

Summary of product characteristics for a biocidal product

Product name: BLUEFUME

Product type(s): PT14 - Rodenticides (Pest control)

PT08 - Wood preservatives (Preservatives)

PT18 - Insecticides, acaricides and products to control other arthropods (Pest control)

Authorisation number: UK-2017-1086

R4BP 3 asset reference number: UK-0011442-0000

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Administrative information

1.1. Trade names of the product

BLUEFUME

1.2. Authorisation holder

Name and address of the authorisation holder	Name	Lučební závody Draslovka a.s. Kolín
	Address	Havlíčková 605 280 02 Kolín IV Czech Republic
Authorisation number	UK-2017-1086	
R4BP 3 asset reference number	UK-0011442-0000	
Date of the authorisation	08/08/2017	
Expiry date of the authorisation	01/10/2024	

1.3. Manufacturer(s) of the biocidal products

Name of the manufacturer	Lučební závody Draslovka a. s. Kolín
Address of the manufacturer	Havlíčková 605 280 02 Kolín Czech Republic
Location of manufacturing sites	Havlíčková 605 280 02 280 02 Czech Republic

1.4. Manufacturer(s) of the active substance(s)

Active substance	60 - hydrogen cyanide
Name of the manufacturer	Lučební závody Draslovka a. s. Kolín
Address of the manufacturer	Havlíčková 605 280 02 Kolín Czech Republic
Location of manufacturing sites	Lučební závody Draslovka a. s. Kolín 280 02 Kolín Czech Republic

2. Product composition and formulation

2.1. Qualitative and quantitative information on the composition of the biocidal product

Common name	IUPAC name	Function	CAS number	EC number	Content (%)
hydrogen cyanide	hydrogen cyanide	Active Substance	74-90-8	200-821-6	97.6

2.2. Type of formulation

AL - Any other liquid

3. Hazard and precautionary statements

Hazard statements

Extremely flammable liquid and vapour.

Very toxic to aquatic life with long lasting effects.

May cause damage to organs (thyroid) through prolonged or repeated exposure by oral, dermal, inhalation.

Fatal if swallowed.Fatal in contact with skin.Fatal if inhaled.

Causes serious eye irritation.

Causes skin irritation.

Precautionary statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. – No smoking.

Do not breathe gas.

Wear protective clothing.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Immediately call a doctor.

Avoid release to the environment.

Take precautionary measures against static discharge.

4. Authorised use(s)

4.1 Use description

Use 1 - Rodenticides

Product type

PT14 - Rodenticides (Pest control)

Where relevant, an exact description of the authorised use

To be used by trained professionals only.
 Hygienic fumigation of empty objects using cans or pressure cylinders in the following area types:

- a) Storehouses, depositories, museums, temples and other buildings;
- b) Agro-food industry – deratization of empty buildings;
- c) Transport facilities;
- d) objects where leakage and significant dilution due to accumulation in the upper parts is impossible (e.g. planes)

Application rate: 10 g/m³ for a), b) and c) or 1g/m³ for d)
 Restriction: do not fumigate at indoor temperatures below 12 dgC .

for further details see below

Target organism(s) (including development stage)

Rats-Rodents-Adults and juveniles

Field(s) of use

Indoor
 Indoor use

Application method(s)

Fumigation -
 Fumigation
 1) Treatment with iron cans
 min. 48 h, 12°C ≤ T ≤ 18 °C
 min. 24 h, T > 18 °C
 A working team designated to open the cans must check can openers, gloves, gas tight protective clothing and self contained breathing apparatuses (SCBAs) for respiratory, skin, eye and hand protection. The structure can be gassed only by employees who are properly rested, who are not sweating, who are not short of breath, etc. During the placing of cans the operators shall wear the SCBA . The operators shall also be equipped with HCN personal detectors.

One employee opens cans for one or two other employees who empty their contents on the floor, spreading the impregnated paper to the sides or behind themselves; i.e. never in front of themselves. CAUTION: Make sure you do not empty the cans on to yourself and that you do not step on to the impregnated paper, avoid contamination of clothes and shoes. Once emptied, stand the cans with their open side facing up. Never throw the cans away so that they roll away and get lost. After locking the structure remember to switch off the central power switch.

During the fumigation phase when the operators are spreading the impregnated paper in the the structure its entrance is watched by a guard; however the exit is not locked. If anyone on the team becomes nauseous, the whole team takes the victim outside (in case of a three-member team); if a team has more members, at least one of them takes the patient outside.

Fumigation is started at least 5 hours before sunset in order to mend possible defects in the vicinity of the structure. If there are several working teams involved, make sure that none of them goes through an area that has already been gassed. The team members must check on each other during the gassing and leave the structure together. The team members should see each other during fumigation. For distance communication explosion-protected handheld transceiver or explosion-protected mobile phones shall be used. The structure is then locked and its doors are glued. After finishing the filling of the structure, personnel shall move out of the exclusion zone (see below), take off the protective clothing and keep moving in an open space for 10 minutes to ensure ventilation of the gas from the clothing and body. Only then they shall take off the SCBA .

The gas treatment teamhead must be accessible during the whole time of the gassing- i.e. from its beginning until the handover of the vented structure. A designated employee

guards the structure during the entire course of the gassing and checks the surroundings and neighbouring buildings until the handover of the structure. All accessible areas must be clearly marked with warning posters with a skull symbol and this notice: "WARNING! Area treated with dangerous poison – hydrogen cyanide! Entry prohibited!" The poster must

indicate the day and time of hydrogen cyanide treatment, the time of exposure, the time of ventilation, and the day and time of possible structure release. The poster must also give the name of the gas treatment head. The posters will be removed after the final handover of the structure to the client.

Refer to HSE Guidance Note 251: Health and safety guidance for employers and technicians carrying out fumigation operations

2) Treatment with pressure cylinders

min. 24h, $T \geq 12$ °C

The lowest acceptable inner temperature of the object to be fumigated is 12 °C.

The work group assigned to open pressure cylinders shall check the function of the pressure cylinders, gloves, masks, filters and SCBAs, respectively for respiratory, skin, eye and hand protection (expirationdate), HCN personal detectors (visually and in case of pressure cylinders also using the personal detectors to check for leakage in a distance of 30 cm). The process of filling the building with the gas shall be performed by rested personnel, not sweaty or out of breath, wearing the prescribed PPE including the required gas mask. The SCBA shall be readily available.

The tubes (hosepipes) connected to pressure cylinders are inserted through sealed apertures to the sealed structure. The staff during the whole fumigation and ventilation stays out the structure. The filling process shall start at least 5 hours before sunset, so that possible defects in the sealing (discovered after the gas has been released) could be fixed. All persons release valves of pressure cylinders to enable the gas to flow into the structure.

During the gas filling process, the groups shall check on each other. Then the building shall be locked and sealed. After finishing the filling of the structure, personnel shall move out of the exclusion zone, take off the protective clothing and keep moving in an open space for 10 minutes to ensure ventilation of the gas from the clothing and body. Only then they shall take off SCBA or the mask with filter.

The workers shall monitor their exposure through out the fumigation process with HCN personal detectors. During the whole time (i.e. from the beginning of the filling to handing over a ventilated building) the process supervisor must be available. Assigned personnel shall guard the building for the whole time of the process, as well as check the surroundings and adjacent buildings till the treated building is handed over. All accessible places must be provided with posters with skull and bones sign and label "Warning! Treated with highly dangerous gas– hydrogen cyanide! No entry!".

Gas-treated structure release

If the treated structure is located near public thoroughfares or paths, these shall be – prior to the ventilation and in cooperation with competent authorities – closed for the ventilation period.

The gas-treated structure is handed over after it has been vented. Ventilation must commence no later than two hours before sunset. Ventilation is performed by opening doors and windows and creating a draught. The structure is vented continually, floor by floor, starting from the top of the building and moving down through the building. It is prohibited to ventilate the structure during fog, rain, smog, or on hot days when air circulation is limited. The first ventilation stage must not be directed towards water streams, streets, etc.; the windows can be opened in this direction only after the gas concentration has been diluted. It is also necessary to consider the direction of the air/wind flow. If the outdoor temperature falls below 10°C, ventilation is achieved by continual opening and closing the windows in order to prevent the cooling of the interior of the structure.

Ventilation is performed by a team of at least three employees, two of whom open the structure and one monitors the environs and the gas concentration outside the structure. The employees inside the structure back up and supervise one another. The employees leave the structure together. The minimum time to ventilate a structure is 48 hours depending on conditions. The ventilation of structures containing the cardboard and packaging units (e.g. bags) usually takes more time.

After ventilation and before handing over the structure to the client, the head employee checks the number of the cans in the building; the number of empty cans must correspond to the number of the cans that were brought in. Empty cans and swept up cardboard reels shall be placed to a suitable wastecontainer and handed over to a person authorised to handle such waste for professional disposal.

Furthermore, checks must be performed to ensure no high local HCN concentrations are present. These include primarily the following tasks, which must be performed in face-masks equipped with filter and suitable gloves: a) close attention must be paid to humidplaces in which hydrogen cyanide gets absorbed as it can be gradually liberated during drying or when the temperature increases; b) mechanical equipment is put into operation for 15 minutes while the windows are left open (if such equipment is part of or in the structure).

1) The exclusion zone for exposure of residents exceeding 24 hours where the HCN concentration must not exceed 0.125 mg/m³. This zone is primarily determined to ensure the safety of the residents in the close neighborhood of the fumigated structures that may be exposed throughout the fumigation to low levels of HCN. When the concentration of hydrogen cyanide dropped below 3 mg/m³ the structure can be released.

Note:

Persons exposed to HCN on a daily basis for up to 8 hours (e.g., operators performing fumigation) may only re-enter the fumigated structure without adequate PPE once the concentration has dropped to 0.6 mg/m³ or below.

Refer to HSE Guidance Note 251: Health and safety guidance for employers and technicians carrying out fumigation operations

Note: The product may not be used for treatment of food or feed items.
Residential building fumigation is not permitted.
Take precautionary measures against static discharge.

Application rate(s) and frequencies

10 g/m³ ; 1 g/m³ - 0 -
One

Category(ies) of users

Trained professional

Pack sizes and packaging material

Can /Tin, Metal: up to 1.5 kg of HCN
Cylinder, Metal: up to 27.5 kg of HCN

There are two forms of packaging:

1) Iron cans made of galvanized iron sheet which are hermetically sealed and tested for leaks before shipment. Uragan D2 is supplied as completely sorbed in a porous inert sorbent placed into gas-tight cans made of 0.45 mm steel 316L. The gas-tight can contains 1.5kg of HCN. The sorbent is cardboardreels (hobra) in the form of circlets of 138mm -140 mm in diameter (outer). The inner diameter is 19-20 mm and the thickness is 7-8 mm. One circlet weighs 13-15 g. The can contains 40 circlets.

2) Pressure cylinders consisting of stainless steel liner and composite overwrap. The pressure cylinders contain up to 27.5 kg of HCN.

Pressure cylinders consisting of stainless steel liner 316L and composite overwrap. Cylinder is equipped with stainless steel 316L dual port valve with dip tube for liquid HCN outlet and gasport for nitrogen pressuring. Elastomeric sealing is from polychlorotrifluoroethene(PCTFE). The cylinders contain up to 27.5 kg of HCN. It is noted that the applicant provided the certificates confirming the compliance of the pressurised cylinders with Directive 2010/35/EU (TPED), Directive 2014/68/EU (PED, replaced by 97/23/EC) and according to the regulations for dangerous goods by air, sea, road, rail or inland waterway. The use of pressure cylinders or metal receptacle with HCN not meeting the descriptions for UN No. 1051 or UN No. 1614 are not be accepted for carriage.

4.1.1 Use-specific instructions for use

FUMIGATION CHECKLIST (empty structures) PT 14

1. Report fumigation in advance to state authorities (if required by national law)
2. External check of the building – with client
3. Internal check of the building – with client
4. Move out any movable materials (e.g. flour, first aid kits, ...) and protect non-movable materials which are not to be fumigated
5. Open machines/equipment
6. Open rooms and buildings adjacent to fumigated space (they must be ventilated during the whole fumigation)
7. Measure air temperature inside the building
8. Close the structure/building (windows, drains,...) except for the entrance
9. Final inspection with client and take-over of the building by operator
10. Seal the structure/building (windows, doors,... glue them with paper tapes with starch glue)
11. Close water and gas supply
12. Place the warning posterson access points and establish an initial exclusion zone
13. Check PPE, first aid boxand antidotes
14. Put in place
 1. Cans – according to the schedule; open them from the top floor downwards
 2. hoses & piping,
 3. cylinders
15. Shut down the electricity
16. Fumigation (gas introduction)
17. Seal the entrance; All accessible places must be provided with posters with skull and bones sign and label "Warning! Treated with highly dangerous gas - hydrogen cyanide! No entry!"
18. Check gas-tightness during the fumigation with gas detectors
19. After fumigation ventilate the structure
20. Check HCN concentration around the structure/building, adjust the exclusion zone, if necessary
21. Before entering the structure for disposing cans, hoses, etc. check HCN concentration inside the structure/building (must be below 3 mg/m3)

22. Dispose cans, cardboards, hoses, cylinders must be disposed of as hazardous waste. Empty cylinders should be sent back to the manufacturer.

23. Final check of HCN concentration inside the building (must be below 3 mg/m³ for being allowed to return). Persons exposed to HCN on a daily basis for up to 8 hours (e.g., operators performing fumigation) may only re-enter the fumigated structure without adequate PPE once the concentration has dropped to 0.6 mg/m³ or below

24. Hand the building back to the client

Further notes:

- The building/space has to be free of any deposits (e.g. flour, food, feed,...) e.g. by using avacuum cleaner.”
- Sorption materials (e.g. construction elements which can't be moved) can lower significantly the efficacy of the fumigation. Sorption materials have to be protected against HCN absorption.
- It has to be assured that animals (e.g.birds, cats) are not staying in the objects when their fumigation takes place.

- During fumigation, it has to be guaranteed that the concentration of the product is high enough even in places not easily infiltrated by the gas, due to structural reasons, but where rodents might be hiding (behind walls, inside cabinets etc.).

Refer to HSE Guidance Note 251: Health and safety guidance for employers and technicians carrying out fumigation operations

4.1.2 Use-specific risk mitigation measures

The treated building must be marked. The treatment may be carried out only in such places where there is no risk of health hazard to humans, animals and the surroundings.

After the building is sealed, all unauthorised personnel must leave. After the final inspection is over, a required number of cans is distributed from the top storey downwards. During the whole treatment, any manipulation with open flame is prohibited and all sources of sparks (telephones, refrigerators, automatic switches etc.) must be switched off for the whole time.

The treatment must be performed by a group of at least three workers. Only trained personnel at least 18 years old may handle hydrogen cyanide. Personnel handling the substance must use approved protective equipment:

Respiratory protection:

Protective face mask detachable or inseparably connected to gastight chemical protective clothing type I (EN 943, EN 136), if detachable then with antigas filter type B2 (EN 14387 +A1), self contained breathing apparatus (SCBA).

Eye protection:

Protective face mask detachable or inseparably connected to gastight chemical protective clothing type I (EN 943, EN 136), if detachable then with antigas filter type B2 (EN 14387 +A1).

Hand protection:

Use standard chemical resistant rubber gloves. (EN 374-1)

Skin protection:

Gastight chemical protective clothing type I (EN 943), in variation either with inseparably connected face-mask or detachable one (EN 943, used mask must correspond to EN 136), rubberboots (EN 20 346).

PPE must be suggested by a producer for work in space with concentrated HCN.

For examples of materials see Appendix 1 to PAR.

The treated building shall can only be released after it has been ventilated and air concentration is safely below AOEL.

The substance may be handled and used only by trained personnel.

Prevent contact with the substance. In any case prevent inhaling.

Provide fresh air supply into and sufficient ventilation of closed spaces.

Do not eat, drink or smoke when using this product.

4.1.3 Where specific to the use, the particulars of likely direct or indirect effects, first aid instructions and emergency measures to protect the environment

First aid measures:

Speed is essential! Obtain medical help immediately! Protect yourself and any casualty from further exposure during providing first aid (can be affected also the protective clothing). Wear specified PPE until test confirms no further risk from exposure (3 ppm).

Each group of operators must be equipped with a first-aid box, should any poisoning occur and the following items:

- Antidote (Not all antidotes are internationally recommended. Consult your National Poison Control Information Service (<http://www.npis.org/>) Administration by a doctor!
- Resuscitator (bag valve mask)
- Oxygen

Inhalation: Remove exposed person to fresh air. If not breathing ensure airway is clear and commence cardiopulmonary resuscitation (CPR). Avoid mouth to mouth contact and use eg. mouth to mask ventilation with one way valve, sacs for artificial lung ventilation, etc. to exhaust victim's exhaled air away from rescuer. Commence administration of oxygen as soon as possible. Administration of oxygen should be maintained until transfer to the care of a paramedic or doctor. Obtain medical help immediately!

Skin contact: Immediately remove contaminated clothing. Wash contaminated skin with large quantities of (preferably lukewarm) water. If poisoning symptoms appear, follow the above instructions for inhalation exposure. Obtain medical help immediately!

Eye contact: Immediately flush eyes with large quantities of water for 10-15 minutes.

While flushing, keep eye lids open even by using force. Obtain medical help immediately!

Ingestion: Obtain medical help immediately! Ingestion of even small amounts is likely to be fatal unless treated rapidly.

4.1.4 Where specific to the use, the instructions for safe disposal of the product and its packaging

Procedures for waste management of the product

Empty cylinders are sent back to the producer.

If possible, spilt hydrogen cyanide should be pumped back into a safe, tight container. Prevent occurrence of fire and sparks. Dilute ponds with water and dispose of the mixture by means of sodium lye and iron sulphate. In the event of water conduit and sewerage contamination, evenly dose about 10 kg of iron sulphate and 2 kg of NaOH (100%) per each kilogram of spilt HCN in the place of its accidental release.

Waste catalogue code

Waste catalogue code 60504 gases in pressure containers (including halons) containing dangerous substances.

If hydrogen cyanide penetrates the soil, it has to be detoxicated and removed to the depth of seepage. These activities have to be carried out only using PPE.

Waste catalogue code 170505 – dredging spoil containing dangerous substances (emergency measure)

4.1.5 Where specific to the use, the conditions of storage and shelf-life of the product under normal conditions of storage

Storage

Uragan D2 shall be stored in dry, cool, ventilated, locked, separate store-room. Due to the danger or accidental release of HCN, only personnel authorised to handle HCN may enter the storeroom, wearing a face mask with a suitable filter and a measuring device.

Keep container tightly closed.

Use explosion-proof electrical/ventilating/light/equipment. Take precautionary measures against static discharge.

Shelf life

The shelf-life of Uragan D2 is set to 12 months.

4.2 Use description

Use 2 - Wood Preservative

Product type	PT08 - Wood preservatives (Preservatives)
Where relevant, an exact description of the authorised use	<p>To be used by trained professionals only. Fumigation of fumigation container using pressure cylinders in the following area types: wood and wooden furniture, pallets, wooden objects.</p> <p>Application rate: 20 g/m³ for further details see below</p> <p>Restrictions: The maximum thickness of treated wood should not exceed 9 cm. Under no circumstances can wooden articles to be used for packaging or storing of foods, feeds or beverages be fumigated. Nor may be such articles made of wood previously fumigated.</p>
Target organism(s) (including development stage)	Coleoptera: -Beetles-larvae and imago
Field(s) of use	Other fumigation container
Application method(s)	<p>Fumigation - Fumigation</p> <p>Treatment with pressure cylinders min. 24h, T_≥12 °C The wood can be fumigated only in special fumigation container filled in with pressurised cylinders. After fumigation unused HCN is sucked out of the chamber into the alkali cleaner solution (a solution based on ferrous sulphate and a sodium hydroxide) which is disposed of as a dangerous waste according to the local regulations. Though this application prevents leakage of HCN into the environment the exclusion zone must be set and maintained throughout the fumigation and ventilation procedure. The treated wood must then be stored at an intensely ventilated space or outdoors under roof. During handling the wood appropriate PPE including gloves, impermeable coveralls and protective face mask (EN 136) with antiaspirator type B2 (EN 14387 +A1) or equivalent must be worn (it is necessary to check them before fumigation visually and in case of pressure cylinders also using the personal detectors to check for leakage in a distance of 30 cm). SCBA should be readily available. The HCN concentration at the place where wood is stored should be checked and only if a risk of exposure to concentrations higher than 0.6 mg/m³ is excluded may such place be entered by operators not wearing PPE.</p> <p>Refer to HSE Guidance Note 251: Health and safety guidance for employers and technicians carrying out fumigation operations</p> <p>Residential building fumigation is not permitted.</p> <p>Take precautionary measures against static discharge.</p>

Application rate(s) and frequencies

20 g/m³ - 0 -
One

Category(ies) of users

Trained professional

Pack sizes and packaging material

Cylinder, Metal: up to 27.5 kg of HCN

There is one form of packaging for PT08:

Pressure cylinders consisting of stainless steel liner 316L and composite overwrap. Cylinder is equipped with stainless steel 316L dual port valve with dip tube for liquid HCN outlet and gasport for nitrogen pressuring. Elastomeric sealing is from polychlorotrifluoroethene(PCTFE). The cylinders contain up to 27.5 kg of HCN. It is noted that the applicant provided the certificates confirming the compliance of the pressurised cylinders with Directive 2010/35/EU (TPED), Directive 2014/68/EU (PED, replaced by 97/23/EC) and according to the regulations for dangerous goods by air, sea, road, rail or inland waterway. The use of pressure cylinders or metal receptacle with HCN not meeting the descriptions for UN No. 1051 or UN No. 1614 are not be accepted for carriage.

4.2.1 Use-specific instructions for use

FUMIGATION CHECKLIST(empty structures) PT 08

Manual of fumigation

1. Report fumigation in advance to state authorities (if required by national law)
2. External check of the container and alkali cleaning
3. Internal check of the container
4. Place wood or wooden products to be treated
5. Measure air temperature inside the container and moisture of wood
6. Close the container
7. Place the warning posters on access points and establish an initial exclusion zone
8. Check PPE, first aid box and antidotes
9. Prepare cylinders with Uragan D2, cylinder with N₂, pipes, valves
10. Connect application equipment to the cylinder with Uragan D2
11. Perform pressure test (with soapy water)
12. Perform fumigation (gas introduction)
13. Check gas-tightness during the fumigation with gas detectors
14. After fumigation ventilate continuously the container through alkali cleaning
15. Check HCN concentration around the alkali cleaning, adjust the exclusion zone, if necessary
16. After ventilation time turn off the ventilation and wait another one hour
17. After one hour check HCN concentration inside (must be below 3 mg/m³, 3 ppm)
18. a) if the concentration is below 3 mg/m³, open the container and dispatch the material to well ventilated space
b) if the concentration is above 3 mg/m³; turn on the ventilation for another one hour and then return to point 17

Under no circumstances may wooden articles be used for packaging or storing of foods, feeds or beverages be fumigated. Nor may be such articles made of wood previously fumigated.
The maximum thickness of treated wood should not exceed 9 cm.

4.2.2 Use-specific risk mitigation measures

The treatment may be carried out only in such places where there is no risk of health hazard to humans, animals and the surroundings.

Only trained personnel at least 18 years old may handle hydrogen cyanide. Personnel handling the substance must use approved personal protective equipment:

Respiratory protection:

Protective face mask detachable or inseparably connected to gastight chemical protective clothing type I (EN 943, EN 136), if detachable then with antigas filter type B2 (EN 14387 +A1)

Eye protection:

Protective face mask detachable or inseparably connected to gastight chemical protective clothing type I (EN 943, EN 136), if detachable then with antigas filter type B2 (EN 14387 +A1)

Hand protection:

Use standard chemical resistant rubber gloves. (EN 374-1)

Skin protection:

Gastight chemical protective clothing type I (EN 943), in variation either with inseparably connected face-mask or detachable one (EN 943, used mask must correspond to EN 136), rubberboots (EN 20 346)
PPE must be suggested by a producer for work in space with concentrated HCN

For examples of materials see Appendix 1 to PAR PT08.

Prevent contact with the substance. In any case prevent inhaling.
Provide fresh air supply into and sufficient ventilation of closed spaces.
Do not eat, drink or smoke when using this product.

4.2.3 Where specific to the use, the particulars of likely direct or indirect effects, first aid instructions and emergency measures to protect the environment

First aid measures:

Speed is essential! Obtain medical help immediately! Protect yourself and any casualty from further exposure during providing first aid (can be affected also the protective clothing). Wear specified PPE until test confirms no further risk from exposure (3 ppm).

Each group of operators must be equipped with a first-aid box, should any poisoning occur and the following items:

- Antidote (Not all antidotes are internationally recommended. Consult your National Poison Information Service (<http://www.npis.org/>)). Administration by a doctor!
- Resuscitator (bag valve mask)
- Oxygen

Inhalation:

Remove exposed person to fresh air. If not breathing ensure air way is clear and commence cardiopulmonary resuscitation (CPR). Avoid mouth to mouth contact and use eg. mouth to mask ventilation with one way valve, sacs for artificial lung ventilation, etc. to exhaust victim's exhaled air away from rescuer. Commence administration of oxygen as soon as possible. Administration of oxygen

should be maintained until transfer to the care of a paramedic or doctor. Obtain medical help immediately!

Skin contact:

Immediately remove contaminated clothing. Wash contaminated skin with large quantities of (preferably lukewarm) water. If poisoning symptoms appear, follow the above instructions for inhalation exposure.

Obtain medical help immediately!

Eye contact:

Immediately flush eyes with large quantities of water for 10-15 minutes.

While flushing, keep eyelids open even by using force. Obtain medical help immediately!

Ingestion: Obtain medical help immediately! Ingestion of even small amounts is likely to be fatal unless treated rapidly.

4.2.4 Where specific to the use, the instructions for safe disposal of the product and its packaging

Procedures for waste management of the product

Disposing of URAGAN D2

Empty cylinders are sent back to the producer.

If possible, spilt hydrogen cyanide should be pumped back into a safe, tight container. Prevent occurrence of fire and sparks. Dilute ponds with water and dispose of the mixture by means of sodium lye and iron sulphate. In the event of water conduit and sewerage contamination, evenly dose about 10 kg of iron sulphate and 2 kg of NaOH (100%) per each kilogram of spilt HCN in the place of its accidental release.

Waste catalogue code 170505 - dredging spoil containing dangerous substances (emergency measure).

If hydrogen cyanide penetrates the soil, it has to be detoxicated and removed to the depth of seepage. These activities have to be carried out only using PPE.

Waste catalogue code 170505 – dredging spoil containing dangerous substances (emergency measure)

4.2.5 Where specific to the use, the conditions of storage and shelf-life of the product under normal conditions of storage

Storage

Uragan D2 shall be stored in dry, cool, ventilated, separate store-room. Due to the danger or accidental release of HCN, only personnel authorised to handle HCN may enter the storeroom, wearing a face mask with a suitable filter and a measuring device.

Keep container tightly closed.

Use explosion-proof electrical/ventilating/light/equipment. Take precautionary measures against static discharge.

Shelf life

The shelf-life of Uragan D2 is set to 12 months.

4.3 Use description

Use 3 - Insecticides

Product type

PT18 - Insecticides, acaricides and products to control other arthropods (Pest control)

Where relevant, an exact description of the authorised use

To be used by trained professionals only
Hygienic fumigation of empty buildings using cans or pressure cylinders in the following area types:

- a) Storehouses, depositories, other buildings, containers, libraries etc.;
- b) Disinsection of empty spaces, protection of stored products;
- c) Transport facilities—railway wagons, sea and river boats.

Application rate: 10 g/m³

Restriction: do not fumigate at indoor temperatures below 12 dgC

for further details see below

Target organism(s) (including development stage)

Blattodea:-Cockroaches-larvae and imago

Coleoptera:-Beetles-larvae and imago

Lepidoptera:-moth-larvae and imago

Field(s) of use

Indoor

Indoor use

Application method(s)

Fumigation -

- 1) Treatment with iron cans
min. 48 h, 12°C ≤ T ≤ 18 °C
min. 24 h, T > 18 °C

A working team designated to open the cans must visually check can openers, gloves, gas tight clothing and self contained breathing apparatuses (SCBAs) if it is not damaged for respiratory, skin, eye and hand protection. The structure can be gassed only by employees who are properly rested, who are not sweating, who are not short of breath, etc. During the placing of cans the operators shall wear the SCBA. The operators shall also be equipped with HCN personal detectors.

One employee opens cans for one or two other employees who empty their contents on the floor, spreading the impregnated paper to the sides or behind themselves; i.e. never in front of themselves. CAUTION: Make sure you do not empty the cans on to yourself and that you do not step on to the impregnated paper, avoid contamination of clothes and shoes. Once emptied, stand the cans with their open side facing up. Never throw the cans away so that they roll away and get lost. After locking the structure remember to switch off the central power switch.

During the fumigation phase when the operators are spreading the impregnated paper in the structure its entrance is watched by a guard; however the exit is not locked. If anyone on the team becomes nauseous, the whole team takes the victim outside (in case of a three-member team); if a team has more members, at least one of them takes the patient outside.

Fumigation is started at least 5 hours before sunset in order to mend possible defects in the vicinity of the structure. If there are several working teams involved, make sure that none of them goes through an area that has already been gassed. The team members must check on each other during the gassing and leave the structure together. The team members should see each other during fumigation. For distance communication explosion-protected handheld transceiver or explosion-protected mobile phones shall be used. The structure is then locked and its doors are glued.

After finishing the filling of the structure, personnel shall move out of the exclusion zone (see below), take off the protective clothing and keep moving in an open space for 10 minutes to ensure ventilation of the gas from the clothing and body. Only then they shall take off SCBA.

The gas treatment team head must be accessible during the whole time of the gassing-

i.e. from its beginning until the handover of the vented structure. A designated employee guards the structure during the entire course of the gassing and checks the surroundings and neighbouring buildings until the handover of the structure. All accessible areas must be clearly marked with warning posters with a skull symbol and this notice: "WARNING! Area treated with dangerous poison – hydrogen cyanide! Entry prohibited!" The poster must indicate the day and time of hydrogen cyanide treatment, the time of exposure, the time of ventilation, and the day and time of possible structure release. The poster must also give the name of the gas treatment head. The posters will be removed after the final handover of the structure to the client.

Note:

During fumigation, it has to be guaranteed that the concentration of the product is high enough even in places not easily infiltrated by the gas, due to structural reasons, but where insects might be hiding (behind walls, inside cabinetsets.).

Refer to HSE Guidance Note 251: Health and safety guidance for employers and technicians carrying out fumigation operations

2) Treatment with pressure cylinders

min. 24h, $T \geq 12^\circ\text{C}$

The work group assigned to open pressure cylinders shall check the function of the pressure cylinders, gloves, masks, filters and SCBAs, respectively for respiratory, skin, eye and hand protection (expiration date), HCN personal detectors (visually and in case of pressure cylinders also using the personal detectors to check for leakage in a distance of 30 cm).

The process of filling the building with the gas shall be performed by rested personnel, not sweaty or out of breath, wearing the prescribed PPE including the required gas mask. The SCBA shall be readily available. The tubes (hosepipes) connected to pressure cylinders are inserted through sealed apertures to the sealed structure. The staff during the whole fumigation and ventilation stays out the structure. The filling process shall start at least 5 hours before sunset, so that possible defects in the sealing (discovered after the gas has been released) could be fixed. All persons release valves of pressure cylinders to enable the gas to flow into the structure.

During the gas filling process, the groups shall check on each other. Then the building shall be locked and sealed. After finishing the filling of the structure, personnel shall move out of the exclusion zone, take off the protective clothing and keep moving in an open space for 10 minutes to ensure ventilation of the gas from the clothing and body. Only then they shall take off SCBA or the mask with filter.

The workers shall monitor their exposure throughout the fumigation process with HCN personal detectors. During the whole time (i.e. from the beginning of the filling to handing over a ventilated building) the process supervisor must be available. Assigned personnel shall guard the building for the whole time of the process, as well as check the surroundings and adjacent buildings till the treated building is handed over. All accessible places must be provided with posters with skull and bones sign and label "Warning! Treated with highly dangerous gas – hydrogen cyanide! No entry!".

Gas-treated structure release

If the treated structure is located near public thoroughfares or paths, these shall be – prior to the ventilation and in cooperation with competent authorities – closed for the ventilation period.

The gas-treated structure is handed over after it has been vented. Ventilation must commence no later than two hours before sunset. Ventilation is performed by opening doors and windows and creating a draught. The structure is vented continually, floor by floor, starting from the top of the building and moving down through the building. It is prohibited to ventilate the structure during fog, rain, smog, or on hot days when air circulation is limited. The first ventilation stage must not be directed towards water streams,

streets, etc.; the windows can be opened in this direction only after the gas concentration has been diluted. It is also necessary to consider the direction of the air/wind flow. If the outdoor temperature falls below 10°C , ventilation is achieved by continual opening and closing the windows in order to prevent the cooling of the interior of the structure.

Ventilation is performed by a team of at least three employees, two of whom open the structure and one monitors the environs and the gas concentration outside the structure. The employees inside the structure back up and supervise one another. The employees leave the structure together. The minimum time to ventilate an empty structure is 48 hours. The ventilation of structures containing the cardboard and packaging units (e.g. bags) usually takes more time.

After ventilation and before handing over the structure to the client, the head employee

checks the number of the cans in the building; the number of empty cans must correspond to the number of the cans that were brought in. Empty cans and swept up cardboard reels shall be placed to a suitable waste container and handed over to a person authorised to handle such waste for professional disposal. Furthermore, checks must be performed to ensure no high local HCN concentrations are present. These include primarily the following tasks, which must be performed in face-masks equipped with filter and suitable gloves: a) close attention must be paid to humid places in which hydrogen cyanide gets absorbed as it can be gradually liberated during drying or when the temperature increases; b) mechanical equipment is put into operation for 15 minutes while the windows are left open (if such equipment is part of or in the structure).

When the concentration of hydrogen cyanide dropped below 3 mg/m³ the structure can be released.

Refer to HSE Guidance Note 251: Health and safety guidance for employers and technicians carrying out fumigation operations

1) The exclusion zone for exposure of residents exceeding 24 hours where the HCN concentration must not exceed 0.125 mg/m³. This zone is primarily determined to ensure the safety of the residents in the close neighborhood of the fumigated structures that may be exposed throughout the fumigation to low levels of HCN. When the concentration of hydrogen cyanide dropped below 3 mg/m³ the structure can be released.

Note: Persons exposed to HCN on a daily basis for up to 8 hours (e.g., operators performing fumigation) may only re-enter the fumigated structure without adequate PPE once the concentration has dropped to 0.6 mg/m³ or below).

Note: The product may not be used for treatment of food or feed items.

Residential building fumigation is not permitted.

Take precautionary measures against static discharge.

During fumigation, it has to be guaranteed that the concentration of the product is high enough even in places not easily infiltrated by the gas, due to structural reasons, but where insects might be hiding (behind walls, inside cabinets etc.).

Refer to HSE Guidance Note 251: Health and safety guidance for employers and technicians carrying out fumigation operations

Application rate(s) and frequencies

10 g/m³ - 0 - One

Category(ies) of users

Trained professional

Pack sizes and packaging material

Can/Tin, Metal: up to 1.5 kg of HCN
Cylinder, Metal: up to 27.5 kg of HCN

There are two forms of packaging:

1) Iron cans made of galvanized iron sheet which are hermetically sealed and tested for leaks before shipment. Uragan D2 is supplied as completely sorbed in a porous inert sorbent placed into gas-tight cans made of 0.45 mm steel 316L. The gas-tight can contains 1.5 kg of HCN. The sorbent is cardboard reels (hobra) in the form of circlets of 138mm -140 mm diameter (outer). The inner diameter is 19-20 mm and the thickness is 7-8mm. One circllet weighs 13-15 g. The can contains 40 circllets.

2) Pressure cylinders consisting of stainless steel liner and composite overwrap. The pressure cylinders contain up to 27.5 kg of HCN. Pressure cylinders consisting of stainless steel liner 316L and composite overwrap. Cylinder is equipped with stainless steel 316L dual port valve with dip tube for liquid

HCN outlet and gasport for nitrogen pressuring. Elastomeric sealing is from polychlorotrifluoroethene(PCTFE). The cylinders contain up to 27.5 kg of HCN. It is noted that the applicant provided the certificates confirming the compliance of the pressurised cylinders with Directive 2010/35/EU (TPED), Directive 2014/68/EU (PED, replaced by 97/23/EC) and according to the regulations for dangerous goods by air, sea, road, rail or inland waterway. The use of pressure cylinders or metal receptacle with HCN not meeting the descriptions for UN No. 1051 or UN No. 1614 are not be accepted for carriage.

4.3.1 Use-specific instructions for use

FUMIGATION CHECKLIST(empty structures) PT 18

1. Report fumigation in advance to state authorities (if required by national law)
2. External check of the building – with client
3. Internal check of the building – with client
4. Move out any movable materials (e.g. flour, first aid kits, ...) and protect non-movable materials which are not to be fumigated
5. Open machines/equipment
6. Open rooms and buildings adjacent to fumigated space (they must be ventilated during the whole fumigation)
7. Measure air temperature inside the building
8. Close the structure/building (windows, drains,...) except for the entrance
9. Final inspection with client and take-over of the building by operator
10. Seal the structure/building (windows, doors,... glue them with paper tapes with starch glue)
11. Close water and gas supply
12. Place the warning posterson access points and establish an initial exclusion zone
13. Check PPE, first aid boxand antidotes
14. Put in place
 1. Cans – according to the schedule; open them from the top floor downwards
 2. hoses & piping,
 3. cylinders
15. Shut down the electricity
16. Fumigation (gas introduction)
17. Seal the entrance; "All accessible places must be provided with posters with skull and bones sign and label "Warning! Treated with highly dangerous gas - hydrogen cyanide! No entry!"
18. Check gas-tightness during the fumigation with gas detectors
19. After fumigation ventilate the structure
20. Check HCN concentration around the structure/building, adjust the exclusion zone, if necessary
21. Before entering the structure for disposing cans, hoses, etc. check HCN concentration inside the structure/building (must be below 3 mg/m³)
22. Dispose cans, cardboards, hoses, cylinders - must be disposed of as hazardous waste. Empty cylinders should be sent back to the manufacturer.
23. Final check of HCN concentration inside the building (must be below 3 mg/m³ for being allowed to return).
Persons exposed to HCN on a daily basis for up to 8 hours (e.g., operators performing fumigation) may only re-enter the fumigated structure without adequate PPE once the concentration has dropped to 0.6 mg/m³ or below
24. Hand the building back to the client

Further notes:

The building/space has to be free of any deposits (e.g. flour, food, feed,...) e.g. by using avacuum cleaner."

Sorption materials (e.g. construction elements which can't be moved) can lower significantly the efficacy of the fumigation. Sorption materials have to be protected against HCN absorption.

Some pests (inparticular Sitophilus granarius) are difficult to eradicate. Without eradication of all development stages a re-infestation

of the treated objects could occur.

It has to be assured that animals (e.g. birds, cats) are not staying in the objects when their fumigation takes place.

During fumigation, it has to be guaranteed that the concentration of the product is high enough even in places not easily infiltrated by the gas, due to structural reasons, but where insects might be hiding (behind walls, inside cabinets etc.).

Refer to HSE Guidance Note 251: Health and safety guidance for employers and technicians carrying out fumigation operations

Please also note : The product may not be used for treatment of food or feed items.

4.3.2 Use-specific risk mitigation measures

The treated building must be marked. The treatment may be carried out only in such places where there is no risk of health hazard to humans, animals and the surroundings.

After the building is sealed, all unauthorised personnel must leave. After the final inspection is over, a required number of cans is distributed from the top storey downwards. During the whole treatment, any manipulation with open flame is prohibited and all sources of sparks (telephones, refrigerators, automatic switches etc.) must be switched off for the whole time.

The treatment must be performed by a group of at least three workers. Only trained personnel at least 18 years old may handle hydrogen cyanide. Personnel handling the substance must use approved protective equipment:

Respiratory protection

Protective face mask detachable or inseparably connected to gastight chemical protective clothing type I (EN 943, EN 136), if detachable then with antigas filter type B2 (EN 14387 +A1); self contained breathing apparatus (SCBA)

Eye protection:

Protective face mask detachable or inseparably connected to gastight chemical protective clothing type I (EN 943, EN 136), if detachable then with antigas filter type B2 (EN 14387 +A1)

Hand protection:

Use standard chemical resistant rubber gloves. (EN 374-1)

Skin protection:

Gastight chemical protective clothing type I (EN 943), in variation either with inseparably connected face-mask or detachable one (EN 943, used mask must correspond to EN 136), rubber boots (EN 20 346)

PPE must be suggested by a producer for work in space with concentrated HCN

For examples of materials see Appendix 1 to PAR.

The treated building shall be cleared after it has been ventilated and air concentration is safely below AOEL.

The substance may be handled and used only by trained personnel.

Prevent contact with the substance. In any case prevent inhaling.

Provide fresh air supply into and sufficient ventilation of closed spaces.

Do not eat, drink or smoke when using this product.

4.3.3 Where specific to the use, the particulars of likely direct or indirect effects, first aid instructions and emergency measures to protect the environment

First aid measures:

Speed is essential! Obtain medical help immediately! Protect yourself and any casualty from further exposure during providing first aid (can be affected also the protective clothing). Wear specified PPE until test confirms no further risk from exposure (3 ppm).

Each group of operators must be equipped with a first-aid box, should any poisoning occur and the following items:

- Antidote (Not all antidotes are internationally recommended. Consult your National Poison Information Service for guidance)

(<http://www.npis.org/>) Administration by a doctor!

- Resuscitator (bag valve mask)

-Oxygen

Inhalation:

Remove exposed person to fresh air. If not breathing ensure airway is clear and commence cardiopulmonary resuscitation (CPR).

Avoid mouth to mouth contact and use eg. mouth to mask ventilation with one way valve, sacs for artificial lung ventilation, etc. to exhaust victim's exhaled air away from rescuer. Commence administration of oxygen as soon as possible. Administration of oxygen should be maintained until transfer to the care of a paramedic or doctor. Obtain medical help immediately!

Skin contact: Immediately remove contaminated clothing. Wash contaminated skin with large quantities of (preferably lukewarm) water. If poisoning symptoms appear, follow the above instructions for inhalation exposure.

Obtain medical help immediately!

Eye contact:

Immediately flush eyes with large quantities of water for 10-15 minutes.

While flushing, keep eyelids open even by using force. Obtain medical help immediately!

Ingestion: Obtain medical help immediately! Ingestion of even small amounts is likely to be fatal unless treated rapidly.

4.3.4 Where specific to the use, the instructions for safe disposal of the product and its packaging

Procedures for waste management of the product

Disposing of URAGAN D2

Empty cylinders are sent back to the producer.

If possible, spilt hydrogen cyanide should be pumped back into a safe, tight container. Prevent occurrence of fire and sparks. Dilute ponds with water and dispose of the mixture by means of sodium lye and iron sulphate. In the event of water conduit and sewerage contamination, evenly dose about 10 kg of iron sulphate and 2 kg of NaOH (100%) per each kilogram of spilt HCN in the place of its accidental release.

Waste catalogue code

Waste catalogue code 60504 gases in pressure containers (including halons) containing dangerous substances.

If hydrogen cyanide penetrates the soil, it has to be detoxicated and removed to the depth of seepage. These activities have to be carried out only using PPE.

Waste catalogue code 170505 – dredging spoil containing dangerous substances (emergency measure)

4.3.5 Where specific to the use, the conditions of storage and shelf-life of the product under normal conditions of storage

Storage

Uragan D2 shall be stored in dry, cool, ventilated, separate store-room. Due to the danger or accidental release of HCN, only personnel authorised to handle HCN may enter the store room, wearing a face mask with a suitable filter and a measuring device.

Keep container tightly closed.

Use explosion-proof electrical/ventilating/light/equipment. Take precautionary measures against static discharge.

Shelf life

The shelf-life of Uragan D2 is set to 12 months.

5. General directions for use

5.1. Instructions for use

Instructions are use specific and can be found in the relevant section in authorised uses.

Refer to HSE Guidance Note 251: Health and safety guidance for employers and technicians carrying out fumigation operations

5.2. Risk mitigation measures

The treatment may be carried out only in such places where there is no risk of health hazard to humans, animals and the surroundings.

Only trained personnel at least 18 years old may handle hydrogen cyanide. Personnel handling the substance must use approved protective equipment:

Respiratory protection:

Protective face mask detachable or inseparably connected to gastight chemical protective clothing type I (EN 943, EN 136), if detachable then with antigas filter type B2 (EN 14387 +A1), self contained breathing apparatus (SCBA).

Eye protection:

Protective face mask detachable or inseparably connected to gastight chemical protective clothing type I (EN 943, EN 136), if detachable then with antigas filter type B2 (EN 14387 +A1)

Hand protection:

Use standard chemical resistant rubber gloves. (EN 374-1)

Skin protection:

Gastight chemical protective clothing type I (EN 943), in variation either with inseparably connected face-mask or detachable one (EN 943, used mask must correspond to EN 136), rubberboots (EN 20 346)

PPE must be suggested by a producer for work in space with concentrated HCN.

For examples of materials see Appendix 1 to PAR.

Prevent contact with the substance. In any case prevent inhaling.

Provide fresh air supply into and sufficient ventilation of closed spaces.

Do not eat, drink or smoke when using this product.

Prevent contamination of the environment, prevent the substance from entering surface waters and sewerage.

No use in Water Protection Areas and in surrounding of surface waters (safety distance not less than 10 m)

5.3. Particulars of likely direct or indirect effects, first aid instructions and emergency measures to protect the environment

First aid measures:

Speed is essential! Obtain medical help immediately! Protect yourself and any casualty from further exposure during providing first aid (can be affected also the protective clothing). Wear specified PPE until test confirms no further risk from exposure (3 ppm).

Each group of operators must be equipped with a first-aid box, should any poisoning occur and the following items:

- Antidote (Not all antidotes are internationally recommended. Consult your National Poison Information Service (<http://www.npis.org/>) Administration by a doctor!
- Resuscitator (bag valve mask)
- Oxygen

Inhalation:

Remove exposed person to fresh air. If not breathing ensure airway is clear and commence cardiopulmonary resuscitation (CPR). Avoid mouth to mouth contact and use eg. mouth to mask ventilation with one way valve, sacs for artificial lung ventilation, etc. to exhaust victim's exhaled air away from rescuer. Commence administration of oxygen as soon as possible. Administration of oxygen should be maintained until transfer to the care of a paramedic or doctor. Obtain medical help immediately!

Skin contact: Immediately remove contaminated clothing. Wash contaminated skin with large quantities of (preferably lukewarm) water. If poisoning symptoms appear, follow the above instructions for inhalation exposure.

Obtain medical help immediately!

Eye contact:

Immediately flush eyes with large quantities of water for 10-15 minutes.

While flushing, keep eyelids open even by using force. Obtain medical help immediately!

Ingestion: Obtain medical help immediately! Ingestion of even small amounts is likely to be fatal unless treated rapidly.

Emergency measures to protect the environment:

Do not allow to enter drains, sewers or water courses. If polluted water reaches drainage systems or water courses, immediately inform water users, appropriate authorities and stop use of these systems.

Allow to evaporate in open air, monitoring levels upwind to ensure unprotected persons do not enter or remain in high exposure areas. If this method cannot be adopted, dilute with large amounts of water, then treat with excess Sodium Hydroxide followed by Sodium Hypochlorite.

5.4. Instructions for safe disposal of the product and its packaging

Procedures for waste management of the product**Disposing of URAGAN D2**

Empty cylinders are sent back to the producer.

If possible, spilt hydrogen cyanide should be pumped back into a safe, tight container. Prevent occurrence of fire and sparks. Dilute ponds with water and dispose of the mixture by means of sodium lye and iron sulphate. In the event of water conduit and sewerage contamination, evenly dose about 10 kg of iron sulphate and 2 kg of NaOH (100%) per each kilogram of spilt HCN in the place of its accidental release.

Waste catalogue code

Waste catalogue code 60504 gases in pressure containers (including halons) containing dangerous substances.

If hydrogen cyanide penetrates the soil, it has to be detoxicated and removed to the depth of seepage. These activities have to be carried out only using PPE.

Waste catalogue code 170505 – dredging spoil containing dangerous substances (emergency measure)

Disposal considerations

Air: When the escape into the atmosphere of hydrocyanic acid will be diluted in the atmosphere

Water: When using the method of application HCN cannot escape into the aquatic environment.

Soil: When using the method of application HCN cannot escape into the soil. The ability of hydrogen cyanide to get bound to dry soil is low.

5.5. Conditions of storage and shelf-life of the product under normal conditions of storage

Storage

Uragan D2 shall be stored in dry, cool, ventilated, separate store-room. Due to the danger or accidental release of HCN, only personnel authorised to handle HCN may enter the storeroom, wearing a face mask with a suitable filter and a measuring device. Keep container tightly closed.

Use explosion-proof electrical/ventilating/light/equipment. Take precautionary measures against static discharge.

Shelf life

The shelf-life of Uragan D2 is set to 12 months.

6. Other information

Fire:

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Liquid evaporates very quickly. Vapours form explosive mixtures with air. When diluted with water, explosive and highly toxic mixtures of vapours and air form above the water surface.

Combustion gases: carbon monoxide, carbon dioxide, nitrogen oxide.

Suitable extinguishing media

Framented water stream;

Powder A, B, C, D. Fire-fighting measures are necessary to adapt according to conditions around.

Unsuitable extinguishing media:

Direct water stream, foam, carbon dioxide

The liquid evaporates rather quickly, forming an explosive mixture with the air. Liquid hydrogen cyanide is apt to polymerize. This chemical reaction is catalysed by alkali substances and by simultaneously formed ammonia – this reaction can be accompanied by explosions.

Emergency measures in case of an accident:

For employees except emergency employees:

Wear appropriate PPE to avoid any contamination of skin, eyes and personal clothing. Remove sources of ignition. Leave the contaminated area.

For employees who intervene in case of emergency:

Ensure suitable personal protection (including breathing apparatus) during removal of spillages. Evacuate the area. Gaseous emission from pits can be greatly reduced by covering of foam on polar liquids.

Do not allow to enter drains, sewers or water courses. If polluted water reaches drainage systems or water courses, immediately inform water users, appropriate authorities and stop use of these systems.

Allow to evaporate in open air, monitoring levels upwind to ensure unprotected persons do not enter or remain in high exposure areas. If this method cannot be adopted, dilute with large amounts of water, then treat with excess Sodium Hydroxide followed by Sodium Hypochlorite.

Information for UK suppliers : Hydrogen Cyanide is a Regulated Substance under the Control of Poisons and Explosives Precursors Regulations 2015. Information on the responsibilities of suppliers is given at

<https://www.gov.uk/government/publications/supplying-explosives-precursors/supplying-explosives-precursors-and-poison>.

Sale and supply of hydrogen cyanide is governed by the Poisons Rules 1982* made under the Poisons Act 1972. It is scheduled as a Part 1 poison.