

Safety regulation for fire safety at grain dryers, S920

Your obligation to prevent damage, valid as of 1 January 2025

Welcome to the safety regulations!

In these safety regulations, we explain what your business must do and take into consideration to prevent fire damage at grain dryers.

⚠ Read the regulations carefully. If you do not comply with the regulations, we may reduce or deny your insurance compensation.

These safety regulations are part of your insurance contract

Your insurance contract consists of the policy document, insurance terms and conditions, safety regulations, and the general contract terms and conditions.

The **policy document** lists your company's insurance policies, and the terms and conditions applicable to them.

The **insurance terms and conditions** describe the terms under which your property is insured.

These safety regulations describe your obligations to prevent damage.

Pohjola Insurance's General Terms of Contract contain general provisions related to your insurance.

We interpret the policy document, insurance terms and conditions, safety regulations, and general contract terms and conditions as a whole.

Please note that the following safety regulations also apply to your insurance contract:

- Safety regulations for solar power stations S950



Policy document



Insurance terms and conditions



Safety regulations
This document



General Terms of Contract

- Fire Safety of a Solid-fuel Heating Station S925
- Daily Fire Prevention S441
- Safety and security on farms, safety regulations S930
- Prevention of Electric Fires S331
- Hot Work S621
- Prevention of leak damage S460

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1 Purpose of the safety regulations: prevention of fire damage at grain dryers

The safety regulations contain provisions concerning the structures, maintenance and use of grain dryers, the storage of flammable liquids, storage of gases and solid biofuels as well as first-aid extinguishing equipment.

The safety regulations must be complied with in all activities performed by the policyholder, insured person or parties comparable to insured persons.

The safety regulations in the paragraph below apply to insurance policies of businesses or organisations that have started on or after 1 January 2014 and to insurance policies of consumers or equivalent policyholders that have started on or after 1 January 2025.

- You and your company have an obligation to ensure that the following parties are aware of the content of the safety regulations:
 - insured persons and parties comparable to insured persons
 - parties in possession of, using or responsible for insured property
 - parties performing installation, repair or maintenance work at locations insured under the policy, or performing such work on insured property.
- You and your company must require and monitor that the abovementioned parties comply with the safety regulations.
- Insured persons and parties comparable to insured persons must inform the abovementioned parties of the content of the safety regulations in the same way as your company, and they must require and monitor compliance with the safety regulations.

2 General instructions and requirements for managing risks related to grain dryers

ⓘ The fire authorities must inspect the grain dryer before it is put into use. A fire inspection must also be conducted when you acquire a new heating device different from the earlier heating device for the drying machinery.

- ✓ **Make** sure that the grain dryer, grain drying machinery and accessories, furnace, burner and fuel tank comply with the manufacturer's, importer's, seller's and authorities' regulations and instructions.

- ✓ **Equip** the grain dryer with a fire thermostat installed in the exhaust air pipe of the drying machinery.
- ✓ **Make** sure that
 - the grain drying machinery and accessories are well-maintained and inspected as according to the manufacturer's instructions.
 - the buildings and machinery are kept in a condition that complies with the Building Act, building regulations and occupational safety and health regulations, and that their performance is monitored.
 - as the owner of the property, you are responsible for arranging chimney sweeping.

3 Structures and placement of the grain dryer

In the next section, we will provide practical instructions related to the construction of a grain dryer.

- The hot air drying machinery must be made of non-combustible materials.
 - Trailer drying machinery or cold air drying machinery can also be made of wood or materials with a corresponding ignitability class.
- The dryer must be a separate building. Do not build a dryer next to an animal shelter.
- Take care of distances: The dryer must be at least 15 metres from other buildings.
 - You can build the dryer in connection with another production or storage building or a motor vehicle garage, provided that it is separated from the rest of the building with a solid, at least EI-M90 class firewall-like wall.

Main distribution board

- The main distribution board of the grain dryer must be placed in a location with minimum accumulation of grain dust on the board surface. The main distribution board must be located in a lockable space or cabinet with a space of at least 0.8 metres.
 - If the IP rating is 54 or better, no separate lockable space is required.
- The main switch of the grain dryer must be located outside the dryer. A cold air dryer without heating equipment does not require a main switch.
- ✗ **Do not** store any items or materials in the main distribution board that do not belong there.
- ✓ **Place** the electrical connection diagrams on the main distribution board or a wall next to it.

4 Grain drying machinery heating device

⚠ When using a heating device, performing maintenance on the devices and storing gas, follow the furnace manufacturer's instructions for use and legislation.

We will provide instructions on the installation and use of various heating devices.

Oil-fuelled heating device

- ✓ **Make** sure that the oil-fuelled heating device meets the requirements set by standards and legislations for an SDS 5623 A class heater.
- ✓ **Perform** maintenance on the burner according to the manufacturer's instructions.
- ✓ **Protect** the burner from water.
- ✓ **Adjust** the fan so that it only stops when the drying air temperature fall below 50°C.

- ✓ **Equip** the heating device with a blast hatch.
- ✗ The average temperature of the drying air entering the grain drying machinery may not exceed 100°C.
- ✗ The temperature in the exhaust vent of the heating device must not exceed 150°C.

Gas-fuelled heating device

- ✓ **When** using a gas-fuelled heating device and storing gas, follow the gas furnace manufacturer's instructions for use and legislation:
 - Standard SFS 5987:2022, liquefied gas operating facility, planning, installation, maintenance and inspection
 - Chemicals Safety Act 390/2005 Chapter 2, Safety Requirements, section 12, Use and maintenance of the operating facility
 - Government Decree 685/2015 on the monitoring of processing and storing hazardous chemicals
 - Government Decree 858/2012 safety requirements of liquified gas plants
 - Pressure Equipment Act 1144/2016
- ✓ **In** the event of a gas leak, follow the technical operating instructions and the gas supplier's operating instructions.

Heating device heated using solid fuel

⚠ When you use solid fuel, please pay particular attention to preventing a backfire. Solid fuel refers to biomass intended as fuel, such as wood chips, pellets, peat or grain.

- ✓ **Comply** with the furnace and burner manufacturers' instructions for installation and use. More information is available in the Safety regulations for solid fuels S925.

A heating device equipped with an automatic fuel feed requires two separate and independent backfire prevention systems, of which

- At least one must be a water extinguishing system
- The other be a rotary fuel feeder, falling chute or feeder silo equipped with an airtight lid.
- A backfire prevention system must also function during a power cut.
- Ash must be removed automatically.

Take care of the following installation and maintenance procedures:

- ✓ **Check** the amount of ash in the cylinder daily. Burning wheat generates a large amount of ash in particular.
 - If the ash level reaches the burner, the burner may be damaged.
- ✓ **Check** and clean the spark filter box daily.
- ✓ **Make** sure that the ash tray is closed and made of non-combustible materials.
- ✓ **Equip** the fireplace and ash cesspit hatches with a latch.
- ✓ **Keep** the hatches of the fireplace and ash cesspit closed during heating.
- ✓ **Adjust** the fan so that the fan only stops when the drying air temperature fall below 50°C.
- ✓ **Equip** the heater with a control device that directs heated air to a separate outgoing flue made of non-combustible material and prevents the flow of combustion air to the fire box in case the heater stops.
- ✓ **Make** sure that the fuel feed stops automatically in the case of a problem.

- ✓ **Make** sure that the drying air flue includes a temperature gauge in the furnace space.

Note:

- ✗ **The average temperature of the drying air entering the grain drying machinery** may not exceed 80°C
- ✗ The temperature in the exhaust vent of the **heating device** must not exceed 150 °C.

Installation and use of an additional heater

- Air warmed using a warm air heater may be directed to cold air drying machinery so that there is an air gap between the warm air flue and the cold air drying machinery's fan.
- There must be no under-pressure in the air ducts of the additional heating device.
- The air gap must be located outdoors in a dust-free place.

Diesel engine use as an additional heating device

- ✓ **Install** the engine into a shelter made of non-combustible material.
- ✓ **The** engine support structures must be made of non-combustible material.
- ✓ **Equip** the engine with a metallic containment basin.
- ✓ **Make** sure that the exhaust pipe is sealed and insulated with a shield made of non-combustible material near combustible structures.
- ✓ **Take** care of distances:
 - The exhaust pipe must be at least 150 cm away from flammable structures.
 - The head of the exhaust pipe must be sufficiently far away from the air intake openings of the drying machinery to prevent exhaust gas from making contact with the blowing air.
 - The shelter must be located at least 3 m from the dryer building
 - If the shelter borders the wall of the dryer or is situated inside the dryer, it must be made of Class E160 structural parts at least.
- ✓ **Make** sure that the air duct entering the dryer is made of non-combustible material.
- ✓ **Equip** the engine with an automatic stop device that is triggered in the absence of oil pressure or if the engine overheats.

Electric heating device use as an additional heating device

- ✓ **Make** sure that fan control and safety devices meet the requirements of the standards for additional heating devices for dryers.
- ✓ **Make** sure that drying air is taken from a dust-free place outside.
- ✗ **Do not place** the electrical heating appliance closer than 1000 mm from the grain to be dried or other flammable material.

Placement of the heating device of the grain drying machinery

- ⓘ Place the grain dryer heating device into a space made of at least Class E160 structural parts and with a floor made of non-combustible material. There must be no access from the space to any other part of the grain dryer.

- ✓ **Place** the heating device so that the heating device and flue can be swept, cleaned and maintained.
- ✓ **Note** that if only one wall of the heating device space borders on the rest of the dryer building, this wall must be of Class E160 while the building elements facing outside must be of Class E130 at least.
 - If the location is at least 1 mm from the dryer building, the wall bordering the dryer can be of Class E130.
- ✓ **Make** sure that the surface layer of the door is of ignitability class 1 and fire spread class I from the inside of the installation space.
- ✓ **Place** the opening and doors of the space at least 2 m from the dryer wall made of flammable material.
- ✓ **For** ventilation and the intake of combustion air, the front wall of the space includes two air intake openings of at least 600 cm².
 - One opening must be located in the upper section of the space and the other in the lower section.
 - The separate combustion air opening must be at least 1.5 times the cross-sectional area of the flue of the drying machinery furnace
- ✓ **Make** sure that the furnace space of a drying machinery furnace using more than 30 kg of oil per hour has a mechanical ventilation based on over-pressure.
 - For gas furnaces, the installation space must have an opening of at least twice the size of the furnace air intake
 - Comply with the device manufacturer's instructions for measuring the ventilation and combustion air openings of the location.
- ✗ **Do not close** the combustion air opening with a hatch.
- ✗ **Do not store** flammable material in the furnace room.

If you place the heating device outside:

- ✓ **Place** it at least 4 metres from the grain dryer or other building
- ✓ **Protect** it from rain or equip it with a roof.

Drying air ducts

- ✓ **Conduct** the air to be heated to the heating device directly from a dust-free place outside through a duct.
- ✓ **Place** the air intake opening at least 1 metre from the ground.
- ✓ **Install** a metal mesh on the air intake opening with a mesh size of 10 mm x 10 mm – 15 mm x 15 mm and a wire thickness of at least 1 mm.
- ✓ **Make** the walls of the drying air duct of non-combustible material, such as galvanised steel plate, suitable for the purpose and withstanding dents and corrosion.
- ✓ **Dimension** the drying air duct and the humid air exhaust duct from the drying machinery so that adversely high back-pressure will not develop in the drying air duct.

Flues

ⓘ Place the chimney and attached chimney connectors and connection flues of the fireplace connected to it in such a way that their surface temperature does not endanger personal or fire safety.

- ✓ **Dimension** the flue so that the necessary draught can be ensured in all circumstances.
- ✓ **Equip** the steel flue with a rain cap. The structure of the rain cap must prevent the development of over-pressure inside the flue. The rain cap must be easily openable for duct cleaning if the flue cannot be

cleaned from below.

✓ **Insulate** the feed-through point of the intermediate floor or ceiling with at least 100 mm thick non-combustible building material.

✗ The surface temperature of visible or easily touchable flue parts may not exceed 80°C.

- Flues can be built according to the instructions of the National Building Code of Finland concerning flues even in cases where the power of the drying machinery furnace exceeds 120 kW.

The flue does not have to meet the dimensioning guidelines for the height of flues if it is located

- At least 1.5 m from the walls of the dryer building made from non-combustible building material.
- At least 3 m from the walls made from non-combustible building material.

Emergency exit route

ⓘ The upper level of the grain dryer must be equipped with an emergency exit window or hatch.

✓ **Make** sure that the emergency exit opening is at least 60 cm high and 50 cm wide so that the sum of its height and width is at least 150 cm.

- If the height of the lower edge of the opening is 350 cm above ground, a fixed ladder must be provided for exit.
- The ladder must extend at least 120 cm from the ground surface.

Movable grain drying machinery

ⓘ Agree on the location of a mobile grain dryer with the fire authority before starting use.

- You can place the mobile grain dryer under a roof at least 4 metres away from other buildings. It can also be used in suitable machine or storage halls or other buildings as long as the following requirements are met:
 - The building is emptied of stored items, equipment and machines for the duration of use
 - The building is at least 8 metres away from the nearest building.

5 Storage of fuel

Storage of fuel oil

ⓘ The oil tank and the suction and return pipe must comply with the Decree on Oil Heating Equipment and the provisions issued under it. The tank must include a type plate.

- A movable oil tank or separate tanks may also be used as the fuel tank in oil-heated equipment in the grain dryer. The tank may be equipped with a pump.
- An overfill protector is mandatory.
- The pump must include siphon flow prevention.

- The oil pipes must be metal oil pipes or oil hoses reinforced with woven steel fibre or oil hoses intended for the transfer of oil.
- ✓ **Attach** the oil pipes or hoses to the oil tank properly so that they do not come loose.
- ✓ **Only** use the hose between solid pipes and the burner as well as between various parts of the burner.
- ✓ **Use** a protective pipe for the penetration of structural components.
- ✓ **Place** the tank at least 3 metres from the burner.
- ✓ **Install** the tank on a concrete floor.
- ✗ **Do not use** an oil tank that is not approved by authorities. For example, the use of a barrel as a fuel tank is prohibited.

You can find additional information about the storage of fuel oil in the Farm safety regulations S930.

Storage of liquefied gas

⚠ Comply with the gas supplier's and the equipment manufacturer's instructions on the storage of gas.

If you detect a gas leak, comply with the technical operating instructions for leak situations and the following instructions:

1. **Try** to find out the origin of the leak without placing yourself in danger.
2. **Close** the nearest cut-off valve of the gas pipes, if possible.
3. **Prevent** the leak from igniting.
4. **Contact** the emergency centre by calling 112.
5. **Contact** the gas supplier's emergency service.

Storage of solid fuel

⚠ Do not store moist solid fuel. Moisture can cause the fuel to ignite by itself.

- ✓ **Store** the fuel in a dry area secure from rain and moisture.
- ✓ **Make** sure that stones or other impurities are not mixed into the fuel.
- ✓ **Comply** with the equipment manufacturer's instructions on the storage of fuel.
- ✗ **Do not enter** an unventilated fuel storage. A closed area may lack oxygen and can be life-threatening.
- ✗ **Do not work** alone in a fuel storage.

You can find additional information in the Safety regulations for a solid fuel heating station S925.

6 Primary extinguishing equipment

⚠ Ensure that you have proper hand-held fire extinguishers. Hand-held fire extinguishers must comply with the hand-held fire extinguisher standard SFS-EN 3-7 and be at least of power class 43 A 183 BC.

- ✓ **When using** a dryer, there must be one hand-held fire extinguisher outside the furnace room.
- ✓ **In** addition, place one hand-held fire extinguisher as follows:
 - To the interior of the dryer
 - If the dryer is not located inside a building, place it close to the dryer.
- ✓ **Inspect** the fire extinguisher
 - a. Once a year, if the extinguisher is susceptible to factors impacting its operating condition, such as moisture or frost.
 - b. Once every two years, if the extinguisher is stored in a dry and isothermic interior.
- ✓ **Take** care of the inspection marking in the extinguisher.
- ✓ **Place** a 100-litre container of sand and a metal shovel in the furnace room for extinguishing the firebox if you use solid fuel.

7 Maintenance and upkeep of the drying machinery

⚠ It is your responsibility to ensure that the grain dryer and its machinery remain operational. Make sure that it is safe to use the devices. Always comply with the manufacturer's instructions.

Sweeping and cleaning of the fireplace and flues

⚠ The heating device of the grain dryer, including flues, connecting ducts and chimney connectors, must be swept once a year. The chimney sweeper must have a chimney-sweeper's vocational qualification.

- ✓ **Clean** the fireplace yearly before starting the drying season.
- ✓ **Comply** with the device manufacturer's instructions when cleaning.
- ✓ **Provide** the equipment with necessary sweeping and cleaning hatches.
- ✓ **Replace** the fire seals of the sweeping and cleaning hatches yearly in connection with sweeping.
- ✓ **Carefully monitor** the ash content in the nest and the ash box of the solid fuel heating device on a regular basis. Empty the ash box if necessary.
- ✓ **Ensure** that the heat exchanger of the solid fuel heating device is swept to prevent the furnace from losing efficiency.

Device maintenance procedures before the drying season

⚠ Before starting drying, check the heating device and flue and clean and perform maintenance on them if necessary. Open the hatch of the grain pocket of the siphon and empty it if necessary.

Take care of the following measures before the start of the drying season:

- ✓ **Clean** the grain drying machinery and dryer building yearly before putting into use.
- ✓ **Check** the extinguisher equipment.
- ✓ **Take** care of sweeping before you start drying.
- ✓ **Clean** the dryer furnace and the space outside the furnace fireplace inside the furnace.
- ✓ **Clean** the area around the furnace room and clean the mesh/grille of the furnace intake.
- ✓ **Take** care of the cleanliness of the warm air pipe between the furnace and the drying machinery.
- ✓ **Clean** the air duct of the drying machinery.
 - Open the inspection hatches of the drying machinery, clean the accumulated debris and check the situation also during the drying season.
- ✓ **Make** sure that the furnace and flues of the drying machinery as well as the air pipes entering the dryer are clean.
- ✓ **Only** use the services of an authorised maintainer for maintaining the oil and gas burner.
- ✓ **Inspect** and, if necessary, adjust the tension of the belts and V-belts.
- ✓ **Take** care that the installation location of the truck dryer has enough load-bearing strength and that the device is firmly in place and straight.
- ✓ **Try** using the dryer empty before starting drying operations.

Device maintenance procedures after the end of the drying season

❗ Clean the drying machinery and dryer building thoroughly after the end of the drying season.

Perform the following measures in the autumn:

- ✓ **Switch** off the power of the devices before performing maintenance and repairs.
- ✓ **Switch** off the power with the main switch for the winter.
- ✓ **Clean** the drying machinery and its surrounding area thoroughly.
- ✓ **Maintain**, repair and adjust the devices after the drying season in accordance with the manufacturer's instructions.
- ✓ **Take** care of pest prevention.
- ✓ **Close** the flue for the winter, if possible.
- ✓ **Close** the fuel cut-off valves.
- ✓ **Close** the dryer building doors and hatches for the winter.

8 Hot work

- ✓ **Follow** the Hot work safety regulations S621.
- ✓ **Perform** hot work outside the dryer, if possible.
- ✓ **Pay** special attention if hot work is performed in a grain dryer or the drying machinery:
 1. Clean and soak the worksite.
 2. Arrange primary extinguishing equipment.
 3. Keep a fire-watch for at least one hour after the hot work is complete. We recommend two hours.

The person performing hot work must have a valid hot work permit and hot work card.

9 Supervision during use

⚠ The grain dryer must be kept as dust-free as possible. Keep the grain dryer, drying machinery, furnace room and the immediate environment of the dryer clean.

- ✓ **Remove** any unnecessary flammable material from the dryer.
- ✓ **Clean** the surfaces of electrical motors weekly.
- ✓ **Comply** with the manufacturer's operating instructions during drying.
- ✓ **Pay** special attention to the operations of the heating device.
- ✗ The temperature of the combustion gases in the chimney connector may not exceed 350°C with the highest loading of the furnace, or fall under 170°C when the drying air temperature rises by 40°C.
- ✗ Lighting an open fire and smoking near the grain dryer is prohibited.

Drying and cooling grain

- When shutting down the operations of the drying machinery furnace, the fan may only be stopped when the temperature of the drying air coming from the drying machinery furnace has dropped to under 35°C.
- The electric circuit of the drying air fan may only have a switch by means of which
 - the drying air fan can be kept in operation after the temperature of the drying air has dropped under
 - the aforementioned limit and the fan can be used when the burner is not in operation.

Monitoring of the drying machinery during operations and automatic safety systems

- Monitor the operations of the automatic grain dryer always after starting it.
- An automatic alarm must be triggered in automatically supervised grain drying machinery if a key function in running grain drying machinery stops. For example, if the burner goes off or the temperature threshold values are exceeded.
- The burner shuts down due to a power failure. Before restarting the burner after a power failure, the temperature in the firebox must drop sufficiently low in order to avoid the danger of explosion.
- If the elevator belt of a grain dryer stops when the motor is running, the danger of fire will result. Equip the elevator with an automatic rotation guard that shuts down the elevator motor.
- Monitor the use of the solid fuel boiler carefully.

⚠ For further information on the fire safety of grain drying machinery, see the machinery manufacturers' installation and operating instructions. Municipality-specific advice in the fire safety of grain dryers is provided by the municipal rescue authority.

10 Glossary

A grain dryer is a building or its fire compartment in which the grain drying machinery, its accessories as well as other equipment needed for handling the grain to be dried, moving it to storage and warehousing are located. Drying machinery, storage silos, grain transfer equipment and warm air generator space form a grain drying unit.

Grain dryer machinery is equipment used for drying grain, including heating devices and conveyors. The grain dryer machinery is hereinafter referred to as “dryer machinery”.

Grain dryer machinery is a fixed or movable equipment that uses air heated by a fixed or movable heating device for drying the object to be dried. A movable dryer machinery is called a truck dryer.

A heating device produces drying air for the warm air drying machinery. A heating device works on light fuel oil, solid biofuel or gas. A gas-fuelled burner uses either liquefied gas or land gas. A heating device is referred to as a furnace. The burner produces warmth to the heating device.

Cold air drying machinery uses fans or air currents produced by fans to dry objects. Cold air drying machinery device types include:

- Fixed drying machinery, including equipment
- Movable drying machinery, e.g. equipment placed on the trailer of a tractor or
- drying round grain silo, including grain transfer, recycling and fan devices.

By following these regulations, you will ensure the security in the grain drying house and avoid unpleasant surprises in the event of an insurance claim.

Thank you for taking the time to read these safety regulations!

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