

1 Introduction

Certain end-users may require doors to be used more frequently and be subject to more physical abuse than others e.g. in school or hospital corridors. In such cases it is vital that these doors are durable so that they will be able to continue to perform their everyday function as well as maintain their fire resistance or security functions if required.

Depending on their location and application, doors must withstand varying levels of traffic and abuse. A door in a cross-corridor of a school, for example, is subject to heavy traffic and frequent abuse, while a classroom door in the same school must withstand the same type of abuse, but less frequently. The entrance door to a large office block has a lot of traffic, but generally lower levels of abuse, while a door within that office is likely to have infrequent traffic and little abuse.

Manufacturers and facility managers have to consider such factors when trying to identify the performance levels of doors they are producing or selecting, and doors may be over-engineered or under-specified, or vice versa, as a result.

Chiltern Dynamics and BM TRADA have developed a testing programme and certification scheme to classify doorsets for service-life and allow doors to be manufactured and specified to meet the needs of their end-use application with minimal maintenance.

2 Test Standards

The testing programme utilises the most demanding elements from the following British and European Test Standards:

DD 171  Guide to specifying performance requirements for hinged or pivoted doors  
BS EN 1191  Windows and doors – resistance to repeated opening and closing – test method  
BS EN 1192  Doors – classification of strength requirements  
BS EN 12046-2  Operating forces – Test method – doors
3 Testing
The CDTM01 test programme incorporates a large number of performance characteristics:

- Vertical load
- Static torsion
- Soft and heavy impact
- Hard body impact
- Slamming shut
- Slamming open
- Closure against obstruction
- Resistance to jarring and vibration
- Abusive force on handles
- Operating forces
- Cycling - as an indication of anticipated service life

Where doorsets are required to perform additional functions, such as fire resistance or security, added assurance can be provided by carrying out the relevant testing for these characteristics on specimens that have already been through the CDTM01 test programme.

4 Classification
Based on the performance under testing, doors can then be classified against BS EN 12400: ‘Windows and doors – Mechanical durability – Requirements and classification’. The classification is expressed as a category of duty:

<table>
<thead>
<tr>
<th>Category of duty</th>
<th>Example end-use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe</td>
<td>Educational establishments</td>
</tr>
<tr>
<td>Heavy</td>
<td>Hospitals</td>
</tr>
<tr>
<td>Medium</td>
<td>Office</td>
</tr>
<tr>
<td>Light</td>
<td>Dwellings</td>
</tr>
</tbody>
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The relevant end-use application is based on our research, site surveys and published figures for typical number of operations for doors installed in such locations.

The requirements for each test reflects the doorset’s intended severity of duty, e.g. a large office building entrance doorset completes more than 900,000 operations each year, doors in school corridors 100,000 operations or more and dwelling entrances greater than 5,000 operations. Similar variations exist for strength and dimensional demands and these are reflected in the test programme requirements.

The testing represents ‘reasonable’ use and abuse, if vandalism is likely to be a factor it is possible to carry out additional testing to reflect the sort of deliberate abuses associated with these activities.
5 Europe
Doors tested to these requirements not only demonstrate appropriate levels of durability but will also be well placed to enter the European market. The Construction Products Directive (CPD) considers the requirements for durability of products, demonstrated by testing an ‘as built’ doorset.

In the case of doors, cyclic testing of doorsets is used as a mechanism of demonstrating durability along with other performance tests to comply with national regulatory requirements as part of demonstrating compliance with the CPD and ultimately achieving CE Marking.

6 Certification
BM TRADA has set up a Q-Mark Performance doorset certification scheme, to offer manufacturers and specifiers increased assurance that doors will perform as specified.

The Performance doorset scheme will allow doors to be classified into four categories of duty, based on performance against the CDTM01 programme of European and British testing:

- Light
- Medium
- Heavy
- Severe

To achieve the Q-Mark, manufacturers must follow a straightforward process:

1. Consultation to evaluate the doorset design and identify the likely end-use market.
2. Testing against the appropriate programme – a category of duty will be derived based on the lowest performance in any category.
4. Continuing, regular (annual) audit testing and factory inspections.

Manufacturers must meet all the requirements to be able to Q-Mark their products, demonstrating the category of duty achieved to potential specifiers and purchasers – who will then be able to match the door’s performance against the required end use.

In addition, by meeting the European testing requirements of the programme, CE marking will be possible.

7 Related services
Chiltern Dynamics, Chiltern International Fire and BM TRADA Certification offer a range of UKAS accredited testing and certification for doors, windows and their components, including:

- Security - Secured By Design (SBD) and European Burglary Resistance
- Thermal simulation (as required by Approved Document Part L)
- Fire resistance (as required by Approved Document Part B)
- Weathertightness

Visit our website www.chilterndynamics.co.uk to find out more.
Chiltern Dynamics provides UKAS accredited testing for:

- Security (BS 7950, PAS 23 & Pas 24 to meet Secured by Design requirements)
- Weather (BS EN 6375 Part 1 for pedestrian doors and BS EN 12427, 12489 & 12444 for industrial doors)
- Fire resistance (BS 476: Part 22 or BS EN 1634: Part 1)

In addition, we also offer a range of other testing services for doors and windows:

- Thermal simulation (to meet Part L requirements)
- Classification for service life (CDTM 01)

BM TRADA operates further Q-Mark third party certification schemes, including:

- Enhanced security windows (BS 7950 to meet SBD requirements)
- Enhanced security doors (PAS 23 & PAS 24 to meet SBD requirements)
- PVC-U windows (BS 7412)
- High performance timber windows
- Insulated glass Units (EN 1279)
- Toughened glass (BS EN 12150, EN 12600 or BS 6206)
- Fire doors

BM TRADA Certification is a Notified Body under the Construction Products Directive.

BM TRADA Certification also provides management certification for Quality (ISO 9001), Health & Safety (OHSAS 18001) and Environmental (ISO 14001).