

Hexamethylphosphoramide-

Classification acc. to 29 CFR 1910.1200

Version number: GHS 6.0 Replaces version of: 2023-02-06 (GHS 5) Revision: 2025-06-10

SECTION 1: Identification

1.1 Product identifier

Identification of the substance Hexamethylphosphoramide-d18

CAS number 51219-90-0

Alternative name(s) Hexamethylphosphoramide

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses laboratory and analytical use

product and process oriented research and devel-

opment

the product is intended for research, analysis and

scientific education laboratory chemical

HS code 2845.90.

1.3 Details of the supplier of the safety data sheet

Zeochem AG Joweid 5, CH-8630 Rüti

Switzerland

Telephone: +41 44 922 93 93 e-Mail: info@zeochem.com

Website: https://www.zeochem.com

1.4 Emergency telephone number

	Poison center				
	Country	Name	Telephone		
	Switzerland	Toxzentrum Zürich / Tox. Info Suisse	+41 44 251 51 51 / CH: 145 - 24h/7d		
United States		CHEMTREC USA	+1 800 424 9300 - 24h/7d		

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Section	Hazard class	Category	Hazard class and cat- egory	Hazard state- ment
A.2	skin corrosion/irritation	1C	Skin Corr. 1C	H314
A.3	serious eye damage/eye irritation	1	Eye Dam. 1	H318
A.5	germ cell mutagenicity	1B	Muta. 1B	H340
A.6	carcinogenicity	2	Carc. 2	H351

For full text of abbreviations: see SECTION 16.

The most important adverse physicochemical, human health and environmental effects

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into



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the dermis.

2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

- Signal word danger

2.2.1.2 Pictograms

-		
	GHS05, GHS08	

	Hazard statements
H314	causes severe skin burns and eye damage
H340	may cause genetic defects
H351	suspected of causing cancer

	Precautionary statements
P201	obtain special instructions before use
P260	do not breathe dusts or mists
P280	wear eye protection/face protection
P301+P330+P331	if swallowed: Rinse mouth. Do NOT induce vomiting
P303+P361+P353	if on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340	if inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338	if in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310	immediately call a poison center/doctor
P321	specific treatment (see on this label)
P363	wash contaminated clothing before reuse
P405	store locked up
P501	dispose of contents/container in accordance with local/regional/national/international regulations

2.3 Other hazards

Hazards not otherwise classified

May be harmful in contact with skin (GHS category 5: acutely toxic - dermal).

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) in a concentration of \geq 0.1%.



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SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance Hexamethylphosphoramide-d18

Identifiers

CAS No 51219-90-0
Purity >90 %

Molecular formula C6D18N3OP Molar mass 197 ^g/_{mol}

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are not known to date.

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray, BC-powder, Carbon dioxide (CO2)

Unsuitable extinguishing media

Water jet

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products

Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO2), Phosphorus oxides (PxOy)



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5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Coordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.

For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains

Advice on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage: sawdust, kieselgur (diatomite), sand, universal binder

Appropriate containment techniques

Use of adsorbent materials.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

Store in a dry place.

- Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Use only in well-ventilated areas.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

- Specific designs for storage rooms or vessels
- Storage temperature

Recommended storage temperature: 15 – 20 °C 15 °C

- Packaging compatibilities



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Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used.

7.3 Specific end use(s)

See section 16 for a general overview.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)											
Coun- try	Name of agent	CAS No	Identi- fier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Ceiling-C [ppm]	Ceiling-C [mg/m³]		Source
US	hexamethylphos- phoramide	680-31-9	TLV®							Н	ACGIH® 2023
US	hexamethylphos- phoramide	680-31-9	REL							lowest, appx-A	NIOSH REL

<u>Notation</u>

appx-A NIOSH Potential Occupational Carcinogen (Appendix A)

Ceiling-C ceiling value is a limit value above which exposure should not occur

H absorbed through the skin

lowest exposure by all routes should be carefully controlled to levels as low as possible

STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute peri-

od (unless otherwise specified)

TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours

time-weighted average (unless otherwise specified

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Skin protection

- Hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

- Type of material

Nitrile

IIR: isobutene-isoprene (butyl) rubber

- Breakthrough times of the glove material

>30 minutes (permeation: level 2)

- Other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory protection



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In case of inadequate ventilation wear respiratory protection.

Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	liquid
Color	not determined
Particle	not relevant (liquid)
Odor	characteristic

Other safety parameters

pH (value)	not determined		
Melting point/freezing point	7 °C		
Initial boiling point and boiling range	235 °C		
Flash point	105 °C (c.c.) (closed cup)		
Evaporation rate	not determined		
Flammability (solid, gas)	not relevant, (fluid)		
Vapor pressure	not determined		
Density	1.05 ^g / _{cm³} at 25 °C		
Vapor density	this information is not available		
Relative density	6.18 (air = 1)		
Solubility(ies)	not determined		

Partition coefficient

- n-octanol/water (log KOW)	0.28
Auto-ignition temperature	not determined
Viscosity	not determined
Explosive properties	none
Oxidizing properties	none



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9.2 Other information

Refractive index	1.46 – 1.46 (20 °C)
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SECTION 10: Stability and reactivity

10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials".

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

10.5 Incompatible materials

Oxidizers

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Acute toxicity

Shall not be classified as acutely toxic.

GHS of the United Nations, annex 4: May be harmful in contact with skin.

Skin corrosion/irritation

Causes severe skin burns and eye damage.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitization

Shall not be classified as a respiratory or skin sensitizer.

Germ cell mutagenicity

May cause genetic defects.

Carcinogenicity

Suspected of causing cancer.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans

Name of substance	CAS No	Classification	Number
Hexamethylphosphoramide-d18	680-31-9	2B	



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Legend

2B Possibly carcinogenic to humans

National Toxicology Program (Un	ited States): R	eport on Carcinoge	ns

Name of substance	CAS No	Classification	Number
Hexamethylphosphoramide-d18		Reasonably anticipated to be a human carcino- gen	

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

SECTION 12: Ecological information

12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

12.2 Persistence and degradability

Data are not available.

12.3 Bioaccumulative potential

The substance fulfills the very bioaccumulative criterion.

n-octanol/water (log KOW)	0.28
BCF	3.3

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) in a concentration of \geq 0.1%.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Sewage disposal-relevant information



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Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packages

Only packagings which are approved (e.g. acc. to DOT) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: Transport information

14.1 UN number

DOT UN 2810 IMDG-Code UN 2810 ICAO-TI UN 2810

14.2 UN proper shipping name

DOT Toxic liquid, organic, n.o.s.

IMDG-Code TOXIC LIQUID, ORGANIC, N.O.S.

ICAO-TI Toxic liquid, organic, n.o.s.

Technical name Hexamethylphosphoramide-d18

14.3 Transport hazard class(es)

DOT 6.1 IMDG-Code 6.1 ICAO-TI 6.1

14.4 Packing group

DOT II IMDG-Code II ICAO-TI II

14.5 Environmental hazards non-environmentally hazardous acc. to the dan-

gerous goods regulations

14.6 Special precautions for user

There is no additional information.

14.7 Transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

Information for each of the UN Model Regulations

Transport of dangerous goods by road or rail (49 CFR US DOT) - Additional information

Particulars in the shipper's declaration UN2810, Toxic liquid, organic, n.o.s., (Hexa-

methylphosphoramide-d18), 6.1, II

Reportable quantity (RQ) 1 lbs (0.454 kg) (Hexamethylphosphoramide-d18)



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Danger label(s)

6.1



Special provisions (SP) IB2, T11, TP2, TP13, TP27

ERG No 153

International Maritime Dangerous Goods Code (IMDG) - Additional information

Marine pollutant Danger label(s) 6.1



Special provisions (SP) 274

Excepted quantities (EQ) E4

Limited quantities (LQ) 100 mL

EmS F-A, S-A

Stowage category B

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Danger label(s) 6.1



Special provisions (SP) A3, A4, A137

Excepted quantities (EQ) E4
Limited quantities (LQ) 1 L

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

National regulations (United States)

Toxic Substance Control Act (TSCA) substance is listed (ACTIVE)

Superfund Amendment and Reauthorization Act (SARA TITLE III)

- The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)

not listed

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- Specific Toxic Chemical Listings (EPCRA Section 313)

Toxics Release Inventory: Specific Toxic Chemical Listings			
Name of substance	CAS No	Remarks	Effective date
Hexamethylphosphoramide-d18	680-31-9		1987-01-01

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

- List of Hazardous Substances and Reportable Quantities (CERCLA section 102a) (40 CFR 302.4)

Name of substance	CAS No	Remarks	Statutory code	Final RQ pounds (Kg)
Hexamethylphosphoramide-d18	680-31-9		3	1 (0,454)

Legend

3 "3" indicates that the source is section 112 of the Clean Air Act

Clean Air Act

not listed

Right to Know Hazardous Substance List

- Cleaning Product Right to Know Act Substance List (CA-RTK)

Name of substance	CAS No	Functionality	Authoritative Lists
Hexamethylphosphoramide-d18	680-31-9		CA TACs EC Annex VI CMRs - Cat. 1B IARC Carcinogens - 2B NTP 13th RoC - reasonable Prop 65

- Toxic or Hazardous Substance List (MA-TURA)

Name of substance	CAS No	DEP CODE		De Minimis Concen- tration Threshold
Hexamethylphosphoramide-d18	680-31-9			0.1 %

- Hazardous Substances List (MN-ERTK)

	Name of substance	CAS No	References	Remarks
H	lexamethylphosphoramide-d18	680-31-9	A, R, T, *	skin

<u>Legend</u>

- * Substances which are regulated by OSHA as carcinogens; have been categorized by the ACGIH as either "human carcinogens" or "suspect of carcinogenic potential for man"; have been evaluated by the International Agency for Research on Cancer (IARC) and found to be carcinogens or potential carcinogens; or have been listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP).
- A American Conference of Governmental Industrial Hygienists (ACGIH), "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 1992-93", available from ACGIH
- R International Agency for Research on Cancer (IARC) Monographs on the Evaluation of the Carcinogenic Risks to Humans; Overall Evaluations of Carcinogenicity: An Updating of IARC Monographs Volumes 1 to 42, Supplement 7 (1987). Available from: WHO Publications Centre USA



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Legend

skin If a potential for absorption from skin contact merits special consideration, the word "skin" follows the substance name.

T National Toxicology Program (NTP) "Fifth Annual Report on Carcinogens," 1989 (NTP 89-239). Order information: (919) 541-

3992

- Hazardous Substance List (NJ-RTK)

Name of substance	CAS No	Remarks	Classifications
Hexamethylphosphoramide-d18	680-31-9		CA

Legend

CA Carcinogenic

- Hazardous Substance List (Chapter 323) (PA-RTK)

Name acc. to inventory	CAS No	Classification
PHOSPHORIC TRIAMIDE, HEXAMETHYL-	680-31-9	E, S

Legend

E Environmental hazard
S Special hazardous substance

- Hazardous Substance List (RI-RTK)

Name of substance	CAS No	References
Hexamethylphosphoramide-d18	680-31-9	Т

Legend

T Toxicity (ACGIH®)

California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987

Proposition 65 List of chemicals				
Name acc. to inventory	CAS No	Remarks	Type of the toxicity	
hexamethylphosphoramide	680-31-9		cancer	
hexamethylphosphoramide	680-31-9		male	

Industry or sector specific available guidance(s)

NPCA-HMIS® III

Hazardous Materials Identification System. American Coatings Association.

Category	Rating	Description
Chronic	*	chronic (long-term) health effects may result from repeated overexposure
Health	3	major injury likely unless prompt action is taken and medical treatment is given



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Category	Rating	Description
Flammability	1	material that must be preheated before ignition can occur
Physical hazard	0	material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive
Personal protection	-	

NFPA® 704

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States).

Category	Degree of hazard	Description
Flammability	1	material that must be preheated before ignition can occur
Health	3	material that, under emergency conditions, can cause serious or permanent injury
Instability	0	material that is normally stable, even under fire conditions
Special hazard		

National inventories

Country	Inventory	Status
US	TSCA	substance is listed (ACTIVE)

Legend

TSCA Toxic Substance Control Act

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information, including date of preparation or last revision

Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety- relevant
1.3	Details of the supplier of the safety data sheet:	Details of the supplier of the safety data sheet:	yes
2.3	Endocrine disrupting properties: Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0,1%.	Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) in a concentration of ≥ 0.1%.	yes
7.2		- Specific designs for storage rooms or vessels	yes
7.2		Storage temperature:	yes

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Section	Former entry (text/value)	Actual entry (text/value)	Safety- relevant
		Recommended storage temperature: 15 – 20 °C 15 °C	
8.1		Occupational exposure limit values (Workplace Exposure Limits): change in the listing (table)	yes
12.6	Endocrine disrupting properties: Does not contain an endocrine disruptor (EDC) in a concentration of \geq 0,1%.	Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) in a concentration of ≥ 0.1%.	yes
15.1	Toxic Substance Control Act (TSCA): substance is listed as "ACTIVE"	Toxic Substance Control Act (TSCA): substance is listed (ACTIVE)	yes
15.1		National inventories: change in the listing (table)	yes

Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H340	May cause genetic defects.
H351	Suspected of causing cancer.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.