Ministry of Defence

Chapter 05 - Fire hazard designation of cables materials - Leaflet 4800

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JSP 604 is changing, for more information see **Standards as a Service**.

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Rule ownership

1* area responsible for Chapter 05 - Fire hazard designation of cables materials - Leaflet 4800 is **Ops Co-ordinating Installation Design Authority**.

Contents

Introduction

There has been a review of installation policy, about the fire hazard characteristics of cables and wiring systems this chapter seeks to communicate the minimum standards for limited fire hazard cables and materials used in the installation of Information and Communication Technology ICT. This review is in response to changes to standards and regulations, and feedback from stakeholders. It has been determined by and is issued under the authority of the DIO Senior Fire Safety Manager SFSM. The SFSM stated goal or intent of this policy is to reduce the fire risk in the estate whenever there is an opportunity to do so. The governing principle is the fire risk should be As Low as is Reasonably Practical ALARP. This document is not intended to undermine statutory instruments or legislation. If there is a confliction then statutory instruments or legislation will take precedence. Where there is a confliction between this document and an extant British Standard or publication, then the most onerous or stringent requirement is normally to be applied. In cases of doubt please contact the project/local fire safety officer or the DIO SFSM.

Rationale

The installation of cables is guided by the Contruction Product Regulations CPR. The MOD minimum required rating for installation cable is CCa. Any other rating below this will require a determination from the SFSM.

Technical controls

The installation requirements below are a minimum standard; however, all installers and specifiers should work with fire safety officers, building owners, Head of Establishment HOE, Installation Design Authority IDA and Site Coordination Installation Design Authority SCIDA officers to ensure that the most appropriate cables and cable management or containment systems for the given context of installation are used. There will be instances when the minimum requirements below fall short of what is required to mitigate an assessed risk and in these circumstances a higher specification may be required. Consultation with fire safety officers and authorities including the DIO SFSM will be required and as such parties are advised to seek advice from fire authorities in these cases. It should be noted that the requirement for cables of a minimum standard are part of wider approach of risk mitigation conducted by MOD Fire authorities to reduce risk on the estate, this approach including the requirement to follow JSP604 Leaflet 4800 are detailed in the Defence Infrastructure Fire Standards DIFS. Parties are reminded that removal is an important requirement and that where cables are no longer required or are rendered redundant, that they add to the total potential fire load of a building and thus BS 8492 requires that they are removed. For clarity, the extent of SCIDA involvement is expected to be as follows; If removal is contracted as part of a change or a project, then the SCIDA should not issue an ECR5 until the complete works have completed, including the removal of any redundant cabling. Where not contracted as part of a change or project, or rendered redundant indirectly, or otherwise identified during SCIDA duties such as audits, the SCIDA should notify the HOE and state that the site fire risk assessment needs to be updated to include the redundant cabling and copy the DFR regional fire safety officer. In any building or facility where risk assessment requires more stringent standards, local fire safety officers and authorities are not constrained and may request a higher standard of installation.

Professionals involved in the design of ICT including SCIDA are to ensure they are using the most up to date version of all British standards. Within MOD there is a subscription to BSI online which provides access to all relevant standards. SCIDA should develop a working knowledge of the applicable standards.

A point to note; BS EN 50575, states 'Cables intended to be used for the supply of electricity, communication, and fire detection and alarm in buildings and other civil engineering works where it is essential to assure the continuity of power and/or signal supply of safety installations such as alarm, way guidance and firefighting installation are not covered by this standard, similarly these cables are out of scope of JSP604 leaflet 4800. All safety related systems should be designed and built to the relevant standards and should be handled by fire safety authorities. Advice or concerns may be sought or raised with the DIO SFSM.

Minimum Cable and cable management requirements

Table **Facility Type**	**Cables intended for installation in accordance with the definition of Installation cables** **(2)(3)(12)**	**All other telecommunications cables(2)(3)(12)**
Underground or Windowless facilities (1)(4)(6)(7)(9)(10)	Selected IAW BS6701:2016-A1:2017 EuroClass Cca s1b, d2, a2(5)(8)	EuroClass Cca s1b, d2, a2(5)(8)(11)
All Other Buildings/Facilities (4)(6)(7)(9)	Selected IAW BS6701:2016-A1:2017 EuroClass Cca s1b, d2, a2(5)(8)	Selected IAW BS6701:2016-A1:2017EuroClass Eca (5)(8), or meet the recommended requirements of BS EN 60332-1-2 (8*)

NOTES

1. The accepted approach for these facilities is predicated on minimising fire & toxic effluent primarily for protection of life.

2. When using Euro Class cable designations, they refer to ALL grades and categories of Installation cables, i.e.; Cat5, Cat5e, Cat6, Cat6a, Cat6A, Cat7, Cat7A, Coaxial and Fibre Optic.

3. 'Installation' and 'all other Telecommunications' cables are defined in BS 6701:2016-A1:2017, para 3.1.4 and 3.1.7 a clarification of these definitions and an explanation of approach is given below and in the foreword of BS 6701.

4. Fire stopping and/or Penetration sealing system is required for all buildings between all walls and floors BS 7671 527.2

5. Euro Classes in accordance with BS EN 13501-6

6. The full requirements of the applicable sections of BS 7671 must be met.

7. Local fire safety authorities may specify higher specification cables and containment or require the use of specific materials.

8. Cables are to be marked or identified in accordance with the requirements of BS 50575 (8* not applicable for 'all other telecommunications cables' that are meeting BS EN 60332-1-2), an 'audit trail' to show that complaint cables were installed is to be maintained this should be included with the as fitted documentation for the installation.

(8*) Evidence of meeting BS EN 60332 -1 -2 will normally be found in the datasheet of patching cables and cords.

9. All power cabling to be specified and installed in accordance with the requirements of BS7671:2018

10. Underground or Windowless facilities; excludes single rooms in fenestrated buildings, including Network Equipment RoomNERs or iso containers.

11. Where cables are not available to this standard, i.e patch cords, they should be selected in accordance with BS 6701 (meet the minimum requirements of BS EN 60332-1-2), the DIO SFSM has additionally stated that they should also be Low Smoke Zero Halogen (LSZH/LS0H)/ Low Smoke Halogen Free (LSHF).

12. Due to standards applied to the designation LFH differing between countries of manufacture, the designation LFH is not to be used in MOD Installations.

Understanding Telecommunication cabling and when a cable is to be considered an ‘installation cable’ for the purposes of specifying reaction to fire performance

If a telecommunications cable is installed in a certain manner, then it becomes, what is known in BS 6701, as an installation cable. Therefore, the important point is understanding what makes a cable an 'installation cable', and then by deduction, if a cable isn’t an installation cable then it falls under the banner of all other telecommunications cables. BS 6701 Defines telecommunications cables as either 'Installation cables' or 'All other telecommunications cables', cables are specified as ‘installation cables’ due to how they are to be installed; In accordance with BS 6701, If a cable is to be installed ‘into pathways which are hidden, (installed above ceilings, below floors, behind walls) or to which access is limited, and may be terminated in-situ or “pre-terminated ”, then it will be an installation cable and require the higher specification of cable.

Note 1. Historically JSP604 referred to these (installation cables) as infrastructure cables however as a result of recent updates to BS 6701 and in order to avoid confusion the MOD has determined that within the Defence Estate the definition should encompass all permanently installed telecommunications cables including all cables installed (hidden) within cable containment, cable management or wiring systems.

Note 2. The SFSM has specified higher standards for underground or windowless facilities, where all cables regardless of whether an installation cable or not, are to be specified to the same high specification; Where a cable is not available to this standard, i.e. a patch cord then refer to note 11 in the table above.

Equipment Power Cords

In All buildings, COTs cabling is acceptable, specifically the cables supplied with the equipment, should be used.

Patch cables and work area cords

These are covered in the table above as 'all other telecommunications cables'. In underground or windowless facilities it is important to consult note 11 in the table. It must be noted that any cord (for example patch or work area) installed as or in the same manner as an installation cable (see definition above), must be specified as an installation cable (see table above) with the higher standard.

Specifying Cable Management System (CMS) type

In Underground or Windowless buildings or facilities the SFSM has determined that only steel CMS may be installed. If a design specification includes any non-metallic containment it must be subject to a successful request for a determination or relaxation from the DIO SFSM. In all other buildings steel CMS is acceptable as is ‘Non-flame propagating’ containment specified in BS EN 50174-2:2018 (4.5 Cable management) and BS 7671:2018 (422). Specifically, this means cable management and CMS meeting the non-flame propagating requirements of the following standards.

- Conduit: BS EN 61386
- Trunking & ducting: BS EN 50085
- Tray & ladder: BS EN 61537
- Power track: BS EN 61534

Details of compliance with these standards is to be confirmed and held with the design and as fitted documentation. It will normally be found on the datasheet or Declaration of Performance DOP

Installing Cable Management Systems (CMS)

Wiring systems must be supported in such a way that they will not be liable to premature collapse in the event of fire. BS7671:2018 and Appendix D of the ‘on site guide’ BS7671:2018 provide further guidance.

Underground or Windowless buildings must utilise steel CMS affixed to the fabric of the building with fixings of steel, installed in accordance with the requirements below.

All other buildings may use steel CMS as above or use non-flame propagating systems with the containment fixed to the fabric of the building as follows:

In all cases, CMS must be installed using steel clips, brackets etc, not more than 500 mm for rigid parts, 250 mm for pliable parts and not more than 250 mm from junctions, bends, corners, changes of direction etc. These distances are for installation both vertical and horizontal, the fixings must be of steel.

Additionally where using non steel CMS, the cables within must be fixed directly to the fabric of the building using steel or copper cable ties, straps etc not more than 500 mm apart for horizontal runs and 250 mm for vertical runs.

Reusing existing Cable Management Systems

The reuse of CMS is governed by the following principle; to reduce the fire risk in the estate whenever there is an opportunity to do so. The governing principle is the fire risk should be As Low As Reasonably Practicable (ALARP). Where there is capacity to utilise an existing CMS, then it may be considered for reuse, however, in all cases, reused CMS that includes new cables shall be supported against premature collapse in the event of fire, up to a logical point; this means, as a minimum, where utilised by new cables, then to the end of a run, or the end of a length of containment, or similar, the logical point will be left to the discretion of the designer and SCIDA to agree. Where existing non-metallic CMS is identified in an underground or windowless facility, it is not to be used and must be reported to the HoE and copied to DFR and the DIO SFSM, so that the sites fire risk assessment can be updated and that action to remedy the situation can be taken promptly. Where new CMS branches off from a legacy route this will always be compliant with latest standards In cases of building refurbishment; the SFSM stated that it is his expectation that where a building is refurbished the CMS is to be replaced with fully compliant systems. However, where a SCIDA identifies a refurbishment project not replacing a CMS, the SCIDA should continue to follow the ECR process, applying the principle above, but they must notify the SFSM of the issue.

The SFSM will then take up the issue directly with the project responsible.

Faceplates and back boxes

1. In Underground or windlowless facilities, back boxes should be constructed from metal. Tap outlet faceplates should also be metal, however if tap outlet faceplates are not available in metal, then plastic is acceptable.

In all other buildings there are no additional requirements, suitable plastic or metal backboxes or tap outlet face plates should be selected appropriate for the installation.

Firestopping cable penetrations

1. Fire stopping and/or Penetration sealing system are required for all buildings between all walls and floors meeting the requirements of BS 7671 527.2 and BS EN 50174

Bringing external cables into building

1. External cables serving a building need to handled and specified in accordance with the BS EN 50174 series of standards;

1. BS EN 50174-2:2018 Information technology – Cabling installation, Part 2: Installation planning and practices inside buildings, states;

'Upon entering buildings, information technology cables that do not meet the requirements of:

a) national or local fire regulations;

b) the requirements of EuroClass Eca of EN 13501-6 or the recommended performance requirements of EN 60332-1-2;

shall be either be:

α) terminated in an entrance facility which is outside the external fire barrier of the building;

or

β) terminated inside the building, within 2 m (unless an alternative distance is specified by local regulations) of the point of internal penetration of the external fire barrier or any length exceeding 2 m is installed within a cable management system that is considered as a fire barrier in accordance with local fire regulations.

NOTE This also applies where the cable passes through a space between two external fire barriers within a building'2.

1. BS EN 50714-3:2013+A1:2017 Information technology – Cabling installation Part 3: Installation planning and practices outside buildings, states;

1. 'Provision shall be made to allow the sealing of pathway systems at or near to the entrance point inside the building to prevent the ingress of dust, water, animals, gas etc.

Information technology cables that do not comply with the minimum recommended performance requirements of EN 60332-1-2 shall either be:

a) terminated inside the building, within 2 m (unless an alternative distance if specified by local regulations) of the point of internal penetration of the external fire barrier (e.g. floor/ceiling/wall)

or

b) any length exceeding 2 m (unless an alternative distance if specified by local regulations) is installed within trunking or conduit that is considered as a fire barrier in accordance with local fire regulations.

NOTE This also applies where the cable has to pass through a space between two external fire barriers within a building.

Incoming cabling management systems shall ensure continuity of cabling, and be connected directly by the shortest possible distance to the equipment room of campus or building, without exceeding constraints (e.g. bending radius or ducts of constant cross sectional area).

Related Pages

Parent Page

- CIDA installation regulations (Leaflet 4800)

Sibling Pages

- Chapter 05 - Fire hazard designation of cables materials - Leaflet 4800
- Chapter 05 - Fire hazard designation of cables materials - Leaflet 4800
- Chapter 06 - The ICT Physical Environment - Leaflet 4800
- Demarcation Diagram

Signature block

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Associated standards

Associated documents with Chapter 05 - Fire hazard designation of cables materials - Leaflet 4800

- DICy PD/2020-011:TEMPEST COUNTERMEASURES GUIDANCE FOR SECRET INFORMATION COMMUNICATIONS TECHNOLOGY (https://modgovuk.sharepoint.com/sites/defnet/JFC/Pages/DICyPN.aspx)
- BS 7671:2018 (https://bsol.bsigroup.com)
- BS 50174 - 2:2018 (https://bsol.bsigroup.com)
- BS 50174 - 3:2013 (https://bsol.bsigroup.com)
- BS EN 61386 (https://bsol.bsigroup.com)
- BS EN 50085 (https://bsol.bsigroup.com)
- BS EN 61534 (https://bsol.bsigroup.com)
- BS EN 61537 (https://bsol.bsigroup.com)

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References