acutely hazardous to the aquatic environment Not classified

Chronically hazardous to the aquatic environment Not classified

Other harm and/or hazards are not classified.

Pictograms



Signal Word Danger

Hazard Statement Highly flammable liquid and vapor  
Strong eye irritability  
Possible risk of genetic disease  
Possible risk of adverse effect on fertility or fetuses  
Possible respiratory irritation  
Possible drowsiness or vertigo  
Organ (liver) injury after a long-term or repeated exposure  
Possible organ (nerve) injury after a long-term or repeated exposure

Precautionary statement Do not deal with this substance until you have thoroughly read and understood all the following safety notices.  
Do not eat, drink, or smoke while you use this product (No smoking).  
Keep this product away from ignition sources such as heat, spark, naked flame, and something with high temperature.  
Use explosion-proof electronic products, ventilators, and illuminators. Prevent ignition from static discharge and/or spark.  
Use protective equipment and ventilators to avoid exposure.  
Wear protective gloves, goggles, and facemask.  
Use this product only outdoors or in a well-ventilated area.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance or Mixture Mixture

Common chemical name or general name NanoSuit solution II for electron microscope observation

## Composition and content

Material name	Content(wt%)	Official gazette reference No.*	Official gazette reference No.*	CASNo.
Alcohols	99.16%	(2)-202	Existing chemical substance	64-17-5
Water	0.81%			7732-18-5
Sugars	<0.02%			Nondisclosure
Inorganic salts	<0.01%			Nondisclosure
Organic salts	<0.003%			Nondisclosure
Amino acids	<0.0001%			Nondisclosure

\*: under the Law concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances, and the Law concerning Industrial Safety and Health

## 4. FIRST AID MEASURES

Inhalation	Immediately remove affected person into fresh air and keep at rest. Seek immediate medical treatments if affected severely.
Skin contact	Immediately remove contaminated clothes and wash the affected region with running water. Clean off fully with soap.
Eye contact	After washing with large amount of water for at least 15 minutes, seek immediate medical treatments by an ophthalmologist. Take applied contact lenses off if they can be so easily, then consult an ophthalmologist.
Ingestion	After rinse the mouth with water again and again, give several cups of water to drink for diluting the effect and induce vomiting with fingers inserted into the throat if possible. Seek immediate medical treatments. If unconscious, give nothing orally. Don't try to make him/her vomit. Consult a doctor immediately.

## 5. FIRE-FIGHTING MEASURES

Extinguishing media	Water, dry chemical, alcohol-resistant foam and carbon dioxide.
The digestive which you must not use	Stick flooding
Fire fighting ways	In the initial stage of fire, extinguish the fire with large amount of water injection, or with fire extinguishers using dry chemical, carbon dioxide, etc. In case of big fire, interrupt from the air by foam (alcohol-resistant foam).
Protection for fire fighters	Wear an appropriate respirator and chemical protective clothing during fire fighting.

## 6. ACCIDENTAL RELEASE MEASURES

### Personal Precautions, Protective Equipment, and Emergency Measures

Let only authorized people enter.

For avoiding physical contact with high concentration of material, put on appropriate protection such as protective glasses, gas mask and hose mask.

### Environmental Precautions

Prevent this product from being released into the river that may affect on the environment.

When this product is diluted with a large amount of water, prevent contaminated wastes from being released into the environment without appropriate treatment.

### Measures and Equipment for Containment and Cleaning

In case of small amount, wash away the leaky area immediately with plenty of water.

In case of large amount, collect leaking and spilling liquid in empty sealable containers as much as possible. Wash away remainder with plenty of water.

### Preventive Measures against Secondary Disaster

Immediately remove adjacent ignition sources because this has permeability and volatility.

## 7. HANDLING AND STORAGE

### Handling

#### Technical Measures:

Take engineering measures and wear protective equipment specified under “8. Exposure Controls/Personal Protection.

#### ” Local and General Ventilation:

Take engineering measures specified under “8. Exposure Controls/ Personal Protection” for good ventilation.

#### Precautions:

Avoid contact with or pouring into flammable or other possible fire sources. Do not vaporize or heat up it.

Don't lay, drop, impact, or drag containers.

Make the whole electrical equipment in facilities for handling and storing with explosion-proof constructions. In places where possibly causes static electricity by alcohol flowage or others, set up equipment for effectively removing it.

Always keep facilities for handling in order and do not lay flammable or oxidative materials in or near the facilities.

#### Safe Handling Advice:

See “10. Stability and Reactivity.”

## Storage

### Storage Conditions:

Store in a storage facility under the Fire Service Law. Keep the place well ventilated to prevent the vapor from retention. Also the materials less than designated volume should be kept away from ignition sources and other dangerous areas, stored in cool and dark places well ventilated, at appropriate temperature and humidity, and shielded from light.

Do not store the material mixed with hazardous materials designated as Category 1 and Category 6 under the Fire Service Law. In principle, do not store it mixed with nonhazardous materials but in case of storing with flammable solids or flammable liquid other than hazardous materials, by way of exception, store each of them in a mass and place the masses at intervals of one meter or more each other.

### Container and Packaging Materials:

Use containers specified under the Fire Service Law and UN legislation covering transportation.

### Incompatible Materials :

See 10. Stability and reactivity.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Facility measures	It is important to use a closed system. Use explosion-proof lighting. Handling should be made in places with no ignition sources and well ventilated.
Occupational exposure limits	ACGIH(2009)TLV-STEL1,000ppm
Protective equipment	Put on rubber gloves, rubber apron and protective footwear in ordinary circumstances. In places with high concentration of material, put on rubber gloves, rubber apron, protective footwear, protective glasses and gas mask.
Working clothes	Put on antistatic clothes.

## 9. PHYSICAL AND CHEMICAL PROPERTIES (as ethanol 100%)

Physical state	Liquid
Color	Transparent and colorless
Odor	Characteristic redolence
Sapor	Stimulating taste
pH	Not applicable
Boiling point	78.32°C (101.325 kPa)
Melting point	-114.5°C
Flash point	13°C
Ignition temperature	439°C
Explosive limits	From lower point of 3.3 vol% to upper point of 19.0 vol% (in the air)

Vapor pressure 5.878 kPa (at 20°C)  
Relative vapor density (air = 1) 1.59  
Density 0.78493 g/cm<sup>3</sup> (at 25°C)  
Solubility in solvents Well dissolves in water and ether.  
Octanol/water partition coefficient -0.30 (logPow)  
Decomposition temperature No data

#### 1 0 . STABILITY AND REACTIVITY (as ethanol 100%)

Stability Stable, not generate hazardous or harmful decomposition product in ordinary handling conditions.

Possible Hazardous Reactions The substance violently reacts with strong oxidants such as nitric acid, silver nitrate, mercury nitrate, and magnesium perchlorate, causing fire and explosion hazard.  
The product erodes certain plastics, rubbers, and film forming agents.

Conditions to Avoid Exposure to a high temperature

Incompatible Materials Strong oxidants, calcium hypochlorite, and ammonia

Hazardous Decomposition Products Carbon monoxide

#### 1 1 . TOXICOLOGICAL INFORMATION (as ethanol 100%)

##### Acute toxicity

Oral, in humans: LD<sub>50</sub>: 1400 mg/kg, affects behaviors and gastrointestinal systems (causes nausea).

Oral, in rats: LD<sub>50</sub>: 7060 mg/kg, affects respiratory systems.

Inhalation, in rats: LC<sub>50</sub> 20000 ppm/10h, toxicity unassessed.

Oral, in humans (male): TD<sub>50</sub>: 700 mg/kg, affects behaviors (psychophysiological) Injection, in rats: LD<sub>50</sub>: 1440 mg/kg, affects respiratory systems.

Injection, in dogs: LD<sub>50</sub>: 1600 mg/kg, causes ataxia and affects respiratory systems.

Intra-abdominal, in mammals: LD<sub>50</sub>: 4300 mg/kg, causes ataxia

##### Mutagenicity

Micronucleus, in mice (abdominal cavity): 1240 mg/kg/48 hours.

##### Dermal corrosion/irritation

Skin, in rabbits: 400 mg, open, causes mild irritation.  
Skin, in rabbits: 500 mg/24 hours, causes severe irritation.

##### Carcinogenicity

IARC classifies the product as Group 1 due to it is “carcinogenic as an alcoholic drink in human.” This is because IARC considers the causal relationship between alcoholic drink and esophageal system and liver carcinomas based on various epidemiological surveys on people habitually taking alcoholic drink. On the other hand, ACGIH classifies ethanol as A4 (substance that cannot be

classified as human carcinogen) as a hazardous factor mainly in a working environment.

Oral, in mice: TDL0: 320 mg/kg/50 weeks, toxicity unassessed.

#### Serious eye damage/irritation

This product is classified as “moderate” based on a study according to OECD TG405 and Draize test.

Human corneal epithelium injury and conjunctival injection will be reversed in 1 or 2 days. Eyes, in rabbits: 100 mg/24 hours, causes moderate irritation.

#### Respiratory sensitization

No information

#### Skin sensitization

No significant skin sensitization has been observed in animal studies.

#### Germ cell mutagenicity

Dominant lethal in rats and mice and heteroploidy in mouse germ cells have been reported.

#### Reproductive toxicity

There have been many reports that habitual intake of a large amount of alcohol may cause malformation and other adverse effects in human fetuses.

Inhalation, in rats: TCL0: 20000 ppm/7 hours, causes poor development on day 1 to 22 of gestation.

Oral, in rats: TDL0: 44 g/kg, causes poor development on day 7 to 17 of gestation.

#### Specific target organ systemic toxicity - single exposure

In human, oral intake of ethanol may cause adverse effect on the central nervous system and headache, fatigue, less concentration, and, in case of acute intoxication, death.

In human, inhalation at 5000 ppm (9.4 mg/L) may cause respiratory tract irritation, stupor, abnormal sleep.

#### Specific target organ systemic toxicity - repeated exposure

In human, intake of a large amount of alcohol can cause injury in almost all organs, of which the liver is a target organ that might be adversely effected most. Fatty degeneration may occur first, leading to necrosis, fibrosis, and eventually cirrhosis.

Withdrawal symptoms in patients with alcohol intoxication (tremor, epilepsy, confusion)

#### Inhalation respiratory hazard

No information

## 1 2 . ECOLOGICAL INFORMATION

#### Degradability

Calculated oxygen demand (ThOD): 2.10

BOD5 44 to 80% ThOD COD 90 to 100% ThOD

Inhibition of bacterial nitrification: Inhibits 50% of ammonia oxidation by Nitrosomonas in 4100mg/L.

#### Ecological toxicity

Orange fin: LC50: 11.2 g/L/24 hours

A kind of carp: LC50: 18 to 13.4 g/L/96 hours

Creek-chub: LC50: 7 g/L/24 hours

Guppy: LC50: 11 g/L/7 days

### 1 3 . DISPOSAL CONSIDERATIONS

Remaining wastes shall be burned up in an incinerator by means of spraying.

Discard the product according to relevant legislation as well as standards in local governments.

Consign disposal to industrial waste disposal services or local public body certified by prefectural governors or the like. Waste disposal should be consigned to waste disposal services after they were fully informed of risks and hazards.

Recycle containers after cleaning or dispose them according to relevant legislation as well as standards in local governments.

When discarding used containers or pipes, etc., they shall be rinsed with water in advance.

Disposal shall be in accordance with descriptions in the column of Precautions to be taken during handling and storing, and with other general cautions to flammable liquids.

### 1 4 . TRANSPORT INFORMATION

UN number UN 1170

Proper shipping name Ethanol (Ethyl alcohol) or Ethanol solution (Ethyl alcohol solution)

Class (UN) 3

Hazard labels (UN) 3



Packing group 2

### 1 5 . REGULATORY INFORMATION

US FEDERAL

TSCA

CAS# 64-17-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.



Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 64-17-5: acute, chronic, flammable.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 64-17-5 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

WARNING: This product contains Ethanol, a chemical known to the state of California to cause developmental reproductive toxicity.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

F

Risk Phrases:

R 11 Highly flammable.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.

S 33 Take precautionary measures against static discharges.

S 7 Keep container tightly closed.

S 9 Keep container in a well-ventilated place.

WGK (Water Danger/Protection)

CAS# 64-17-5: 0

Canada - DSL/NDSL

CAS# 64-17-5 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B2, D2A.

Canadian Ingredient Disclosure List

CAS# 64-17-5 is listed on the Canadian Ingredient Disclosure List.

※ Regulatory information with regard to this preparation in your country or region should be examined by your own responsibility.

**1 6 . OTHER INFORMATION**

This information only concerns the above-mentioned product and does not need to be valid if used with others or in any process. The information is to our best present knowledge correct and complete and is given in good faith but without warranty. It remains the user's own responsibility to make sure that the information is appropriate and complete for his special use of this product.