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Home Office Specifications A29 Firefighters' Rubber Boots and A30 Firefighters' Leather Boots

Issued by:

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Addressed to:

**The Commissioner of the London Fire and
Emergency Planning Authority
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Summary

This Circular informs fire and rescue services of the revision of Home Office Specifications A29 for firefighters' rubber boots and A30 for firefighters' leather boots. The revision amends the boot height range, which has been modified as a result of recent developments in firefighters' footwear to allow for the construction of boots in smaller fittings to accommodate the needs of female firefighters. Both specifications have been reprinted in full as Annexes A and B to this Circular. The relevant text – relating to the revisions – is highlighted in yellow.

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Annex A

Home Office Specification A29 (Rev. 1) (30.06.2004)

Firefighters' Rubber Boots

1.0 Introduction

This is a specification for firefighters' rubber boots, which includes compliance with the British Standard for safety footwear for professional use (BS EN 345-2) and other additional requirements.

2.0 General Requirements

- 2.1 Boots shall comply with BS EN 345-2:1997 and the additional requirements set out in this specification.
- 2.2 Boots shall be classified in accordance with Code designation II of Table 1 of BS EN 345:1993.
- 2.3 Boots shall be constructed of all rubber (i.e. entirely vulcanised) compounds.

3.0 Design Requirements

- 3.1 Boots shall be as light as possible commensurate with the attainment of the specified performance requirements.

3.2 Rubber thickness

3.2.1 Toecap

The thickness of rubber covering the toecap shall be not less than 3.0 mm.

3.2.2 Heel

The thickness of rubber at the centre point of the heel extending a minimum of 50 mm either side of the centre point shall be not less than 4.0 mm

3.3 Toecap bond strength

The bond strength of the rubber to toecap join shall be not less than 5 kg/25 mm strip when tested in accordance with the procedure given in **Annex A**.

4.0 Safety Requirements

4.1 Electrical resistance

The electrical resistance of the boots shall be not less than 2×10^{10} ohms when tested in accordance with Appendix A 4.15 of BS 2050:1978.

4.2 Flammability

The outsole and heel of the boot shall display no signs of serious damage, such as is caused by burning, dripping, melting or foaming of the material, nor shall the specimen be permitted to flame more than 2 seconds (afterflame time) and to glow more than 5 seconds (afterglow time) after removal of the flame when tested in accordance with Clause 5.2.3 of BS EN 344-2:1997.

4.3 Metal components

4.3.1 No metal component of the boot shall be made of aluminium, magnesium or titanium.

4.3.2 No alloy containing one or more of the metals in 4.3.1 shall be used unless both the total content of the three constituents does not exceed 15% by mass and the content of magnesium and titanium together does not exceed 6% by mass.

4.4 Penetration resistance

Boots shall be constructed with a penetration resistant midsole in accordance with Clause 4.3.3 of BS EN 344:1993.

4.5 Dry heat ageing

Rubber components shall withstand exposure to air for 24 hours at $100\pm 1^{\circ}\text{C}$ without developing any signs of brittleness or tackiness when tested in accordance with method A or B of BS 903 Part A19: 1986.

4.6 Boot height

The boot height shall be between 325 mm and 365 mm measured on the inside at the back of the boot from the insole of the boot to the top of the boot.

Note: This height range of measurements has been modified as a result of recent developments in firefighters' footwear to allow for the construction of boots in smaller fittings to accommodate the needs of female firefighters. When specifying boots at the lower end of this range, care should be taken to ensure the continuing compatibility with overtrousers.

4.7 Outsole width

The width of the outsole shall not be greater than 120.0 mm when measured at its widest part.

5.0 Marking

5.1 Boots that meet this specification shall be permanently marked with the designation 'A29'.

6.0 References

- **BS EN 345-2:1997** Safety footwear for professional use - Additional specifications
- **BS EN 345:1993** Safety footwear for professional use
- **BS 2050:1978** Specification for electrical resistance of conducting and anti-static products made from flexible polymeric material
- **BS EN 344-2:1997** Safety, protective and occupational footwear for professional use - Additional requirements and test methods
- **BS EN 344:1993** Requirements and test methods for safety, protective and occupational footwear for professional use
- **BS 903 Part A19:1986** Heat resistance and accelerated ageing tests

Annex A

Home Office Specification A29

Firefighters' Rubber Boots

Toecap Bond Strength: Test Method

- Make two parallel cuts through the rubber toecap to the steel toecap using a sharp knife, 12.5mm equidistant on either side of the centre line of the toecap. Cuts to extend from the back edge of the toecap to the outsole joint.
- Cut the toecap covering at the back edge of the toecap through to the steel the full width of the two parallel cuts. Cut back the 25mm strip a distance of 15mm.
- Insert the freed 15x25mm strip in a clamp and tighten.
- Measure the steel/rubber adhesion with a spring balance attached to the clamp.

Annex B

Home Office Specification A30 (Rev. 1) (30.06.2004)

Firefighters' Leather Boots

1.0 Introduction

This is a specification for firefighters leather boots, which includes compliance with the British Standard for safety footwear for professional use (BS EN 345-2), and other additional requirements.

Note: Boots complying with this specification will not have the same inherent degree of chemical resistance as vulcanised rubber boots conforming to Home Office Specification A29.

2.0 General Requirements

- 2.1 Boots shall comply with BS EN 345-2:1997 and the additional requirements set out in this specification.
- 2.2 Boots shall be classified in accordance with Code designation I of Table 1 of BS EN 345:1993.
- 2.3 Boots shall be made of full grain or corrected grain leather as defined in BS EN 344-1.

3.0 Design Requirements

- 3.1 Boots shall be as light as possible and able to be donned speedily commensurate with the attainment of the specified requirements.
- 3.2 The thickness of any material covering the toecap shall be not less than 3.0mm.
- 3.3 The bond strength of any material to toecap join shall be not less than 5kg/25mm strip when tested in accordance with the procedure given in **Annex A**.
- 3.4 Where a laminated combination of materials is used to cover the steel toecap, the bond strength between the materials shall be not less than 5kg/25mm strip when tested in accordance with the procedure given in **Annex A**.

4.0 Safety Requirements

4.1 Electrical resistance

The electrical resistance of the boots shall be not less than 2x10 (10) ohms when tested in accordance with Appendix A4.15 of BS 2050:1978.

4.2 Flammability

The outsole and heel of the boot shall display no signs of serious damage, such as is caused by burning, dripping, melting or foaming of the material, nor shall the specimen be permitted to flame more than 2 seconds (afterflame time) and to glow more than 5 seconds (afterglow time) after removal of the flame when tested in accordance with Clause 5.2.3 of BS EN 344-2:1997.

4.3 Metal components

4.3.1 No metal component of the boot shall be made of aluminium, magnesium or titanium.

4.3.2 No alloy containing one or more of the metals in 4.3.1 shall be used unless both the total content of the three constituents does not exceed 15% by mass and the content of magnesium and titanium together does not exceed 6% by mass.

4.4 Penetration resistance

Boots shall be constructed with a penetration resistant midsole in accordance with Clause 4.3.3 of BS EN 344:1993.

4.5 Dry heat ageing

Any rubber components shall withstand exposure to air for 24 hours at 100+10C without developing any signs of brittleness or tackiness when tested in accordance with method A or B of BS 903 Part A19: 1986.

4.6 Boot height

The boot height shall be between 325mm and 365mm measured on the inside at the back of the boot from the insole of the boot to the top of the boot.

Note: This height range of measurements has been modified as a result of recent developments in firefighters' footwear to allow for the construction of boots in smaller fittings to accommodate the needs of female firefighters. When specifying boots at the lower end of this range, care should be taken to ensure the continuing compatibility with overtrousers.

4.7 Outsole width

The width of the outsole shall not be greater than 120.0 mm measured at its widest part.

5.0 Marking

5.1 Boots that meet this specification shall be permanently marked with the designation 'A30'.

6.0 References

- **BS EN 345-2:1997** Safety footwear for professional use - Additional specifications
- **BS EN 345:1993** Safety footwear for professional use
- **BS 2050:1978** Specification for electrical resistance of conducting and anti-static products made from flexible polymeric material
- **BS EN 344-2:1997** Safety, protective and occupational footwear for professional use - Additional requirements and test methods
- **BS EN 344:1993** Requirements and test methods for safety, protective and occupational footwear for professional use
- **BS 903 Part A19:1986** Heat resistance and accelerated ageing tests

Annex A

Home Office Specification A30

Firefighters' Leather Boots

Toecap Bond Strength: Test Method

- a) Make two parallel cuts through the material of the toecap to the steel toecap using a sharp knife, 12.5 mm equidistant on either side of the centre line of the toecap. Cuts to extend from the back edge of the toecap to the outsole joint.
- b) Cut the toecap covering the back edge of the toecap through the steel the full width of the two parallel cuts. Cut back the 25mm strip and distance of 15mm.
- c) Insert the freed 15 x 25 mm strip in a clamp and tighten.
- d) Measure the steel/material adhesion with a spring balance attached to the clamp.

Annex B

Home Office Specification A30

Firefighters' Leather Boots

Bond Strength of Toecap Covering: Test Method

- a) Prepare test pieces by laminating the appropriate materials together having first inserted a 25 mm wide non stick tab, which will allow easy attachment of clamp.
- b) Cut a 25 mm wide strip through the laminated test materials to a minimum length of 80 mm.
- c) Insert the two free ends (produced by the insertion of the non-stick tab) into appropriate clamps and tighten. One clamp must be static. Measure the adhesion using a spring balance attached to the free clamp.