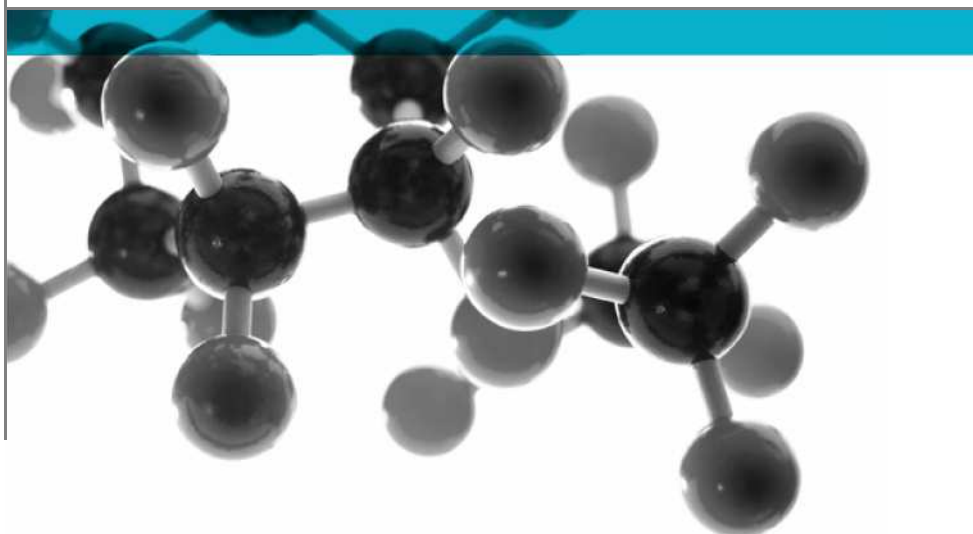


Evaluation of the Slip Resistance Potential of Two Flooring Test Specimens Applied with Bona "Traffic HD Anti-Slip"



A Report To:
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Exova – the new name for BM TRADA

On December 1st 2015, Chiltern International Fire Ltd and TRADA Technology Ltd (both trading as BM TRADA) commenced trading under the name Exova.

To coincide with this change, our Technical Reports, Test Reports, Product Assessments, company stationery and marketing collateral have been updated to reflect the Exova branding.

The validity of all documents previously issued by Chiltern International Fire Ltd and TRADA Technology Ltd including certificates, test reports and product assessments is unaffected by this change. A letter to this effect is available upon request by e-mailing europe@exova.com

About Exova

Exova is part of the Exova Group one of the world's leading laboratory-based testing groups, trusted by organisations to test and advise on the safety, quality and performance of their products and operations. Headquartered in Edinburgh, UK, Exova operates 143 laboratories and offices in 32 countries and employs around 4,500 people throughout Europe, the Americas, the Middle East and Asia/Asia Pacific. With over 90 years' experience, Exova specialises in testing across a number of key sectors from health sciences to aerospace, transportation, oil and gas, fire and construction.

Be assured that while the name will change, your service provision and primary contacts have not. What will be available to you is a wider team of testing experts and an extended range of testing capabilities.

If you have any questions, please do not hesitate to contact a member of the team and we will do our best to answer them. We appreciate your business to date and we look forward to working with you in the future.

Kind regards

Exova

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Client: Bona Limited

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1 Introduction

This report has been prepared in response to a request from Mr Alec Stacey on behalf of Bona Limited (*the Client*) to conduct slip resistance tests on two test specimens of engineered flooring coated with Bona Traffic HD Anti-slip to BS 7976 – Part 2. The work was carried out under BM TRADA contract No. TC 17604.

2 Scope of Work

The scope of this work as cited in BM TRADA contract No TC 17604 was as follows:

To carry out slip resistance tests in accordance with BS 7976 (Pendulum Test) on two samples prepared by the Client with Bona Traffic HD – Anti-Slip lacquer.

3 Limitations

1. The findings of this report are based solely upon the information and evidence provided and made available to BM TRADA by the Client and/or the Client's representative(s) at the time that this report was written. Should subsequent information be made known to us we reserve the right to amend our findings.
2. Any information or evidence provided to BM TRADA for the preparation of this report by the Client or the Client's representative(s), or by any third party, has been taken by us at face value, unless we state specifically that we have validated it and include in this report evidence of such validation.
3. This report cannot be used for any purpose other than that for which it is expressly authorised within the contract under which it has been agreed and produced.
4. All advice offered by BM TRADA is offered on the basis that it represents the principles of good practice and that it has not necessarily been validated by BM TRADA.
5. Statements which appear in this report, which address current or likely future risks, and which project or estimate outcomes, are based on reasonable assumptions from empirical evidence. Such statements by their nature involve uncertainties, which themselves carry the risk that actual outcomes may differ materially from any predicted outcomes. BM TRADA does not guarantee or warrant any projections or estimates of risks or outcomes contained within this report.
6. Any contracted rights to confidentiality will be considered null and void should the report be modified in any way by any party without express permission of BM TRADA.

4 Specimen Material

The test specimens consisted of two 380 mm x 315 mm squares, each made up from two widths of 190 mm x 15 mm engineered tongue and grooved flooring with a 4mm oak wear layer.

Exova BM TRADA understands that both test squares were coated with the same lacquer system. However, the test squares were labelled differently as follows:

Traffic HD Anti-Slip – (2)
Traffic HD Anti-Slip – x3

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The different labelling on the two samples were assumed by Exova BM TRADA to be a reference to the number of coats applied to the two test squares although this could not be verified at the time of testing.

The results were presented separately for the two test squares.

5 Experimental

On receipt at the Exova BM TRADA laboratories, the specimens were laid out on a bench and left to equilibrate at room temperature for several days prior to being subjected to slip resistance testing by the Pendulum method described in BS 7976 Part 2.

The Pendulum test measures the frictional resistance between a rubber slider mounted on the end of a pendulum arm and the test surface. This provides a means of checking the resistance of wet and dry surfaces to slipping and skidding.

The test method is based on the Izod principle in which a pendulum rotates about a spindle attached to a vertical pillar. At the end of the tubular arm a head of known mass is fitted with a sprung loaded rubber slider. The pendulum is released from a horizontal position so that it strikes the sample surface with a constant velocity. The distance travelled by the head after striking the sample is determined by the friction occurring between the substrate and rubber slider and read against a numerical scale which provides the so-called "Pendulum Test Value" (PTV) by means of a pointer which comes to rest at the maximum height achieved by the swinging head.

The test specimens were subjected to slip resistance testing under wet and dry conditions in two directions one parallel to the grain (axial) and the second at right angles to it (cross-grain) in order to account for any directional anisotropy arising from the grain pattern or surface texture.

The Pendulum tester was fitted with a 96 (formerly Four-S) rubber slider commonly used for the testing of wood floor surfaces. The Pendulum test was carried out eight times in each direction on each specimen. In each case the first three values were ignored to allow the contact edge of the rubber slider to adjust to the test substrate. The remaining 5 values were used to determine the "Pendulum Test Value" (PTV) in both directions.

Prior to testing the contact edge of the rubber slider was prepared by swinging the pendulum arm twenty times against a sheet of 3M 261X Imperial Lapping Film Grade 3MIC mounted on a flat surface. Reproducibility of the Pendulum tester was verified against a calibration procedure using float glass and the 3M Lapping film (pink) under water wet conditions.

Slip resistance tests were first carried out under dry conditions and then repeated under water wet conditions when the test substrate was sprayed with potable water between measurements.

6 HSE Classification of Slip Potential

The PTV is based on an arbitrary scale of 1-150 where the value increases with increasing slip resistance. According to the Health & Safety Executive's Guidance Note "*Assessing the slip resistance of flooring*" the results of the pendulum test can be interpreted as follows:

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HSE Guidance Note Classification of Slip Resistance of Flooring

	Pendulum Test Value (PTV)
High slip potential	0-24
Moderate slip potential	25-35
Low slip potential	36 +

7 Results

The mean Pendulum Test Values (PTV's) obtained in both test directions under wet and dry conditions are presented in Table 1 below:

Table 1: Pendulum Test Values Obtained for Two Variants of Engineered Flooring in Two Test Directions Under Wet & Dry Conditions

Specimen Ref.	Test Direction	Dry Conditions			Wet Conditions		
		PTV Range	Mean PTV	HSE Rating	PTV Range	Mean PTV	HSE Rating
Traffic HD Anti-Slip – (2)	Axial	59-69	63	Low	39-42	40	Low
	Cross Grain	57-65	63	Low	43-52	50	Low
Traffic HD Anti-Slip – x3	Axial	53-63	58	Low	37-43	40	Low
	Cross Grain	53-60	57	Low	35-50	43	Low

8 Conclusions

From the data presented in Table 1 the following conclusions can be drawn:

- Both samples achieved a “low” slip potential according to the HSE system of categorisation when tested under both wet and dry conditions irrespective of test direction.
- The test specimen labelled “Traffic HD Anti-Slip – x3” generally returned slightly lower mean PTV's than the specimen labelled “Traffic HD Anti-Slip – (2)”. This suggests a slightly greater slip potential was achieved by the “x3” variant. However the magnitude of the difference was not great enough to alter the final outcome of the HSE classification.

9 Authorisation

	Issued by:	Under the authority of:
Signature:		
Name:	P Kaczmar	P O' Leary
Title:	Senior Consultant	Section Leader – Timber Technology Investigations

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