

CODE OF PRACTICE

METHOD OF TEST FOR THE FLAMMABILITY SAFETY OF CHILDREN'S DRESS-UP



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INTRODUCTION

CLOTHING CAN BURN RAPIDLY WHEN ACCIDENTALLY IGNITED BY CONTACT WITH AN OPEN FLAME OR SIGNIFICANT HEAT SOURCE. THIS CAN CAUSE SERIOUS INJURY, BURNS AND POTENTIALLY DEATH. CHILDREN ARE ESPECIALLY VULNERABLE IN CIRCUMSTANCES WHEN THEY ARE PLAYING WITHOUT SUITABLE ADULT SUPERVISION.

As a result of the increased risk, mandatory regulations are in place to control the fire performance of the fabrics used in nightwear and toys, along with compulsory labelling to make the consumer more aware of the dangers:

- The Nightwear (Safety) Regulations 1985
- The Toy Safety Directive 2009/48/EC / Toy Safety Regulations 2011

However, considering the potential risk and vulnerability of children, our members have considered whether it is necessary to go beyond the current EN71-2 testing standard to ensure safety.

Following these discussions, the BRC has worked with the British Standards Technical Committee to approach CEN with a view to reviewing the appropriateness of the existing test standard EN 71-2.

BRC members recognise their duty of care to their customers, and their responsibility in selling products that are safe and legal. Whilst statistics and compliance with existing test methods indicate that dress up outfits appear safe, retailers want to go further. This is to ensure safety test methods reflect the hazards presented by today's style of costumes, fabrics and finishes used.

The development of a new standard will take time, so the BRC and its members have introduced two voluntary Codes of Practice to improve the safety of children's dress up clothing. These requirements are in addition to the requirements of the Toy Safety Directive / EN71-2 and are being made available for anyone to use.

1. Additional Flammability Labelling of Children's Dress-up
2. Method of Test for the Flammability Safety of Children's Dress-up

SCOPE

The scope of this document covers toy dressing up as identified in the relevant legislation and standards:

1. Article 2 (Scope) of the Toy Safety Directive (TSD) 2009/48/EC defines a toy as “a product designed or intended, whether or not exclusively, for use in play by children under 14 years of age”.
2. Children’s dressing-up outfits have to comply with all the requirements of the Toy Safety Directive. Dressing-up outfits are covered by the European Harmonised Standard EN 71-2: Safety of Toys Flammability, Section 4.3 Toy Disguise Costumes and Toys Intended to be Worn by a Child in Play
3. EU Guidance Document 17 on the Application of the Directive on The Safety of Toys, Carnival Costumes (disguise costumes, fancy dress)

A presumption of conformance with the Toy Safety Directive is given by compliance with the harmonised standard.

This voluntary Code of Practice (COP) is designed to provide additional testing requirements for these products. This does not preclude members from using the same testing for other products.

This code of practice does not cover adult dressing up clothing, items that are not CE marked and items not classified as toy dress up such as wigs and masks, accessories etc.

TESTING

The test method will be referred to as the BRC Modified EN71-2 test.

Laboratories conducting this test should be UKAS or mutually accredited to ISO 17025 with the standard EN71-2 test on their Scope of Accreditation

The test is conducted in an unwashed condition, and retailers can request additional test on washed samples.

For age graded dress-up clothing, it is recommended that the largest size is submitted for testing. The number of samples typically required to undertake a full test will depend on type and complexity of the costume. A minimum of six garments would probably suffice, but in some cases additional garments may still be required to cover all the variations. This also applies to simple designs (large capes or simple top and trouser sets – as few as 1 or 2 garments could be required).

METHOD OF TEST FOR DRESS-UP COSTUMES USING THE BRC MODIFIED EN71-2 TEST

INTRODUCTION

It is proposed that the modifications set out in this protocol are applied even when conducting testing in accordance with EN 71-2:2011 + A1:2014 clause 5.4. Nothing in this protocol prevents materials which can be tested to the existing EN71-2 method of test (clause 5.4) from being tested. However, this protocol provides additional procedures which shall be used to address many of the perceived shortcomings within the existing method of test arising from particular flammability behaviours and/or the lack of availability of sufficient material to permit the required EN71-2 test to be carried out.

MODIFICATIONS TO EXISTING EN71-2 METHOD

1. An additional trip thread shall be positioned halfway between the existing 2 threads (i.e. 300mm above the lower edge). It is recommended that this is included even where sufficient material is available to carry out the test, in accordance with the existing EN71-2 method.

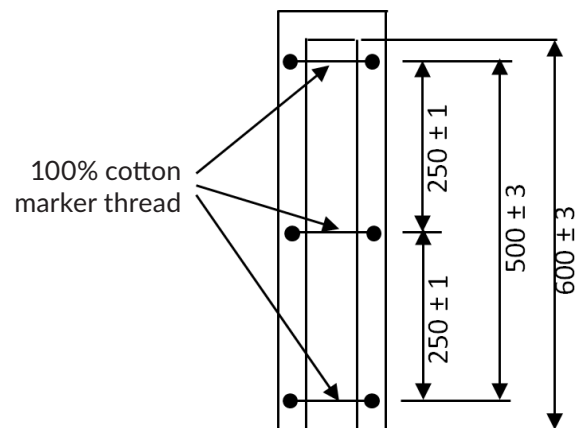


Figure 1: Modified Specimen Holder

2. All materials to be tested in both length and width directions for all materials used below the waist and/or in sleeves.
3. All tests to be done in duplicate.

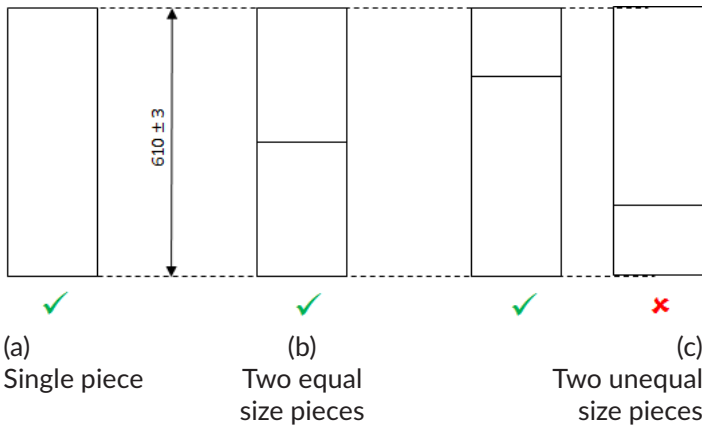


Figure 2: Test specimens

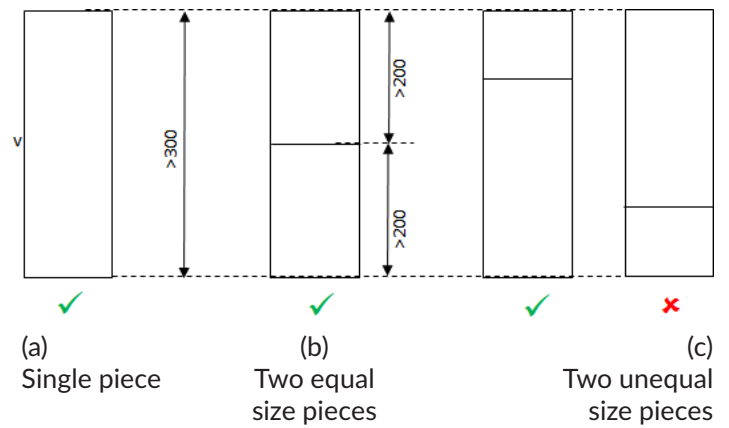


Figure 3: Short test specimens

4. Sample size:

- i. Prepare test specimens of dimensions at least 610mm x 100mm from each material available on the toy in accordance with EN 71-2 clause 5.4.1 (see Figures 2a and 2b). However test specimens shall include both single materials without seamed edges or edges decorated with lace trims and also additional samples incorporating features present on the dress-up costume (see clause 2.5 for guidance on features to be included).

NOTE: Although EN71-2 clause 5.4.1 states that seams and trims shall be excluded from test specimens as they modify the rate of spread of flame, such features are incorporated in this protocol in order to assess the extent to which they modify the rate of spread of flame.

- ii. For fabrics where there is insufficient material to prepare a test specimen from a single piece of material or from 2 half-size pieces of fabric (as per clause EN71-2 5.4.1), prepare a test specimen of the required dimensions but using no more than 2 pieces of any length provided that the longer piece is located at the lower part of the test specimen (i.e. any join is as far away from the point of ignition as possible) (see Figure 2c).

- iii. If it is not possible to obtain sufficient material to form a full length test specimen then carry out a test using a test specimen made from a single piece of length not less than 300mm (see Figure 3a). If it is not possible to obtain a test specimen of 300mm length then use 2 pieces, each of not less than 200mm, which shall be joined using an overlap of 10 mm as per EN71-2 clause 5.4.1 (see Figure 3b). Where these 2 pieces are of differing lengths, the longer piece is located at the lower part of the test specimen (see Figure 3c).

- iv. Where half-size specimens are used the 500mm trip thread shall be disregarded.

- v. If it is not possible to obtain a half-size specimen, even if 2 pieces are used, then the material is exempt from the need to be tested.

5. Features (e.g. prints, appliques, embellishments, vertically oriented seams, and any part of the garment which is not tested using an earlier test, etc):

- i. These shall be tested as a half-size test specimen (i.e. 310 mm x 100 mm) and with the test specimen prepared in the length way orientation only.
- ii. For trims at a bottom hem, the trim shall be positioned at the lower edge of the test specimen (see Figure 4a).
- iii. Position the seam in the centre of the test specimen such that the ignition source is applied directly to the seam (see Figure 4b).

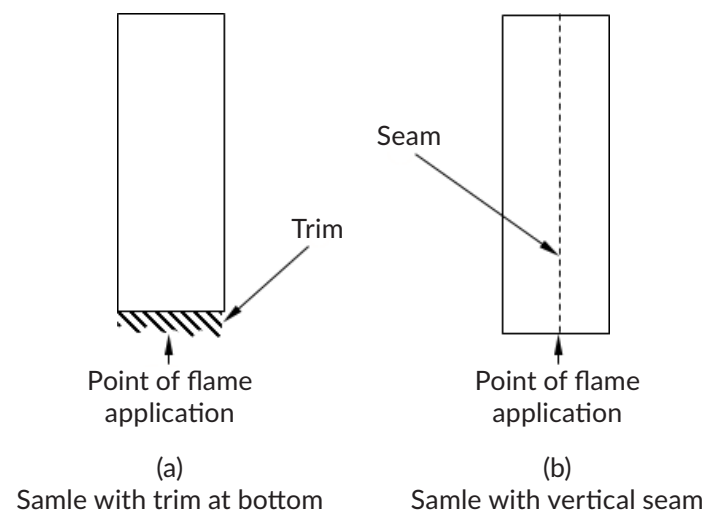


Figure 4: Test specimens containing features

6. Materials which do not ignite

- i. For materials which do not ignite when tested above they shall be re-tested but with the addition of a piece of cotton fabric complying with BS EN ISO 105-F09 and cut into squares measuring 25 mm x 25 mm. The cotton square shall be attached to the centre of the bottom edge of the underside of the test specimen using metal staples. The metal staples shall be inserted so that they are parallel to the longer edge of the test specimen (see Figure 5).
- ii. If possible staple the cotton fabric to the previously tested specimen. If required due to damage caused by the initial test without the cotton fabric present and where the extent of any damage does not exceed 25 mm in the length of test specimen, trim the bottom edge of the test specimen before attaching the cotton fabric as described.
- iii. If the extent of any damage to a test specimen without the cotton fabric present exceeds 25 mm in length then prepare a fresh test specimen.
- iv. The ignition source shall be applied to the cotton fabric. (see Figure 5)

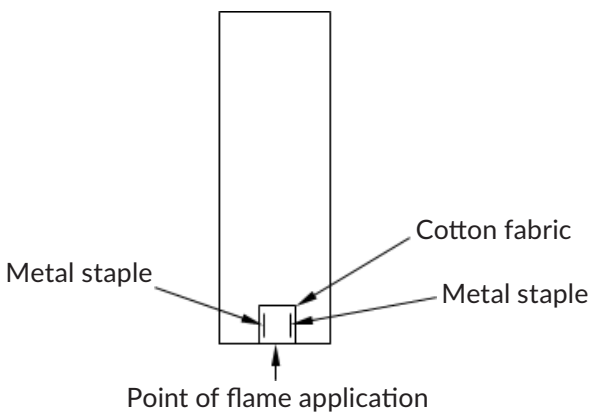


Figure 5: Test specimen with attached cotton fabric (underview)

7. Narrow materials

For materials which are not wide enough to permit testing but have sufficient length, a metal wire mesh approximately 20 mm x 20 mm grid shall be used to support the test specimen.

The specification of the metal wire shall be approximately 19 gauge 20mm square mesh. (19 gauge is approx. 1.0mm diameter wire)

A suitable source of the mesh can be found below:
<http://www.meshdirect.co.uk/wire-mesh-wire-netting/wire-mesh/welded-mesh-20mm-x-20mm-hole-x-inch/>

REQUIREMENTS

1. No material to burn with a rate of spread of flame of greater than 10 mm/s. This requirement shall apply to the rates to sever each trip thread (excluding that at 50mm) and to the speed between the 250 mm and 500mm trip threads.
2. When foam fillings are tested at their same nominal thickness as used in the garment and in accordance with FMVSS 302 / BS AU169a, then the rate of spread of flame shall not exceed 102 mm/min.
3. All non-foam fillings shall be of a type which meets the UK Furniture & Furnishing (Fire)(Safety) Regulations 1988 Schedule 2 Part 1.
4. Flame retardant chemicals are not permitted

EXPLANATORY NOTES

The above procedure can be applied to individual materials prior to the manufacture of the dress-up costume. Since the current EN71-2 test only works in individual fabrics then this approach is a valid one. It also has the advantage of allowing fabric suppliers to pre-assess the likely suitability of materials prior to the costume being manufactured and to therefore exclude those which burn too rapidly. However the new protocol also adds testing of composite features which will better replicate the actual costume behaviour although even this falls short of testing the actual costume for which a full item test would be required.

This is seen as a cost effective approach, especially when materials are used in multiple designs and test results can be cross-referenced within technical files. Even when fabrics are then modified by the application of glitter, sequins, etc., samples can be prepared for testing purposes to validate the suitability of the materials prior to the manufacture of prototype or production garments.

The proposal is that any material which hangs below the waist or is used in a sleeve is tested in both length and width directions. Capes which are attached at the shoulder but which hang below the waist would therefore be tested in both length and width, whereas a nurse's short cape which finishes above the waist would only be tested in the length direction.

Existing data on materials tested to EN 71-2 clause 5.4 can be evaluated for compliance with the requirements of this protocol. Previously tested materials with rates of spread of flame of less than 10 mm/s can be inferred to meet the requirements of this protocol providing that they are not modified by the application of embellishments, finishes such as glitter, etc. This will allow existing materials to be evaluated for their continued future use without the need for re-testing. Previously tested materials with rates of spread of flame greater than 10 mm/s can be inferred as not complying with the requirements of this protocol, even though they may satisfy the requirements of EN71-2.

This modified EN71-2 protocol is now more stringent in terms of permitted rate of flame spread (10 mm/s max) when compared with existing UK Nightwear Regulations (12 mm/s max).

FREQUENTLY ASKED QUESTIONS

Would it not be best to test a whole garment?

In an ideal world, the testing of a whole garment would represent the burning action of the dress in real-life. However, no such test methodology currently exists and would take some time to develop. The BRC alternative option is to test strips of fabrics using the existing methodology. There is a fundamental issue with testing multi-layered samples using any method based on EN71-2 namely that the layers will be compressed into contact with one another whereas in the costume there would be air gaps between the layers, especially with stiffer fabrics. As such, it would be preferable to conduct some form of whole garment test. No test based on EN71-2 can fully represent the real-life burning behaviour of the costume.

Are wigs and masks included in this COP?

The short answer is no. This COP only covers children's dress up only items covered by EN71-2 Clause 4.3 Toy Disguise Costumes and Toys Intended to be Worn by a Child in Play. Wigs and masks are covered in EN71-2 by clause 4.2 Toys to be worn on the head. Hoods and head-dresses fall under clause 4.2.5, which specifically excludes "those items covered by clause 4.3". Attention is drawn to the guidance given in CEN TR15371:2015 Safety of Toys - Interpretations on EN71-1, EN71-2, EN71-8 and EN71-14 and in particular to clause 3, which addresses and gives examples of different types of dress-up costume and how EN71-2 should be applied. However retailers are at liberty to apply this COP on any product should they so wish.

What is meant by accessory?

Accessory in this instance means any product not covered by EN71-2 Clause 4.3 Toy Disguise Costumes and Toys Intended to be Worn by a Child in Play. Swords, wands, tiaras, wigs, masks etc. are excluded from this COP and are covered by their own separate flammability requirements within EN71-2.

How are tests completed on complex items to determine how to choose which trims and accessories to test?

The purpose of the BRC protocol is to clarify how materials in complex articles are tested. At present, under the test method given in EN71-2, Clause 5.4 any material is exempt from testing if there is insufficient material to form the required test specimen size. However the BRC protocol introduces a number of deviations to the standard EN71-2 method to enable such materials to be assessed for flammability behaviour.

The new protocol allows for materials which do not have sufficient material for a full size EN71-2 specimen to still be tested. Where there is still insufficient material then the protocol allows for a composite specimen to include that material as a 'feature' (see clause 2.5 of the protocol), therefore allowing some form of evaluation to be carried out.

It is likely that this will lead to more materials being tested for complex articles, but should allow for the most flammable materials to be eliminated from the designs therefore increasing consumer safety.

Are multi-layered materials tested individually or in combination?

Where multiple materials are glued, bonded, sewn or otherwise attached to form a layer (e.g. padded suit), this layer should be tested without separation. If there are multiple individual layers (e.g. dual layer petticoat) these layers are tested individually.

For costumes containing trims and accessories; is the agreement to test all sizes or just the smallest and largest sizes to keep samples to a minimum?

Testing is primarily based on testing the individual materials, this should avoid the need to do size based testing. The first point of testing should be selecting materials which individually burn slowly. It is then necessary to evaluate the features such as trims, prints, etc. to establish if they significantly alter the burning behaviour. However, features such as trims, prints, appliques, seams, pockets, etc. will still need to be assessed and their performance may depend on size-related issues. Where there are no size-related issues, then sufficient costumes need only be submitted to permit testing of all components and features. However where there are size-related differences, then additional garments may be required to establish whether the size-related issue has any effect on flammability performance. In such cases, it might be appropriate to test the largest and smallest sizes to represent the extremes of size but there is no guarantee that intermediate sizes will not behave differently.

Labs are not asking for the sizing data, they are simply asking that the client submitting the costumes for testing considers the design when deciding how many garments to submit to the laboratory for flammability testing. This information may however not be known by the retailer or importer hence the guidance that 6 items per design are submitted. Due to the complexity in some instances a lab may require additional samples. Similarly, for simple designs only 1 or 2 garments may be required for testing.

Responsibility for submitting the appropriate sizes of costume lies with the designer/manufacturer/importer/retailer. Laboratories can only test the samples submitted.

Section 2.2 states all materials to be tested in both length and width direction for all materials used below the waist and/or in sleeves: What happens if the bodice is a separate material, how should it be tested? Revert back to the usual EN71-2 or use the modified method with 2 trip wires but only lengthways?

If the bodice is intended to be worn above the waist only (i.e. is a top rather than a dress) then the materials must initially be tested according to the standard EN71-2 method as this is the legal requirement. However, where there is insufficient material and/or where there is a risk that the fabric is at higher risk of being exposed to a naked flame (as is the case with sleeves, skirts, dresses, etc.) then the BRC protocol recommends testing in both length and width directions. The purpose of this clause is to address the increased flammability risk associated with sleeves and garments worn below the waist, which are more likely to come into accidental contact with an ignition source.

EN71-2 states that the fabric shall be tested in the vertical direction if possible (even if this means joining 2 equal half-length specimens). Typically for the sleeves this will be in the length direction of the sleeve, but depending on garment dimensions and/or direction in which fabric for the sleeves was cut, the length direction of the sleeve may not necessarily be the length direction of the fabric.

Since the wearer could reach out horizontally over an ignition source (e.g. candle) and particularly if the sleeves are loose fitting, then a flammability hazard potentially exists in both garment length and width directions and therefore the fabric used in the sleeves should be tested in both directions. Tests should always be in accordance with EN71-2 as far as is possible but if there is insufficient material then the modified protocol shall be used.

Section 2.5 (II) – For the bottom hem, the trim shall be positioned at the lower edge of the test specimen – does this include necklines and sleeves?

The trim shall form the bottom edge of the test specimen i.e. the edge to which the ignitions flame is applied (as per Figure 4a). Trims on necklines are not “trims at the bottom hem” but trims on sleeves should be considered as “trims on the bottom hem”.

Point 2.6 Materials that do not ignite. Why is cotton being added to fabrics that do not ignite? Surely not igniting is the result we want and adding the cotton is not representative of an actual garment being worn?

The reason behind the cotton is that some materials melt when tested in isolation but if in the vicinity of a material which doesn't (e.g. cotton) then the molten material becomes trapped on the other material and can then burn much more vigorously rather than simply melt. Costumes are likely to be worn over other clothes so we opted to introduce this modification to ensure that when a piece of non-FR (flame retardant) cotton is present then the burning behaviour remains acceptable.

REFERENCES

Directive 2009/48/EC of the European Parliament and of the Council of 18 June 2009 on the Safety of Toys

<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0048&from=EN>

Enacted in the UK as The Toys (Safety) Regulations 2011 No.1881

http://www.legislation.gov.uk/uksi/2011/1881/pdfs/uksi_20111881_en.pdf

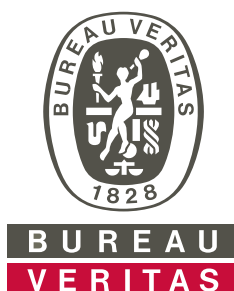
Guidance Document No.17 on the Application of the Directive on the Safety of Toys, Carnival costumes (disguise costumes, fancy dress)

http://ec.europa.eu/growth/sectors/toys/safety/guidance/index_en.htm

CEN TR 15371-1: 2015 Safety of toys – Interpretations – Part 1: Replies to requests for interpretation of EN 71-1, EN 71-2, EN 71-8 and EN 71-14

EN 71-2 Safety of toys - Part 2: Flammability

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