CCN: Hygrothermal Resistance

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CCN Performance Doorsets

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The case for hygrothermally rated doorsets

Hygrothermal testing ensures that timber doors can withstand real-world environmental changes, particularly fluctuations in temperature and humidity. In school environments, doors are subjected to constant use, high footfall, and varying climate conditions due to heating, ventilation, and seasonal weather changes. Ensuring their long-term stability is essential for both safety and functionality.

DfE funded projects need to comply with Technical Annex 2D which requires numerous door types to be hygrothermally resisting (durable and resistant to warping or swelling caused by moisture).

Theses doors need to be stable in varying environmental conditions, particularly in areas such as sports halls, kitchens, and wet rooms where humidity levels fluctuate.

Modern fire certification demands that doors not be more than 1mm out of plane with the frame or an opposing door - doorsets that separate different environmental conditions are at risk of bowing/ twisting beyond this if not built from a suitably robust construction.

By meeting rigorous hygrothermal performance standards, our doors provide long-lasting, low-maintenance solutions that align with DfE specifications, reduce fire compliance risks to clients, and ensure doorsets will perform as intended.

Nachweis
Hygrothermische Beanspruchung, Mechanische Festigkeit

Blatt: Summary

Prüfbericht Nr. 16-001596-PR03 (PB-C02-0310-de-01) vom 26.10.2016

ROSENHEIM

Summary of Classifications to EN1192 and RAL-GZ 426

Project number - 16-001596-PR03
Basis of test - RAL-GZ 426 and EN1192
Wood based and other materials
Product code - HW 43 Internal Doorset
Test references - 41716-007, 41716-008, 41716-009, 41716-021, 41716-022

Information on test arrangements and procedure

Tested according to Table 1

Test Classifications

The following table records the classifications to EN1192 arising from tests at table 1 and RAL-GZ 426.

Performance Resistance	RAL Classification	EN1192 Classification	Fitness Proposal
Hygrothermal Load	III	N/A	Satisfactory
Mechanical Load*	S	3	Satisfactory
Mechanical Load**	E	4	Satisfactory

* Door not lipped
** Door lipped

The results recorded fully satisfy the standard, including fittings.

The full test program also included variations to construction which all satisfied the standard.

Table 1: Values to EN1192 Classification.

Test	Resistance against	Test	Maximum allowances
1	Vertical loading	EN 947	1mm
2	Static Torsion	EN 948	2mm
3	Soft and heavy body impact	EN 949	2mm
4	Hard body impact	EN 950	Cutting diameter - 20mm Average from impact - 1mm Maximum from impact - 1,5mm

*The maximum permitted is the maximum penetration depth and diameter including any lesions.

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Hygrothermal Testing

Hygrothermal testing simulates real-world conditions by exposing doorsets to repeated humidity and temperature cycles over the course of around 8 weeks. This ensures that the doors we produce meet the performance classifications suitable for educational environments, preventing common issues such as swelling, sticking, or distortion, which could impact fire safety and ease of use.

Technical annex 2D classifies doors into two categories; Normal & Humid.

Normal
No hygrothermal requirements
Humid
One Side - 25% RH at 10°C
Opposite Side - 85% RH at 25°C

The above requirements come from EN12219 and is equivalent to class 3 - one of the main criteria to achieve this classification is that test specimens cannot offer cross curvature of more than 1mm during the course of the test regime.

We have tested our stiled and railed door construction to EN12219 and have achieved class 3 meeting the onerous standard demanded by technical annex 2D.

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www.ccn-uk.com

CCN Ltd
1 Belmont, Belmont Industrial Estate
Durham, DH1 1ST.
Telephone – 0191 427 7779
Email – sales@ccn-uk.com
www.ccn-uk.com