

## 1 Identification

### Product identifier

**Product name:** 5,5-Diphenylhydantoin

**Stock number:** L04167

**CAS Number:**  
57-41-0

**EC number:**  
200-328-6

**Relevant identified uses of the substance or mixture and uses advised against.**

**Identified use:** SU24 Scientific research and development

### Details of the supplier of the safety data sheet

#### Manufacturer/Supplier:

Alfa Aesar  
 Thermo Fisher Scientific Chemicals, Inc.  
 30 Bond Street  
 Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

**Information Department:** Health, Safety and Environmental Department

#### Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

## 2 Hazard(s) identification

### Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)



GHS08 Health hazard

Carc. 1A H350 May cause cancer.

Repr. 1A H360 May damage fertility or the unborn child.



GHS07

Skin Sens. 1 H317 May cause an allergic skin reaction.

**Hazards not otherwise classified** No information known.

### Label elements

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

### Hazard pictograms



GHS07 GHS08

### Signal word

Danger

### Hazard statements

H317 May cause an allergic skin reaction.

H350 May cause cancer.

H360 May damage fertility or the unborn child.

### Precautionary statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P281 Use personal protective equipment as required.

P363 Wash contaminated clothing before reuse.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

### WHMIS classification

D1B - Toxic material causing immediate and serious toxic effects

D2A - Very toxic material causing other toxic effects



### Classification system

#### HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH	2	Health (acute effects) = 2
FIRE	1	Flammability = 1
REACTIVITY	1	Physical Hazard = 1

### Other hazards

#### Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

## 3 Composition/information on ingredients

### Chemical characterization: Substances

#### CAS# Description:

57-41-0 5,5-Diphenylhydantoin

#### Identification number(s):

EC number: 200-328-6

Product name: **5,5-Diphenylhydantoin**

(Contd. of page 1)

#### 4 First-aid measures

##### Description of first aid measures

###### After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm.  
Seek immediate medical advice.

###### After skin contact

Immediately wash with water and soap and rinse thoroughly.  
Seek immediate medical advice.

**After eye contact** Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Seek medical treatment.

##### Information for doctor

**Most important symptoms and effects, both acute and delayed** No further relevant information available.

**Indication of any immediate medical attention and special treatment needed** No further relevant information available.

#### 5 Fire-fighting measures

##### Extinguishing media

**Suitable extinguishing agents** Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

##### Special hazards arising from the substance or mixture

If this product is involved in a fire, the following can be released:

Carbon monoxide and carbon dioxide

Possibly Hydrogen cyanide (HCN)

Nitrogen oxides (NOx)

##### Advice for firefighters

###### Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

#### 6 Accidental release measures

##### Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Environmental precautions:** Do not allow material to be released to the environment without proper governmental permits.

**Methods and material for containment and cleaning up:** Dispose of contaminated material as waste according to section 13.

**Prevention of secondary hazards:** No special measures required.

##### Reference to other sections

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

#### 7 Handling and storage

##### Handling

###### Precautions for safe handling

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Open and handle container with care.

**Information about protection against explosions and fires:** No information known.

**Conditions for safe storage, including any incompatibilities**

##### Storage

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** Store away from oxidizing agents.

##### Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

**Specific end use(s)** No further relevant information available.

#### 8 Exposure controls/personal protection

##### Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

##### Control parameters

**Components with limit values that require monitoring at the workplace:** Not required.

**Additional information:** No data

##### Exposure controls

###### Personal protective equipment

###### General protective and hygienic measures

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Maintain an ergonomically appropriate working environment.

**Breathing equipment:** Use suitable respirator when high concentrations are present.

###### Protection of hands:

Impervious gloves

Check protective gloves prior to each use for their proper condition.

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

**Penetration time of glove material (in minutes)** Not determined

**Eye protection:** Safety glasses

**Body protection:** Protective work clothing.

#### 9 Physical and chemical properties

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

###### General Information

###### Appearance:

**Form:** Powder

**Color:** White

**Odor:** Not determined

(Contd. on page 3)

Product name: **5,5-Diphenylhydantoin**

(Contd. of page 2)

**Odor threshold:** Not determined.

**pH-value:** Not applicable.

**Change in condition**

**Melting point/Melting range:** 293-298 °C (559-568 °F)

**Boiling point/Boiling range:** Not determined

**Sublimation temperature / start:** Not determined

**Flash point:** Not applicable

**Flammability (solid, gaseous):** Not determined.

**Ignition temperature:** Not determined

**Decomposition temperature:** Not determined

**Auto igniting:** Not determined.

**Danger of explosion:** Product does not present an explosion hazard.

**Explosion limits:**

**Lower:** Not determined

**Upper:** Not determined

**Vapor pressure:** Not applicable.

**Density:** Not determined

**Relative density:** Not determined.

**Vapor density:** Not applicable.

**Evaporation rate:** Not applicable.

**Solubility in / Miscibility with**

**Water:** Not determined

**Partition coefficient (n-octanol/water):** Not determined.

**Viscosity:**

**dynamic:** Not applicable.

**kinematic:** Not applicable.

**Other information:** No further relevant information available.

**10 Stability and reactivity**

**Reactivity:** No information known.

**Chemical stability:** Stable under recommended storage conditions.

**Thermal decomposition / conditions to be avoided:** Decomposition will not occur if used and stored according to specifications.

**Possibility of hazardous reactions:** No dangerous reactions known

**Conditions to avoid:** No further relevant information available.

**Incompatible materials:** Oxidizing agents

**Hazardous decomposition products:**

Carbon monoxide and carbon dioxide

Nitrogen oxides

Possibly Hydrogen cyanide (HCN)

**11 Toxicological information**

**Information on toxicological effects**

**Acute toxicity:** Harmful if swallowed.

**LD/LC50 values that are relevant for classification:**

Oral LD50 2195 mg/kg (rat)

**Skin irritation or corrosion:** Irritant to skin and mucous membranes.

**Eye irritation or corrosion:** Irritating effect.

**Sensitization:** May cause an allergic skin reaction.

**Germ cell mutagenicity:** No effects known.

**Carcinogenicity:**

May cause cancer.

IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.

**Reproductive toxicity:** May damage fertility or the unborn child.

**Specific target organ system toxicity - repeated exposure:** No effects known.

**Specific target organ system toxicity - single exposure:** No effects known.

**Aspiration hazard:** No effects known.

**Other information (about experimental toxicology):**

Tumorigenic effects have been observed on tests with laboratory animals.

Reproductive effects have been observed on tests with laboratory animals.

Mutagenic effects have been observed on tests with bacteria.

Mutagenic effects have been observed on tests with human lymphocytes.

Mutagenic effects have been observed with human leukocyte.

Mutagenic effects have been observed on tests with laboratory animals.

**Subacute to chronic toxicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Behavioral - somnolence (general depressed activity).

Behavioral - hallucinations, distorted perceptions.

Behavioral - ataxia.

Behavioral - changes in motor activity (specific assay).

Behavioral - irritability.

Behavioral - altered sleep time (including change in righting reflex).

Behavioral - excitement.

Behavioral - muscle contraction or spasticity.

Behavioral - sleep.

Behavioral - muscle weakness.

Behavioral - alteration of operant conditioning.

Behavioral - anticonvulsant.

Behavioral - convulsions or effect on seizure threshold.

Behavioral - alteration of classical conditioning.

Behavioral - changes in psychophysiological tests.

Behavioral - withdrawal.

Brain and Coverings - encephalitis.

Brain and Coverings - other degenerative changes.

Brain and Coverings - changes in brain weight.

Brain and Coverings - tumors.

Blood - eosinophilia.

Blood - other changes.

Blood - thrombocytopenia.

Blood - lymphoma, including Hodgkin's disease.

(Contd. on page 4)  
USA

**Product name: 5,5-Diphenylhydantoin**

(Contd. of page 3)

Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol).  
 Liver - changes in liver weight.  
 Liver - jaundice, other or unclassified.  
 Liver - other changes.  
 Lungs, Thorax, or Respiration - structural or functional change in trachea or bronchi.  
 Lungs, Thorax, or Respiration - respiratory stimulation.  
 Lungs, Thorax, or Respiration - other changes.  
 Lungs, Thorax, or Respiration - respiratory depression  
 Cardiac - arrhythmias (including changes in conduction).  
 Vascular - BP lowering not characterized in autonomic section.  
 Sense Organs and Special Senses (Eye) - effect, not otherwise specified.  
 Skin and Appendages - dermatitis, other (after systemic exposure).  
 Skin and Appendages - tumors.  
 Immunological Including Allergic - increase in cellular immune response  
 Biochemical - Metabolism (Intermediary) - effect on cyclic nucleotides.  
 Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - other enzymes.  
 Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - hepatic microsomal mixed oxidase.  
 Nutritional and Gross Metabolic - weight loss or decreased weight gain.  
 Kidney, Ureter, Bladder - Kidney tumors.  
 Reproductive - Tumorigenic effects - transplacental tumorigenesis.  
 Reproductive - Specific Developmental Abnormalities - craniofacial (including nose and tongue).  
 Reproductive - Specific Developmental Abnormalities - eye/ear.  
 Reproductive - Specific Developmental Abnormalities - cardiovascular (circulatory) system.  
 Reproductive - Effects on Newborn - growth statistics (e.g. %, reduced weight gain).  
 Reproductive - Effects on Newborn - physical.  
 Reproductive - Effects on Newborn - delayed effects.  
 Reproductive - Specific Developmental Abnormalities - skin and skin appendages  
 Reproductive - Specific Developmental Abnormalities - musculoskeletal system.  
 Reproductive - Specific Developmental Abnormalities - other developmental abnormalities.  
 Reproductive - Effects on Newborn - other postnatal measures or effects.  
 Reproductive - Effects on Newborn - biochemical and metabolic.  
 Reproductive - Effects on Newborn - viability index (e.g., # alive at day 4 per # born live).  
 Reproductive - Effects on Newborn - behavioral.  
 Reproductive - Fertility - litter size (e.g. # fetuses per litter; measured before birth).  
 Reproductive - Effects on Embryo or Fetus - fetal death.  
 Reproductive - Effects on Newborn - live birth index (measured after birth)  
 Reproductive - Maternal Effects - menstrual cycle changes or disorders.  
 Reproductive - Fertility - other measures of fertility.  
 Reproductive - Specific Developmental Abnormalities - body wall.  
 Reproductive - Specific Developmental Abnormalities - urogenital system.  
 Reproductive - Specific Developmental Abnormalities - Central Nervous System.  
 Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).  
 Reproductive - Fertility - post-implantation mortality (e.g. dead/or resorbed implants per total number of implants).  
 Reproductive - Effects on Embryo or Fetus - extra-embryonic structures (e.g., placenta, umbilical cord)  
 Reproductive - Fertility - male fertility index (e.g. # males impregnating females per # males exposed to fertile nonpregnant females)  
 Reproductive - Fertility - abortion.  
 Reproductive - Specific Developmental Abnormalities - immune and reticuloendothelial system  
 Reproductive - Fertility - pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea)  
 Reproductive - Effects on Embryo or Fetus - other effects to embryo.  
 Tumorigenic - carcinogenic by RTECS criteria.  
 Tumorigenic - equivocal tumorigenic agent by RTECS criteria.  
 Tumorigenic - neoplastic by RTECS criteria.  
**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

**12 Ecological information**

**Toxicity**  
**Aquatic toxicity:** No further relevant information available.  
**Persistence and degradability** No further relevant information available.  
**Bioaccumulative potential** No further relevant information available.  
**Mobility in soil** No further relevant information available.  
**Additional ecological information:**  
**General notes:**  
 Do not allow material to be released to the environment without proper governmental permits.  
 Do not allow product to reach ground water, water course or sewage system, even in small quantities.  
 Danger to drinking water if even extremely small quantities leak into the ground.  
 Avoid transfer into the environment.  
**Results of PBT and vPvB assessment**  
**PBT:** Not applicable.  
**vPvB:** Not applicable.  
**Other adverse effects** No further relevant information available.

**13 Disposal considerations**

**Waste treatment methods**  
**Recommendation** Consult state, local or national regulations to ensure proper disposal.  
**Uncleaned packagings:**  
**Recommendation:** Disposal must be made according to official regulations.

**14 Transport information**

Not a hazardous material for transportation.

<b>UN-Number</b> DOT, IMDG, IATA	None
<b>UN proper shipping name</b> DOT, IMDG, IATA	None
<b>Transport hazard class(es)</b> DOT, ADR, IMDG, IATA Class	None
<b>Packing group</b> DOT, IMDG, IATA	None

(Contd. on page 5)  
USA

Product name: **5,5-Diphenylhydantoin**

(Contd. of page 4)

<b>Environmental hazards:</b>	Not applicable.
<b>Special precautions for user</b>	Not applicable.
<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
<b>Transport/Additional information:</b>	Not dangerous according to the above specifications.
<b>DOT</b>	
<b>Marine Pollutant (DOT):</b>	No

## 15 Regulatory information

**Safety, health and environmental regulations/legislation specific for the substance or mixture**  
**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)  
**Hazard pictograms**



GHS07 GHS08

**Signal word** Danger

**Hazard statements**

H317 May cause an allergic skin reaction.

H350 May cause cancer.

H360 May damage fertility or the unborn child.

**Precautionary statements**

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P281 Use personal protective equipment as required.

P363 Wash contaminated clothing before reuse.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**National regulations**

All components of this product are listed on the Canadian Domestic Substances List (DSL).

This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only. This product must be used by or directly under the supervision of a technically qualified individual as defined by TSCA. This product must not be used for commercial purposes or in formulations for commercial purposes.

**SARA Section 313 (specific toxic chemical listings)**

57-41-0 | 5,5-Diphenylhydantoin

**California Proposition 65**

**Prop 65 - Chemicals known to cause cancer**

57-41-0 | 5,5-Diphenylhydantoin

**Prop 65 - Developmental toxicity**

57-41-0 | 5,5-Diphenylhydantoin

**Prop 65 - Developmental toxicity, female** Substance is not listed.

**Prop 65 - Developmental toxicity, male** Substance is not listed.

**Information about limitation of use:**

For use only by technically qualified individuals.

Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.

This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

**Other regulations, limitations and prohibitive regulations**

**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.** Substance is not listed.

**The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.**

Substance is not listed.

**Annex XIV of the REACH Regulations (requiring Authorisation for use)** Substance is not listed.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## 16 Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing SDS:** Global Marketing Department

**Date of preparation / last revision** 11/23/2015 / -

**Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

vPvB: very Persistent and very Bioaccumulative

ACGIH: American Conference of Governmental Industrial Hygienists (USA)

OSHA: Occupational Safety and Health Administration (USA)

NTP: National Toxicology Program (USA)

IARC: International Agency for Research on Cancer

EPA: Environmental Protection Agency (USA)