

VV 23 SAFETY INSTRUCTIONS Use and storage of hazardous substances	 Balen/Pelt
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1 PURPOSE

This regulation describes the requirements associated with the (temporary) use and (temporary) storage of hazardous substances during the performance of work.

2 SCOPE

The requirements of this safety regulation apply on Nyrstar Belgium's premises.

3 DEFINITIONS

Dangerous products: the substances and mixtures which, [due to their intrinsic properties or the conditions under which they occur, may cause danger, damage or serious nuisance to humans, animals or the environment](#) and which are classified according to the CLP Regulation.

[E.g.: sulfuric acid, lead, ores, cement, paint, thinner, chemicals, oils, fats, lubricants, solvents, silicones, acids, toilet unblockers, air fresheners, products used in the production process such as aluminum, zinc powders, etc. in short, all products that may pose a risk to health or the environment if inhaled, touched, eaten, stored, vaporized, atomized, spilled,... of it.](#)

The CLP Regulation introduces the Globally Harmonised System (GHS) in the European Union. CLP stands for "classification, labelling and packaging". This Regulation No 1272/2008 deals with the classification, labelling and packaging of substances and mixtures.

SDS: Safety Data Sheet.

[Carcinogenic](#): **carcinogen** is a substance that can cause cancer or increase the frequency of cancer in a population that has been exposed to this substance.

Reprotoxic: **Reprotoxic** substances are chemical substances that can have a detrimental effect on the fertility and reproductive structure of workers.

Mutagens: A **mutagen** (combination of mutation and genesis) is a chemical substance that damages DNA and can cause hereditary changes.

[Substances of concern \(ZS\)](#): substances of concern are substances with 1 or more of the following properties: [carcinogenic, mutagenic, reprotoxic, endocrine disrupting in humans and/or the environment, persistent and bioaccumulative.](#)

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Repository (cf. VLII): the premises or places in buildings, underground or in the open air, in which the dangerous products or flammable liquids are stored in fixed containers, in movable containers or unpackaged in a quantity exceeding the daily consumption per 24 hours.

- a) "fixed containers" means containers that are filled or refilled at the place of use;
- b) Movable container: the containers that are filled or refilled in a place other than the place of use.

Transport vehicles and devices in which the hazardous substance is present to undergo processing (e.g. production) do not count as storage sites.

Open storage area: storage space in the open air or in a room that is closed to a maximum of 3/4 of the perimeter.

Closed warehouse: storage place in a closed room or in a room that is closed for more than three quarters of the perimeter of the storage area.

4 PRESCRIPTION

4.1 Requirements for the use of hazardous substances

4.1.1 What is a new product?

A product is considered new if it is not already listed in your department's register.

If you only change manufacturers, it is sufficient to request a new SDS. If the hazard properties remain the same, 4.2.1 should not be followed.

Every company is legally obliged to have an up-to-date inventory of dangerous products.

4.1.2 How do dangerous products enter our company?

Dangerous products enter our company in various ways:

1. Products that we purchase ourselves;
2. Products brought in by contractors;
3. Products that are created during production;
4. Products that are obtained through a supplier as a test product or alternative to an existing product.

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4.1.3 When are chemical products dangerous?

The SDS (or packaging) of the product can be used to determine whether or not a product is dangerous.

Products are labeled as dangerous if:

a hazard symbol is indicated on the SDS/packaging



H-phrases (Hazard) are present on the packaging, such as:

H300 - Fatal if swallowed

H301 - Toxic if swallowed

H302 - Harmful if swallowed

H304 - May be fatal if swallowed and enters the respiratory tract

4.2 Purchase of new dangerous products

4.2.1 Request to purchase a product

When purchasing or bringing in a new hazardous product, document XF-446-FREQ-0-00024 is used to make a risk assessment of the hazards.

The prevention service will evaluate the new hazardous product after advice from:

Advice	Purpose
Process Technologist	Impact of the product on the process and environment
Company doctor	Danger to health of employees
Environmental coordinator	Waste, storage and environmental impact
Responsible fire brigade	Fire hazard, storage
Prevention advisor	Final conclusion

The advice will:

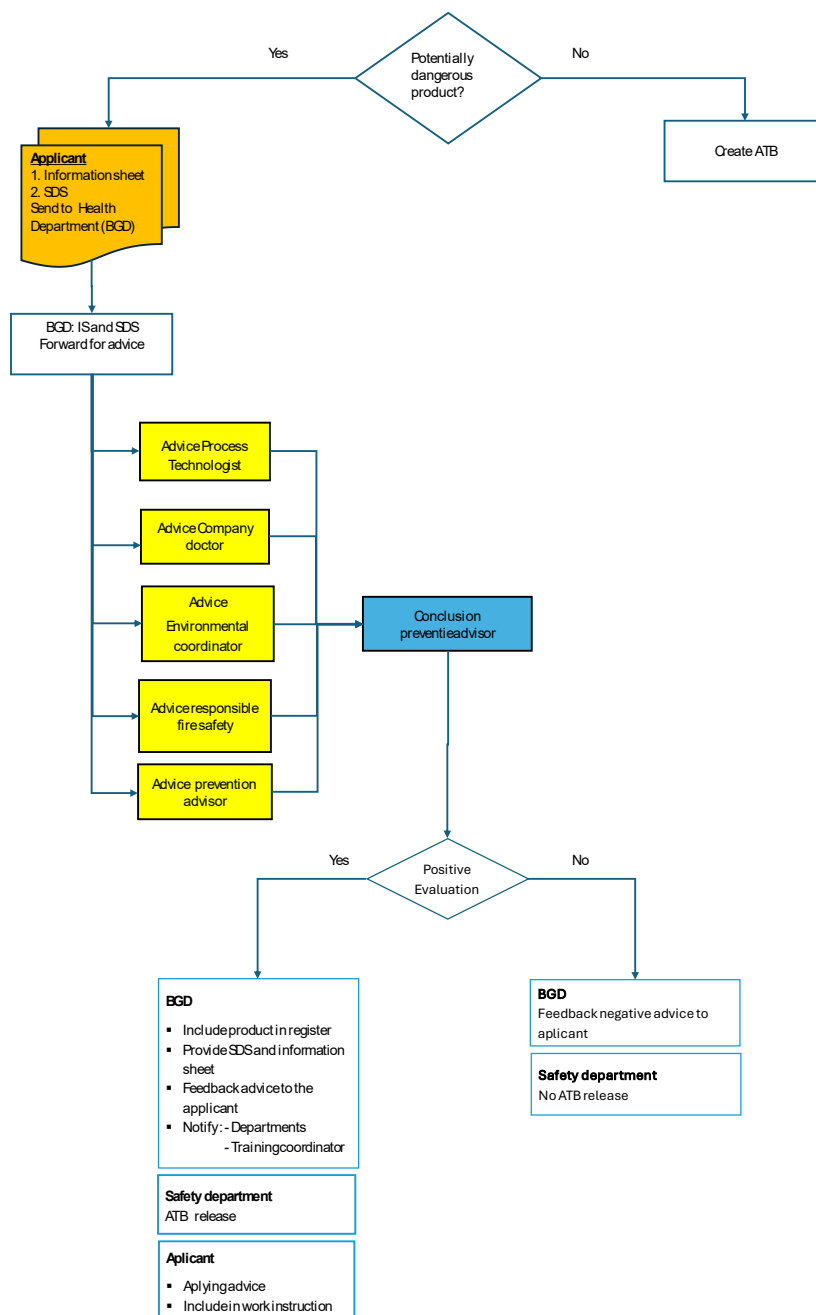
- Allow use without reservation
- The use is permitted provided that remarks and/or comments are taken into account
- The use of the product should be avoided and alternatives should be sought

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The application for acceptance of a dangerous product is presented schematically in the decision tree.



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4.2.2 Products brought in by contractors

Contractors are responsible for carrying out a risk assessment, as set out in the Occupational Wellbeing Codex, of the hazards of the products they wish to use within Nyrstar.

Contractors provide the completed template "[Nyrstar – Template dangerous products contractors](#)" and the SDS sheets to the Contractor Manager who archives them.

An annual update of this data is requested via contractor management, whereby the BGD is informed about this. In addition, random checks will be carried out to verify the accuracy of the data, this will be done through workplace inspections. Any deviations are recorded and secured in RIMS.

4.2.3 Products created during production

An SDS is not required as long as the products are not traded. However, for products that are created during the production process and are traded or shipped to internal or external customers, an SDS must be prepared.

4.2.4 Products that are obtained through a supplier as a test product or alternative to an existing product.

Products offered through a supplier must follow the same flow as dangerous products that we purchase ourselves. It is the Nyrstar user who is responsible for initiating the approval process.

4.3 Requirements for the use of hazardous products

The use of hazardous products should be avoided as much as possible.

- The use of dangerous products is only permitted if:
 - the Safety Data Sheet (see XF-446-FREQ-0-0024) and has been checked;
 - a positive advice and evaluation was given by Process Technologist, Company Doctor, Environmental Coordinator, Fire Safety Officer, Prevention Advisor)
 - at least all precautions are applied as a result of the evaluation and were communicated via a TRA, work instruction,...;
 - the products or their packaging are labelled with the hazard statements in accordance with the CLP regulation;
 - The people who have to work with the product are familiar with the risks and observe the recommended precautions.
- In the event that hazardous products are used in a confined space, a risk analysis must be drawn up in which the hazards and precautions to prevent fire/explosion or poisoning or other injuries are specifically mentioned.

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- In a closed warehouse:
 - heating may only be carried out by means of appliances the installation and use of which provide sufficient guarantees to prevent the risk of fire and explosion;
 - no work may be carried out which requires the use of an appliance with an open flame or which may generate sparks;
 - it is forbidden to smoke, make fires or store flammable substances within the boundaries of a zoned zone – this prohibition is indicated by pictograms;
 - the chimneys and discharge ducts of the extracted fumes and fumes are made of non-combustible or self-extinguishing materials.
- The use of products that are classified as (very) toxic and/or hazardous to health are only permitted after explicit approval by Nyrstar's Prevention department. These include substances known to be carcinogenic, mutagenic or reprotoxic. In order to obtain that approval, it will have to be demonstrated that there are no alternatives.
- Acetylene/oxygen cylinders on welding carts should always be driven to a safe location after completion of work due to the risks to emergency responders.
- The supply of dangerous products may only be present at the workplace for the day. Other stock must be stored as described below.
- The 'points of attention during use' mentioned in the table below must be observed.

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Hazard label		Point of attention when using
CLP marking		
 GHS01	Explosion Explosive	
 GHS02	Fire hazard Flammable	In combination with fire-hazardous work: MEDIUM-HIGH RISK ZONE for both this work and adjacent works.
 GHS03	Oxidizing Fire-promoting	In combination with fire-hazardous work: MEDIUM-HIGH RISK ZONE for both this work and adjacent works.
 GHS04	Gases under pressure	
 GHS05	Corrosive Corrosive	Keep BUMB available .
 GHS06	Poisonous	Only with explicit permission from Nyrstar Prevention Department.
 GHS07	Irritating	
 GHS08	Dangerous to health (carcinogenic, reprotoxic, mutagenic)	Only with explicit permission from Nyrstar MEDICAL Department.
 GHS09	Environmentally hazardous	Take precautions against spills.

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4.4 Storage of Hazardous Solids in Bulk

Bulk solids, which contain leachable substances, are stored on a liquid-tight surface, equipped with a collection system.

4.5 Storage of hazardous liquids

Storage Requirements Fixed/Movable Overhead Holders

Fixed containers for the storage of hazardous liquids must be constructed in accordance with a code of good practice (cf. VLII annex 5.17.2) – with a "declaration of conformity of the holder" signed by the manufacturer.

Movable/fixed containers containing hazardous liquids must be placed in a sump that meets the following conditions:

- the sump is impermeable to liquids and resistant to the effects of the stored liquids;
- the sump is strong enough to withstand the mass of liquid that may escape from the largest container placed in the sump in the event of a breakage;
- Ducting pipes through the sump is only permitted if the tightness of the containment remains ensured;
- the floor is laid in such a way that the spread of leaking fluids is kept to a minimum and can be easily removed;
- measures are taken to remove rainwater from a containment on a regular basis; this takes into account the avoidance of soil, groundwater or surface water pollution;
- The capacity of the sump depends on many factors such as the location of the containers, the hazard class of the hazardous liquid, the equipment of the container, etc.
 - As a general rule, it is assumed that the sump should have at least a capacity of at least one of the water capacity of the largest container, increased by 25% of the total capacity of the containers placed in it;
 - Always consult the environmental department for a correct capacity determination of the containment for a specific situation!

Movable/fixed containers with a capacity > 220 litres:

- A minimum distance equal to half the height of the container shall be maintained between the container and the inner bottom of the walls of the sump.
- A passage of at least 1 meter wide between the holders and the walls of the sump must be left completely free.

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Fixed containers with a capacity > 10,000L: the containment and foundation are built according to code of good practice under the supervision of a (civil (structural) architect, or industrial engineer.

Permanent containers with a capacity > 50,000 L: stability study should be carried out.

Fixed containers are equipped with an **conform** overfill protection and a level measurement.

Single-walled fixed holders are placed within a sump.

Double-walled fixed holders do not need to be placed inside a sump, but are equipped with a permanent leak detection system.

Fixed containers are always equipped with a marking plate – the following indications are placed at the filling opening: the number of the holder; the name of the stored liquid, the hazard pictograms and the water capacity of the container.

If leaks or defects are found on a container, all possible measures are taken to limit soil and groundwater contamination as much as possible.

The contents of a leaking container are immediately pumped or transferred to another suitable container.

Any spilled liquids are immediately immobilized with intervention equipment (such as absorption and neutralization material, oversized drums, protective equipment,...) and placed in a specially designated container.

In the case of repair of a container which is part of a group of containers installed in the same containment, the container must be surrounded by a liquid-tight wall throughout the repair period, the height of which is equal to that of the raised edge and/or walls surrounding the entire group.

After a container has been professionally repaired, it may only be put back into use after inspection by a recognised environmental expert who effectively certifies this inspection.

4.5.1 Distance rules

Precautions are taken to prevent products from coming into contact with each other and causing dangerous chemical reactions.

Products, marked with different hazard pictograms, shall be stored in the same warehouse in different compartments taking into account distance rules set out in VLII – Annex 5.17.1. or consult the environmental department.

4.5.2 Filling of fixed above-ground containers

With regard to the filling of the fixed containers and tankers, the following rules apply:

- measures are taken to prevent spillage of liquids and contamination of soil, groundwater and surface water;

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- the flexible hose, which is used for supplying, is connected to the opening of the holder or duct by a screw-fitting device or equivalent;
- any filling operation is carried out under the supervision of the operator or his appointee; this monitoring shall be organised in such a way that the filling operation can be monitored and immediate action can be taken in the event of an incident;
- it is forbidden to fill the container with any liquid other than that for which the container is designed;
- to prevent overfilling of a container, the container must be equipped with a compliant overfill protection and the possibility of level measurement;
- The location of the tanker, the areas where the filling nozzles of the filling pipes are grouped and the filling zones at the distribution system are always located on the site of the installation and are:
 - sufficiently load-bearing and impermeable to liquids; and in the case of a flammable liquid, also fireproof;
 - Tankers for the loading of liquids of group 1 or group 2, included in the environmental permit after 01/01/2025, must be equipped with a liquid-tight zone of at least 8 m². A liquid-tight facility must also be installed around the filling and unloading points.
 - equipped with the necessary ramps and possibly raised edges, so that all spilled liquids drain into a collection system;
 - The liquids collected shall be disposed of in accordance with the provisions of the regulations, in particular those relating to the disposal of the waste. Under no circumstances may there be a connection to a public sewer system, a surface water, a canal or a groundwater layer.
 - A container may not be filled with a liquid other than a liquid for which the container is designed, unless after an examination by a recognised environmental expert who indicates in a report that the container is suitable for this purpose and that the installation complies with the requirements set out in this Decree.
 - It is forbidden to fill or have filled containers whose filling pipe is provided with a red sticker or plate.
 - It is forbidden to fill or have filled containers whose filling pipe is not equipped with a sticker or plate. Smaller containers must also be labelled correctly.

4.5.3 Inspection obligation

Before installing the fixed above-ground container > 10,000L, a certified environmental expert must check whether the holder / foundations are compliant. This control is attested by an unambiguous report.

After installation, but before the fixed above-ground container is put into service, it must be checked that the holder, the pipes and accessories, the overfill warning or protection system, the containment and fire-fighting equipment and, where applicable, the leak detection system and the existing vapour recovery facilities are adequate. This control must be carried out by an approved body that certifies this control with an unambiguous report.

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After commissioning, all certificates and reports are submitted to the Reliability Department – statutory inspections, which draws up the necessary PO plans to guarantee, among other things, the external periodic 3 – annual examinations and the internal 20 – annual general examinations [cfr. VLAREM II art 5.17.4.3.16](#).

For containers built from 01/01/2025, the installation will be subject to a general survey at least every twenty years or at least every period that concerns 75% of the calculated or expected life of the holder, whichever is shorter.

The recognized expert draws up a certificate that must unequivocally show whether the holder/installation complies with the regulations and affixes a clearly visible sticker or plate near the filling pipe with his approval number, last and next inspection date. This sticker or plate has the following color:

- green: the container / the installation complies → container may be filled, refilled and operated
- Orange: the container / installation is not fully compliant but the defects do not give rise to contamination → container may be filled or refilled and operated during a transitional period of up to six months.
- red: the container / the installation is not satisfactory and the defects found may give rise to contamination → container must NOT be filled / refilled; the necessary measures must be taken to restore the storage installation to good condition after which the storage installation must be subjected to an inspection by the approved expert.

Reliability department notifies the owner of the keeper / installation of the results of the inspection according to the procedures established by their service. If a red sticker or plate is detected, a RIMS report is also made so that the necessary measures can be taken immediately / the tank can effectively no longer be refilled.

4.5.4 Flammable liquids

Storages for flammable liquids must be tub-shaped and constructed of non-combustible material. The doors must open outwards and must be closed automatically in the event of a fire.

The storage area must be adequately ventilated. This can be done through both natural ventilation and artificial ventilation.

Flammable liquids should be stored in closed containers and protected from all adverse effects of radiation from heat sources.

Storage of flammable products is not permitted at basement level.

Flammable liquids and solids, marked with the hazard pictogram GHS02, must NOT be stored in a place where the temperature may exceed 40°C due to technological origin.

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4.6 Storage of gases in fixed / movable containers



4.6.1 Storage Requirements Fixed/Movable Overhead Holders

The gases must not be stored outside the designated storage area, taking into account that no chemical reactions occur. A storage area must be provided for the empty movable containers.

The electrical installations / lighting fixtures comply with the requirements of the CODEX Well-being at Work and the AREI inspection certificates are made available to the certified environmental expert.

The floor of the storage area offers sufficient resistance, is impermeable and is laid out in such a way as to ensure the stability of the movable containers.

The floor must not be lower than the adjacent property / must not contain any openings, cavities or trenches / must not be set up in a basement.

Closed warehouses must be built entirely of non-combustible materials, the doors must open outwards, the windows must have fixed windows with reinforced glass, and must be adequately ventilated.

In storage facilities of group 1 gases:

- Measures are taken against electrostatic charges;
- Heating is only allowed if there are sufficient safeguards to avoid the risk of fire and explosion – the temperature must not exceed 40°C;
- Is it forbidden to make open fires, to work with appliances that generate sparks, to smoke – these prohibitions are indicated by means of pictograms;
- Is it forbidden to enter with motor vehicles;
- The storage of flammable substances within 5 m is prohibited;
- Are the chimneys / discharge ducts made of non-flammable material and is there no connections with sewers;
- Is the roof built of non-combustible material that has max. 20% consists of translucent self-extinguishing material.

Only authorised persons have access to the storage facility – the prohibition of access to unauthorised persons is indicated by means of pictograms.

The construction of the fixed container, whether vacuum or not, is adapted to the gas they contain according to a code of good practice.

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The fixed container undergoes a water pressure test in the presence of a certified environmental expert and is equipped with an identification plate.

4.6.2 Distance rules

For open and closed storage sites, gases from different groups must be stored in a separate compartment; these compartments are indicated by walls, safety screens, markings on the ground, chains or fixed demarcations at a height of 1 m) taking into account the distance rules included in VLII – Annex 5.17.1. or consult the environmental department.

[Below are some distance rules for the most commonly used gases in movable containers with a storage capacity of up to 1,000L. Consult the environmental department for the determination of distance rules for the storage of hazardous liquids and solids or distances from limits of property, storage tanks,...](#)

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	Group 1 gas (GHS02)	Group 2 Gas (GHS06)	Group 3 Gas (GHS03)	Group 4 Gas
<u>Group 1 gas (GHS02)</u> Acetyleen Butane LPG Propane Hydrogen	0 m	5 m (acuut tox. cat. 1)	2 m (open storage) 5 m (closed storage area)	0 m
<u>Group 2 Gas (GHS06)</u> Arsine Sulphur dioxide	5 m (acuut tox. cat. 1)	0 m	0 m	0 m
<u>Group 3 Gas (GHS03)</u> Oxygen Lachgas (stikstofmonoxide)	2 m (open storage) 5 m (closed storage area)	0 m	0 m	0 m
<u>Group 4 Gas</u> Argon Carbon dioxide Nitrogen Helium	0 m	0 m	0 m	0 m

4.6.3 Filling of fixed above-ground containers

For each filling operation, a precise and written instruction is drawn up describing the various operations to be performed.

An appointee continuously and attentively supervises the effective filling operation.

The percentage of the fixed container to be filled depends on the density of the gas and the volume of the above-ground container (see VLII art. 5.17.3.3.9).

It is forbidden to fill non-cooled, non-vacuum insulated containers with a liquid whose vapour pressure is higher than the maximum service pressure for which the container was purchased.

Hoses used for filling may only be used in the open air.

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It is forbidden to fill a fixed container that has visible defects that may harm safety or for which an inspection report can be submitted showing that the storage place / storage tank complies with the regulatory requirements and the conditions imposed (see VLII art. 5.17.3.3.9.).

It is forbidden to fill a fixed container where the certificate of the recognised expert indicates that the installation may not be refilled.

4.6.4 Inspection obligation

An accredited environmental expert checks the documents provided by the manufacturer, the detailed statement of the checks, the inspections, the surveys and the tests carried out by him.

This control is attested by an unambiguous report.

After commissioning, all certificates and reports are submitted to the Reliability department – statutory inspections that draw up the necessary PO plans to guarantee, among other things, the periodic examinations and the general internal examinations, carried out by a recognized environmental expert [cfr. VLAREM II art 5.17.3.1.8.](#)

The Reliability Department – Legal Inspections also draws up PO plans for the periodic inspection of the storage site and of the holder [cf. VLAREM II art. 5.17.3.3.8.](#)

The accredited expert draws up a certificate that must unequivocally show whether the holder / installation complies with the regulations. If shortages are found, the certificate indicates whether or not the installation may be refilled or refilled and within what period these shortages must be remedied.

Reliability Service notifies the owner of the keeper / installation of the results of the inspection according to the procedures established by their service. If it is determined that the installation is not satisfactory, a RIMS report is also made so that the necessary measures can be taken immediately / the tank can effectively no longer be refilled.

Vacuum – insulated containers should be checked at least 2 – annually by a recognized environmental expert – the safety valves should be adjusted 10 – annually.

Non-return valves on the filling line between the container and the filling point of an LPG station must be inspected at least 5 times a year by a certified environmental expert.