

CODE OF PRACTICE

# FLAMMABILITY SAFETY OF CHILDREN'S DRESS-UP



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# 1. 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 WHERE THEY ARE PLAYING WITHOUT SUITABLE ADULT SUPERVISION AND EXPOSED TO THESE CONDITIONS.**

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. In July 2016, CEN voted to revise EN71-2 and the UK will take a leading role in this process.

BRC members recognise their duty of care to their customers, and their responsibility in selling products that are both safe and legal. Whilst statistics and compliance with existing test methods do not indicate that dress-up outfits are unsafe, 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 revised European standard will take time, so the BRC and its members have introduced two voluntary Codes of Practice to further enhance 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

In developing this Code of Practice it is the stated desire of BRC that flame retardant chemicals are not used in children's dress-up costumes due to concerns in relation to their potential toxic effect on both humans and the environment. However it is not necessary for materials to be tested to prove the absence of flame retardant chemicals.

This Code of Practice has been endorsed by The Royal Society for the Prevention of Accidents (RoSPA), The National Fire Chiefs Council (NFCC), Bedfordshire and Luton Fire and Rescue Service (BLFRS) and the Children's Burns Trust.

## 2. SCOPE

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

1. Article 2 (Scope) of the Toy Safety Directive (TSD) 2009/48/EC defines a toy a "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 enhance the testing requirements for these type of 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.

## TESTING

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

Laboratories conducting this test should be accredited to ISO 17025 (UKAS or equivalent under the ILAC MLA) with the standard EN71-2 test on their Scope of Accreditation.

Attention is drawn to the amended guidance in this document regarding testing without the need for pre-treatment except where finishes such as glitter are present and which may be affected by the pre-treatment in a manner which fails to represent the potential worst-case scenario when the item is 'new'. Testing of materials after pre-treatment is already addressed within the existing EN71-2 testing methodology.

For age graded dress-up clothing, it is recommended that the largest size is submitted for testing although it may be necessary to test more than one size in the age range. The number of samples typically required to undertake a full test will depend on type and complexity of the costume. A maximum of six garments would probably suffice in most instances, but in some cases additional garments may still be required to cover all the variations. For simpler designs (large capes or simple top and trouser sets made from unembellished fabric) – as few as 1 or 2 garments could be required.

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

## 3.1 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 or precludes the samples from being assessed for compliance with the requirements of EN71-2. 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 of concern and/or the lack of availability of sufficient material to permit the required EN71-2 test to be carried out.

Given that certain materials may be used in more than one style of dress-up costume, albeit in differing colourways or with variations in printed design, it may be more advantageous to fabric manufacturers to perform the testing to this protocol on the fabric prior to garment manufacture and for the dress-up costume manufacturer to cross-reference between the fabric test report and the different styles in which that fabric has been used. This will both reduce the amount of duplication of testing needed (thereby providing a potential cost saving) and permit the testing using full size specimens. It also provides the facility whereby dress-up costume manufacture can source materials which have already been verified as meeting the BRC flammability requirements. This in turn potentially reduces the amount of testing required on the final dress-up costume to an evaluation of 'features'.

## 3.2 DEFINITION

### **NARROW FABRIC:**

A fabric or component whose length is substantially longer than its width and the width does not exceed 5cm. Examples of narrow fabrics include braid, cords, webbing, ribbons, lace trim, etc.

### **PRINT:**

A distinct area of colouration which is applied separately to the surface of the fabric after fabric manufacture. This includes heat transfers, plastisol prints, placement prints, etc. However discharge prints or which have been digitally printed or roller printed during fabric manufacturing shall not be considered to be 'prints' for the purpose of this definition (see A.6).

### **'DID NOT IGNITE':**

The phrase 'Did not ignite' is defined as being no ignition of the test specimen with any flaming of the test specimen during or after the application of the ignition source having a duration of less than 1 second. Fabrics which sustain a flame for longer than 1 second but which do not burn to the first marker thread 50 mm above the bottom edge of the test specimen are not considered to fulfil this definition.

### 3.3 MODIFICATIONS TO EN71-2 METHOD

1. An additional trip thread shall be positioned halfway between the existing 2 threads (i.e. 250mm above the first trip thread and 300mm above the lower edge of the test specimen). 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.

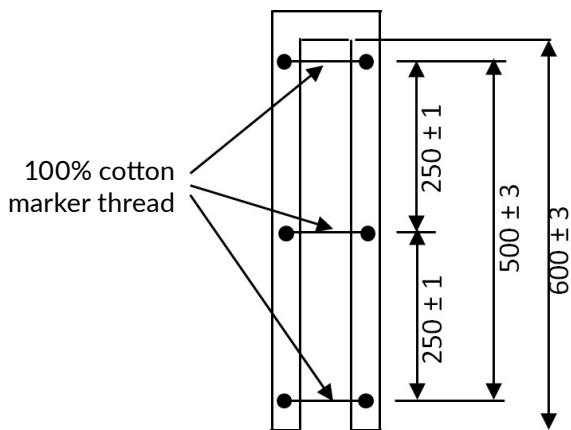


Figure 1: Modified Specimen Holder

### 3.4 PRE-TREATMENT

1. Dress-up costumes and the fabrics intended to be used in them should be tested in the 'as received' condition only.

The testing in this Code of Practice is intended to supplement that of EN71-2 in which dressup costumes intended for children under 36m are required to be capable of being washed and therefore the behaviour of the component materials after washing will automatically be assessed by the mandatory testing required under EN71-2.

- Dress-up costumes intended for children including those under 36m shall be tested after pre-treatment.
- Dress-up costumes intended for children including those under 36m which, after pre-treatment, produce a noticeable or detrimental change in appearance shall also be tested in the 'as received' condition.
- Dress-up costumes intended only for children over the age of 36m shall be tested in the 'as received' condition.
- Dress-up costumes for children of any age which include glitter printed or similar printed materials that may result in noticeable or detrimental change shall be tested in both the 'as received' condition and after pre-treatment.

## 3.5 SAMPLING

1. All fabrics shall be tested in both length and width directions unless it is stated that the material is not intended to be used in sleeves or the costume is intended to be worn on the upper body only and the lower edge of that costume (or part of the costume) does fall below the crotch. (see A.1, A.2).

Sleeves which are less than 160 mm in length (measured on the underarm seam from the sleeve cuff to underarm point) do not need to be tested.

2. Narrow fabrics need only be tested in the length or machine direction regardless of the orientation in which they appear in the garment. However narrow fabrics which are solely used in the width direction may still form part of the 'feature' specimens tested. (see A.3)
3. Fabrics used in capes, regardless of whether or not the lowest hem of the cape falls below the level of the crotch, shall be tested in both length and width directions. (see A.4)
4. Fabrics used in features such as collars which are intended to protrude only in an upwards direction do not need to be tested unless they form part of a larger garment feature which is required to be tested. However collars which are intended to hang vertically downwards at the back of the garment and whose vertical dimension is greater than 160 mm shall be treated in the same manner as a cape.
5. All tests to be done in duplicate. This means testing 2 lengthway and, where relevant, 2 widthway specimens per material or feature to be tested. (see A.5). In order for a fabric or feature to be considered to 'pass' the requirements, both test specimens must satisfy the requirements. If one or both test specimens exceeds the maximum permitted rate of spread of flame then the sample shall be considered to 'fail' to meet the BRC requirements.

6. Samples containing 'features' such as trims, seams, etc shall be cut such that the bottom edge of the test specimen (to which the ignition source will be applied) is representative of the lowest edge of the dress-up costume or the cuff edge of the sleeve (see Appendix B). If the bottom edge or sleeve cuff is not an even length (e.g. has a wavy or zig-zag form) then it is permissible to trim the bottom edge to produce an even (straight) edge for the purpose of testing. Where applicable, this may mean that the trimmed bottom edge of the test specimen is not necessarily the lowest point on the bottom edge of the dress-up costume.
7. If a feature falls outside the area the test specimen (i.e. is more than 600 mm from the bottom edge or sleeve cuff edge) then that feature shall not be tested. (see A.7) Where the bottom edge of the dress-up costume or layer of a dress-up costume falls below the level of the crotch then the test specimens shall be taken in the vertical direction of the dress-up costume only and with the bottom edge of the test specimen being the bottom edge of the layer of the dress-up costume.

**Note:** For definition of crotch level, refer to EN 14682:2014

8. For dress-up costumes featuring multi-layer constructions, test specimens shall be taken from each layer and the bottom edge of the dress-up costume shall be taken as the bottom edge of each layer individually. Each layer shall be tested separately. (see A.8)

9. For dress-up costumes containing a placket, zip, or other means of fastening which falls within a zone for which testing is required (i.e. within 600mm of a bottom edge), the test specimens shall be prepared with the placket or zip positioned centrally and parallel to the longer dimension of the test specimen. The zip or placket shall be in the 'closed' position (i.e the zip, touch and close fastener or buttons or other closures shall be fastened). If the fastening is not vertical, then the fastening shall be positioned such that the fastening at the bottom edge of the test specimen is positioned at the mid-point of the short side of the test specimen and the test specimen shall incorporate only that part of the fastening that falls within the area of the vertically positioned test specimen.
10. Glitter printed fabrics and fabrics with similar types of printing shall be tested both before and after pre-treatment regardless of the age for which the dress-up costume is intended. (see A.11)
11. Other filling materials (e.g. fibre wadding) which do not 'fall out' of the test specimen when the test specimen is cut from the dressup costume can be tested as a composite. However if the filling material 'falls out' of the composite then the filling shall be tested individually in accordance with the relevant method of test as set out in this Code of Practice. (see A.10)
12. For dress-up costumes containing foam fillings, it is not necessary to separate the foam from the material to which it is adhered. It is permissible to prepare and test specimens as a laminate (composite). The laminate shall be tested with the outer surface of the laminate face upwards



## 3.6 TEST SPECIMENS

### 1. Test Specimen size

- a. 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 and Appendices A and B of this Code of Practice 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.
- b. 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).
- c. 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 300 mm (see Figure 3a). If it is not possible to obtain a test specimen of 300 mm length then use 2 pieces, each of not less than 160 mm, 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).
- d. Where half-size specimens are used the 500 mm trip thread shall be disregarded. 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.

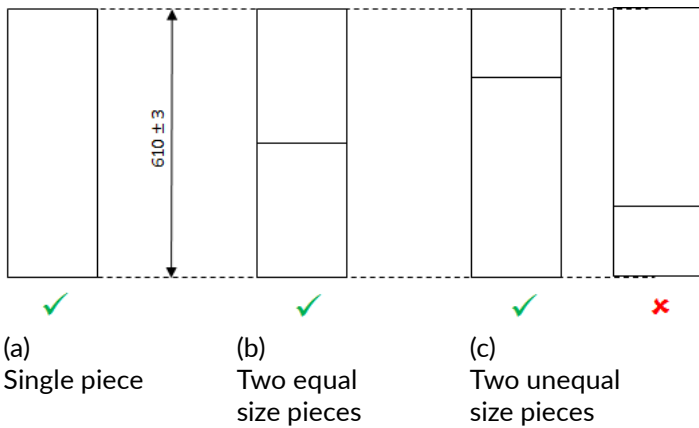


Figure 2: Test specimens

2. Features (e.g. prints, appliques, embellishments, vertically oriented seams, and any part of the garment which is not tested using an earlier test, etc):
  - a. 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.
  - b. For trims at a bottom hem, the trim shall be positioned at the lower edge of the test specimen (see Figure 4a).
  - c. Position the seam in the centre of the test specimen such that the ignition source is applied directly to the seam (see Figure 4b).

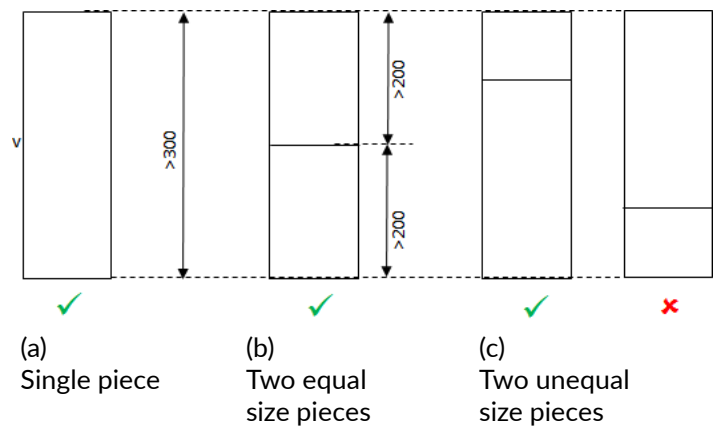
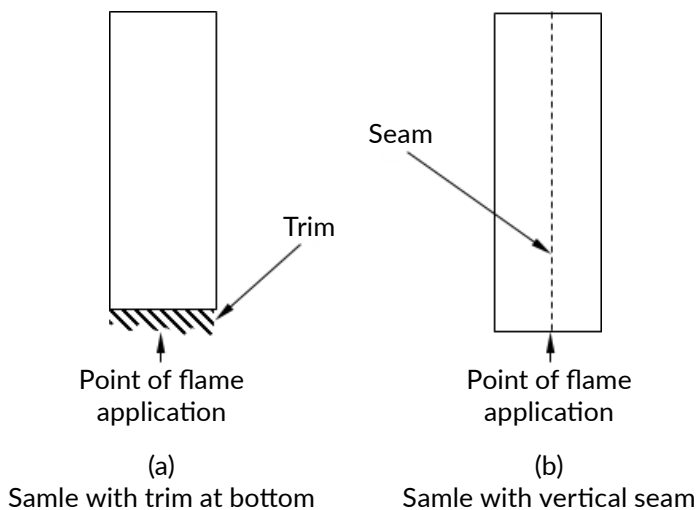


Figure 3: Short test specimens

3. Materials which do not ignite
  - a. Materials which do not ignite when tested as above shall be re-tested but with the addition of a piece of cotton fabric complying with BS EN ISO 105-F09 and cut into a square 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).
  - b. Where damage caused by the initial test without the cotton fabric present 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. Where the damage exceeds 25mm then either rotate the test specimen 180° or use a fresh test specimen.



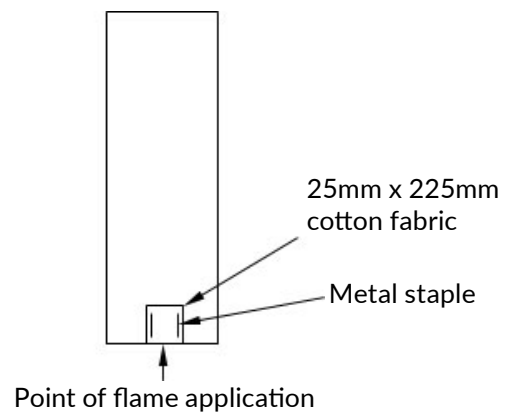
**Figure 4: Flame application to test specimens with features**

- a. 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.
- b. The ignition source shall be applied to the cotton fabric. (see Figure 5)

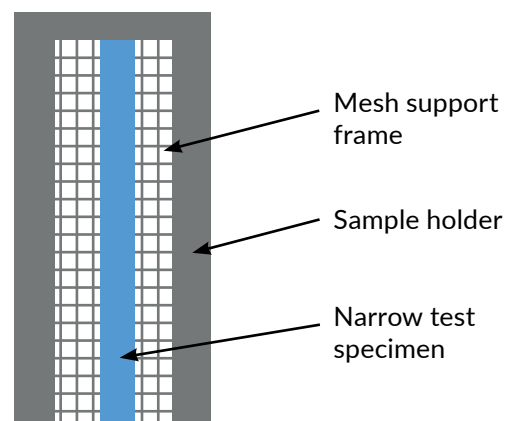
4. Narrow materials

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 (see Figure 6).

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



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



**Figure 6: Testing of narrow test specimen**

## 3.7 TEST RESULTS

OUTCOME	ABBREVIATION	EXPLANATION
Did not ignite	DNI	No flaming or flaming lasting less than 1s and the first trip thread is not severed.
Zero rate of spread	0 mm/s	Flaming lasting longer than 1s but the first trip thread is not severed
Self Extinguishing	SE	Flaming lasting longer than 1s and the first trip thread is severed but flaming ceases without the second trip thread being severed.
Rate of flame spread	xxx mm/s	The speed of burning calculated from the time taken for at least the first and second trip thread to be severed. NOTE: The rate of flame spread may additionally be calculated based on the time to also sever the third trip thread and the time taken for the flame to spread from the second to the third trip thread.

# 4. REQUIREMENTS & TEST REPORT

## 4.1 REQUIREMENTS

1. The rate of spread of flame between the first trip thread and second trip thread shall not exceed 12 mm/s. The rate of spread of flame between the first trip thread and the third trip thread shall not exceed 10 mm/s.

The rate of spread of flame between the second trip thread and the third trip thread shall also not exceed 10mm/s.

**Note:** The measurement of the rates of spread of flame shall be determined without the need to take uncertainty of measurement into account. (see A.13)

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 (see A.12).
3. Crumb foam filling shall be tested in accordance with the UK Furniture & Furnishing (Fire)(Safety) Regulations Schedule 1 Part II (see A.13).
4. All non-foam fillings shall be of a type which meets the UK Furniture & Furnishing (Fire)(Safety) Regulations 1988 Schedule 2 Part 1 and using a filling density of 15 kg/m<sup>3</sup> (see A.14).
5. The occurrence of molten flaming droplets or debris which continues to burn on the floor of the test rig shall be reported in the test report (see Annex A.15).

## 4.2 TEST REPORT

The test report shall contain the following information:

- a. Reference to this test method (i.e. BRC Modified EN71-2 test)
- b. Details of the fabric or costume tested
- c. Where applicable, details about the location of each test specimen from within the costume. This may be supported by the use of photographs in the test report identifying the relevant location(s)
- d. The direction of test (length or width)
- e. Whether or not the additional piece of cotton was present
- f. Whether or not the first trip thread was severed
- g. Whether or not the second trip thread was severed and if so, the rate of spread of flame
- h. Whether or not the third trip thread was severed and if so, the rate of spread of flame
- i. If the third trip thread is severed, the rate of spread of flame between the second and third trip threads.
- j. Any occurrence of any molten flaming debris during the test.
- k. Whether or not the fabric or costume meets the requirements of this Code of Practice

# 5. 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 preassess 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.

Since the requirements for pre-treatment and test specimens are based on the existing EN71-2 method, then 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).

# 6. 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 or on this protocol can fully represent the real-life burning behaviour of the costume.

## Are wigs and masks included in this Code of Practice?

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 headdresses 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 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.

### The BRC protocol states all materials to be tested in both length and width direction for those 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 the BRC protocol may also be used to provide additional information on the burning characteristics. 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 should be used and 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 3.6 clause 2(b) – 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 sleeve cuffs should be considered as “trims on the bottom hem”.

**Section 3.6 clause 3 - 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.

# APPENDIX A: RATIONALE

- A.1. Fabrics are tested in both length and width directions because it may not be known whether the length direction of a fabric will correspond to the length direction of the garment. Fabrics may burn at different rates or behave differently in different orientations. Current industry practice for dress-up differs from that of the wider clothing industry and therefore testing in both directions will ensure that regardless of the fabric orientation the burning behaviour meets BRC's requirements for flammability.
- A.2. Fabrics used below the waist or in sleeves must be tested in both length and width directions since these areas of a garment present the greatest risks of ignition. There is no differentiation for closefitting garments such as trousers in order to keep this testing protocol simple even though closefitting garments present a lower risk than loose flowing garments such as skirts, dresses, etc. Short or capped sleeves are exempted as they represent little risk to the wearer.
- A.3. Narrow fabrics, when tested separately, such as braid, lace, etc. only need to be tested in the length or machine direction since they represent only a relatively small element of the dress-up costume. However, where narrow fabrics are used then they may be incorporated in to composite specimens which encapsulate garment features thereby allowing their contribution to the overall burning behaviour to be evaluated.
- A.4. Narrow fabrics which are only used in the widthway direction in the disguise costume do not need to be tested in the length direction provided that they are tested as part of a lengthway 'feature' test specimen.
- A.5. Fabrics used in capes need to be tested in both directions since a cape is inherently a loose flowing element in a costume and being worn on the child's back presents a potentially higher risk of ignition than may otherwise occur.
- A.6. Testing is done in duplicate per direction in order to provide greater confidence in the consistency of the test results produced, especially if the rate of spread of flame is near to the maximum permitted limit.
- EN 71-2 clause 5.4 only requires a single test specimen and permits testing in whichever direction allows a test specimen of the relevant dimensions to be taken. However, with the reduction in maximum permitted rate of spread of flame, it is necessary to ensure the robustness of compliance by testing in duplicate.
- A.7. Fabrics which are printed during textile manufacturing (i.e. roller printed, screen printed, discharge printed) are not considered to require testing provided that the base fabric or the printed fabric have been tested and comply with the BRC requirements. This is because inks and pigments used textile printing do not contribute to the flammability of the underlying textile. However other types of printing such as placement prints which are more commonly applied to the fabric or garment at the garment manufacturing stage can either enhance or be detrimental to the burning behaviour of the final garment and therefore the fabric is required to be tested both with and without the print present.
- Similarly, materials for which the print design varies but the method of printing remains the same do not need to be tested more than once. However it is for the supplier to be able to show that the base substrate material is the same quality in each case.

- A.8. Hoods (or the fabric from which they are made) which form a permanent and integral part of a disguise costume are included within the scope of this protocol. However hats and headwear such as headbands, etc which are separate from the main disguise costume are excluded from this protocol since they are covered by other clauses within EN71-2.
- A.9. The principle for selecting test specimens is that the greatest risk arises from ignition of the bottom edge or sleeve cuff of the dress-up costume. Features which occur only in the upper part of the dress-up costume (i.e. around the waist area or in the upper chest area) and which are more than 600mm from the lower edge or sleeve cuff edge are not considered to present an undue flammability hazard since they are unlikely to be the point of ignition of the dress-up costume.
- A.10. Dress-up costumes may consist of a number of layers, for example a dress may have an underskirt, overskirt and decorative mesh layers. Each layer shall be tested separately and the bottom edge for each layer shall be taken as the bottom edge of the material forming that layer.
- A.11. Glitter prints and similar printed materials are tested before and after pretreatment because the pre-treatment may remove any finish and/or adhesive which may affect the flammability of the glitter print material. Therefore the glitter print material may exhibit a higher rate of spread of flame before pre-treatment than after pre-treatment due to the effect of the spray adhesive used which may be diminished as a result of washing or similar removal by aqueous means.
- A.12. It is recommended that filling materials are selected and tested separately before being incorporated in to the dress-up costume. This may be undertaken by either the filling supplier or the dress-up costume manufacturer. This approach both permits the testing of pre-verified filling materials and avoids the use of potentially highly flammable fillings. However it may be necessary to re-test the filling material as a laminate in order to ensure that there is no detrimental interaction between filling and other components in the composite sample.
- A.13. The uncertainty of measurement has been established as being no greater than 2.0 mm/s. This is based on manual measurement of the trip thread severance times and for electronically measured timings the uncertainty may be less. However in establishing the limits for the rate of spread of flame, this uncertainty has already been taken in to account and does not need to be taken in to account when reporting the test results or determining compliance with the limits imposed within this Code of Practice. This means that a test result of 10 mm/s cannot be greater than 12.0 mm/s at worst and even at this level the rate of spread of flame is no worse than the equivalent rate applied to nightwear under the UK's Nightwear Safety Regulations 1985.
- A.14. It is recommended that foam fillings are tested prior to their incorporation into the costume. The method of test chosen to evaluate foam fillings is a small scale test which is the same as that used by the automotive industry. However, thin layers of foam which has incorporated into the dress-up costume as part of a laminate can also be tested in its composite form (i.e. in conjunction with the fabric or material to which it is bonded) using this BRC method of test.

A.15. Crumb foam is foam formed by the shredding of larger pieces of foam and usually contains more than 1 type of foam within the crumb mixture. Although not commonly used in dress-up costumes, a test requirement has been included in order to restrict the potential flammability risk arising from the use of such filling materials.

A.16. For all non-foam fillings (loose fibre, wadding, feathers, polystyrene bead, etc), it is recommended that such fillings are tested prior to their incorporation into the dress-up costume. The test chosen is that used in the UK to identify highly flammable non-foam filling materials used in upholstered furniture. This is a relatively large scale test which it would not be possible to carry out by removing filling from one or more dress-up costumes. Such materials typically would 'flow' out of a test specimen when it is cut from the dress-up costume and therefore could not be tested using this BRC method. The test method uses a nominal fixed density for the filling of 15 kg/m<sup>3</sup> thereby eliminating the need for a testing laboratory to have to determine the filling density present in the costume. The test method sets a requirement that the material is self-extinguishing within 2 minutes and this has been demonstrated to differentiate between those materials which burn readily and those which do not. In addition, it is known that synthetic fibre fillings such as polyester which have been siliconized (in order to make processing of the fibre more efficient) will tend to fail this test whereas non-siliconised fibre will tend to pass the same test. It is therefore recommended that non-siliconised fibre is used in order to limit the contribution of the fibre filling to the overall flammability of the dress-up costume.

A.17. The occurrence of molten flaming droplets or molten flaming debris can lead to secondary ignition of the dress-up costume if the droplets or debris falls onto other materials in the dress-up costume or onto any other clothing being worn beneath the costume. In addition, the molten flaming droplets can fall onto and adhere to the skin and may result in full thickness localised skin burns which may be very painful.

It is acknowledged that if molten flaming droplets or molten flaming debris were to be prohibited this would cause difficulty to the industry whilst alternative materials were developed and dress-up costumes re-designed to avoid such behaviour.

No requirement prohibiting such behaviour has been included into this BRC Code of Practice at this time but it has been decided that the occurrence of molten flaming debris does not need to be reported in the test report unless specifically requested by the user.

It is intended that the issue of molten flaming droplets or molten flaming debris will be monitored and the position reviewed on a periodic basis.

# APPENDIX B: CASE STUDIES



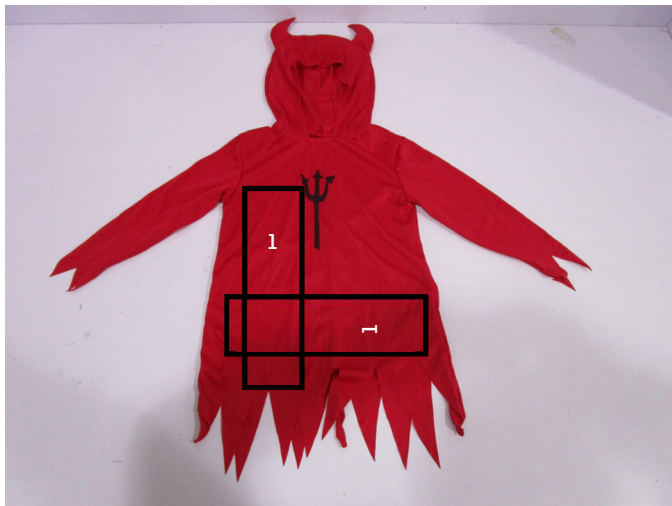
## CASE STUDY #1:

This costume contains a number of features (grey, black and chequered panels) at specific points. The features are fully sewn to the base fabric and do not protrude or hang off the costume. It is not practical to test each component individually and the risk arising from the various features is relatively small. Therefore it is only necessary to test the base fabric (yellow) plus composite specimens incorporating those features based on the bottom edge representing the point of ignition.

The test specimens required would therefore be as follows:

- Base fabric (samples #1) - tested in both length and width direction (widthway specimen made from two half-sized pieces)
- Lengthway sample #2 incorporating bottom hem and centre-back seam
- Lengthway sample #3 incorporating front placket and closure mechanism
- Lengthway sample #4 incorporating sleeve cuff edge

The patch pockets, mock tie, etc. would not be tested unless they fell within the area bounded by the size of the test specimen.



#### CASE STUDY #2:

This costume has an uneven but unhemmed bottom edge. The lengthway test specimens may be prepared such that the bottom edge of the test specimen is square cut. The body fabric shall be tested in both length and widthway directions since the costume includes sleeves and may extend below the waist. Lengthway sample cut with straight lower edge.

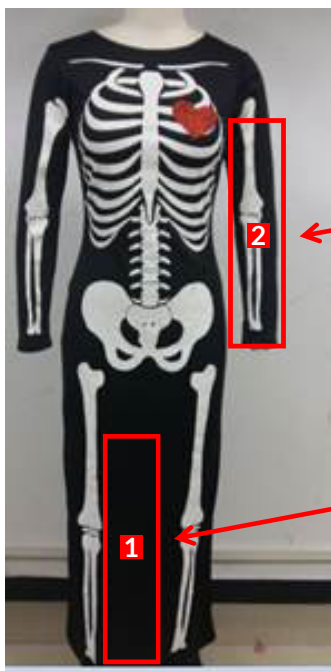


#### CASE STUDY #3:

This item has a skirt with multi-layered inset front panel. It is necessary to test both the base printed red fabric (sample #1), the black satin forming the front panel (sample #2) and the material -forming the sleeve incorporating both the mesh lower sleeve and the material forming the upper part of the sleeve (sample #3). In addition, because the collar is designed to stand upwards behind the head but could fall vertically behind the wearer, so the collar should be tested (sample #4) but may only have enough material to permit the use of half-sized specimens. Additional samples to include the side seam of the skirt may also be required.

The features in the upper body area would not be tested unless the size of the costume incorporated them into samples #1 or #2.





Sample containing printed material

Sample containing base material (unprinted)

#### CASE STUDY #4:

This costume includes a base material with a placement print. It is necessary to test both the base material and the printed material in both length and width directions. In addition it may be necessary to test additional specimens incorporating the side seams in the length direction only.

Note: Widthway specimens of the base material may be taken from the back of the costume which is unprinted.



#### CASE STUDY #5:

This 'costume' includes the outer fabric of the boxing gloves, the filling and various trims including the laces (narrow fabric). However the overall size of the boxing gloves is likely to be less than 300 mm, therefore it would not be possible to obtain sufficient material from the finished article to permit testing in accordance with this protocol. However it would still be possible for the individual materials used to construct the boxing gloves to be tested prior to construction of the actual boxing gloves.

# 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/ukxi/2011/1881/pdfs/ukxi\\_20111881\\_en.pdf](http://www.legislation.gov.uk/ukxi/2011/1881/pdfs/ukxi_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](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

BS EN 14682:2014 Safety of Children's Clothing – Cords and Drawstrings on Children's Clothing – Specification.



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# ACKNOWLEDGEMENTS

The BRC would like to thank all those committee members who actively contributed to this Code of practice. Contributing companies:

ALDI	Morrisons	Tesco Stores Ltd
Asda Stores Ltd	Mothercare	The Co-Operative Group
Boots UK Limited	Next Retail Ltd	Waitrose
John Lewis plc	Sainsbury's	WHSmith
Marks & Spencer	Sainsbury's Argos	Wilko Retail

The BRC would like to thank the following manufacturers who actively contributed to this Code of Practice:

Christy's by Design	Rubies UK	Smiffy's
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We would also like to thank the experts from the following organisations for their valuable co-operation and input in delivering this test methodology:

Bureau Veritas (BV)	Intertek (ITS)
High Street Textile Testing Services Ltd (HSTTS)	Modern Testing Services (MTS UK)

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ISSUE 04: MAY 2017

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