



Department for
Business, Energy
& Industrial Strategy

**TECHNICAL PANEL TO THE
REVIEW OF THE FURNITURE &
FURNISHINGS (FIRE) (SAFETY)
REGULATIONS**

AUGUST 2016

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Introduction

Purpose and scope

The group was established by the Department for Business, Innovation and Skills (BIS) in March 2016. BIS was preparing to share proposals with stakeholders prior to going to consultation. Before going out to a wide group of stakeholders we wished to ask a smaller advisory group for early views on the technical aspects.

1. The scope of the group is to look at the new testing proposals put forward for the revised FFRs, in particular the revised match test.
2. The aim of the group is to make sure that the technical aspects of the new testing proposals are clear and workable. We expect that discussion will be focussed on practical issues relating to furniture construction and flammability testing. We hope that this panel will help us to get the technical aspects of the proposal right before sharing them more widely.

Membership

3. Panel members were invited by BIS to join the group on the basis of their knowledge and experience of flammability and fire resistance behaviours. It was planned that the group would include representatives with a detailed knowledge of furniture flammability requirements, such as test laboratories, as well as others independent of the industry with academic expertise. This should provide a balanced assessment of the technical issues integral to the proposals.

4. Members of the panel:

FIRA Phil Reynolds (Furniture Industry Research Association)

Imperial College Dr Guillermo Rein

LGC Ian Axford

SATRA Andrew Munns

UCLAN Prof Richard Hull (University of Central Lancashire)

UKTLF Alan Ross (UK Textile Laboratory Forum)

West Yorks Material

Testing Services Dale Brockbank

BEIS European Reform Directorate

- Bridget Micklem, Deputy Director Single Market

- Phil Earl, Head of Single Market Product Safety
- Chris Knox, Single Market Product Safety
- Caroline Lucas, Single Market Product Safety

Working methods

5. The panel will meet as required whilst the proposals are being finalised ready for the consultation process. BEIS will organise and Chair the meetings to be held at BEIS 1 Victoria St, London.

Sharing of information

6. The technical panel is a matter of public knowledge but BIS asked that whilst the proposals were still under development the papers and minutes circulated to the technical panel be kept confidential to within the panel. Once the proposals have been finalised and issued more widely to stakeholders then we will release the papers as appropriate.

3rd March 2016 Technical Panel

Opening

1. BIS opened the meeting by welcoming all and thanking them for taking part.

Proposals

2. BIS said that their aim was to keep the core proposals for amending the match test which they put forward in 2014, but make the different elements clearer in their functions of flammability and protection. The Technical Panel had been convened to make sure that the technical aspects of these proposals, and the compliance choices for industry, are clear and workable.
3. BIS said the central objectives of the new proposal remain unchanged: to correct the weakness identified by Intertek in the current test and to reduce where possible the use of flame retardants (FRs) in meeting the requirements of the regulations without compromising safety. The proposal should also bring cost savings for industry through a reduction in FRs and testing costs.
4. The discussion then opened out to panel members and focussed on the various routes to compliance in the new proposal. Looking at the balance of take up by industry between the various routes to compliance it was considered that industry would be very unlikely to adopt both a match test and Schedule 3 interliner route to compliance (although this is theoretically possible) due to expense; so this route would not be necessary.

Interliners

5. Regarding the use of interliners to secure compliance, it was noted that at the time the regulations were written most cellulosic fabrics could not pass the match test so the interliner route was developed specifically for these fabrics. Cellulosic fabrics smoulder. Polyester fabrics melt but then stop smouldering when the source is removed and so provide a barrier effect which is not performed by the cellulosic fabrics. Around 90% of interliners will fail the Schedule 3 test, as this uses a crib 5 (more severe than the match test). The logic for a stronger test in this arrangement, however, was that the cover fabric itself was not expected to provide a protective function.

Re-upholsterers

6. Re-upholsterers could in theory use all routes but the high-end tend to use interliners to ensure compliance. It is difficult for re-upholsterers to comply with the regulations now as they are often given a fabric by the customer which they then have to use. For the new test, it was considered clear that they would find it difficult to meet the “components close to the cover” test as this would require them to take the item of furniture apart – which is not part of their current process.

Liners

7. The use of a lining material is not explicitly referred to in the earlier 2014 consultation or the technical paper. BIS wanted to know what role the lining material plays in the construction of furniture and whether / how they should be taken into account in the new match test. It was explained that large retailers will buy fabric which they will then coat with FRs, have tested and sent to say 20 manufacturers across the world who will each use their own liner. So to reflect the actual material used you would need to do 20 liner tests for each cover fabric. Without that, the fabric provider and coater cannot then guarantee that their fabric would pass the new match test when used with a particular liner. There was discussion as to whether the liners could be tested as a component close to the cover and there was some agreement in the panel that this could be logical. Alternatively the cover and lining material could be tested together to assess whether, in combination, they provided a protective barrier.
8. There are several different types of liners in use: cotton liners which could be used with feather fillings, polyesters possibly with crumb fillings and netting with foam. All of these can be of different weights and varieties.
9. Unless the liner is cotton then all of them will melt – the cotton will smoulder – and the liner therefore offers no protective function.

Innovation

10. Concern was expressed that the regulations – because they apply in the UK only – could leave little incentive to innovate (i.e. in terms of reducing the need for chemicals). It was noted that the sofas from one large retailer have different burning behaviours in different member states with the sofas sold in UK and Ireland having the highest levels of fire resistance (because of their stricter regimes). Other Member states do have furniture regulations but they are for contract (non-domestic) furniture only.
11. The innovation need would be removed if the need for brominated flame retardants was reduced or removed in the regulations. This has happened in California where due to the ban on certain FRs, innovation to develop new and safer FRs has stalled. There has been some innovation in coating fabrics. Some manufacturers have used carbon and sprayed graphite onto fabric covers which were fire-safe but didn't meet the requirements of the regulations.

Filling 1

12. The panel agreed that Filling 1 could be removed from the proposal for simplification purposes, although this may not suit all manufacturers. The removal of Filling 1 (ie testing directly over foam) makes the specification of the combustion modified foam (CM) less important as there will be an additional layer (the fibre wrap) between the cover and the foam.

Impact of the proposals on different materials

13. The earlier testing for the technical paper which informed the 2014 consultation, showed that there would be a limited number of cover fabrics which would pass the current test and fail the new test.
14. The introduction of a fibre wrap would lower the amount of FRs needed for synthetic fibres. With polycotton mixture fabrics, more FRs would be needed to pass the new test. But there is not a linear relationship between the amount of polyester or cotton in a fabric and the degree of burning.

Fibre wrap

15. The current match test is generally perceived as repeatable but the introduction of a fabric wrap in testing could introduce an additional variable and it was felt more testing is needed to explore this. The earlier testing for the technical paper used a single specification for the fibre wrap as it was focussed on reductions in chemical use in the cover, rather than the impact of the wrap itself.
16. The panel then talked through the draft specification proposed for the fabric wrap. It was mentioned that the technical paper put forward a hypothesis for the purpose and effect of the fabric wrap that was not necessarily representative of what happens in real life testing and needed further evidence – such as testing different fabrics with different fabric wraps – to support it.
17. It was felt that $\pm 5\text{mm}$ was an appropriate level of tolerance in the specification but that this left a wide variation in the thickness of the fabric wrap that could be used in the test from 10mm to 25mm which could have a noticeable effect on test results. It was agreed that more testing would give a more informed view of the impact of different thicknesses and types of fibre wrap on fire resistance levels. It was suggested that BIS approach the fibre wrap manufacturers for more information.

Cigarette test

18. It was reported that there were many instances of leather covers failing the cigarette test. There is also an increase in 'fashionable' fabrics at the moment that are failing the cigarette test. The cigarette test was needed to provide a measure of the resistance of a fabric to smouldering. The panel agreed that the cigarette test could probably be removed for 100% synthetic fabrics as they would simply melt away and not smoulder.
19. The high tar cigarettes needed to perform the cigarette test are no longer available and it was suggested that a hot coil (suitably defined) could be used as a smouldering source instead for those fabrics where the cigarette test was retained. This might also be more realistic as many smouldering fires are in fact started by other sources (e.g. overheating electrical chargers).

Protective cover

20. It was explained that industry's biggest concern is that some commonly used components close to the cover just won't pass the simplified match test. While substitutes e.g. for hessian could be found, it would be more difficult to find an alternative for e.g. the most commonly used webbing. BIS felt this made it important to find a definition for a protective cover (or protective cover/lining combination) to allow a potential route to exempt the components underneath from the match test.
21. The panel agreed that hole formation was not a satisfactory method by which to determine whether a cover is protective or not. (This was in part due to repeatability – because the fabric would not necessarily behave the same way if tested throughout the roll.) A list of protective fabrics would be difficult to keep up to date and would need to be specific as to weight and structure of fabric; but there was also concern that not many fabrics could be said to be protective. The panel discussed whether other methods were possible to determine whether the integrity of the cover fabric had been compromised. One possibility was whether a temperature sensitive paint marker could be used underneath the cover to test whether heat had broken through the cover fabric. Alternatively, the cover could be tested over non-combustion modified foam (NCMF) as in the current match test - but this would mean a double match test – one with the new CM foam approach and one with the NCMF (the current method) which was not attractive due to cost.
22. The point was made that it was important to test proposals with manufacturers. Many manufacturers would struggle with compliance on their components – keeping track of what was on an “exclusion list” or not would be impractical. Removing the list would mean there was not this source of confusion, but there would still be a struggle to comply. It was noted that under the previous proposal, BIS had suggested the idea of a “protective” component which in theory would allow manufacturers to wrap their flammable components in cotton or wool. The panel thought this would introduce rather than remove risk.

Conclusion

23. BIS thanked the panel for their participation and concluded that they would reflect if any further follow-up or a second meeting was needed.

28th April 2016 Technical Panel

Definitions

1. The panel discussed some definitions that could be used in the proposals or regulations.
2. Primary covers - a primary cover is the cover closest to the filling. In the current regulations, pillows and cushions can be tested with primary covers to account for different types of fillings.
3. Synthetic materials could be defined as non-cellulose based, i.e. not plant material based. Any material that chars, will smoulder. The panel noted that there are a great many natural/synthetic fabric blends, e.g. polycotton, and they contain varying ratios of cellulosic to synthetic fibre, with some containing enough cellulosic fibre to smoulder.

Stretch covers

4. It was noted that stretch covers are very rarely tested. It was suggested that a specific test for stretch covers is abolished and no difference made between them and permanent covers – any new test should apply to all covers, regardless of type.

Cigarette test

5. The panel then revisited the proposal to remove the cigarette test for fabrics that passed the match test. The match test is concerned with speed of ignitability and exposure to a high heat source. Smouldering, as in the cigarette test, is based on long exposure to a low heat source. These behave very differently, and therefore it doesn't always follow that covers which pass the match test will automatically pass the cigarette test.
6. However, it was agreed that the less than 1% failure rate figure for the cigarette test on visible covers was accurate. And it was suggested that the cigarette test for non-visible covers is entirely redundant as there were no known failures. It was pointed out that this assumes that the types of covers by manufacturers will not change with the new regulations. Different covers might become more popular which could mean that the currently low failure rate for the cigarette test could increase.
7. Removal of the cigarette test would reduce testing costs to industry. Carrying out a match test costs about two-thirds of the cost of combined match and cigarette testing.
8. A new standard for a smoulder and ignition test could be developed using something other than a cigarette, for example, an electronic substitute such as cartridge heaters. Or something specific to industry could be developed but this

would take time and money so might be something to be considered in the longer term.

Fibre wrap

9. The panel discussed whether it was necessary to specify the density of the fibre wrap in the regulations. There were mixed views as to how significant an effect this would have on the ultimate outcome (i.e. the safety of the product).
10. Should it be decided to specify fibre wrap then 20-25mm density would be appropriate and wrap is usually defined by weight per square metre. If density is not specified then the outcomes of testing could be affected, particularly at the extremes. It would be appropriate to give a range for wrap weight rather than a point estimate.
11. In the US fire barriers are used, e.g. fibre glass material, between the cover and the filling in order to avoid the use of flame retardants. A fibre wrap as proposed in the test would not constitute a fire barrier.

Protectiveness test

12. Development of a test to work out the protectiveness of a cover would be extremely helpful.
13. The panel discussed some criteria of assessing when a test for protectiveness had been failed, such as charring of materials and the use of paint markers. Fabrics that pass testing can still form small holes (dependent on the mix of synthetic and natural fibres) and split. Presently, there is no measurement of splitting, testers just observe it. It is not reproducible as fabrics do not always split.
14. The California smoulder test measures smoulder time and char rate. The latter is easier to measure than hole formation.
15. The panel thought there were a number of options that could be used for testing the protectiveness of a cover including use of the existing match test for that specific function.

Liners

16. The logic of testing liners is that it is material close to the cover fabric and influences how the cover fabric behaves.
17. Type of lining material is dependent on filling and suppliers of covers do not generally sell liners as well, so it would often not be feasible to test covers and linings in combination.
18. The work carried out for the August 2014 paper did not include liners. The test methods used in development of the liner test had shown there was a question

about time limits for flame application and smouldering and whether these should be different or the same.

19. The panel suggested that generally, liners should be treated like any other material that is currently unregulated. All internal materials (components close to the cover), including liners, should be regarded as being the same for testing purposes.

Components close to the cover

20. The panel discussed some of the issues relating to the component testing. Components close to the cover need to be bigger than a match flame in order to be tested, so the size of some components is a problem for testing: e.g. plastic clips for springs which could be within 40mm of the surface.
21. There is also an issue with re-sourcing components. Some plastic components – if found not to comply - could be replaced by metal at no great cost to industry. However, replacing elasticated webbing, which can be close to the cover and is not generally flame resistant, would be a problem. Some flame retardant webbing exists but this is not widely available and is expensive. This is probably the biggest issue with components close to the cover as work on alternatives would be time-consuming and expensive. In addition, smaller manufacturers will struggle more with compliance if they cannot use 'protective' covers. However, it was agreed that an exclusions list for components would be unworkable.
22. All in all, more work will be needed to understand the implications of the proposals on components close to the cover, including wood which, as a natural material, has a variable reaction to flame/heat.

Traceability

23. The intention of the new regulations is to give more detail about what must be supplied to Trading Standards and this will be in the form of a technical file. It was noted that industry will need to develop guidance in this area.



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