



# SAFETY DATA SHEET

Date of issue: 28 October 2019

Version: 1.0/PL

[Has been drawn up in accordance with Regulation EC 1907/2006 (REACH) with later amendments]

## Section 1: Substance/mixture identification and company identification

### 1.1 Product Identifier

Name of the substance: graphene oxide  
EC number: 942-699-3  
Appropriate registration number: exempted from registration (tonnage)

### 1.2 Significant identified applications of substance or mixture and applications advised against

Identified uses: research and development (R&D), incl. composite materials, electronics, photovoltaics (see section 16).

Uses advised against: see section 16.

### 1.3 Data concerning safety data sheet supplier

Manufacturer: **Advanced Graphene Products Sp. z o. o.**  
Address: Nowy Kisielin – A. Wysockiego 4, 66-002 Zielona Góra, Poland  
Phone: +48 68 328 20 12  
E-mail address of the person responsible for the safety data sheet: biuro@theta-doradztwo.pl

### 1.4 Emergency phone number

112 (emergency call), 998 (fire brigade), 999 (medical emergency)

## Section 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Skin Irrit. 2 H315, Eye Irrit. 2 H319, STOT SE 3 H335**

Irritating effect on the skin. Causes eye irritation. May cause respiratory irritation.

### 2.2 Labelling elements

Hazard pictograms and signal word



#### NOTE

Hazard statements

H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.

Precautionary statements

P233 Keep container tightly closed.  
P280 Use protective gloves/protective clothing/eye protection/face protection.  
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing.  
Rinse skin with water [or shower].  
P304+P340 IF INHALED: remove victim to fresh air and keep him breathing well.  
P305+P351+P338: IN THE CASE OF GETTING INTO EYES: Carefully rinse with water for several minutes  
P403+P235 Store in a well-ventilated place. Store in a cool place.

### 2.3 Other hazards

The substance does not meet the PBT or vPvB criteria in accordance with appendix XIII regulation REACH.



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## Section 3: Composition/information on ingredients

### 3.1 Substances

Chemical name: graphene oxide  
CAS number: -  
EC number: 942-699-3  
Concentration: 100%

## Section 4: First aid measures

### 4.1 Description of first aid measures

In contact with skin: remove contaminated clothing. Contaminated skin wash with plenty of water. If disturbing symptoms appear, consult a physician.

After eye contact: flush contaminated eyes thoroughly with water for 10-15 minutes with eyelids wide open. Protect the non-irritated eye. If disturbing symptoms appear, consult a ophthalmologist.

Ingestion: do not induce vomiting. Rinse mouth with water. Never give anything orally to unconscious person. Call a physician, show the packaging or label.

After inhalation: move the victim out to fresh air, keep warm and calm. If disturbing symptoms appear, consult a physician.

### 4.2 Most important acute and delayed symptoms and effects of exposure

Eye contact: possible redness, tearing, burning, irritation.

Skin contact: possible redness, irritation and drying of the skin.

After inhalation: possible respiratory irritation, coughing.

After swallowing: possible nausea and vomiting.

### 4.3 Instructions concerning any immediate medical assistance and particular procedure with the injured person

The decision on how to proceed is made by a physician after a thorough assessment of the injured person's condition.

## Section 5: Fire-fighting measures

### 5.1 Extinguishing Media

Suitable extinguishing media: adapt extinguishing media to materials stored in the neighborhood.

Inappropriate extinguishing media: straight streams of water - danger of the spread of fire

### 5.2 Specific hazards associated with substance or mixture

During combustion, hazardous gases may be formed, such as carbon monoxide. Avoid inhalation of combustion products, may present a risk for health.

### 5.3 Information for fire brigades

Personal protection typical in case of fire. Do not stay in the danger zone of fire without proper chemical-resistant clothing and breathing apparatus with independent air circulation.

## Section 6: Proceedings in the case of unintended release to environment

### 6.1 Individual precautions, protective equipment and procedures in emergency situations

Restrict access of outsiders to the area of emergency until the completion of proper cleaning operations. Ensure that emergency procedures and its results are carried out only by trained personnel.



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In case of large releases, isolate the affected area. Ensure adequate ventilation. Prevent dust formation.

## 6.2 Precautions in the field of environmental protection

In the case of release of large amounts of the substance should take steps to prevent the spread of the natural environment. Notify the appropriate emergency services.

## 6.3 Methods and materials preventing contamination spreading and used for contamination removal

Collect mechanically and place in waste containers. Treat collected material as waste. Clean the contaminated place with a large amount of water.

## 6.4 References to other sections

Product waste management - see section 13.

## Section 7: Handling substances and mixtures and their storage

### 7.1 Precautions for safe handling

Work in accordance with the principles of health and safety. Avoid dust formation. Wash hands before breaks and after finishing work. Avoid contact with skin and eyes. Provide adequate ventilation, general and/or local. Keep unused containers tightly closed.

### 7.2 Conditions for safe storage, including information on any mutual incompatibilities

Keep only in original, tightly closed containers in a dry, cool and well-ventilated place. Avoid the accumulation of dust. Do not expose to direct exposure. Keep away from foodstuffs and animal feed.

### 7.3 Specific final application(s)

No information about the applications other than those listed in subsection 1.2.

## Section 8: Exposure control/means of personal protection

### 8.1 Control parameters

Specification	OEL	STEL	TLV-C	BELV
Dusts not classified for toxicity - inhalable fraction	10 mg/m <sup>3</sup>	—	—	—

Legal basis: Journal of Laws of 2018, item 1286.

#### Recommended monitoring procedures

Monitoring procedures of hazardous components concentrations in air and air quality control procedures in the workplace should be used - as long as they are available and reasonable for the job - in accordance with the relevant Polish or European Standards, taking into account the conditions prevailing at the site of exposure and appropriate methodology adapted to the measurement work. Mode, type and frequency of tests and measurements should meet the requirements of the Regulation of the Minister of Health on 2 February 2011 (Journal of Laws No.33, item 166).

### 8.2 Exposure Controls

Observe general rules of health and safety. Do not eat, drink or smoke during the work. Wash your hands thoroughly before breaks and after finishing work. Avoid contamination of skin and eyes. Ensure proper ventilation. Each workplace at which dusts are emitted at a level exceeding the maximum allowable concentration should be equipped with local ventilation.

#### Body and hands protection

Recommended gloves resistant to the product compliant with EN374. not powdered at performance level 2 or higher. Wear work protective clothing.

Material of gloves has to be impermeable and resistant to the product. Material selection should be made taking into account the penetration times, rates of diffusion and the degradation. Moreover, the selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies depending on the manufacturer. From manufacturer must obtain



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information on the exact break through time and has to be observed.

## Eye protection

Airtight protective goggles according to EN166 are recommended.

## Respiratory protection

In the event of air pollution by dust, use filtering equipment. When protection is required p N85 (USA) or type P1 (EN 143). Use a mask that has been tested and meets the relevant standards.

The personal protective equipment must comply with the requirements of Regulation (EU) 2016/425). The employer is obliged to provide the means of protection appropriate to the activities and meet all the quality requirements, including maintenance and cleaning.

## Environment exposure control

Do not allow large quantities of product to enter ground water, sewage system, sewage or soil.

## Section 9: Physical and chemical properties

### 9.1 Information on basic and physical and chemical properties

physical state:	solid
odour:	odourless
odour threshold:	not determined
pH value:	not determined
melting point/freezing point:	not determined
initial boiling point:	not determined
flash point:	not determined
evaporation rate:	not applicable
flammability (solid, gas):	no data available
upper/lower explosive limits:	not determined
vapour pressure:	not applicable
vapour density:	not applicable
density (20°C):	not determined
solubility:	not determined
partition coefficient: n-octanol/water:	not determined
autoignition temperature:	not self-igniting
decomposition temperature:	not determined
explosive properties:	not presented
oxidizing properties:	not presented
viscosity:	not determined

### 9.2 Other Information

No additional research.

## Section 10: Stability and reactivity

### 10.1 Reactivity

The hazards associated with the reactivity of the substance are unknown.

### 10.2 Chemical stability

The product is stable when used properly and stored.

### 10.3 Possibility of hazardous reactions

No hazardous reactions known.

### 10.4 Conditions to be avoided

They are not known.



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## 10.5 Incompatible materials

Strong oxidizing agents.

## 10.6 Hazardous decomposition products

They are not known.

## Section 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

Based on available data, the classification criteria are not met.

#### Caustic/irritating effect on the skin

Irritating effect on the skin.

#### Serious damage to eyes/ irritating effect on eyes

Causes eye irritation.

#### Respiratory or skin sensitisation

Based on available data, the classification criteria are not met.

#### Mutagenic effect on reproductive cells

Based on available data, the classification criteria are not met.

#### Carcinogenic effect

Based on available data, the classification criteria are not met.

#### Harmful impact on reproduction capacity

Based on available data, the classification criteria are not met.

#### Toxic effect on target organs - one-time exposure

May cause respiratory irritation.

#### Toxic effect on target organs - repeated exposure

Based on available data, the classification criteria are not met.

#### Aspiration hazard

Based on available data, the classification criteria are not met.

## Section 12: Ecological information

### 12.1 Toxicity

The substance is not classified as hazardous to the environment.

### 12.2 Durability and capacity of decomposition

Inorganic substance - not applicable.

### 12.3 Bioaccumulation ability

Inorganic substance - not applicable.

### 12.4 Mobility in the soil

No data available.

### 12.5 Results of properties assessment PBT and vPvB

The substance does not meet criteria neither for PBT or vPvB.

### 12.6 Other harmful effects of the action

The product does not affect global warming and ozone depletion.



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## Section 13: Disposal considerations

### 13.1 Waste disposal methods

Recommendations for mixture: dispose in accordance with applicable regulations. Waste code must be given at the point of manufacture.

Recommendations for packaging waste: recovery / recycling / liquidation of packaging waste carried out in accordance with the applicable regulations. Only completely emptied packaging can be recycled.

Community legislation: Directive of the European Parliament and of the Council: 2008/98/EC and 94/62/EC.

National legal acts: Journal of Laws of 2013, item 21 with later amendments, Journal of Laws of 2013, item 888 with later amendments

## Section 14: Transport information

### 14.1 UN number

Not applicable. The product is not classified as hazardous during transport by land, sea or air.

### 14.2 Correct transport name UN

Not applicable.

### 14.3 Transport hazard class(es)

Not applicable.

### 14.4 Packing group

Not applicable.

### 14.5 Environmental hazards

Not applicable.

### 14.6 Special precautions for user

Not applicable.

### 14.7 Bulk transport according to appendix II of the MARPOL convention and IBC code

Not applicable.

## Section 15: Regulatory information

### 15.1 Legal regulations related to safety, health and environmental protection principles specific for the substance or mixture

The Act of 25 February 2011 on chemical substances and their mixtures (Journal of Laws No. 63, item 322, with later amendments).

Regulation of the Minister of Labour and Social Policy of 6 June 2014 on the highest allowable concentrations and intensities of factors harmful to health in the work environment (Journal of Laws of 2014, item 817 with later amendments) ADR agreement concerning the International Carriage of Dangerous Goods by Road.

Act on Waste of 14 December 2012 (Journal of Laws of 2013, item 21) with later amendments

The Act of 13 June 2013 on packaging management and packaging waste (Journal of Laws of 2013, item 888 with later amendments)

Regulation of the Minister of Environment of 9 December 2014 on the catalogue of waste (Journal of Laws of 2014, item 1923).

Regulation of the Minister of Economy of 21 December 2005 on essential requirements for personal protective equipment (Journal of Laws No. 259, item 2173).

Regulation of the Minister of Health of 2 February 2011 on tests and measurements of harmful factors for health in the work environment (Journal of Laws No.33, item 166).

**1907/2006/EC** Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 No. 1488/94, as well as Council Directive 76/769/EEC and Commission Directive 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, with



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later amendments

**1272/2008/EC** Regulation of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 1907/2006 with later amendments

**2015/830/EU** Commission Regulation of 28 May 2015 amending Regulation (EC) No. 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

**2008/98/EC** Directive of the European Parliament and the Council of 19 November 2008 on waste and repealing certain directives

**94/62/EC** Directive of the European Parliament and the Council of 20 December 1994 on packaging and packaging waste.

## 15.2 Assessment of chemical safety

A safety assessment has not been carried out for this substance (exemption from registration).

## Section 16 : Other information

### The full text of the H-phrases of Section 3 of the MSDS

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

### Abbreviations and acronyms

NDS	Workplace Exposure Limit
NDSch	Short term exposure limit
NDSP	Ceiling Occupational Exposure Limit
DBS	Biological exposure limit values
PBT	Persistent, bioaccumulative and toxic substance
vPvB	Very persistent substance and have high bioaccumulative potential.
Eye Irrit. 2	Irritating effect on the eye, cat. 2
Skin Irrit 2	Irritating effect on the skin, cat. 2
STOT SE 3	Specific target organ toxicity - single exposure, cat. 3

### Training courses

Prior to working with the product you should be familiar with safety rules for handling the chemicals, in particular take proper workplace training.

### References to key literature and data sources

The MSDS has been developed based on the characteristics of individual components, literature data, online databases (e.g. ECHA, TOXNET, COSING) and possessed knowledge and experience, taking into account the currently applicable legal provisions.

### Additional manufacturer information

The materials have not been tested in vivo on humans and animals or on products intended for these purposes.

The above information was based on currently available data characterizing the product and the experience and knowledge possessed by the manufacturer in this regard. They do not constitute a qualitative description of the product or a promise of specific properties. They should be treated as an aid for safe handling in the transport, storage and use of the product. This does not absolve the user from any liability for improper use of the above information and compliance with all legal norms in force in this field.

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