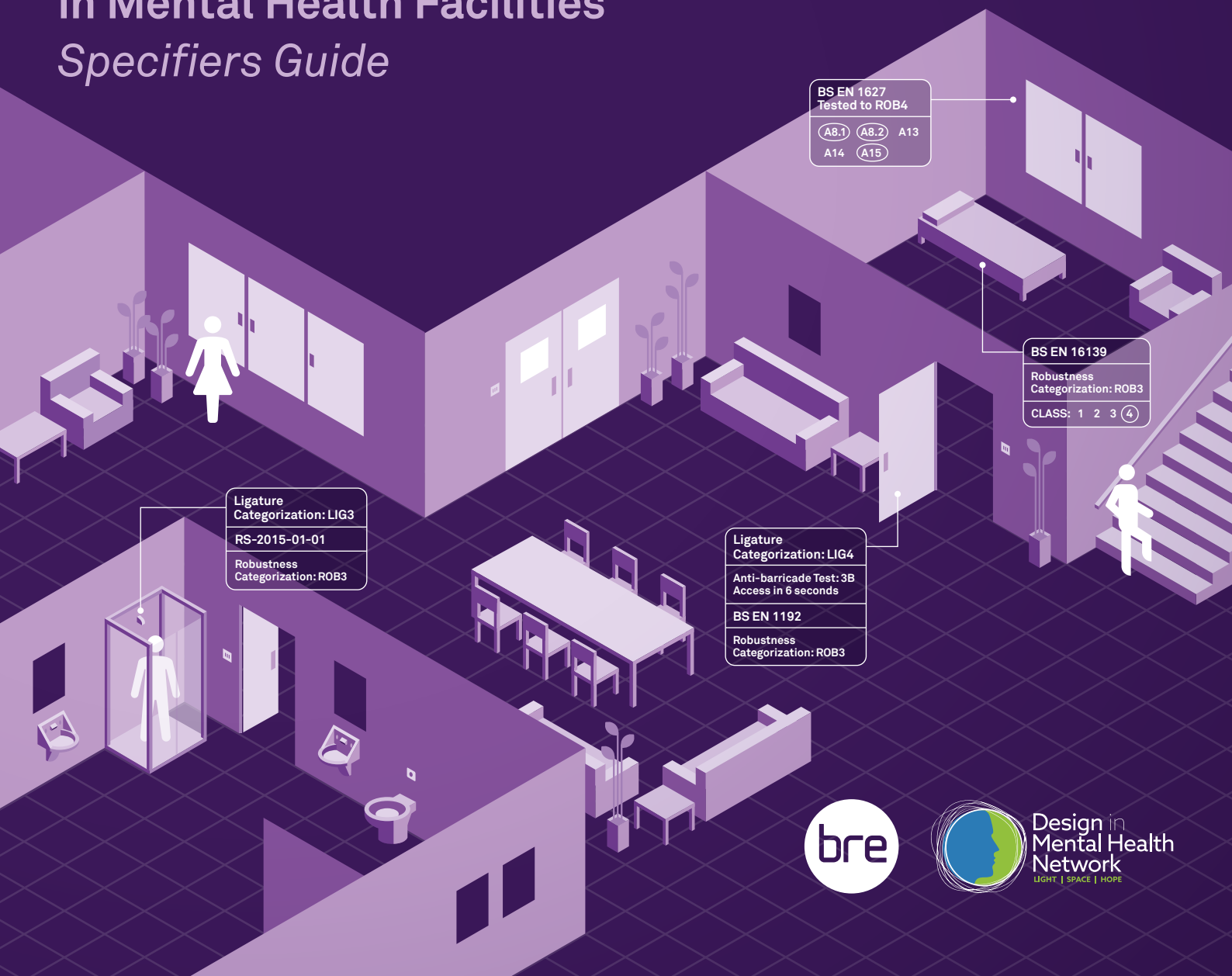
Design With
People in Mind

INFORMED CHOICES

Testing Guidance for Products in Mental Health Facilities

Specifiers Guide



bre

Design in Mental Health Network
LIGHT | SPACE | HOPE

Contents

CONTENT WARNING:

This document is about reducing and assessing ligature risk for vulnerable people in the mental health built environment. It provides help for people planning these environments in introducing a new testing standard.

In order to have this discussion, in this document, ligature methods are referred to. In writing this, we have referred to the Samaritans media guidelines, and balanced the requirements there with the details that we need to create a guide for an audience of clinicians, health and safety experts and product manufacturers.

However, no one is immune from the need for a content warning, and we have included the contact details for the Samaritans helpline here.

For help contact:
jo@samaritans.org
116 123

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Why use *INFORMED CHOICES*?

Anyone who has ever been involved in choosing products for a mental health environment will know the pressures with proving your eventual selection is safe.

There is a huge responsibility on the shoulders of the person or team tasked with making the final decision, and with the need for clinical risk management needing to support too, clarity of what risks have been removed or reduced and what still exist carries significant consequence. Getting it wrong could mean that service users are left at risk of harm or in some cases even death.

Manufacturers marketing materials regularly make claims of “anti-ligature” or “safest” without any means of substantiating this, and in many cases, there are multiple risks remaining.

Zero Risk doesn’t exist, but this testing approach will enable a better understanding of the balance between environmental and clinical risk management.

The *INFORMED CHOICES* test has been developed in response to concerns and needs raised by the industry, manufacturers, specifiers, safety planners and clinicians. The consultation and coproduction of the testing standard was led by Design in Mental Health Network.

When a product is tested and certificated using the *INFORMED CHOICES* guidance, the process is exclusively carried out by BRE, leaders in built environment safety testing and an independent, international certification body. The full test and certification process ensures that not only does an individual product perform to a clearly defined standard, but also that the factory production control is audited annually for repeatability and reproducibility - ensuring that each product supplied performs to the same standard.

Having no defined, measurable and repeatable testing of products for use within mental health has meant that stakeholders have had to rely on the word of representatives of provider companies, or carry out testing themselves, both of which have proven not to be consistent or reliable. In the UK, the Department of Health's Environmental Design Guide for Medium Secure Units has been used to provide some comfort as to the robustness of windows and doors. However, it does not prescribe for ligature testing, and the manual use of mallets, mauls and shafts of wood for assessing robustness may give very differing results depending on the person delivering the blows. This may have resulted in the dismissal of adequate products or, more likely, inadequate products finding their way into hospitals.

There is little by way of prescribed methods for ligature testing of products. Seeing national safety alerts like noted below, where products "failed to operate as expected" highlights the mismatch between how products are marketed, clinical expectations and reality.

"Seven separate incidents have been reported in the last 12 months involving attempted self-harm or suicide in a mental health ward where an anti-ligature curtain rail ***system failed to operate as expected****"*

Estates and Facilities Alert

Reference:	Issued:	Review Date:
EFA/2019/003	**11 March 2019**	**11 March 2021**

'Anti-ligature' type curtain rail systems: Risks from incorrect installation or modification

Summary

'Anti-ligature' type curtain rail systems can be used as a point of ligature when installed incorrectly or not assessed as part of overall environmental health and safety risks. Recommendations are given on selection, installation, periodic inspections and user checks in mental health inpatient facilities or wherever ligature reduction is risk assessed as required.

Each Mental Health Care System (Health System) has a large degree of autonomy in the building or refurbishment of their facilities. The staff involved generally have other roles within the Health System and rarely specialise in product testing especially when you consider the detailed aspects that need to be assessed. Without a prescribed, reliable way of assessing the safety of products in regard to ligature and robustness, Health Systems tend to set up testing of their own.

In many cases each Health Systems would test in a different way. Without prescribed guidance they can never be sure that the results can be definitively reliable. Therefore, as well as being incredibly expensive (both time and money), these tests are not scientifically repeatable, measurable, or conclusive.

IMPORTANT

The *INFORMED CHOICES* test is not a pass/fail test, it is a graded assessment of performance. In order to support clinicians to make decisions, the *INFORMED CHOICES* team encourages comparisons and discussion on use cases across Trusts and Boards.

However, while an *INFORMED CHOICES* test result can help clinicians to assess products, decisions about use cases for different grades of product remain a clinical matter and are not the responsibility of the test.

2

How will *INFORMED CHOICES* testing help you?

An example where most of us have to make a choice is the model of car that we chose. Most people would put safety at the top of their list, but cost and appropriate functionality for their lifestyle and practical needs are likely the most significant influences for most of us. Probably the safest car in the world, is the US presidential limousine, but that costs approximately $1.5 million. It weighs 20,000 lbs and only does about 4 mpg. So, although it will protect its users from virtually every threat possible it is arguably over-engineered, impracticable, and inappropriate for all but a very few.

The point? All cars are tested for safety and the universally accepted NCAP 5 star safety rating system helps users understand the safety of their vehicles https://www.youtube.com/watch?v=b3AZlH8_8UU&t=36s, and has driven significant innovation over the years. New cars today are significantly safer, documented by independent assessment and certification and more people walk away unharmed from accidents than ever before. However, the cars all have different levels of safety, design features and practicality from which a consumer can make an informed choice and select the mix of characteristics that suits their needs and budgets.

Products evaluated to '*INFORMED CHOICES*' performance criteria will be thoroughly tested independently by BRE's expert team and receive certification from BRE. This includes a factory production control audit to ensure the product (and tested performance) is reproduceable. A summary of products' performance will be visible to all on the BRE website, and a more detailed product certification appendix detailing the results from the testing will be sent to the manufacturer by BRE who will make it available upon request. The latter will be used by specification team to enable a detailed consideration of what risks have been resolved and what remain helping clinical teams inform the clinical risk management practice.

It is intended that this new certification scheme will give end users greater transparency of safety and robustness performance to empower them to make *INFORMED CHOICES*. Specifiers will be able to choose specific characteristics of products most suited to different user groups, considering levels of safety and robustness. As an example, for older adult users with dementia – ligature risk might be lower priority relative to considerations around slips, trips and falls.

It is also hoped that testing and certifying products to a universally accepted standard will:

- create a vocabulary for discussing risk within mental health environments and help risk and safety managers create a more standardised risk assessment approach
- make it easier for designers to balance performance with aesthetics for achieve better health outcomes
- clearer for end users and specifiers to compare different offerings
- easier for manufacturers to get their products adopted (new or existing)
- drive innovation with rising safety standards and consistency of products

3 How does *INFORMED CHOICES* work? A Grading System approach

From extensive research and market feedback, the current robustness testing standards are simply pass or fail, which might not provide enough scope to consider the approach with clinical and environmental risk management. The term 'anti-ligature' is seen as too absolute, suggesting everything is "safe" or not and it is thus too binary to suggest products are ligature free or not. More recent adoption of 'reduced ligature' is equally dangerous, with a suggestion everything performs the same. The reality is there is a spectrum of risk level.

1. Time

2. Determination

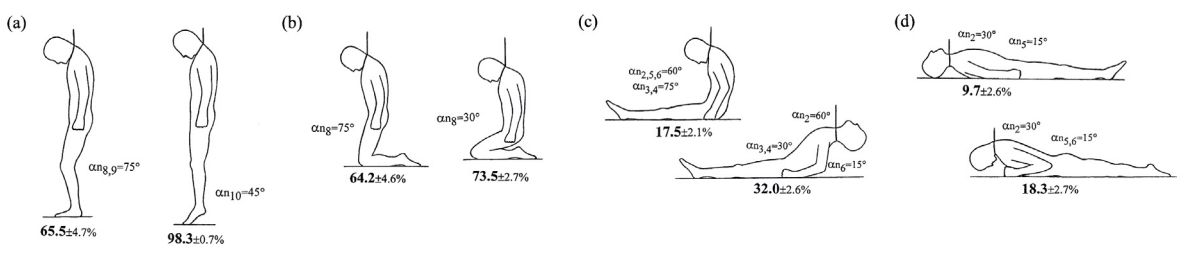
3. Ligation Tools

4. Load & Loading Pattern

The grading system considers cord diameters and weights applied as a means of recognising the complexity and determination involved in a suicide attempt using an anchor point. From extensive feedback, we believe this gives greater visibility and transparency, capturing what risks environments remove and what remains. It provides additional information to aid the decision process and risk management with other considerations to sit alongside this such as, cost, complexity, useability (for both patients and staff) and aesthetics.

A grading system also aids benchmarking, assurances and better understanding of the clarity of overall performance – you're only as good as the weakest link (ie. greatest risk within a bedroom). It will allow both manufacturers and specifiers to understand potential weak points, and also where improvements can be made – at product and building design levels.

The tested product will be attributed a performance grading for ligature and robustness performance. These grades have been established using research into published studies around ligature methods and loading patterns. We evaluate ligature performance using cord diameter and weight as these seem to best capture the determination/ complexity aspects.



Ref: Calculation of tension exerted on a ligature in incomplete hanging, Vladislav D. Khokhlov, Published by Elsevier in June 2001

As most products have not had clear guidance on what the various levels of safety are from a ligature or robustness perspective, we don't believe the top-level grades will be achievable immediately but with time and innovation, it may be possible in the future. The other ther reality to bear in mind is that ligature reduction can only go so far without having major impact on the design. The highest risk spaces, like a seclusion room, might require products with grade 5 ligature rating, but bedroom spaces might be acceptable with grade 3 or 4 – making a wider range of products available, and maintaining a good balance between risk reduction and normality of these environments. It is also hoped the different levels of the grading can provide the manufacturers guidance of where their products need to aspire for improving safety.

One solution does not fit all, and different user groups will have different performance needs. The grading system will help clinical leads, designers, and specifiers to take a holistic view on product selection – enabling positive risk taking, using lower grade ligature performance for increased usability or familiarity. At Design in Mental Health Network, we're always encouraging due consideration is given to the therapeutic considerations of product selection as institutional aesthetics can have a detrimental impact of a person's recovery. Weighing up aesthetic choices with safety considerations is what determines the overall therapeutic impact of a design selection in terms of the user experience.

UNDERSTANDING THE *INFORMED CHOICES* TESTING GUIDANCE DOCUMENT

Product Categorization

To ensure the correct test methods are applied to products they have been divided into 5 categories:

1

Fixed products

A product intended to be permanently attached to a structure, such as a wall, and that does not have parts operable by patients, for example, handrails, wardrobes, fixed beds, light fittings.

2

Movable fixed products

A product that is part of the built fabric, but operable by a patient. These items have different states, and each might have differing performance. Some examples are doors, windows and drawers.

3

Load release products

A product that relies on breakaway load for safety, the safety is largely driven by the load release weight.

4

Abnormal load or ligature detection systems

Where it is not possible to remove the risk, there is the potential to use alerting systems to call staff if an abnormal force or ligature load is detected, for example door alarms.

5

Loose furniture

Items found within a room or mental health environment that are not fixed in position. Examples are a chair, coffee table.

4 Ligature Resistance

The language used in product descriptions can have a disproportionate effect on clinical team behaviour, perhaps even causing it to be adjusted in the belief that there is a lower risk present than is in fact the case, as this media coverage highlights.

BBC

Home | News | Sport | Weather | iPlaye

NEWS

Home | Cost of Living | War in Ukraine | Coronavirus | Climate | UK | World | Business | Politics | Tech |

Scotland | Scotland Politics | Scotland Business | Edinburgh, Fife & East | Glasgow & West | Highlands &

Alba | Local News

Death of girl, 14, in suicide prevention centre was 'foreseeable'

Source:
BBC News,
5 September 2018

We believe changing the language to 'ligature performance' with independently asserted grade creates far greater clarity for all stakeholders who specify and use these products. With this premise, the testing described in the Test Guide sets out to determine how resistant a product is to ligature formation. Talking about Grade 3 or 4 prompts people to understand that nothing is without risk.

TEST PROCEDURES

The test engineers conducting the tests have backgrounds in being inventive and ingenious at trying to defeat products. They will also have a database of techniques that work and ones that do not. The engineers will be in possession of the manufacturers drawings before they do any testing so they will have an insider's view as to what may be the weak points of a product before they begin their tests. The engineers will always be looking for the weakest points and worst-case scenarios when conducting tests. These tests will be carried out over days, compared to some 30-60 minute evaluations by clinical teams who simply don't have the same time or focus available.

HOW THE TEST IS CARRIED OUT

Assessment of products will be carried out and categorised into different levels of risk based on the ease for the attacker to acquire the tools to create a ligature anchor point, and the degree of difficulty for the product's design to resist the different types of attack.

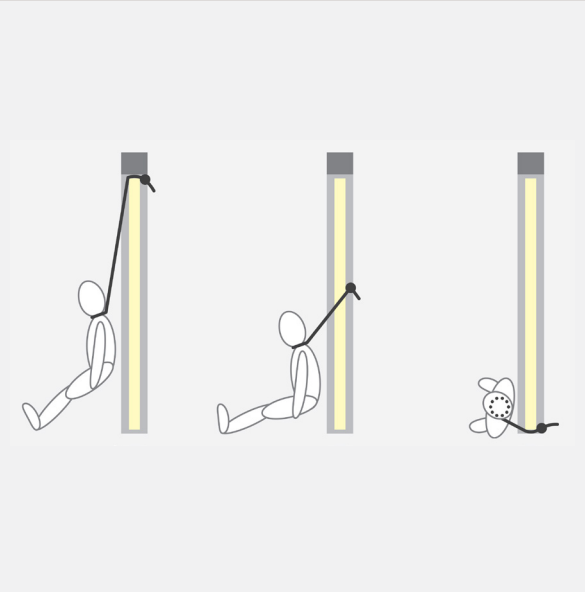
The following table shows the grading system of ligature complexity – driven by cord diameter and weight applied, with the arrows pointing towards more determination.

	Material/wire at which ligature point achieved				
Release Load	**Bed Sheet**	**4mm wire - fabric/ rubberised**	**2mm wire - fabric/ rubberised**	**1mm wire - low friction**	**0.5mm wire - low friction**
>20kg	LIG1-1	LIG1-2	LIG1-3	LIG1-4	LIG1-5
<20kg	LIG2-1	LIG2-2	LIG2-3	LIG2-4	LIG2-5
<10kg	LIG3-1	LIG3-2	LIG3-3	LIG3-4	LIG3-5
<6kg	LIG4-1	LIG4-2	LIG4-3	LIG4-4	LIG4-5
<3kg	LIG5-1	LIG5-2	LIG5-3	LIG5-4	LIG5-5

In addition to the basic ligature evaluation using the tools/ weights above, there will also be 'extra security' assessments based on products being damaged or commonly smuggled tools being used.

HOW TO INTERPRET THE RESULTS

Ligature is the main method of suicide for mental health patients. Ligature based suicides involves restricting air or blood flow to the brain through compression around the neck using an anchor point, and at all heights as highlighted in the national safety alert below.



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Assessment of ligature points

In this instance the organisation used a ligature risk assessment classification that suggested low-level ligatures (less than one metre) were a low priority for removal. Consequently, the organisation concerned had not considered that all ligature points in higher risk, unobserved private single spaces, regardless of height, are a priority.

There is a wide range of what people consider to be safe ligature weight load, particularly important for load release solutions. However, evidence quite firmly points to 3-6kgs depending on the users' body weight. It's worth noting the widely used Office for Mental Health for New York State product testing has chosen 11 lbs (5.5kgs) for their own facilities.

It is recognised that it is almost impossible to eliminate risks from a patient room through building or product design alone. Therefore, environmental risk assessment and management must be viewed as part of a comprehensive suicide prevention strategy which includes clinical risk management practice which is outside the scope of this document.

The Product Certificate Appendix that accompanies a Product Certificate will contain information such as the maximum weight a potential ligature anchor point can sustain, the angle(s) and direction the load was applied and the height range over which the product might be used. Those doing the risk assessments within the facility that the products are to be used in, should take all three of these parameters into consideration when deciding if a product is suitable for the environment into which it is being installed and the implications of neighbouring products.

People taking their life using a ligature anchor point is generally a solitary act which takes place in areas in which the patient is alone, so privacy is a key ingredient of risk. High risk areas include bedrooms (67% of suicides) and communal bathrooms (23% of suicides). Corridors are often considered lower risk however these areas are often observed intermittently. It only takes a short period of time unobserved to create an opportunity to hurt oneself – a study by the University of Manchester (report published annually) showed that 91% of suicides occur under intermittent observations (typically every 15 minutes). Some recent reports from door sensors shows ligatures being created in under 40 seconds.

5

Robustness – why is it important?

Robustness is another important attribute of products used in mental health care environments. During periods of mental distress, the psychological state of people in care can present as aggression against the environment around them, with risk of causing damage to products. Regardless of the cost impact of damaged products requiring repair or replacement, the result of a damaged product may by its very nature form a new tool to cause harm or create ligature anchor points previously missing.

It might be possible to create indestructible products, however, the downside of such products is that they can have an institutionalised feel that has a negative effect on a patient's wellbeing and sense-of-self and their recovery.

A significant proportion of damage caused to products used in mental health care units are done so by human force such as caused by running at a product with the full body weight, repeatedly kicking from a stationary position, punching or jumping on products. Patients may exhibit 'superhuman' strength that can occur when pain receptors are reduced through medication, so this has been considered too.

The tests specified in the *INFORMED CHOICES* Test Guide have been designed to demonstrate that products can withstand the typical attacks described above.

To define the forces and abuse that products must withstand, sources of anthropometric data on real human achievements were used to derive the loads and energies that are in the Testing Guide. Data was also used from NASA's, Human Performance Research Group reports that looked at a whole range of human limits on strength such as grip strength, push forces, arm and leg strength.

ROBUSTNESS TESTING ALL PRODUCTS

All products are tested to dynamic loads through impact tests. The Test Guide specifies three different tests, these are:

- Large Soft Body Impacts
- Small Soft Body Impacts
- Hard body impacts

The impact tests will:

- determine how and when a product may fail or break
- determine the serviceability of products

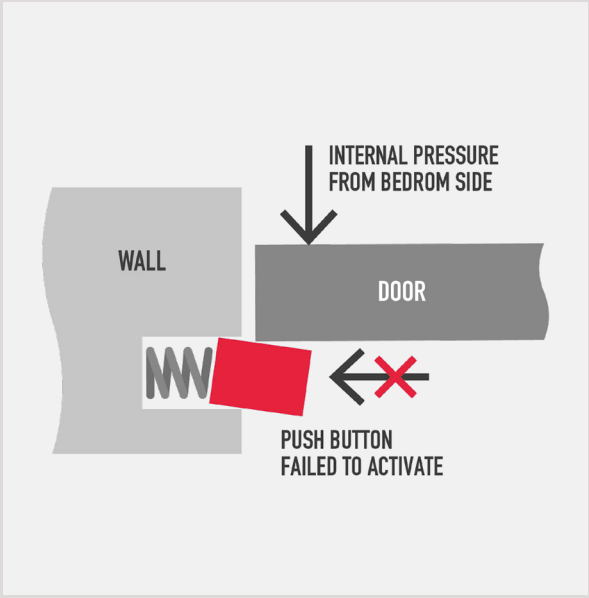
Please click on
the QR codes
to see the videos.

Please click on
the QR codes
to see the videos.

ROBUSTNESS TESTING DOORS AND WINDOWS

In addition to the dynamic testing described above, all doors and windows must be tested to a wider robustness test program. The test methods used are all well established in the testing of doors and windows for general use and for security, and specified in a number of British and European standards. However, to more accurately represent the loads, use cases and duty cycles that products used in mental healthcare must withstand, the standardised parameters have been significantly enhanced.

Anti-barricade door mechanisms and closers are also covered by the Tests.



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Anti-barricade devices may have been fitted to doors to manage the risk of barricade situations occurring. Some of these devices may be rendered ineffective in certain circumstances. This increases the risk of avoidable harm and self harm until the room can be accessed.

Anti-barricade devices include mechanical fittings such as latches, hinges and special locks used to prevent doors being used as barricades. Violence and aggression risk controls should work together with all other key performance needs, e.g. therapeutic, fire, privacy, equality, infection control.

Anti-Barricade testing is crucial in understanding its effectiveness. Doors will exert a force on the door stop which may, if not designed well, fail to release when pressure is exerted or where manipulation may have occurred. The test will cover both direct and sideways forces.

RESULTS

The Product Certificate Appendix that accompanies a Product Certificate will detail the maximum performance achieved without failure, and the appropriate classification band within which the product has been placed. It will detail any cracking, or deformations of the product, and will include photographs, and dimensions of any cracks or deformations. If a product fails, the failure mechanism of the product will be recorded including detailing any materials, parts or components that have become detached from the product.

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Certificate of Product Performance

Certificate Number: ProMHS 0001 Issue\ 1

Company name

The product listed in this certificate and appendix have been tested in accordance with the requirements of:

Products for Mental Health Safeguarding vX.X

In line with

Informed Choices Testing Guidance for Products in Mental Health Facilities vX.X

The performance of the product(s) is documented in BRE Test Report Number P111111-1111

Product
Click here to enter text

Tests *(delete as appropriate)*
Ligature Performance
Robustness
Anti-Barricade Performance

Head Office Address
Click here to enter text.

Site(s) of manufacture
See page 2 for details

SAMPLE

This certificate is maintained and held in force through regular surveillance activities.
The certificate is applicable to the named product as manufactured. Actual performance of a product may vary if not installed according to the manufacturer's installation instructions.

Signature here — Signed for BRE Global Ltd.
Click here to enter text. — Director
Click to enter date. — Date of Issue
Click to enter date. — Date of First Issue

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To check the validity of this certificate please visit www.redacted.com/check or contact us.
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Certificate of Product Performance

6 How to Adopt?

We anticipate that adopting *INFORMED CHOICES* testing into your specifications is a simple decision, and you're likely to ask how best to incorporate into your projects. In the fullness of time, we expect you'll be able to specify desired grades depending on the risk needs of different spaces within your project. However, we suspect this will take time to understand what can be achieved. We intend to support specifiers including clinical teams, architects, health and safety, estates and others in determining the appropriate grades for specific services so that we can help develop understanding and literacy as to the best test standard for a specific use case.

In the meantime, we believe a great starting place is to demand independent test certification from manufacturers so you can make an informed choice.

Why would you not prefer independently laboratory tested products over subjective and unreliable tests, when patient safety and recovery is at the forefront of clinical services? Is it is appropriate that we ask manufacturers to take responsibility for independently verifying the performance they claim.

By including the requirement of BRE Tested and Certified products into your specifications you will demonstrate your commitment to creating safer environments for service-users and staff. We would discourage specifying minimum performance in the earlier days of the scheme, as specifiers and manufacturers will need to understand products' actual performance and then work to improve from here.

We encourage Health Systems and specifiers to talk to your peers – a growing number of NHS organisations and specialist design consultants have already taken the pledge to promote the use of Tested products. Talk to them to find out why, and how it's working for them in practice. Visit https://dimhn.org/bre-tested-products/ to see who has already "taken the pledge"

Talk to DIMHN Member Specialists https://dimhn.org/find-a-specialist/ to discuss their experience, and for product manufacturers, find out which products have been tested. Ask for copies of certificates to see how products perform.

Further and more detailed information can be found on the dedicated BRE website https://bregroup.com/services/testing-certification-verification/mental-health-product-testing/

Further Info + Links

INFORMED CHOICES - SIMPLIFIED USER GUIDE

This document is a simplified version of the full Informed Choices Testing Guide for products in mental health. For full details information, please refer to this document here:

https://bregroup.com/services/testing-certification-verification/mental-health-product-testing/

The Informed Choices Testing Guide has been written in such a way as to support a product testing/certification process. It does not set pass / fail criteria for any specific setting/use case, but does however, define test procedures and requirements that should result in demonstrating a range of performance characteristics that will enable an informed choice for those procuring the products.

The Informed Choices Testing Guide has, where appropriate, specified test methods and test equipment that already exist in industry documents. However, the parameters specified in those documents do not always cover the full range of scenarios that the products under test may face, or the parameters have not been defined in sufficient detail to ensure the repeatability and reproducibility of results that must underpin any approvals process that can be relied upon. In these circumstances the Informed Choices Testing Guide has added additional requirements to cover the parameters at issue. Where there is no current appropriate standard methodology to evaluate a products performance, the Informed Choices Testing Guide provided details on how this can be demonstrated.

It is recognised that the performance of many products can be affected by their installation, maintenance and interaction with other products and the environment that they are placed in. Whilst the product manufacturers must produce installation and maintenance guidance, the managers controlling facilities must still exercise due diligence on products and how they are used and installed to maintain the performance that the product demonstrated under test conditions. Therefore, good product design must go hand in hand with good management. Regular inspections and risk assessments are necessary to help ensure buildings and rooms are safe for those patients' intent on self-harm or escape, and who have large amounts of time and ingenuity to plan and execute those plans.

For more info, visit https://dimhn.org/informed-choices