

Acoustic Molton

Perfect For: Masking • Decorative/Scenic • Film & TV • Stage • Acoustics



J&C Joel 

the inspiration behind the performance

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Acoustic Test Report

Flat	25
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TECHNICAL



NDFR

Non Durably Flame Retardant

chemically treated with a water solution and if wetted in any way should be retreated



DFR

Durably Flame Retardant

chemically treated to withstand a number of cleanings



IFR

Inherently Flame Retardant

woven from fibres with a high flame retardancy



FR

Flame Retardant

chemically treated to an individual specification



NOT FR

Not Flame Retardant no flame retardant treatment



Confirmation that the fabric meets one or more flame retardant standards

BS5867 BS5867 Pt2 B is the British Standard for flame retardant fabrics used for curtains and drapes

BS5852 BS5852 Pt1 is the British Standard for flammability of upholstered composites for seating

BS4790 BS4790: 1987 Determination of the effects of a small source of ignition on textile floor coverings hot metal nut method (method 1, loose laid)

EN13773: 2003 Meets European fire safety standards for vertically hung fabrics. Burning behavior, ignitability testing of curtain fabric for use in the contract market.

TL 1080-0002/8 German Military Specification for horizontally tested materials

EN14041 Details the requirement for CE Marking of textiles, laminate and resilient floor coverings

BS7905-1:2001 Lifting equipment for performance, broadcast and similar applications.

ATTRIBUTES



Approx roll length of material in linear metres (m) & feet (ft)



Approx width of material in centimetres (cm) & inches (")



Approx weight in grams per metre squared (g/m²)



Approx thickness in (mm)

M1, M2, M4 Conforms to French Fire Regulations

B1, B2 Conforms to German Fire Regulations DIN 4102

IMO Conforms to International Maritime Organisation regulations

Classe Uno Meets Italian Fire Regulations

BS EN13501-1 Fire Classification of construction, products and building elements. Classification using test data from reaction to fire tests

CFC EN ISO 9239-1 Reaction to fire test. Horizontal surface spread of flame on floor covering system. Determination of the burning behaviour using a retardant heat source

NFPA 701 NFPA 701: (USA) Standard Methods of Fire Tests for Flame Propagation of Textiles and Films

EN9239-1 Reaction to fire tests – horizontal surface spread of flame on floor covering systems

DIN EN1021 Meets European fire safety standards for exposure to different ignition sources, namely a lit cigarette and butane flame. Assessment of the ignitability of upholstered furniture

Datasheet - Fabrics & Flooring

Acoustic Molton

To ensure you get the best from the product supplied to you, we advise you follow the care instructions within this datasheet.

Fabric	Flame Retardancy	NDFR
	Fire Certification	BS5867, M1, B1
	Brand Name (and Manufacturer)	J&C Joel Ltd.
	Material (Blending Ratio)	100% Cotton
	Construction of Fabric	Plain Weave
Chemicals	Surface Treatments	Dyed - Flameproofed
	Brand Name of Flame Retardant Chemicals	KAPP-Chemie GMBH & Co K.G
	Chemical name of Flame Retardant Chemicals	Kappaflam CFP
	Process of Flame Retardant Chemicals	Immersion
Care	Information	Non-Durably Flame Retardant. This means that the fabric is chemically treated and if wet (in any way) should be retreated to meet the flammability requirements of BS5867 Part 2 Type B, M1 and B1. Therefore, the cloth will not withstand wet cleaning and should be re-flame proofed whenever wet. The cloth can be professionally dry cleaned using the correct chemical process. Notwithstanding the aforementioned, it would be our advice to only dry clean this material periodically. We would suggest that the curtain be soft-brushed on a regular basis and periodically cleaned using a vacuum and drapery attachment. Commercial flame retardants may alter the aesthetics, appearance, colour or performance of the textile material. This fabric is not pre-shrunk.
	Laundering Treatment	     Dry Clean Only Do Not Wash Do Not Bleach Do Not Iron Do Not Tumble Dry
Notes		



Fire Rating:
NDFR



Approx Bale Length:
30m / 98ft



Width:
300cm / 118"



Weight:
500 g/m²



Fire Certification:
BS5867, M1, B1



Colours
Available

For further information please contact our sales team sales@jcjoel.com

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: BS5867 Part 2 Type B

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TESTING • CERTIFICATION • AUDITING

Wira House, West Park Ring Road,
Leeds, LS16 6QL, UK.
Telephone: +44 (0)113 259 1999
Email: info@bttg.co.uk
Website: www.bttg.co.uk

Date: 01 August 2017

Our Ref: 53519-31
Your Ref: -

Page: 1 of 3

Client: J. & C. Joel Limited
Corporation Mill
Corporation Street
Sowerby Bridge
Halifax
HX6 2QQ

Job Title: Surface Ignition Of Curtains & Drapes (Type B)

Client's Order No: -

Date of Receipt: 19 May 2017
Date of Test Start: 08 June 2017

Description of Sample(s): One sample identified as follows was received for testing:
Acoustic Molton, stated to be NDFR

Work Requested: We were asked to make the following test:
BS 5867: Part 2: 2008 (2015): Type B Curtains, Drapes and Blinds



1066

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Our laboratories are accredited to EN ISO/IEC 17025.

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Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: BS5867 Part 2 Type B

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TESTING • CERTIFICATION • AUDITING

J. & C. Joel Limited

Sample was identified as follows:

Acoustic Molton, stated to be NDFR

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Leeds, LS16 6QL, UK.
Telephone: +44 (0)113 259 1999
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Date: 01 August 2017

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Your Ref: -

Page: 2 of 3

BS 5867: Part 2: 2008 (2015): Type B Curtains, Drapes and Blinds

Pre-Treatment

No water treatment required as the sample was stated to be non durable flame retardant.

Conditioning

The test specimens were conditioned for at least 24 hours in the standard atmosphere of 60 ± 5 % relative humidity (R.H.) and 20 ± 2 °C.

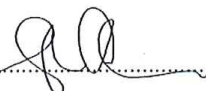
Testing

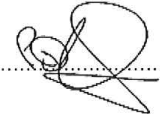
Three specimens from both length and width were tested in accordance with BS EN ISO 15025: Procedure A (surface ignition):2002. The sample was tested at 20°C and 60% relative humidity (R.H.).

Each specimen was subjected to an applied flame using propane and a 15 second flame application time. The results obtained (shown in the table below) were assessed according to the requirements of BS 5867: Part 2:2008 (2015).

Test results relate only to the sample tested.

The results for all tests are given in the table(s) on the following page(s).

Reported by: 
J Coleman
Fire Technician

Countersigned By: 
P Doherty
Operational Head

Enquiries concerning this report should be addressed to Customer Services.



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Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: BS5867 Part 2 Type B

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TESTING • CERTIFICATION • AUDITING

J. & C. Joel Limited

RESULTS

Sample Ref: Acoustic Molton, stated to be NDFR

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Telephone: +44 (0)113 259 1999
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Your Ref: -

Page: 3 of 3

BS 5867: Part 2: 2008 (2015): Type B Curtains, Drapes and Blinds

Testing as received.

Specimen No.	Length			Width		
	1	2	3	4	5	6
Flame reached an edge	No	No	No	No	No	No
Hole reached an edge	No	No	No	No	No	No
Flaming debris separated	No	No	No	No	No	No

Requirements

Any "Yes" means fail except if only one specimen fails a further 6 specimens are tested, if the second 6 specimens all pass the result is a pass.

Result: Pass

Conclusion

The fabric meets the Type B performance requirements of BS 5867: Part 2: 2008 – the fabric must be clearly labelled 'If wetted in any way it is essential to re-treat the fabric to meet flammability requirements'.

The material should be identified with the manufacturers name, trademark or other identifying mark, the statement 'Flammability complies with the requirements of BS 5867: Part 2, Type B and instructions of any special precautions to be taken concerning care (including cleansing) of the curtain, drape or window blind to be manufactured from the fabric, preferably using an appropriate care labelling symbol in accordance with BS EN 23758 and taking account of the pre-treatment used in this test and the requirements of Clause 4 of BS 5867: Part 2: 2008 (2011). If the fabric is unsuitable for cleansing, this shall be stated.

Uncertainty Budget

There is no uncertainty budget associated with BS 5867: Part 2: Type B as no measurements are determined, the pass/fail criteria is assessed visually.



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Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: M1

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MESURES PHYSIQUES ET SCIENCES DE L'INCENDIE
ESSAIS DE CONFORMITÉ ET EXAMEN DE MATÉRIELS

**PROCÈS-VERBAL DE CLASSEMENT
DE RÉACTION AU FEU D'UN MATÉRIAU**
PRÉVU À L'ARTICLE 5 DE L'ARRÊTÉ DU 21 NOVEMBRE 2002

Valable 5 ans à partir de la date de délivrance

PROCÈS-VERBAL N° 16/14362

et annexes de 10 pages

Marque commerciale : ARTICLE N°15/14 - 14/17 - 11/14 DEKOMOLTON
Description sommaire : Tissu uni, présentant une ou deux faces molleton.
Composition globale : 100 % Coton ignifugé.
Masse : 140 à 200 grammes au mètre carré environ.
Épaisseur : 0,55 millimètre environ.
Coloris : Unis, variés.
Nature des essais : Essais au brûleur électrique
Vieillessement accéléré en chambre climatique

Classement :

M1

Durabilité du classement : Non limitée (Matériau non lavable, non nettoyable à sec)

Compte tenu des critères résultant des essais décrits dans le rapport d'essai annexé n° 16/14362 du 03/04/2017.

Ce procès-verbal atteste uniquement des caractéristiques de l'échantillon soumis aux essais et ne préjuge pas des caractéristiques de produits similaires. Il ne constitue donc pas une certification de produits au sens de l'article L. 115-27 du code de la consommation et de la loi du 3 juin 1994.

Fait à Paris, le 03/04/2017

Pour le Directeur,
l'adjoint au chef du pôle mesures physiques et
sciences de l'incendie


Laure MIMOUNI



Le responsable technique


Jennifer CHERON

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Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: M1

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MESURES PHYSIQUES ET SCIENCES DE L'INCENDIE
ESSAIS DE CONFORMITÉ ET EXAMEN DE MATÉRIELS

RAPPORT D'ESSAI DE RÉACTION AU FEU D'UN MATÉRIAU

PRÉVU À L'ARTICLE 5 DE L'ARRÊTÉ DU 21 NOVEMBRE 2002

Valable 5 ans à partir de la date de délivrance

RAPPORT D'ESSAI N° 16/14362

ANNEXES

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NOTA : Ce rapport d'essai atteste uniquement des caractéristiques de l'échantillon soumis aux essais et ne préjuge pas des caractéristiques de produits similaires. Il ne constitue donc pas une certification de produits au sens de l'article L 115-27 du code de la consommation et de la loi du 3 juin 1994.

ELUP0001_B00_PV-14E_A000714

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: M1

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Rapport d'examen de dossier n° 16/14362/RG1

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1 BUT DES ESSAIS

Les essais auxquels se rapporte le procès-verbal de même numéro ont pour but de déterminer le classement de réaction au feu des matériaux d'aménagement, conformément à l'article 3 et annexe 2 de l'arrêté du ministère de l'intérieur, de la sécurité intérieure et des libertés locales du 21 novembre 2002 (J.O. du 31 décembre 2002) modifié.

2 PROVENANCE ET CARACTÉRISTIQUES DES ÉCHANTILLONS

Marque commerciale

ARTICLE N°15/14 - 14/17 - 11/14 DEKOMOLTON

Caractéristiques attestées par le demandeur

Composition : Tissue 100 % Coton ignifugé ;
Produit d'ignifugation : Kappaflam CFP de Kapp Chemie/Miehlen pour noir/blanc/écru Sergé
Flacavon R neu de Schill + Seilacher AG /Boblingen pour les coloris Sergé
Technique utilisée : En bain d'ignifugation par foulardage ;
Masse au mètre carré : de 140 à 180 g/m² ;
Épaisseur : voisine de 0,5 mm ;
Densité : 30 fils/cm² ;
Coloris présentés : 7 (gris 15/14, gris 11/14, bleu 15/14, bleu 11/14, écru 15/14, écru 11/14, blanc 14/17).

Caractéristiques constatées par le laboratoire

Composition : Tissue uni, présentant une ou deux faces molleton, 100 % Coton ;
Masse au mètre carré : entre 140 et 200g/m², calculée sur huit échantillons de 600 x 180 mm ;
Épaisseur : 0,55 mm ;
Coloris testés : 7 (2 gris, 2 bleu, 2 écru et 1 blanc).

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
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Rapport d'examen de dossier n° 16/14362/RG1

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Échantillons déposés le 10 janvier 2017.

Échantillons découpés par le laboratoire. Essais effectués les 14 février et 28 mars 2017.

3 MODALITÉS DES ESSAIS ET RÉSULTATS

MODALITÉS DES ESSAIS

ESSAI PRINCIPAL :

- Essai au brûleur électrique (norme NF P 92-503 - décembre 1995)

ÉPREUVES DE DURABILITÉ (norme NF P 92-512 – mars 1986) :

- Vieillissement accéléré en chambre climatique

Épreuve en chambres climatiques

L'épreuve en chambre climatiques consiste à faire subir à l'éprouvette disposée en position verticale 4 cycles d'une durée de 2 semaines chacune.

Après stabilisation à 50% d'humidité relative et température de 23 °C le séjour de l'éprouvette dans chacune des chambres climatiques est alternativement de 4 jours à 90% d'humidité relative, 3 jours à 15% d'humidité relative, 3 jours à 90% d'humidité relative, 4 jours à 15% d'humidité relative, afin que les durées passées dans chaque enceinte soient semblables. À l'issue des cycles l'éprouvette subit également un brossage manuel à plat de 10 passages simples au moyen de la brosse en nylon, puis une stabilisation à une température de 23 °C et 50% d'humidité relative.

CONDITIONNEMENT DES ÉPROUVETTES

Les éprouvettes sont conditionnées, avant essai, dans une enceinte à 23 °C $\pm$ 2°C et 50% $\pm$ 5% d'humidité relative pendant 7 jours ou jusqu'à obtention d'une masse constante. La masse est considérée constante quand deux pesées successives à 24 heures d'intervalles ne diffèrent pas de plus de 0,1% ou de 0,1 g.

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: M1

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Rapport d'examen de dossier n° 16/14362/RG1

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RÉSULTATS DES ESSAIS AVANT ÉPREUVE DE DURABILITÉ

BRÛLEUR ÉLECTRIQUE

Caractéristiques des éprouvettes	Référence des échantillons	07/EC543	07/EC544	07/EC545
	Masse (en g)	19,5	19,2	19,2
	Dimensions (en mm)	600 x 180	600 x 180	600 x 180
	Épaisseur (en mm)	0,68	0,57	0,57
	Face	Endroit	Envers	Endroit
	Coloris	15/14 gris	15/14 bleu	15/14 bleu
	Sens	Chaîne	Chaîne	Trame
Résultat des essais	Inflammations à (secondes)	Néant	Néant	Néant
	Durée de l'inflammation (secondes)	Néant	Néant	Néant
	Durée de l'inflammation supérieure à 5 secondes	NON	NON	NON
	Chutes de gouttes et/ou débris enflammés	NON	NON	NON
	Chutes de gouttes non enflammées	NON	NON	NON
	Zones en ignition	NON	NON	NON
	Largeur maximale de la zone détruite entre 450 et 600 mm	-	-	-
	Longueur de la zone totalement détruite ou carbonisée en mm	185	190	200

Valeur moyenne des largeurs maximales détruites entre 450 à 600 mm (en mm)	/
Valeur moyenne des longueurs totalement détruites ou carbonisées (en mm)	/

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: M1

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Rapport d'examen de dossier n° 16/14362/RG1

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RÉSULTATS DES ESSAIS AVANT ÉPREUVE DE DURABILITÉ

BRÛLEUR ÉLECTRIQUE

Caractéristiques des éprouvettes	Référence des échantillons	07/EC546	07/EC547	07/EC548
	Masse (en g)	18,1	19,2	16,3
	Dimensions (en mm)	600 x 180	600 x 180	600 x 180
	Épaisseur (en mm)	0,68	0,56	0,47
	Face	Envers	Endroit	Endroit
	Coloris	15/14 écru	14/17 blanc	11/14 gris
	Sens	Trame	Chaîne	Chaîne
Résultat des essais	Inflammations à (secondes)	Néant	Néant	Néant
	Durée de l'inflammation (secondes)	Néant	Néant	Néant
	Durée de l'inflammation supérieure à 5 secondes	NON	NON	NON
	Chutes de gouttes et/ou débris enflammés	NON	NON	NON
	Chutes de gouttes non enflammées	NON	NON	NON
	Zones en ignition	NON	NON	NON
	Largeur maximale de la zone détruite entre 450 et 600 mm	-	-	-
	Longueur de la zone totalement détruite ou carbonisée en mm	185	200	205

Valeur moyenne des largeurs maximales détruites entre 450 à 600 mm (en mm)	/
Valeur moyenne des longueurs totalement détruites ou carbonisées (en mm)	/

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: M1

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Rapport d'examen de dossier n° 16/14362/RG1

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RÉSULTATS DES ESSAIS AVANT ÉPREUVE DE DURABILITÉ

BRÛLEUR ÉLECTRIQUE

Caractéristiques des éprouvettes	Référence des échantillons	07/EC549	07/EC550	07/EC551
	Masse (en g)	18,9	18,6	16,7
	Dimensions (en mm)	600 x 180	600 x 180	600 x 180
	Épaisseur (en mm)	0,47	0,53	0,47
	Face	Envers	Endroit	Envers
	Coloris	11/14 bleu	11/14 bleu	11/14 écru
	Sens	Chaine	Trame	Trame
Résultat des essais	Inflammations à (secondes)	Néant	Néant	Néant
	Durée de l'inflammation (secondes)	Néant	Néant	Néant
	Durée de l'inflammation supérieure à 5 secondes	NON	NON	NON
	Chutes de gouttes et/ou débris enflammés	NON	NON	NON
	Chutes de gouttes non enflammées	NON	NON	NON
	Zones en ignition	NON	NON	NON
	Largeur maximale de la zone détruite entre 450 et 600 mm	-	-	-
	Longueur de la zone totalement détruite ou carbonisée en mm	190	200	195

Valeur moyenne des largeurs maximales détruites entre 450 à 600 mm (en mm)	/
Valeur moyenne des longueurs totalement détruites ou carbonisées (en mm)	194

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: M1

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Rapport d'examen de dossier n° 16/14362/RG1

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RÉSULTATS DES ESSAIS APRÈS ÉPREUVE DE DURABILITÉ

BRÛLEUR ÉLECTRIQUE

Caractéristiques des éprouvettes	Référence des échantillons	07/EC1809	07/EC1810	07/EC1811
	Masse (en g)	18,1	18,1	18,8
	Dimensions (en mm)	600 x 180	600 x 180	600 x 180
	Épaisseur (en mm)	0,68	0,57	0,57
	Face	Endroit	Envers	Endroit
	Coloris	15/14 gris	15/14 bleu	15/14 bleu
	Sens	Chaîne	Chaîne	Trame
Résultat des essais	Inflammations à (secondes)	Néant	Néant	Néant
	Durée de l'inflammation (secondes)	Néant	Néant	Néant
	Durée de l'inflammation supérieure à 5 secondes	NON	NON	NON
	Chutes de gouttes et/ou débris enflammés	NON	NON	NON
	Chutes de gouttes non enflammées	NON	NON	NON
	Zones en ignition	NON	NON	NON
	Largeur maximale de la zone détruite entre 450 et 600 mm	-	-	-
	Longueur de la zone totalement détruite ou carbonisée en mm	185	190	185

Valeur moyenne des largeurs maximales détruites entre 450 à 600 mm (en mm)	/
Valeur moyenne des longueurs totalement détruites ou carbonisées (en mm)	/

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: M1

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Rapport d'examen de dossier n° 16/14362/RG1

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RÉSULTATS DES ESSAIS APRÈS ÉPREUVE DE DURABILITÉ

BRÛLEUR ÉLECTRIQUE

Caractéristiques des éprouvettes	Référence des échantillons	07/EC1812	07/EC1813	07/EC1814
	Masse (en g)	17,8	19,2	16,6
	Dimensions (en mm)	600 x 180	600 x 180	600 x 180
	Épaisseur (en mm)	0,68	0,56	0,47
	Face	Envers	Endroit	Endroit
	Coloris	15/14 écru	14/17 blanc	11/14 gris
	Sens	Trame	Chaîne	Chaîne
Résultat des essais	Inflammations à (secondes)	Néant	Néant	Néant
	Durée de l'inflammation (secondes)	Néant	Néant	Néant
	Durée de l'inflammation supérieure à 5 secondes	NON	NON	NON
	Chutes de gouttes et/ou débris enflammés	NON	NON	NON
	Chutes de gouttes non enflammées	NON	NON	NON
	Zones en ignition	NON	NON	NON
	Largeur maximale de la zone détruite entre 450 et 600 mm	-	-	-
	Longueur de la zone totalement détruite ou carbonisée en mm	180	210	205

Valeur moyenne des largeurs maximales détruites entre 450 à 600 mm (en mm)	/
Valeur moyenne des longueurs totalement détruites ou carbonisées (en mm)	/

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: M1

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Rapport d'examen de dossier n° 16/14362/RG1

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RÉSULTATS DES ESSAIS APRÈS ÉPREUVE DE DURABILITÉ

BRÛLEUR ÉLECTRIQUE

Caractéristiques des éprouvettes	Référence des échantillons	07/EC1815	07/EC1816	07/EC1817
	Masse (en g)	19,1	18,7	16,9
	Dimensions (en mm)	600 x 180	600 x 180	600 x 180
	Épaisseur (en mm)	0,47	0,53	0,47
	Face	Envers	Endroit	Envers
	Coloris	11/14 bleu	11/14 bleu	11/14 écru
	Sens	Chaîne	Trame	Trame
Résultat des essais	Inflammations à (secondes)	Néant	Néant	Néant
	Durée de l'inflammation (secondes)	Néant	Néant	Néant
	Durée de l'inflammation supérieure à 5 secondes	NON	NON	NON
	Chutes de gouttes et/ou débris enflammés	NON	NON	NON
	Chutes de gouttes non enflammées	NON	NON	NON
	Zones en ignition	NON	NON	NON
	Largeur maximale de la zone détruite entre 450 et 600 mm	-	-	-
	Longueur de la zone totalement détruite ou carbonisée en mm	205	210	200

Valeur moyenne des largeurs maximales détruites entre 450 à 600 mm (en mm)	/
Valeur moyenne des longueurs totalement détruites ou carbonisées (en mm)	197

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: M1

J&C Joel 
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Rapport d'examen de dossier n° 16/14362/RG1

11/11

4 OBSERVATIONS CONCERNANT LES ESSAIS

Essai au brûleur électrique

Sous l'action du brûleur électrique et de la flamme pilote, le matériau carbonise sans qu'il ne soit observé d'inflammation.

La longueur moyenne détruite sur les éprouvettes est inférieure à 350 millimètres.

Au cours des essais, il n'a pas été observé la chute de gouttes enflammées ou non.

Essais après épreuve de durabilité

Les résultats des essais effectués, après l'épreuve de durabilité (vieillesse accéléré en chambre climatique), ne modifient pas le classement obtenu avant l'épreuve de durabilité.

Fait à Paris, le 03/04/2017

Pour le Directeur,
l'adjoint au chef du pôle mesures physiques et
sciences de l'incendie


Laure MIMOUNI



Le responsable technique


Jennifer CHERON

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: B1

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ibmb MPA
TU BRAUNSCHWEIG

Institut für Baustoffe,
Massivbau und Brandschutz | Materialprüfanstalt
für das Bauwesen

General Building Authority Test Certificate

Test certificate number: P-3574/850/12-MPA BS

Subject: Fire protection product "KAPPAFLAM CFP" for cellulose fiber fabrics pursuant to the Construction Products List ("Bauregelliste") A, part 2, version 2011/2, serial number 2.10.2.

Applicant: KAPP-CHEMIE GmbH & Co. KG
Industriestrasse 2-4

56357 Miehlen

Date of issue: May 23, 2017

Date of expiry: July 31, 2022

According to the present General Building Authority Test Certificate, the construction product described above can be used to comply with the State Building Codes ("Landesbauordnungen") of the respective federal state.

The present General Building Authority Test Certificate consists of 6 pages and -- annexes.

The present General Building Authority Test Certificate P-3574/850/12-MPA BS dated May 23, 2017, replaces the General Building Authority Test Certificate no. P-3574/850/12-MPA BS dated July 2, 2012.

The present General Building Authority Test Certificate no. P-3574/850/12-MPA BS was first issued on July 2, 2012.

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The present General Building Authority Test Certificate must only be distributed if it is complete and without any alterations. Excerpts or abridgements need to be authorized by MPA Braunschweig beforehand. Any translations of this document not initiated by MPA must contain the note "Translation of the German original, not verified by Materialprüfanstalt (MPA) für das Bauwesen, Braunschweig". Documents without stamp and signature are not valid. Every page of the present General Building Authority Test Certificate has been stamped with the official seal of MPA Braunschweig.

Materialprüfanstalt (MPA)
für das Bauwesen
Beethovenstrasse 52
D-38106 Braunschweig

Phone +49 (0)531-391-5400
Fax +49 (0)531-391-5900
info@mpa.tu-bs.de
www.mpa.tu-bs.de

Norddeutsche LB Hannover
106 020 050 Bank code: 250 500 00
Swift code: NOLADE 2H
VAT ID: DE183500654
Tax ID: 14/201/22859
IBAN: DE5825050000106020050

Notified body (0761-CPD)
MPA Braunschweig is accredited and notified for testing, supervision, inspection and certification by the building supervision authorities. MPA Braunschweig is accredited as a testing and calibration laboratory in accordance with ISO/IEC 17025 and as an inspection body in accordance with ISO/IEC 17020.

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: B1

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MPA BRAUNSCHWEIG

Page 2 | General Building Authority Test Certificate no. P-3574/850/12-MPA BS of 05/23/2017



I. General provisions

1. The General Building Authority Test Certificate proves that the construction product can be used to comply with the State Building Code ("Landesbauordnung").
2. The General Building Authority Test Certificate does not replace the approvals, permits, authorizations, consents and certifications prescribed by law.
3. The General Building Authority Test Certificate is issued without prejudice to any third party rights, in particular private property rights.
4. Without prejudice to more extensive regulations, the producers and distributors of the construction product must provide the users of the construction product with copies of the General Building Authority Test Certificate and must caution them that the General Building Authority Test Certificate must be available at the site of use. Upon request, the authorities concerned must be provided with copies of the General Building Authority Test Certificate.
5. The present General Building Authority Test Certificate must only be duplicated as a whole. Any extract publication must be authorized by MBA Braunschweig. Texts and drawings in advertising brochures must not contradict the General Building Authority Test Certificate. Translations of the General Building Authority Test Certificate must contain the indication "Translation of the original version not verified by Materialprüfanstalt für das Bauwesen Braunschweig".
6. The General Building Authority Test Certificate is issued until revoked. The General Building Authority Test Certificate can be subsequently amended, especially if new technical achievements require it.

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Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: B1

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CERTIFIED TRANSLATION FROM GERMAN 3/6

MPA BRAUNSCHWEIG
Page 3 | General Building Authority Test Certificate no. P-3574/850/12-MPA BS of 05/23/2017

iBMB MPA TU BRAUNSCHWEIG

II. Special provisions

1 Subject and scope of use

1.1 Subject

1.1.1 The General Building Authority Test Certificate shall be applicable for the production and use of the fire protection product called "KAPPAFLAM CFP" for the equipment of cellulose fiber fabric as a flame-retardant building material of the fire classification DIN 4102-B1 in accordance with the DIN standard 4102-1¹⁾:1998-05.

1.1.2 The fire protection product is a combination of various inorganic salts.

1.1.3 The General Building Authority Test Certificate for the construction product is issued in accordance with the information of the Construction Products List "Bauregelliste" A, part 2, serial number 2.10.2, version 2015/2.

1.2 Scope of use

1.2.1 The fire protection product is to be used to equip cellulose fiber fabrics with a weight per unit area of $\geq 50 \text{ g/m}^2$ if these fabrics are used as construction products (e.g. stage curtains) which will be permanently installed.

1.2.2 The fabric equipped with the fire protection product must only be used in closed rooms without any influence of humidity. The persistence of the flame-retarding equipment against washing, dry-cleaning or weathering has not been proved.

1.2.3 The proof of the flame-retardant property is not valid in combination with other construction products, e.g. when the surface of the building material is coated with paint, lamination or the like.

1.2.4 The proof of the flame-retardant property is only valid for equipped cellulose fiber fabrics arranged with a distance of $> 40 \text{ mm}$ to laminar building materials.

1.2.5 Without prejudice to this General Building Authority Test Certificate, components and special components containing the building material need a Test Certificate ("Prüfzeugnis") / General Building Authority Test Certificate ("allgemeines bauaufsichtliches Prüfzeugnis") or a General Building Authority Approval ("allgemeine bauaufsichtliche Zulassung"), depending on the type of construction product.

1.2.6 The present General Building Authority Test Certificate does not contain any statements concerning the compliance with requirements to sound-proofing and thermal protection.

1.2.7 On the basis of the declaration of the applicant that in the construction product no products subject to the Ordinance on Hazardous Substances ("Gefahrstoffverordnung"), Chemicals Prohibition Ordinance ("Chemikalien-Verbotverordnung") or the CFC Halon Prohibition Ordinance ("FCKW-Halon-Verbotsverordnung") were used, and/or that he complies with the obligations under the above regulations (especially the labeling requirements), there was no reason for testing the effects of the construction products on the compliance with requirements concerning health and environment protection.

Furthermore, the applicant declares that - if measures have to be taken for trading and marketing or use with regards to hygiene or environment protection - the applicant has initiated them and/or published them in the required form.

Therefore, MPA Braunschweig saw no reason for testing the effects of the fitted construction product to health and environment.

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¹⁾ DIN 4102-1: Fire behavior of building materials and building components; Building materials; concepts, requirements and tests (publication date: May 1998) - Sections 3 and 6.



Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: B1

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Page 4 | General Building Authority Test Certificate no. P-3574/850/12-MPA BS of 05/23/2017



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2 Provisions for the construction product

2.1 Properties and composition

- 2.1.1 The fire protection product is a white, crystalline powder and is a combination of different inorganic salts.
- 2.1.2 The composition of "KAPPAFLAM CFP" must correspond to the data stored at the MPA in Braunschweig.

2.2 Test procedure

As a fire protection product according to DIN 4102-16, section 7.16.2, the product "KAPPAFLAM CFP", applied on cellulose fiber fabrics, must comply with the requirements for flame-retardant building material (DIN 4102-B1) in accordance with DIN 4102-1¹⁾, section 6.1.

2.3 Basis for issuing the General Building Authority Test Certificate

Name of the test body	Customer	Number of the Test Certificate/ Date of issue	Test procedure / rules
MPA Braunschweig	KAPP-CHEMIE GmbH & Co. KG Industriestrasse 2-4 56357 Miehlen	3728/336/11-Het of 06/30/2011	DIN 4102-1 : 1998-05 Section 6.1 DIN 4102-16: 1998-05 ²⁾ Section 7.16.2

2.4 Production and labeling

2.4.1 Production

For the production of the fire protection product, the provisions of section 2.1 must be complied with.

2.4.2 Labeling

The producer must label the construction product, the packaging of the construction product or the package insert – or, if this poses difficulties, the delivery note or an annex to the delivery note - with the Conformity Mark ("Ü-Zeichen") in accordance with the Conformity Mark Ordinances [Übereinstimmungszeichen-Verordnungen] of the federal states. He must only label them if the requirements under section 2.1 and 2.2 have been complied with.

¹⁾ DIN 4102-1: Fire behavior of building materials and building components: Building materials; concepts, requirements and tests (publication date: May 1998) - Sections 3 and 6.1.

²⁾ DIN 4102-16: Fire behavior of building materials and building components: Conducting fire shaft tests (publication date: May 1998) - Sections 7.16.1, 7.16.2, Sections 8 and 9.



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Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: B1

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Page 5 | General Building Authority Test Certificate no. P-3574/850/12-MPA BS of
05/23/2017


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The following information must be included on the construction product or the packaging or the package insert or on an annex to the delivery note:

- Product name
- Conformity Mark ("Ü-Zeichen") with
 - Producer's name
 - Test Certificate number: P-3574/850/12-MPA BS
 - Logo or name of the certifying body
- Manufacturing site
- Flame-retardant (fire classification DIN 4102-B1) on cellulose fiber fabric
- "Only flame-retardant (fire classification DIN 4102-B1) if a distance of >40 mm is observed to the same or other laminar building materials.

- 2.4.3** A note that the resistance to water, dry-cleaning and weathering has not been proved must be integrated into the instructions for use, and a label with the note must be attached to the equipped product.

2.5 Proof of conformity ("Übereinstimmungsnachweis")

2.5.1 General information

The confirmation that the construction product conforms to the regulations of this General Building Authority Test Certificate must be carried out for every production plant with a Certificate of Conformity on the basis of an in-house production control and a regular external supervision - including an initial test of the construction product - in accordance with the following regulations:

To be granted a Certificate of Conformity and for the external supervision including the product tests that need to be carried out, the producer of the construction product must involve an accredited certification body and a supervision board accredited for this.

2.5.2 In-house production control

In every production plant, an in-house production control in accordance with DIN 18200³⁾ 2000-05, section 3, must be installed, which ensures the consistent production and composition of the construction product as under section 2.1.

For the in-house production control, the Guidelines Concerning the Proof of Conformity of Flame-Retardant Building Materials (fire classification DIN 4102-B1)⁴⁾ in the applicable version shall apply.

The results of the in-house production control must be recorded, evaluated and retained for at least 5 years. They must be submitted to the supervision board upon request.

2.5.3 External supervision

In every production plant, the in-house production control must be inspected by an external supervision regularly, but at least once a year.

For the external supervision, the Guidelines Concerning the Proof of Conformity of Flame-Retardant Building Materials (fire classification DIN 4102-B1)⁴⁾ in the applicable version shall apply.

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³⁾ DIN 18 200 "Proof Conformity for Construction Products - In-house Production Control and Certification of Products " version May 2000 is to be used.

⁴⁾ The „Guidelines Concerning the Proof of Conformity of Flame-Retardant Building Materials (fire classification DIN 4102-B1) after a General Building Authority Approval must be published in the official newsletter of the German Institute for Civil Engineering ("Mitteilungen" des Deutschen Instituts für Bautechnik).

Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: B1

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MPA BRAUNSCHWEIG

Page 6 | General Building Authority Test Certificate no. P-3574/850/12-MPA BS of
05/23/2017



In the context of the external supervision, an initial testing of the construction product must be carried out. During the external supervision, samples for random inspections must be taken. Sampling and inspection shall be subject to the respective recognized supervision body.

The results of the certification and of the external supervision must be retained for at least five years. They must be submitted by the certification body or the supervision board to the competent supreme building authority upon request.

3 Provisions concerning the application

- 3.1 The fire protection product is applied as an aqueous solution by spraying, submerging and squeezing or spinning on cellulose fiber fabric with a weight per area unit of ≥ 50 g/m² in a "dry-in-wet" procedure.
At a pick-up of 80 %, a quantity of > 150 g/l of "KAPPAFLAM CFP" is needed on the cellulose fiber fabric to be equipped.
The dry pick-up per weight unit of the fabric must be ≥ 330 g/kg.
- 3.2 The application procedure must be submitted to the user by the applicant in writing in accordance with the test certificate mentioned in section 2.3.
- 3.3 The fabric equipped with the fire protection product must only be used in closed rooms without any influence of humidity. The persistence of the fire protection equipment against washing, dry-cleaning or weathering has not been proved.
- 3.4 The proof of the flame-retardant property is only valid for equipped cellulose fiber fabrics arranged with a distance of > 40 mm to laminar building materials.

4 Information about legal remedies

Opposition against this decision can be filed within one month after notification with Materialprüfanstalt für das Bauwesen, Braunschweig.

[Signature]
Senior civil servant ["ORR"]
Dr.-Ing. G. Blume
Head of test body

[ROUND SEAL:] #3
MPA BRAUNSCHWEIG

[Signature]
by order: Technical officer
K. Feustel-Prause
Official in charge

Braunschweig, May 23, 2017



Fire Test Certificate – Specimen

Fabric: Acoustic Molton
Type: B1

J&C Joel 

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CERTIFIED TRANSLATION FROM GERMAN

CERTIFICATION

As a translator for the English language, publicly commissioned and sworn by the President of the Regional Court [Landgericht] of Aschaffenburg, Germany, I hereby certify:

This foregoing is a true and complete translation of the document written in German that has been submitted to me in the original.

Mömlingen, June 1, 2017

BEGLAUBIGUNG

Als vom Präsidenten des Landgerichts Aschaffenburg öffentlich bestellte und allgemein beeidigte Übersetzerin für die englische Sprache bestätige ich:

Diese Übersetzung der mir im Original vorgelegten, in deutscher Sprache abgefassten Urkunde ist richtig und vollständig.

Gabriele Lindner-Partholl



Gabriele Lindner-Partholl

SPECIMEN

Acoustic Test Report - Absorption

Absorption Class: C

Calculated to EN ISO 11654:1997

Fabric: Acoustic Molton

Fullness: Flat

Cavity from Wall: 100mm

J&C Joel 

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Data Sheet 20

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd

Test Date: 30/11/2020

Empty Room: **Temperature:** 16.4 °C **Humidity:** 57 %RH **Pressure:** 1016 mbar

Room with Sample: **Temperature:** 15.7 °C **Humidity:** 55 %RH **Pressure:** 1009 mbar

Sample Description: Acoustic Molton - Single Layer - Flat (Approx. Weight 500g/m²) - 100mm Cavity From Wall

Mounting Method: G - 100

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 20

Freq Hz	T1 sec	T2 sec	Absorp Coeff α_s	Practical Absorp Coeff #
50*	5.15	5.23	-0.01	
63*	4.83	5.51	-0.14	n/a
80*	7.33	7.60	-0.03	
100	7.42	6.82	0.06	
125	7.17	6.47	0.08	0.10
160	6.75	5.78	0.14	
200	6.77	5.59	0.17	
250	6.80	5.13	0.26	0.30
315	6.65	4.48	0.40	
400	6.46	3.60	0.67	
500	5.63	3.19	0.74	0.75
630	5.00	2.83	0.83	
800	5.22	2.88	0.85	
1000	5.79	3.04	0.85	0.85
1250	5.75	3.08	0.82	
1600	5.33	3.00	0.79	
2000	4.93	2.95	0.73	0.75
2500	4.35	2.70	0.74	
3150	3.55	2.34	0.76	
4000	2.92	1.96	0.85	0.80
5000	2.34	1.68	0.82	
6300*	1.60	1.22	0.91	
8000*	1.30	1.05	0.78	n/a
10000*	0.93	0.77	0.92	

α_w 0.60(MH)

Class C

Calculated to EN ISO 11654:1997

NRC 0.65

Calculated to ASTM C 423-01

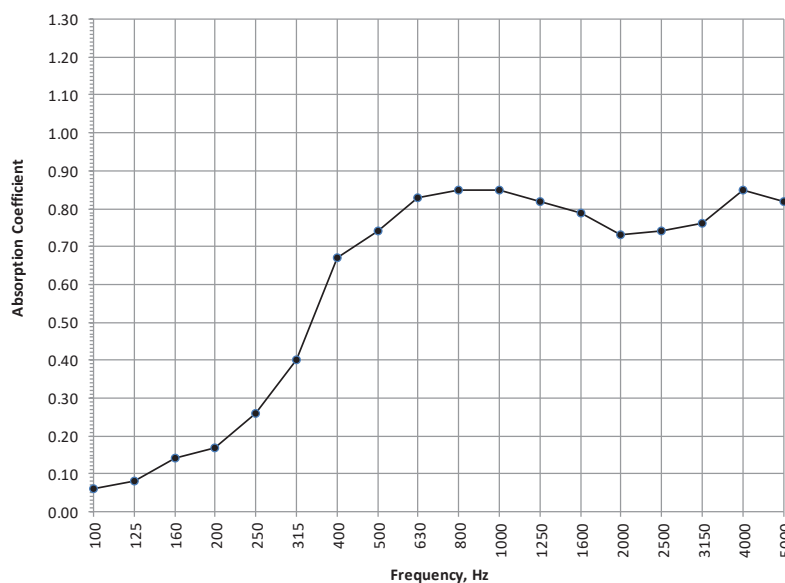
* Denotes frequencies outside the range covered

by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Sound Absorption Coefficient



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: C

Calculated to EN ISO 11654:1997

Fabric: Acoustic Molton

Fullness: Flat

Cavity from Wall: 350mm

J&C Joel 

the inspiration behind the performance

Data Sheet 9

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd

Test Date: 19/01/2019

Empty Room: **Temperature:** 17.0 °C **Humidity:** 46 %RH **Pressure:** 1002 mbar

Room with Sample: **Temperature:** 15.5 °C **Humidity:** 43 %RH **Pressure:** 1001 mbar

Sample Description: Acoustic Molton - Single Layer - flat (Approx. weight 500g/m²) 350mm cavity from wall

Mounting Method: G - 350

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 10

Freq Hz	T1 sec	T2 sec	Absorp Coeff α_s	Practical Absorp Coeff #
50*	4.96	4.87	0.02	
63*	5.39	5.02	0.08	n/a
80*	7.08	6.76	0.04	
100	9.00	7.44	0.13	
125	7.30	6.03	0.16	0.15
160	6.60	5.23	0.22	
200	6.86	4.78	0.35	
250	7.22	4.43	0.48	0.45
315	6.99	4.00	0.58	
400	6.36	3.81	0.58	
500	5.64	3.42	0.63	0.60
630	5.09	3.23	0.62	
800	5.10	3.05	0.72	
1000	5.74	3.14	0.78	0.75
1250	5.63	3.08	0.79	
1600	5.18	2.86	0.83	
2000	4.76	2.65	0.87	0.85
2500	4.22	2.43	0.89	
3150	3.35	2.00	0.99	
4000	2.59	1.62	1.09	1.00
5000	2.04	1.30	1.27	
6300*	1.39	0.96	1.39	
8000*	1.14	0.80	1.52	n/a
10000*	0.80	0.59	1.79	

α_w 0.65(H)

Class C

Calculated to EN ISO 11654:1997

NRC 0.70

Calculated to ASTM C423-01

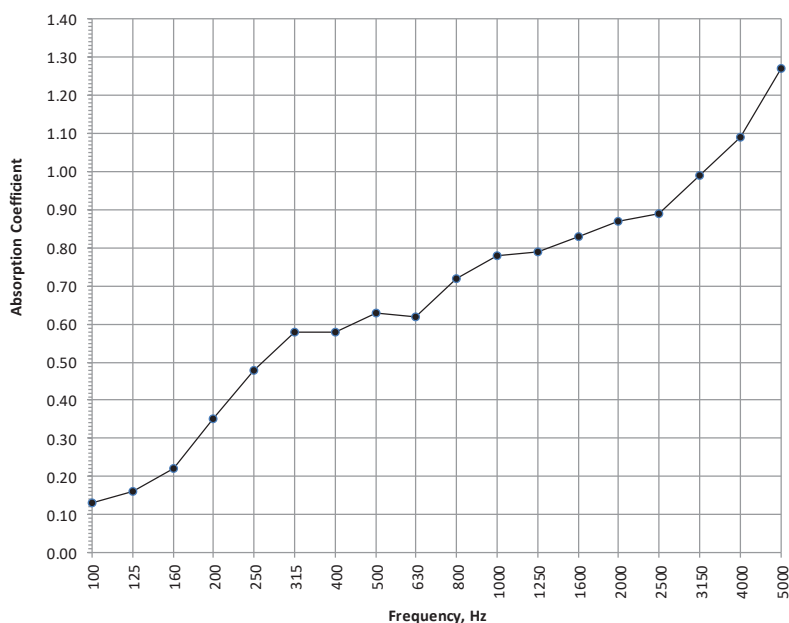
* Denotes frequencies outside the range covered

by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Sound Absorption Coefficient



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A

Calculated to EN ISO 11654:1997

Fabric: Acoustic Molton

Fullness: 50%

Cavity from Wall: 350mm



the inspiration behind the performance

Data Sheet 8

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd

Test Date: 19/01/2019

Empty Room: **Temperature:** 17.0 °C **Humidity:** 46 %RH **Pressure:** 1002 mbar

Room with Sample: **Temperature:** 15.4 °C **Humidity:** 43 %RH **Pressure:** 1001 mbar

Sample Description: Acoustic Molton - Single Layer - 50% fullness (Approx. weight 500g/m²) 350mm cavity from wall

Mounting Method: G - 350

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 9

Freq Hz	T1 sec	T2 sec	Absorp Coeff α_s	Practical Absorp Coeff #
50*	4.96	4.75	0.05	
63*	5.39	4.91	0.10	n/a
80*	7.08	6.53	0.07	
100	9.00	7.17	0.15	
125	7.30	5.54	0.24	0.25
160	6.60	4.40	0.41	
200	6.86	4.05	0.55	
250	7.22	3.91	0.64	0.65
315	6.99	3.50	0.78	
400	6.36	3.28	0.81	
500	5.64	3.01	0.85	0.85
630	5.09	2.69	0.96	
800	5.10	2.62	1.01	
1000	5.74	2.77	1.01	1.00
1250	5.63	2.77	0.99	
1600	5.18	2.58	1.04	
2000	4.76	2.38	1.10	1.00
2500	4.22	2.21	1.11	
3150	3.35	1.85	1.21	
4000	2.59	1.54	1.26	1.00
5000	2.04	1.23	1.49	
6300*	1.39	0.91	1.68	
8000*	1.14	0.77	1.77	n/a
10000*	0.80	0.59	1.77	

α_w 0.90

Class A

Calculated to EN ISO 11654:1997

NRC 0.90

Calculated to ASTM C423-01

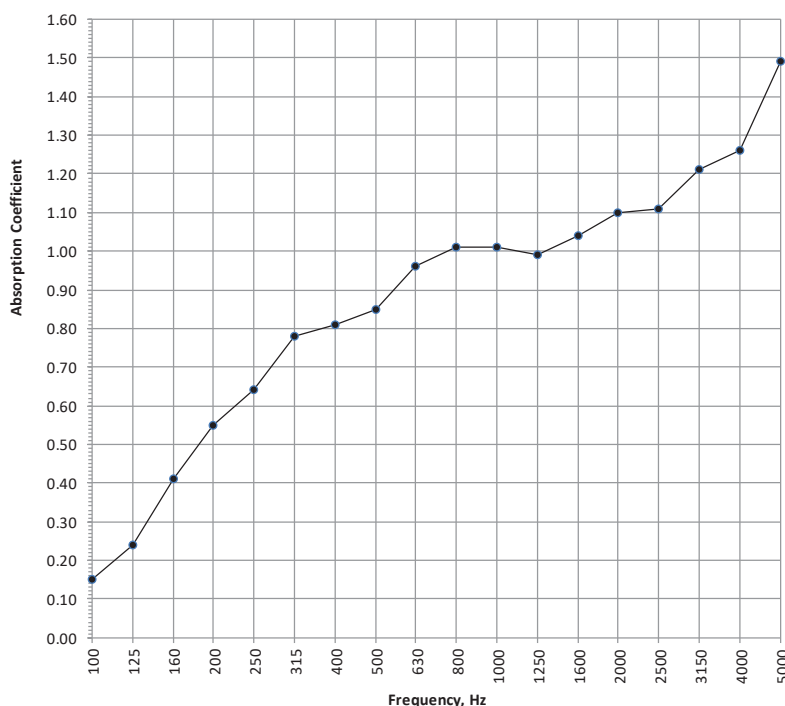
* Denotes frequencies outside the range covered

by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Sound Absorption Coefficient



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A

Calculated to EN ISO 11654:1997

Fabric: Acoustic Molton

Fullness: 100%

Cavity from Wall: 100mm



the inspiration behind the performance

Data Sheet 19

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd

Test Date: 30/11/2020

Empty Room: **Temperature:** 16.4 °C **Humidity:** 57 %RH **Pressure:** 1016 mbar

Room with Sample: **Temperature:** 15.7 °C **Humidity:** 55 %RH **Pressure:** 1009 mbar

Sample Description: Acoustic Molton - Single Layer - 100% Fullness (Approx. Weight 500g/m²) - 100mm Cavity From Wall

Mounting Method: G - 100

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 19

Freq Hz	T1 sec	T2 sec	Absorp Coeff α_s	Practical Absorp Coeff #
50*	5.15	5.18	0.00	
63*	4.83	5.19	-0.08	n/a
80*	7.33	7.40	-0.01	
100	7.42	6.58	0.09	
125	7.17	5.33	0.26	0.20
160	6.75	4.99	0.28	
200	6.77	4.49	0.41	
250	6.80	3.99	0.56	0.60
315	6.65	3.45	0.76	
400	6.46	2.84	1.07	
500	5.63	2.72	1.03	1.00
630	5.00	2.49	1.10	
800	5.22	2.59	1.06	
1000	5.79	2.80	1.00	1.00
1250	5.75	2.82	0.98	
1600	5.33	2.73	0.97	
2000	4.93	2.60	0.98	1.00
2500	4.35	2.40	0.99	
3150	3.55	2.14	0.97	
4000	2.92	1.82	1.06	1.00
5000	2.34	1.55	1.09	
6300*	1.60	1.18	1.06	
8000*	1.30	1.00	1.04	n/a
10000*	0.93	0.76	1.01	

α_w 0.90

Class A

Calculated to EN ISO 11654:1997

NRC 0.90

Calculated to ASTM C.423-01

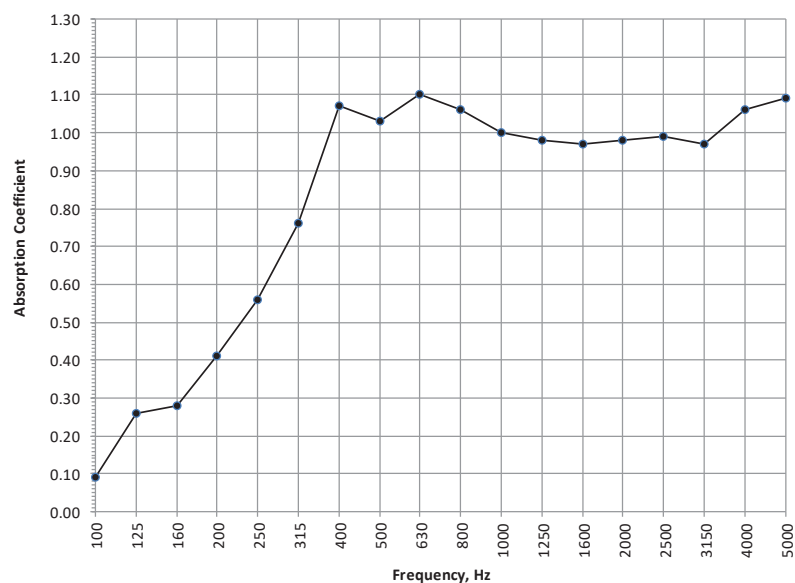
* Denotes frequencies outside the range covered

by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Sound Absorption Coefficient



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A

Calculated to EN ISO 11654:1997

Fabric: Acoustic Molton

Fullness: 100%

Cavity from Wall: 350mm

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Data Sheet 7

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd

Test Date: 19/01/2019

Empty Room: **Temperature:** 17.0 °C **Humidity:** 46 %RH **Pressure:** 1002 mbar

Room with Sample: **Temperature:** 15.4 °C **Humidity:** 44 %RH **Pressure:** 1001 mbar

Sample Description: Acoustic Molton - Single Layer - 100% fullness (Approx. weight 500 g/m²) 350mm cavity from wall

Mounting Method: G - 350

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 8

Freq Hz	T1 sec	T2 sec	Absorp Coeff α_s	Practical Absorp Coeff #
50*	4.96	4.66	0.07	
63*	5.39	4.95	0.09	n/a
80*	7.08	6.47	0.07	
100	9.00	7.41	0.13	
125	7.30	5.44	0.26	0.30
160	6.60	4.19	0.47	
200	6.86	4.09	0.54	
250	7.22	3.73	0.71	0.70
315	6.99	3.49	0.78	
400	6.36	3.14	0.88	
500	5.64	2.90	0.92	0.95
630	5.09	2.64	1.00	
800	5.10	2.56	1.06	
1000	5.74	2.71	1.06	1.00
1250	5.63	2.69	1.05	
1600	5.18	2.53	1.08	
2000	4.76	2.39	1.10	1.00
2500	4.22	2.17	1.16	
3150	3.35	1.87	1.20	
4000	2.59	1.53	1.31	1.00
5000	2.04	1.24	1.50	
6300*	1.39	0.91	1.75	
8000*	1.14	0.78	1.77	n/a
10000*	0.80	0.58	2.04	

α_w 0.95

Class A

Calculated to EN ISO 11654:1997

NRC 0.95

Calculated to ASTM C 423-01

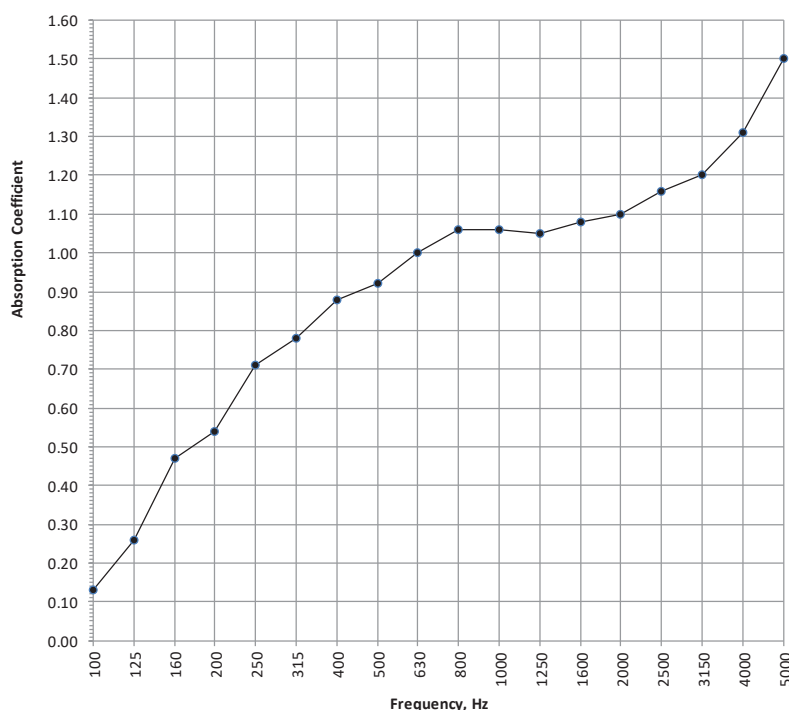
* Denotes frequencies outside the range covered

by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Sound Absorption Coefficient



Practical absorption coefficient, BS EN ISO 11654:1997

v5

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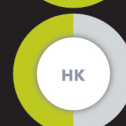
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