Review n. 0
Review Date: 18/10/21
Press Date: 18/10/21

SAFETY DATA SHEET

According to Regulation (EC) 878/2020, 1907/2006, 1272/2008 and subsequent amendments and additions

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifier:	Dispersion of Graphene few layers
1.1.1 Commercial name:	G-LEAF Coating 00901
1.1.2 UFI:	CCG2-Y0FV-900Y-N3H3
1.2 Identified uses:	Diluting agent for solvent-based paints and fillers. Other uses must be evaluated on a case-by-case. SU3: industrial uses; SU22: professional uses.
1.3 Details of the supplier of the safety data sheet:	BeDimensional S.p.A. Via Lungotorrente Secca, n. 30/r 16163 – Genoa VAT 02389840998 *info@bedimensional.it*
1.3.1 Competent technician for safety data sheet:	Andrea Gamucci a.gamucci@*bedimensional.it*
1.4 Emergency telephone number:	Centro Antiveleni di Milano 02 66101029 (CAV Ospedale Niguarda CaGranda -Milano)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Product definition: mixture

Classification according to Regulation (EC) No 1272/2008:

The mixture is classified as dangerous:

Flam. Liq. 2: Highly flammable liquid and vapour
Asp. Tox. 1: May be fatal if swallowed and enters airways
Acute Tox. 4: Harmful in contact with skin and if inhaled
Skin Irrit. 2: Causes skin irritation
Eye Irrit. 2: Causes serious eye irritation
STOT SE 3: May cause respiratory irritation, drowsiness or dizziness
STOT RE 2: May cause damage to organs through prolonged or repeated exposure

2.2 Label elements:

Pictogram:

Signal word: DANGER

Frasi H:
H225: Highly flammable liquid and vapour
H304: May be fatal if swallowed and enters airways
H312: Harmful in contact with skin
H315: Causes skin irritation
H319: Causes serious eye irritation
H332: Harmful if inhaled
H335: May cause respiratory irritation
H336: May cause drowsiness or dizziness
H373: May cause damage to organs through prolonged or repeated exposure

Frasi P:
P264: Wash exposed parts of the body thoroughly after handling
P272: Contaminated work clothing should not be allowed out of the workplace
P280: Wear protective gloves/protective clothing/eye protection/face protection
P362: Take off contaminated clothing and wash before reuse
P391: Collect spillage
P332+P313: If skin irritation occurs: get medical advice/attention.
P305+P351+P338: If in eyes rinse cautiously with water for several minutes. Remove contact lenses, if present and if easy to do. Continue rinsing.
P337+P313: If eye irritation persists, get medical advice/attention.
P302+P352: If on skin: wash with plenty of soap and water.
P333+P313: If skin irritation or rash occurs: get medical advice/attention.
P501: Avoid release to the environment. Dispose of contents/ container according to regulation.

2.3 Additional hazard statements:
The product contains Graphene nanoparticles, avoid breathing dust and / or aerosol

3. . COMPOSITION - INGREDIENTS INFORMATION

3.1 Substances

Not applicable

3.2 Mixture

Hazardous ingredients according to Regulation (EC) No 1907/2006 and 1272/2008 are shown below.

3.2.1 Composition

The product is a dispersion of graphene particles in a mixture of organic solvents.

3.2.2 Hazardous ingredients:

Component	Concentration	Classification
XYLENE (mixture of isomers) CAS: 1330-20-7 EINECS: 215-535-7	29% - 49%	H226, H304, H312, H315, H319, H332, H373,
ACETONE CAS: 67-64-1 EINECS: 200-662-2	19% - 39%	H225, H319, H336, EUH066
METHYL ACETATE CAS: 79-20-9 EINECS: 201-185-2	9% - 19%	H225, H319, H336, EUH066
ETHYLBENZENE CAS: 100-41-4 EINECS: 202-849-4	4% - 9%	H225, H304, H332, H373
N-BUTYL ACETATE CAS: 123-86-4 EINECS: 204-658-1	4% - 9%	H226, H336, EUH066
2-BUTOXYETHANOL CAS: 111-76-2 EINECS: 203-905-0	0,5% - 5%	H302, H312, H315, H319, H332
METHYL ALCOHOL CAS: 67-56-1 EINECS: 200-659-6	0,5% - 2%	H225, H301, H311, H331, H370

Component	Concentration	Classification
GRAPHENE CAS: 10343-98-0 EINECS: -	0,5% - 1%	H315, H319, H335

Supplemental information: Not present SVHC, PBT e vPvB ingredients in concentration over 0,1%.

4. FIRST AID MEASURES

4.1 Description of first aid measures:

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

In case of eye contact: Rinse thoroughly with plenty of water for at least 10 minute and consult a ophthalmologist.

If swallowed: CONSULT A PHYSICIAN IMMEDIATELY, showing the safety data sheet or the label of the substance. DO NOT INDUCE VOMITING.

If inhaled: Ventilate the premises. Immediately remove the patient from the contaminated area and keep him in a ventilated area. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed:

No other information available

4.3 Indication of any immediate medical attention and special treatment needed:

In case of contact, consult a physician immediately, showing the safety data sheet or the label of the substance.

Treatment: consult a physician

5. FIREFIGHTING MEASURES

5.1 Extinguishing media:

Suitable extinguishing agents: Alcohol-resistant foam,
Carbon dioxide (CO_2)
Extinguishing powder
Water spray to stop spilling

Not suitable extinguishing agents: Water

5.2 Special hazards arising from the substance or mixture:

The product is flammable and gives explosive atmospheres.
Thermal decomposition can generate toxic compounds such as carbon monoxide.
Do not inhale the gases produced by combustion.
Collect contaminated water used to extinguish the fire separately; do not discharge into the sewer system.
If feasible, move undamaged containers from the danger area to another.

5.3 Advice for firefighters:

Wear self contained breathing apparatus and wear protective clothing for firefighters.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

Use personal protective equipment: gloves, glass and protective clothing .For personal protection see section 8. Avoid breathing vapours. Evacuate personnel to a safe area.

6.2 Enviromental precautions:

Limit leakages with sorbent devices to avoid contaminations of water course and drainage system.
Collect polluted water and close in containers for disposal.
In case of water contamination to inform local authorities.

6.3 Methods and materials for containment and cleaning up:

Wash area and materials: collect the washing water and and close in containers for disposal.

6.4 Reference to other sections: See section 7, 8 e 13.

7. HANDLING AND STORAGE

7.1 Precaution for safe handling:

Keep away from heat and open flames, do not smoke. Vapors can ignite or explode, therefore avoided accumulation.
Avoid contact with skin and eyes.
Do not use empty containers before they have been cleaned.
Contaminated clothing must be replaced. Do not eat or drink.
See chapter 8 for recommended protective devices.

7.2 Conditions for safe storage, including any incompatibilities:

Keep in the original container tightly closed. Do not store in open or unlabeled containers. Keep the containers in an upright position and secure, avoiding the possibility of falls or collisions. Store in a cool place, away from any heat source and from direct sunlight.

7.3 Specific and use:

Diluting agent for solvent-based paints

SU3: industrial;
SU22: professional.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:

Derivated No Effect Level (DNEL)
Predicted No Effect Concentration (PNEC)

DNEL

ACETONE
Consumers - Long-term systemic effect > 62 mg/Kg (Oral)
Consumers - Long-term systemic effect >200 mg/m3 (Inhalation)
Consumers - Long-term systemic effect > 62 mg/Kg (skin contact)
Workers - Long-term systemic effect >2420 mg/m3 (Inalazione)
Workers - Long-term systemic effect >186 mg/Kg (skin contac)

PNEC

ACETONE
Microorganism - Value >100 mg/l
Fresh water - Value >10,6 mg/l
Fresh water sediment – Value >30,4 mg/Kg
Marine water - Value >1,06 mg/l
Marine water sediment - Value >3,04 mg/kg
Soil - Value >29,5mg/kg

PNEC

XILENE
Microorganism - Value >6,58 mg/l
Fresh water - Value >0,327 mg/l
Fresh water sediment >12,46 mg/Kg
Marine water - Value >0,327 mg/l
Marine water sediment - Value >12,46 mg/kg
Soil - Value >2,31mg/kg

8.2 Exposure controls

Eye/face protection:	Safety glasses with side-shield conforming to EN166.
Skin protection	Use adequate clothing that covers the whole body. Handle with gloves. Recommended protection index 3 (nylon rubber, nbr rubber, pvc or neoprene or latex).

Respiratory protection: Use a face mask equipped with AX1P3 filter [EN371]

Control of enviromental exposure: Verify concentration in workplace (UNI EN 689:1997).

Occupational Exposure Limit Values:

Substance	Country/Organization	TLV-TWA	TLV-STEL
Breathable powders	ACGIH	3 mg/m^3	-
Acetone	ACGIH	1187 mg/m^3	-
	ITA – D.Lgs. 81/08	1210 mg/m^3	-
Xylene	ACGIH	434 mg/m^3	651 mg/m^3
	ITA – D.Lgs. 81/08	221 mg/m^3	442 mg/m^3
Ethylbenzene	ACGIH	434 mg/m^3	543 mg/m^3
	ITA – D.Lgs. 81/08	442 mg/m^3	884 mg/m^3
Methyl alcohol	ACGIH	262 mg/m^3	328 mg/m^3
2-Butoxyethanol	ACGIH	97 mg/m^3	-
Methyl acetate	ACGIH	606 mg/m^3	1044 mg/m^3
N-Butylacetate	ACGIH	713 mg/m^3	950 mg/m^3

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Fisic state and color	Liquid, light grey
Odor	Proper
Odor threshold	No data available
pH (water extract)	No data available
Melting point	< -92°C
Punto di congelamento	< -92°C
Boiling point / boiling temperature range	56°C - 171°C
Flammability solid/gas	N.A.
LEL / UEL	N.A.
Vapor density	No data available
Specific gravity	N.A.
Flash point	< 21°C
Evaporation rate	N.A.
Vapor pressure	No data available
Density	0,837 kg/l 25°C
Solubility	Soluble in organic solvents
Partition coefficient n-octanol / water (log Pow)	No data available
Ignition temperature	> 520°C
Decomposition temperature	No data available

Viscosity	No data available
Explosive properties	can form explosive atmospheres
Combustion properties	Not comburent

9.2 Other information

Miscibility	Not miscible with water Miscible in organic solvents
Liposolubility	No data available
Conducibility	No data available.
Other properties	No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity:	Stable
10.2 Chemical stability:	Stable
10.3 Possibility of hazardous reactions:	Vapors can produce explosive mixture with air
10.4 Conditions to avoid:	Heat, flames and sparks.
10.5 Incompatible materials:	water, nitrates, strongly oxidizing substances, acids and alkalis and potassium t-butoxide.
10.6 Hazardous decomposition product:	Methane, aromatic and aliphatic organic compounds, hydrogen, ethane and other irritating compounds

11. TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes (Reg. (CE) no. 1272/2008):

Acute toxicity (Ethanol):	No toxicological data are available. Relevant toxicological components are: - Xylene (mixture of isomers): LD50 oral 3523 mg/kg (rat) LD50 dermal 4350 mg/kg (rabbit) LC50 inhalation 26 mg/l/4h(rat);

- Ethylbenzene:
LD50 oral 3500 mg/kg (ratto)
LD50 dermal 15354 mg/kg (coniglio)
LC50 inhalation 17,2 mg/l/4h(ratto);

- 2-Butoxyethanol:
LD50 oral > 300 mg/kg (ratto)
LD50 dermal > 1000 mg/kg (coniglio)
LC50 inhalation > 10 mg/l/4h(ratto);

- N-Butylacetate:
LD50 oral > 6400 mg/kg (ratto)
LD50 dermal > 5000 mg/kg (coniglio)
LC50 inhalation 21,1 mg/l/4h(ratto)

Primary Irritability: Irritating to respiratory tract

Awareness: No data available

Germ cell mutagenicity: No data available

Cancerogenicity: No data available

Reproductive toxicity: No data available

Specific target organ toxicity (STOT) - single exposure:
No data available.

Specific target organ toxicity (STOT) - repeated exposure:
No data available.

Exposure hazard: No data available.

11.2 information on other hazards: No data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity:

Use according to good working practices, avoiding product dispersion in the environment. The mixture contains chemicals that are toxic to the aquatic environment in the long term.
Avoid dispersion in the environment.
No information is available on the mixture ecotoxicity. The values for the ecotoxic substances in the preparation are reported below:

-2-Butossietanolo:
LC50 >100 mg/l/96h (fish)
EC50 > 100 mg/l/48h (acquatic invertebrates)
EC50 > 100 mg/l/72h (algae)
- Acetone:
EC50 > 100 mg/l/72h (algae)

12.2 Persistence and degradability:

Some substances of which the preparation is composed may persist in the aquatic environment and have long-term effects

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12.3 Bioaccumulation potential: No data available

12.4 Mobility in soil: No data available

12.5 Results of PBT and vPVB assessment:

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Properties of interference with the endocrine system: No data available

12.7 Other adverse effects: No data available

13. DISPOSAL CONSIDERATION

13.1 Waste treatment method:

Operate according to national and international waste disposal regulations.
The waste is disposed according to productive cycle.
Expired product may be disposed with code CER 14.03.06 "other solvents and solvent mixtures"
Empty packaging may be disposed with CER code for packaging 15.01.XX according to the type of packaging and the amount of the contained product .
Store the waste in watertight container to avoid leaks.
Contaminated packaging: do not re-use

14. TRANSPORT INFORMATION

ADR/RID/AND/IMDG/IATA Regulation

14.1 ONU or ID Number : UN 1993

Transport hazard class: 3

Packaging group: II

UN 1993 FLAMMABLE LIQUID, N.O.S. (mix of solvents), 3, II, (D/E)

15. REGULATORY INFORMATION

15.1 Safety, health abd envirnmental regulations/legislation specific for the substance or mixture.

The product is classified in compliance with CE 1272/2008 regulation.

	Applicable regulations:
Italy	D.Lgs. 81/08 (Testo Unico Sicurezza)
Italiy	D.Lgs. 152/06 (Testo Unico ambiente)
EU	Regulation (CE) n. 1907/2006
EU	Regulation (CE) n. 1272/2008
EU	Regulation (CE) n. 790/2009
EU	Regulation (CE) n. 878/2020
EU	Regulation (CE) n. 1357/2014
EU	Regulation (CE) n. 997/2017

If applicable, refer to the following regulations:

D.Lgs. 105/2015 e s.m.i. (Seveso ter law)
Reg. (CE) 648/2004 (Detergents Regulation)

15.2 Chemical safety assessment: A chemical safety assessment has not been carried out for this mixture

16. OTHER INFORMATION

Full text of H-statements referred to under section 3:

H225: Highly flammable liquid and vapour
H226: Flammable liquid and vapour;
H304: May be fatal if swallowed and enters airways
H312: Harmful in contact with skin;
H315: Causes skin irritation;
H319: Causes serious eye irritation;
H332: Harmful if inhaled;
H335: May cause respiratory irritation;
H336: May cause drowsiness or dizziness;
H373: May cause damage to organs through prolonged or repeated exposure
H370 – Provoca danni agli organi;
H331 – Toxic if inhaled;
H311 – Toxic in contact with skin;
H301 – Toxic if swallowed;
H335 – May cause respiratory irritation;
UH066 – Repeated exposure may cause skin dryness or cracking;

Testo delle indicazioni d'uso utilizzate al paragrafo 1:
SU3: industrial;
SU22: professional.

Leggend:
N.A.: Not applicable

Bibliography:

1. Regulation (CE) 1272/2008 of the EU parliament (GHS)
2. Regulation (CE) 1907/2006 of the EU parliament (REACH)
3. Regulation (CE) 878/2020 of the EU parliament
4. Niosh - Registry of Toxic Effects of Chemical Substances
5. INRS - Fiche Toxicologique
5. Patty - Industrial Hygiene and Toxicology
6. N.I. Sax - Dangerous properties of Industrial Materials-8 Ed.
7. ACGIH - Threshold Limit Values – 2016 edition
8. ADR regulation
9. IMDG regulation
10. IATA regulation

Principali definizioni:

ACGIH: American Conference of Governmental Industrial Hygienists
ADR: Dangerous Goods by Road
CAS: Chemical Abstracts Service (divisione della American chemical Society)
CLP: classification labelling and packaging
Derived no-effect level
EINECS: European Inventory of Existing Commercial Chemical Substances
GHS: Globally Harmonized System
IATA: International Air Transport Association
MDG: International Maritime Dangerous Goods
EC50 (48hr): Exposure Concentration for immobility of 50% of tested population.
LC50: Letal Concentration for 50% of tested population
LD50: Letal Dose for 50% of tested population
PNEC: Predicted No Effect Concentration
STEL: Short-term exposure limit
STOT: Specific Target Organ Toxicity
TLV: Threshold limit value
TWA: Time Weighted Average

This safety sheet cancels and replace every previous edition.

NOTES:
The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precaution. It does not represent any guarantee of the properties of the product.
IIT shall not be held liable for any damage resulting from handling or from contact with the above product.
No liability is assumed for improper use.