SAFETY DATA SHEET
2-Cyanoethyl tetraisopropylphosphorodiamidite

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Product name 2-Cyanoethyl tetraisopropylphosphorodiamidite
Product number FC03165
Synonyms; trade names Bis(diisopropylamino)(2-cyanoethoxy)phosphine, P-Reagent
CAS number 102691-36-1
EC number 600-337-9

1.2. Relevant identified uses of the substance or mixture and uses advised against
Identified uses Laboratory reagent. Manufacture of substances. Research and development.

1.3. Details of the supplier of the safety data sheet
Supplier Carbosynth Ltd
8 & 9 Old Station Business Park
Compton
Berkshire
RG20 6NE
UK
+44 1635 578444
+44 1635 579444
info@carbosynth.com

1.4. Emergency telephone number
Emergency telephone +44 7887 998634

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification (EC 1272/2008)
Physical hazards Flam. Liq. 3 - H226
Environmental hazards Not Classified

2.2. Label elements
EC number 600-337-9

Hazard pictograms

Signal word Danger
2-Cyanoethyl tetraisopropylphosphorodiamidite

Hazard statements
H226 Flammable liquid and vapour.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary statements
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P243 Take action to prevent static discharges.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370+P378 In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.

2.3. Other hazards
No data available.

SECTION 3: Composition/information on ingredients

3.1. Substances
Product name
2-Cyanoethyl tetraisopropylphosphorodiamidite
CAS number
102691-36-1
EC number
600-337-9
Chemical formula
C₁₅H₃₂N₃OP

SECTION 4: First aid measures

4.1. Description of first aid measures
General information
Get medical advice/attention if you feel unwell.
Inhalation
Remove person to fresh air and keep comfortable for breathing. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. If breathing stops, provide artificial respiration. Get medical attention if symptoms are severe or persist.
Ingestion
Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth thoroughly with water. Give plenty of water to drink. Get medical attention if symptoms are severe or persist.
Skin contact
Remove contaminated clothing. Rinse with water. Continue to rinse for at least 15 minutes. Wash contaminated clothing before reuse. Get medical attention if symptoms are severe or persist.
Eye contact
Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes. Get medical attention if symptoms are severe or persist.

4.2. Most important symptoms and effects, both acute and delayed
General information
See Section 11 for additional information on health hazards.

4.3. Indication of any immediate medical attention and special treatment needed
Notes for the doctor
Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media
Extinguish with alcohol-resistant foam, carbon dioxide or dry powder. Use fire-extinguishing media suitable for the surrounding fire.
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**Unsuitable extinguishing media**

Water.

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

**Specific hazards**

None known.

**Hazardous combustion products**

Thermal decomposition or combustion products may include the following substances:


### 5.3. Advice for firefighters

**Special protective equipment for firefighters**

Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing conforming to European standard EN469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents. Use protective equipment appropriate for surrounding materials.

### SECTION 6: Accidental release measures

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

**Personal precautions**

Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into spilled material. Avoid inhalation of vapours. Provide adequate ventilation. Eliminate all sources of ignition. Vapours may form explosive mixtures with air. Vapours may accumulate on the floor and in low-lying areas. Keep unnecessary and unprotected personnel away from the spillage.

#### 6.2. Environmental precautions

**Environmental precautions**

Avoid discharge into drains or watercourses or onto the ground.

#### 6.3. Methods and material for containment and cleaning up

**Methods for cleaning up**

Wear protective clothing as described in Section 8 of this safety data sheet. Absorb spillage with sand or other inert absorbent. Clear up spills immediately and dispose of waste safely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Provide adequate ventilation. For waste disposal, see Section 13.

#### 6.4. Reference to other sections

**Reference to other sections**

For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

**Usage precautions**

Wear protective clothing as described in Section 8 of this safety data sheet. Wash hands thoroughly after handling. Provide adequate ventilation. Avoid contact with skin and eyes. Do not breathe vapour/spray. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharges.

#### 7.2. Conditions for safe storage, including any incompatibilities

**Storage precautions**


**Storage class**

Flammable liquid storage.

#### 7.3. Specific end use(s)

**Specific end use(s)**

The identified uses for this product are detailed in Section 1.2.
2-Cyanoethyl tetraisopropylphosphorodiamidite

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits
No exposure limits known for ingredient(s).

8.2. Exposure controls

Appropriate engineering controls
Provide adequate ventilation.

Eye/face protection
Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Tight-fitting safety glasses. Personal protective equipment for eye and face protection should comply with European Standard EN166.

Hand protection
Wear protective gloves. To protect hands from chemicals, gloves should comply with European Standard EN374.

Other skin and body protection
Wear appropriate clothing to prevent repeated or prolonged skin contact.

Respiratory protection
Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Ensure all respiratory protective equipment is suitable for its intended use and is ‘CE’-marked. Gas and combination filter cartridges should comply with European Standard EN14387. Full face mask respirators with replaceable filter cartridges should comply with European Standard EN136. Half mask and quarter mask respirators with replaceable filter cartridges should comply with European Standard EN140.

Environmental exposure controls
Keep container tightly sealed when not in use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance
Clear liquid.

Colour
Colourless to pale yellow.

Odour
No data available.

Odour threshold
No data available.

pH
No data available.

Melting point
No data available.

Initial boiling point and range
98 to 100°C @ 5 mm Hg

Flash point
60°C Closed cup.

Evaporation rate
No data available.

Flammability (solid, gas)
No data available.

Upper/lower flammability or explosive limits
No data available.

Vapour pressure
No data available.

Vapour density
No data available.

Relative density
0.949 g/cm³ @ 25°C

Solubility(ies)
No data available.
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Partition coefficient  No data available.
Auto-ignition temperature  No data available.
Decomposition Temperature  150°C
Viscosity  No data available.
Explosive properties  No data available.
Oxidising properties  No data available.
9.2. Other information
Molecular weight  301.42

SECTION 10: Stability and reactivity

10.1. Reactivity
Reactivity  No data available.

10.2. Chemical stability
Stability  Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions
Possibility of hazardous reactions  No data available.

10.4. Conditions to avoid
Conditions to avoid  Heat, sparks, flames. Water, moisture.

10.5. Incompatible materials
Materials to avoid  Strong alkalis. Strong oxidising agents.

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity - oral
Notes (oral LD₅₀)  Based on available data the classification criteria are not met.

Acute toxicity - dermal
Notes (dermal LD₅₀)  Based on available data the classification criteria are not met.

Acute toxicity - inhalation
Notes (inhalation LC₅₀)  Based on available data the classification criteria are not met.

Skin corrosion/irritation
Animal data  Irritating.

Serious eye damage/irritation
Serious eye damage/irritation  Causes serious eye irritation.

Respiratory sensitisation
Respiratory sensitisation  There is evidence that the product can cause respiratory hypersensitivity.

Skin sensitisation
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Skin sensitisation
May cause skin sensitisation or allergic reactions in sensitive individuals.

Germ cell mutagenicity
Based on available data the classification criteria are not met.

Genotoxicity - in vitro
Based on available data the classification criteria are not met.

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

IARC carcinogenicity
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure
Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure
Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard
Based on available data the classification criteria are not met.

General information
The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation
May cause sensitisation or allergic reactions in sensitive individuals.

Ingestion
May cause sensitisation or allergic reactions in sensitive individuals. May cause irritation.

Skin contact
May cause skin sensitisation or allergic reactions in sensitive individuals. Redness. Irritating to skin.

Eye contact
Irritating to eyes.

Route of exposure
Ingestion Inhalation Skin and/or eye contact

Target organs
No specific target organs known.

Medical considerations
Skin disorders and allergies.

SECTION 12: Ecological information

Ecotoxicity
Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity
Based on available data the classification criteria are not met.

12.2. Persistence and degradability
The degradability of the product is not known.

12.3. Bioaccumulative potential
No data available on bioaccumulation.

12.4. Mobility in soil
No data available.
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Mobility
No data available.

12.5. Results of PBT and vPvB assessment
Results of PBT and vPvB assessment
This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects
Other adverse effects
None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
General information
Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered.

SECTION 14: Transport information

14.1. UN number
UN No. (ADR/RID) 1993
UN No. (IMDG) 1993
UN No. (ICAO) 1993
UN No. (ADN) 1993

14.2. UN proper shipping name
Proper shipping name (ADR/RID) FLAMMABLE LIQUID, N.O.S. (2-Cyanoethyl tetraisopropylphosphorodiamidite)
Proper shipping name (IMDG) FLAMMABLE LIQUID, N.O.S. (2-Cyanoethyl tetraisopropylphosphorodiamidite)
Proper shipping name (ICAO) FLAMMABLE LIQUID, N.O.S. (2-Cyanoethyl tetraisopropylphosphorodiamidite)
Proper shipping name (ADN) FLAMMABLE LIQUID, N.O.S. (2-Cyanoethyl tetraisopropylphosphorodiamidite)

14.3. Transport hazard class(es)
ADR/RID class 3
ADR/RID classification code F1
ADR/RID label 3
IMDG class 3
ICAO class/division 3
ADN class 3

Transport labels

14.4. Packing group
ADR/RID packing group III
IMDG packing group III
2-Cyanoethyl tetraisopropylphosphorodiamidite

ICAO packing group       III
ADN packing group        III

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

EmS                     F-E, S-E
ADR transport category   3
Emergency Action Code    •3Y
Hazard Identification Number (ADR/RID) 30
Tunnel restriction code  (D/E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations     Health and Safety at Work etc. Act 1974 (as amended).
                         The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment
                         Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"].
                         EH40/2005 Workplace exposure limits.

                         December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of
                         Chemicals (REACH) (as amended).
                         December 2008 on classification, labelling and packaging of substances and mixtures (as
                         amended).

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information
2-Cyanoethyl tetraisopropylphosphorodiamidite

Abbreviations and acronyms used in the safety data sheet

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
IATA: International Air Transport Association.
IMDG: International Maritime Dangerous Goods.
CAS: Chemical Abstracts Service.
ATE: Acute Toxicity Estimate.
LC₅₀: Lethal Concentration to 50 % of a test population.
LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).
EC₅₀: 50% of maximal Effective Concentration.
PBT: Persistent, Bioaccumulative and Toxic substance.
vPvB: Very Persistent and Very Bioaccumulative.

Training advice

Only trained personnel should use this material.

Revision date

12/11/2019

Revision

3

Supersedes date

13/11/2018

SDS number

144929

Hazard statements in full

H226 Flammable liquid and vapour.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company’s knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.