Bonpet Fire Extinguisher Ampoule Manual

This manual is based on available sources to provide comprehensive information on the Bonpet automatic fire extinguisher ampoule.

1. Introduction to the Bonpet Fire Extinguishing Ampoule

The Bonpet ampoule is an **innovative fire extinguishing device** specifically designed **for fire protection in small, confined spaces.** It is designed to **automatically extinguish initial fires** in places where potential sources of fire, such as electrical appliances, are continuously operating, even without human supervision. Its use is recommended **in hard-to-reach places**,

The ampoule **safely protects** an **enclosed space of 8 atmospheres.** Suitable **for extinguishing Class A, B, C, F and ELECTRIC fires.** It is highly effective in extinguishing **fires caused by electricity.**

2. Benefits of the Bonpet Ampoule

Using the Bonpet fire extinguishing tool has many advantages:

- **Automatic fire extinguishing**: The Bonpet will automatically start when the temperature of the extinguishing liquid inside reaches **90°C**.
- **For use in enclosed spaces**.
- It can be **easily** fixed to the wall or ceiling with two screws using the supplied bracket. The ampoule **must** always **be placed in a horizontal position, from above, in the bracket.**
- **Long lifetime (10 years)**: the manufacturer **guarantees a lifetime of 10 years**.
- **No maintenance costs**: installed as an automatic fire extinguisher, it requires no maintenance. As an automatic fire extinguisher, it does not require any maintenance.
- **Extinguishing electrical fires and fires of fire classes A, B, C, F in automatic mode**.
- **Not harmful to humans, environmentally friendly (halon-free)**. When activated, it **removes** only **2-3% of oxygen from the air**.
- **It can also be used as a fire** extinguisher: when the ampoule is removed from its holder and thrown into the fire, it immediately extinguishes the fire.
- **When mixed with water, it multiplies the extinguishing power of water many times over**: the chemical solution mixed with water **remains effective for 24 hours** after the ampoule is broken.

- **Aesthetic look**: available in four colours, other colours are possible for larger orders (standard colour is red)
- **No further damage**: the residue from the grafting process can be easily removed from the surface. No damage to machinery, electrical and electronic equipment.
- It **works reliably in extreme weather conditions (-23°C to +80°C).**
- It does **not require any wiring**, so it is independent of electricity or water networks.
- **It is easy to use in a panic situation** and does not require firefighting skills.
- **The special glass fibre does not cause cutting damage**.
- **Reliability**: the possibility of failure is excluded.
- **Cost-effective**: long life and maintenance-free, it is economical.

3. How the Bonpet Ampoule works

If a fire starts in an enclosed space protected by Bonpet, the temperature will rise. This causes the extinguishing liquid in the glass ampoule to heat up and expand. When the temperature of the liquid reaches **about 85°C ± 5°C**, it turns into a gas (vapour) and the pressure caused by the change of state breaks the glass. The gas (vapour) disperses in the zone, **initiating endothermic processes** that draw energy away from the fire and hinder the combustion process in several ways.

Bonpet's rinsing action is ensured by four chemical reactions:

- **Cooling effect**: urea decomposes into carbon dioxide and ammonia when exposed to heat, removing significant heat from the combustion chamber.
- **Choking I**: Further decomposition of ammonia produces nitrogen and water vapour, which reduces the amount of oxygen in the air (about 2-3%).
- **Choking II**: Sodium bicarbonate decomposes into sodium carbonate, water and carbon dioxide when heated, thus preserving the choking effect.
- **Scavenging effect**: sodium silicate decomposes to silicon oxide, which reacts with sodium oxide to form sodium silicate. This adheres to the burning material like glass.

As a side effect of the reactions, small amounts of nitrogen and carbon dioxide are produced, which prevent oxygen from reaching the combustion area. Non-degradable substances form a protective layer that prevents reignition. The residues left after inoculation are not dangerous and can be easily removed.

4. Ways to use Bonpet Ampoule

The Bonpet ampoule can be used in three ways:

1. **Automatic fire extinguishing**: the ampoule, when installed in the space to be protected, is automatically activated by a rise in temperature.
2. **It can also be used directly as a fire extinguishing grenade (mobile extinguisher)**: when removed from its holder and thrown into or near a fire, it immediately starts to extinguish. It is particularly useful where the location of the fire is difficult to determine and where rapid fire spread is expected. It can also be placed in portable extinguishing containers.

3. **Dilution with water**: mixing Bonpet with 10 litres of water increases the effectiveness of the inoculation many times compared to normal water. The mixed solution is effective for up to 24 hours.

5. Placement of the Bonpet Ampoule

The effectiveness of the ampoule depends on proper placement. The following criteria and examples should be considered when fitting:

Location criteria:

- **For a Class A fire**: 1 fire extinguisher is sufficient for **8 cubic metres of air** or **4 square metres of** floor space in a confined space. The maximum ceiling height is **2,5 m.**
- **For Class B fires**: 1 for a **44x44 cm** floor area in flammable liquid environments.
- The ampoule should be mounted on **the wall or ceiling** above the potential fire, approx.
- **10 -15 cm from the ceiling**.
- It can be placed **in a computer cabinet, in an electrical cabinet containing the main fuses, or in a rectifier cabinet** in a pre-wrapped case.
- For the firing method, ampoules should be positioned **so that they are removable and protected from damage**.
- The temperature of the room to be protected **must not fall below -23°C**, as the extinguishing fluid may freeze.
- Care must be taken to ensure that the fire extinguishing spray **covers the entire potential fire area** to protect the entire area.

Examples of placement:

- **In households**:
    - In the kitchen: above the stove, induction or glass ceramic hobs. 1 for small kitchen hoods, 2 for large ones.
    - In boiler rooms: above oil burners, above the stove for solid fuel. 1 piece/4 m² and 1 piece above the fuel tank.
    - In daylight: over fire risk areas (fireplaces, lamps, electrical appliances), 1 per 4 m².
    - In storage room, attic: 1 piece/4 m², above potentially fire hazardous areas.
    - In staircases and manholes: per level.
- **In a corporate environment**:
    - In tea kitchens, restaurant kitchens: near the cooking area, stove, grill.
    - Computers, server rooms: above the equipment, in a cabinet or on the wall. 1 unit/4 m².
    - In electrical and balancing cabinets: in the upper part of the cabinets.
    - In laboratory glass cabinets, paint and varnish shops, assembly bays, small storage rooms for flammable liquids, lift machine rooms, electrical backup generators, archives.
    - In offices, meeting rooms: 1 piece/4 m².
    - In computer rooms: 1 per 4 m² and above potentially fire-prone areas.

    - In industrial units, laboratories: over digesters, workbenches (1-2 pieces/4 m² + 2 per throw).
    - In warehouses (textiles, stationery, newspapers): 1 item/4 m².
- **In shipping**: in engine rooms, kitchens. In power transmission rooms, small engine rooms: 1-2 pieces/4 m². In engine rooms: 2-6 units depending on the size of the engine. In passenger cabin: 1 unit/8 m³.
- **Clinics and hospitals**: small wards: 1 unit/4 m². Larger wards: 2 units/4 m². Corridors: 1 unit/2 corridor metres. Staff rooms, kitchens: 1 piece/4 m² + corridors and around the stove. Boiler room, fuel storage: 2 pieces/4 m² + above the tank.
- **Transport - Vehicles**: lorries, trailers: 2-4 vehicles. Passenger vehicles (buses): 2-4 (fire extinguishing). Railway wagons: 1 unit/4 m². Combat vehicles: 1 cabin, 1 transport compartment/4 m².

An important note on the protection of industrial units and laboratories: large enclosed spaces are similar to open areas in terms of fire risk, and therefore require the installation of a large number of ampoules.

The distributor is available for expert advice on placement.

6. Installation Instructions

When fitting the Bonpet fire extinguisher ampoule, the following should be taken into account:

1. **Design**: careful planning precedes installation. Based on the dimensions of the room and the fire classification of the flammable materials, the number of Bonpets required and the location of the installation should be determined.
2. **Fixing the bracket**: fix the Bonpet support (bracket) to the designated surface, taking care of the position of the grooves.
3. **Inserting the ampoule**: Always place the ampoule in the console **in a horizontal position, from above.**
4. **Efficiency chart**: to calculate the number of ampoules needed, use the efficiency chart (see the Operation chapter).
5. **Complete coverage**: when placing the ampoules, take care to ensure that the entire area is protected and that the fire extinguishing spray covers the entire potential fire area.

7. Technical Data

Standard Ampoule:

- **Dimensions:** 300 mm x 60 mm / 1030 g
- **Packaging:** sealed glass ampoule
- **Content:** 600 ml Bonpet liquid
- **Operation:** automatic
- **Warranty/Lifetime:** 10 years
- **Impact:** 8 atmospheres

Available colours: Available in four colours, with other colours available for larger orders.

8. Extinguishing effect

The Bonpet ampoule effectively extinguishes the following classes of fire:

- **A**: Fires involving combustible solid materials (e.g. wood, paper, textiles, rubber, plastics). Bonpet **is very** effective on these fires.
- **B**: Flammable liquids (e.g. petrol, cooking oil, oils). Bonpet **is good** to **very good** at these fires.
- **C**: Flammable gases (e.g. natural gas, propane-butane, acetylene, hydrogen).
- **F**: Fire of vegetable oils and cooking fats. Bonpet **is very** effective for these fires.
- **Electrical fires**: the Bonpet extinguishes electrical fires **up to 60 000 V with high safety** in automatic mode. It is recommended for the protection of electrical appliances, equipment, computer centres, transformer stations and high voltage systems.

9. Security

Bonpet ampoules **are not harmful to the human body or the environment**. When activated, it **removes** only **2-3% of oxygen from the air**, which is not dangerous for living organisms. The special glass fibre does not cause any cutting injuries.

The ampoule **has been tested by** the **Slovenian Building Testing Laboratory** for extinguishing fires involving kitchen oil and flammable liquids.

In Hungary, **the RESPONSIBLE STATEMENT was issued by the CATASTROPHETIC RESEARCH INSTITUTE**.

10. Additional Products

Additional products available for the Bonpet ampoule:

- **Protective grid**: prevents damage to the vial.
- **Special stabilising washers**: to reduce vibrations where vibrations are generated (e.g. pots, machinery).
- **Possibility to connect a signalling device**: it sends a notification to the fire control panel when the ampoule is activated.
- **Shoulder bag**: to store the ampoule for mobile use.

We hope this manual has provided you with useful information about the Bonpet automatic fire extinguisher ampoule. If you have any further questions, please contact your distributor!