

**Fact File
96**



Fire Industry Association

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The 2023 revision of BS 5306-8. Specifics regarding the provision of extinguishers for fires involving electrical equipment.

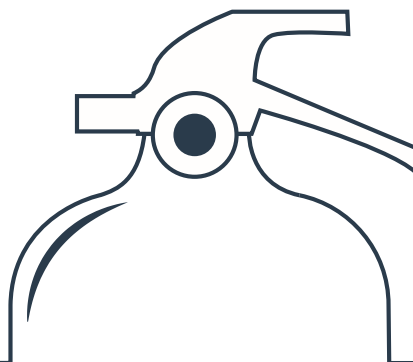


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The 2023 revision of BS 5306-8. Specifics regarding the provision of extinguishers for fires involving electrical equipment.

1. Background.

BS 5306-8 was revised in 2023. One area reviewed was the provision of extinguishers on electrical fires. This Fact File shows the similarities and differences between the text in the withdrawn 2012 version and the new/current 2023 version.

2. What has stayed the same?

These two key messages are unaltered between the two versions.

- **Only non-conductive extinguishing media, such as carbon dioxide, powder or other clean agent, should be specified for use on electrical equipment.**
- **Responsible persons and potential users should be made aware that electrical equipment needs to be switched off before any extinguisher is discharged onto it.**

3. What is new?

Clause 4 (Provision of extinguishers. General recommendations) has commentary about the media available in portable extinguishers, their firefighting properties, and their effects on people, property and the environment and includes commentary on how each conducts electricity.

Clause 5.4 (Electrical conductivity) has commentary noting HSE regulation and guidance about electric shock injuries.

Clause 7.7 (Fires involving live electrical equipment) has new commentary noting that these fires are common due increasing number of appliances/devices. With that comes two new recommendations:

- a) that extinguishers be provided throughout the premises for use on common electrical hazards (e.g. lighting and small appliances); and
- b) that mains intake/distribution and cooking hazards to be allocated their own extinguisher.

A new warning has been inserted which elevates some the recommendations in the 2012 version as well as to remind us:

- that fire can cause electrical cut-off protection to fail;
- that use of media which conducts electricity on these fires could result in electrocution;
- that electrical supply to consumer units/fuse boards will always remain live, except where there is a complete failure of the supply.

4. What has been removed?

References to BS EN 3 do not appear in the related clauses of the new version.

5. Comparison table

- The Columns show related clauses/text side by side as far as possible.
- Unchanged text is highlighted grey.
- Unhighlighted text in the LHS column indicates text which has been removed.
- Unhighlighted text in the RHS column indicates text which has been inserted.
- Font sizes reduced where necessary to ensure like for like comparisons are on the same page.

2012 (withdrawn)	2023 (current)
<p>(The clause 4 commentary in the RHS column here was all new in 2023.)</p>	<p>4 Provision of extinguishers – General recommendations</p> <p><i>COMMENTARY ON CLAUSE 4 (excerpts related)</i></p> <p><i>The media available in portable extinguishers, their firefighting properties, and their effects on people, property and the environment are described below.</i></p> <p>a) Water</p> <p><i>Water conducts electricity. Use of purified water (e.g. distilled, deionized or de-mineralized) on a fire introduces CO₂ from the air, impurities from the products of combustion, and an increase in temperature. This causes the water to reassume its natural properties, and as a result can render the originally purified water electrically conductive.</i></p> <p>b) Water-based media</p> <p><i>NOTE Examples of water-based media are water-with-additive, foam, alcohol-resistant foam and wet chemical.</i></p> <p><i>Water-based media conduct electricity in the same way as water does.</i></p> <p>c) Powder</p> <p><i>ABC and BC powders are electrically non-conductive. Class D powders can be electrically conductive.</i></p> <p>d) Carbon dioxide (CO₂)</p> <p><i>CO₂ is electrically non-conductive.</i></p>

5.4.2 Conductivity

Only non-conductive extinguishing media, such as carbon dioxide, powder or other clean agent, should be specified for use on electrical equipment.

NOTE Some water-based models with a spray type discharge have passed the discharge conductivity test in BS EN 3. This does not necessarily mean that these types can be used directly on fires involving electrical equipment. However, if the discharge of one of this type, being operated in the fashion prescribed by the manufacturer, inadvertently splashes onto electrical equipment, then the spray type discharge will afford the user more protection from electrical shock than the discharge from a jet type extinguisher or a spray type which has not passed the BS EN 3 conductivity test.

Responsible persons and potential users should be made aware that electrical equipment needs to be switched off before any extinguisher is discharged onto it.

5.4 Electrical conductivity

COMMENTARY ON 5.4

The Health and Safety Executive's guidance to the Electricity at Work Regulations 1989 [9] highlights that the effects of electric shock injury are potentially dangerous at around the public electricity supply frequency, and that quite low currents, of the order of only a few milliamps (mA), can cause electric shock injury. It also highlights that susceptibility to electric shock injury is increased if a person is in electrical contact with earth, such as in damp or wet conditions, or having damp or wet clothing.

The level of hazard can be reduced by the use of extinguishing media which cannot create damp/wet conditions (or clothing) and which do not conduct electricity.

Further guidance on the electrical conductivity of extinguishing media is given in the Commentary on Clause 4.

Only electrically non-conductive extinguishing media, such as non-conductive powder, carbon dioxide, or other clean agent, should be specified for use on live electrical equipment.

Responsible persons and potential users should be made aware that live electrical equipment needs to be disconnected/isolated from the electrical supply before any extinguisher is discharged onto it.

NOTE Even where cut-off protection is provided, a fire can cause this to fail. The electrical supply to consumer units/fuse boards will always remain live except where there is a complete failure of the supply.

<p>9 Fires involving electrical equipment</p> <p>9.1 General</p> <p>For fires involving electrical equipment (see also 5.4.2), it is expected that the first action will be to cut off the source of power to the electrical equipment, if this can be done in safety. It is unlikely that the electrical equipment itself will provide the major fuel source. The provision of extinguishers should therefore be decided on the basis of the other fire hazards in the area.</p> <p>9.2 Suitability of extinguishers for fires involving electrical equipment</p> <p>Water-based extinguishers that do not pass the dielectric test specified in BS EN 3-7 are marked “DO NOT USE ON LIVE ELECTRICAL EQUIPMENT”.</p> <p>However, for many years extinguishers of this type have of necessity been installed and used in premises where electric lighting fittings and power socket outlets are present. This use is acceptable subject to the advice given in Note 2.</p> <p>Where class F fires are likely to be present, extinguishers having a class F fire rating in accordance with BS EN 3 should be selected.</p> <p><i>NOTE 1 Extinguishers having a class F fire rating might also be suitable for use on other fire classes.</i></p> <p><i>NOTE 2 Water-based extinguishers can be marked as being suitable for use on live electrical equipment up to 1 000 V a.c. at a distance of 1 m in accordance with BS EN 3-7. The British Standards Technical Committee FSH/2 have stated that the national practice is “not marking the extinguisher if it passes the test in BS EN 3-7:2004+A1, Annex C, but marking a warning if the extinguisher failed the test or was not submitted”. This practice refers to extinguishers manufactured in accordance with BS EN 3. Where there is uncertainty, seek guidance from the manufacturer.</i></p> <p><i>NOTE 3 The use of carbon dioxide, clean agent or powder extinguishers on live electrical equipment does not increase the danger of electric shock from this type of equipment. Aqueous solutions are electrically conductive and when they are used, the danger of electric shock arises either by conduction of electric current along the discharge stream to the extinguisher or by conduction along wetted surfaces, including the floor, which can be touched by the extinguisher operator or other persons.</i></p>	<p>7.7 Fires involving live electrical equipment</p> <p><i>COMMENTARY ON 7.7</i></p> <p><i>Where live electrical equipment fails, it can catch fire and ignite other materials.</i></p> <p><i>Fires involving live electrical equipment are common due to premises having an increasing number of appliances/devices and equipment.</i></p> <p><i>Live electrical equipment needs to be disconnected/isolated before any extinguisher is discharged onto it.</i></p> <p><i>Guidance on electrical conductivity is given in the Commentary on 5.4.</i></p> <p>7.7.1 General</p> <p>Only electrically non-conductive extinguishing media, such as non-conductive powder, carbon dioxide or clean agent (see 3.2), should be used on live electrical equipment. Extinguishers containing such media should be provided throughout the premises for use on common electrical hazards (e.g. lighting and small appliances).</p> <p>Dedicated extinguishers should be provided for mains intake/distribution and cooking appliances, which are involved in the greatest number of fires, and for any other potential sources of fires involving live electrical equipment that are identified by the installer/service provider or a fire risk assessment.</p> <p>WARNING. Before any extinguisher is discharged onto live electrical equipment, it is expected that the equipment will be disconnected/isolated. Even where cut-off protection is provided, a fire can cause this to fail, and therefore the use of electrically conductive extinguishing media could result in electrocution. The electrical supply to consumer units/fuse boards will always remain live, except where there is a complete failure of the supply.</p>
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