



Institut Français
Textile - Habillement

PROCES-VERBAL DE CLASSEMENT DE REACTION AU FEU D'UN MATERIAU

établi conformément à l'article 88 de l'Arrêté du Ministère de l'Intérieur
du 30 Juin 1983 (J.O du 1er Décembre 1983) modifié

Valable 5 ans à partir de la date de délivrance

PROCES-VERBAL N° 8973L

et annexes de 4 pages

MATERIAU présenté par :

**TISSAGE ET ENDUCTION SERGE FERRARI
ZONE INDUSTRIELLE
BP 54
38110 LA TOUR DU PIN**

MARQUE COMMERCIALE :

GRILLE PRECONTRAINTE 331 SIGN

DESCRIPTION SOMMAIRE :

grille polyester enduite de PVC ignifugé dans la masse sur les deux faces
Masse surfacique nominale : 340 g/m² (+ 10 %)
Epaisseur nominale : 0,45 mm (+ 10 %)
Coloris : blanc SIGN

RAPPORT D'ESSAI :

N° 8973 du 18/01/2002

NATURE DES ESSAIS :

Brûleur électrique

CLASSEMENT

M 1

DURABILITE du classement (annexe 22) : non limitée a priori

compte tenu des critères résultant des essais décrits dans le rapport d'essai annexé.

Le classement indiqué ne préjuge pas de la conformité des matériaux commercialisés aux échantillons soumis aux essais et ne saurait en aucun cas être considéré comme un certificat de qualification tel que défini par la loi du 10 janvier 1978. Cette conformité peut être attestée par les certificats de qualification reconnus par le ministère chargé de l'industrie, et notamment par la marque NF-Réaction au feu.

NOTA : Sont seules autorisées les reproductions intégrales et par photocopie du présent procès-verbal de classement ou de l'ensemble procès-verbal de classement et rapport d'essai annexé.

A Lyon, le 18 janvier 2002

Directeur ou son représentant
Jacques - Hervé LEVY

[Signature]
P. GROSSELIN



ACCREDITATION
N° 1-0101
PORTÉE
COMMUNIQUÉE
SUR DEMANDE

L'Institut Français du Textile et de l'Habillement
reprend l'ensemble des missions, biens, droits et obligations du Cetih et d'Ifth
à compter du 1er novembre 2000 (Article 1er de l'Arrêté du 14 avril 2000)

Siège Social : Avenue Guy de Collongue - 69134 ÉCULLY CEDEX - Tél. (33) 04 72 86 16 00 - Fax (33) 04 72 86 16 50 - www.ifth.org

SIRET 433 430 832 00017 - NAF 731 Z - TVA : FR 39433430832 - CENTRE TECHNIQUE INDUSTRIEL (LOI DU 22 JUILLET 1948 - ARRÊTÉ DU 14 AVRIL 2000)

Prüfinstitut Hoch

Lerchenweg 1
D-97650 Fladungen
Tel.: 09778 – 740 163, Fax: 09778 – 740 164
hoch.fladungen@t-online.de
www.brandverhalten.de



Prüfinstitut für das Brandverhalten von Bauprodukten, Dipl.-Ing. (FH) Andreas Hoch
Bauaufsichtlich anerkannte Prüf-, Überwachungs- und Zertifizierungsstelle

TEST REPORT

for the proof of Fire behaviour according to DIN 4102, part 1

Prüfzeugnis Nr. PZ-Hoch-03028

Translation of the German test report – no guarantee for translation of technical terms

Company:

FERRARI S.A.
Zone Industrielle – B.P. 54
F-38352 LA TOUR DU PIN CEDEX

Description of samples:

Polyester fabric coated on both sides with PVC

Name of the material:

PRECONTRAI NT 331

sampling:

by the company itself

Content of request:

Proof of flammability to classify building materials to class B1
"schwerentflammbar" according to DIN 4102, part 1

validity of test report:

31st January 2008^{*)}

Result:

The examined product meets the requirements of class B1 for
"schwerentflammbare" (hardly flammable) building materials
according to DIN 4102, part 1 (May 1998) if used in one layer,
suspended freely or with distance of >40 mm to same or other
plain materials.

This test report includes 4 pages and 3 enclosures.

Remark: If the above mentioned building material is not used as product according to MBO § 2, Abs. 9, Ziffer 1, there is no need for a general building supervisory test report.

This test report is not valid if the examined building material is used as product in the meaning of state building prescriptions (MBO § 20, Abs. 3).

This test report does not replace an eventually necessary proof of applicability concerning building supervisory or building laws in the meaning of state building prescriptions. This has to be verified by:

- "allgemeine bauaufsichtliche Zulassung" (general building inspectorate approval) or by
- „allgemeines bauaufsichtliches Prüfzeugnis" (general building inspectorate certificate) or by
- "Zustimmung im Einzelfall" (exceptional approval)

This test report can underlie building supervisory procedures

- for regular building products for the prescribed proofs of conformity
- for non regular building products for the needed proofs of applicability.

This test report must not be published and copied without preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents. Agreement of the test laboratory has to be given in any case if norms on which the tests are based or other technical standards have changed.

*) prolongation on request.



1. Description of test material in condition as delivered

PN 1473 PRECONSTRAINT 331:

Polyester fabric, white, coated on both sides with PVC,
according to manufacturer no difference between weft and warp orientation

characteristic values determined by the test laboratory:
thickness 0,45 mm, area weight approx. 0,370 kg/m²

The testing laboratory is not provided with further details concerning composition of the tested building materials. Samples are deposited.

2. Preparation of samples:

The samples were kept in climate chamber 23/50 until they reached constant weight.

3. Arrangement of samples: freely suspended

#2452: flaming the front in warp orientation

#2453: flaming the back in weft orientation

4. Date of test

week 4 in 2003

5. Results:

The test has been examined according to DIN 4102 (Mai 1998)

line No.	Measurement	Result with the tested specimen				Dimension
	Test number	#2452 front warp	#2053 back weft	---	---	
1	<u>Number of specimen arrangement</u> acc. to. DIN 4102/T15, schedule 1	1	1	---	---	
2	<u>Maximum flame height</u> above bottom edge of the specimen	40	40	---	---	cm
3	Time ¹⁾	0:04	0:04	---	---	min:s
4	<u>Burn through / melting</u> Time ¹⁾	0:02	0:02	./. .	./. .	min:s
5	<u>Observations on the back side of the specimen</u> Flames / Glowing Time ¹⁾	---	---	---	---	min:s
6	Change of color Time ¹⁾	./. .	./. .	./. .	./. .	min:s
7	<u>Falling of burning droplets</u> Start ¹⁾ Extent	./. .	./. .	./. .	./. .	min:s
8	sporadic falling of burning droplets ²⁾	---	---	---	---	
9	continuous falling of burning droplets ²⁾	./. .	./. .	./. .	./. .	min:s
10	<u>Falling of burning droplets</u> Start ¹⁾ Extent	./. .	./. .	./. .	./. .	min:s
11	sporadic falling of burning droplets ²⁾	---	---	---	---	
12	continuous falling of burning droplets ²⁾	---	---	---	---	
13	<u>Afterflame time at the bottom of the sieve (max.)</u>	./. .	./. .	./. .	./. .	min:s



line No.	Measurement	Result with the tested specimen				Dimension
	Test number	#2452 front warp	#2053 back weft	---	---	
14	<u>Impairment of the burner by dropping or falling material:</u> Time ¹⁾	./.	./.	./.	./.	min:s
15	<u>Premature end of test</u> Final occurrence of burning at the specimen ¹⁾	./.	./.	./.	./.	min:s
16	Time of eventually end of test ¹⁾	./.	./.	./.	./.	min:s
17	<u>Afterflame after end of test</u> Time ¹⁾	./.	./.	./.	./.	min:s
18	Number of specimen	---	---	---	---	cm
19	Front side of specimen ²⁾	---	---	---	---	
20	Back side of specimen ²⁾	---	---	---	---	
21	flame length	---	---	---	---	
22	<u>Afterglow after end of test</u> Time ¹⁾	./.	./.	./.	./.	min:s
23	Number of specimen	---	---	---	---	cm
24	<u>Place of appearance</u> Lower half of the specimen ²⁾	---	---	---	---	
25	Upper half of the specimen ²⁾	---	---	---	---	
26	Front side of specimen ²⁾	---	---	---	---	
27	Back side of specimen ²⁾	---	---	---	---	% * min % * min
28	<u>Density of smoke</u> ≤ 400 % * min	19	32	---	---	
29	> 400 % * min ⁴⁾	---	---	---	---	
30	Diagram: encl. no.	1	2	-	-	cm cm cm cm
31	<u>Residual lengths: individual value ³⁾</u> Specimen 1	67	61	---	---	
	Specimen 2	64	65	---	---	
	Specimen 3	64	67	---	---	
	Specimen 4	63	60	---	---	
32	<u>Average value, individual test ³⁾</u>	65	63	--	--	
33	<u>Photo of specimen in enclosure no.</u>	1	2	-	-	
34	<u>Flue gas temperature</u> Maximum of average value	111	113	---	---	°C
35	Time ¹⁾	10:00	10:00	---	---	min:s
36	Diagram: encl. no.	1	2	-	-	
37	Remarks: - none -					

1) indication of times: from the begin of testing procedure

2) checked off if applicable

3) indication of carrier/foam layer separated in case of fire-proofing agents

4) very strong development of smoke



6. Explanations concerning the testing procedure:

There were no additional tests proceeded because of the residual length of more than 45 cm

7. Summary of results and additional establishments to Fire Behaviour:

line no.	Measurement	Result with the tested specimen				dimension
	test-no.	#2452	#2453	-	-	
1	residual length	65	63	-	-	cm
2	max smoke temperature	111	113	-	-	°C
3	density of smoke - integral	19	32	-	-	%min
4	remarks: - none -					

According to DIN 4102, part 1, "schwerentflammbare" (hardly flammable) building materials must meet the requirements of class B2.

Pursuant to additional tests in the ignitability apparatus this can be determined.

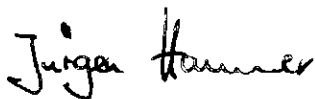
8. Special remarks:

- This report is only valid for the material as described under paragraph 1. In combination with other materials or with additional coatings or grounds etc. the burning behaviour may differ.
- This test report is not valid for the exposure to outdoor climate conditions, washing or cleaning with chemicals.
- This test report is not valid, as soon as the fabric is used as a building product in the sense of the "Landesbauordnungen" (state building requirements, MBO § 20, par. 3).
- This test report is no substitute for a General Building Inspectorate Certificate.
- This test report is granted without prejudice to the rights of third parties, im particular private proprietary rights.
- In General Building Inspectorates procedures this test report can be based for
 - regular building materials for the required proof of accordance
 - for not regular building materials for the required proof of applicability

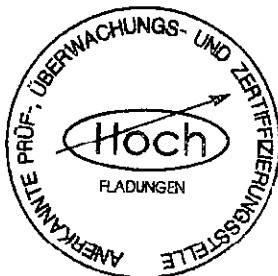
9. Validity: This test report is valid until the mentioned date on page 1.

Fladungen, 24th January 2003

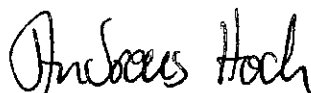
clerk in charge:



(Dipl.-Ing.(FH) Jürgen Hammer)

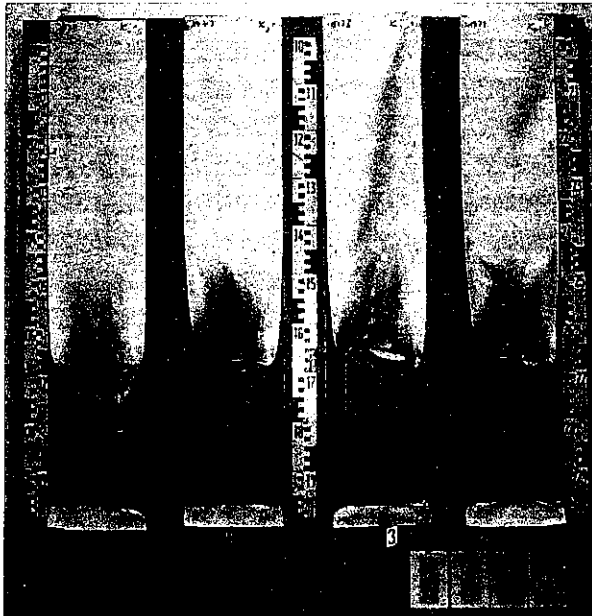


Head of the test laboratory:

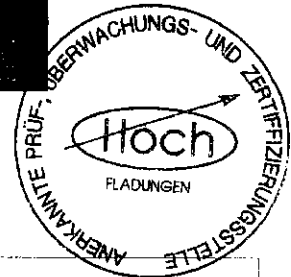


(Dipl.-Ing.(FH) Andreas Hoch)

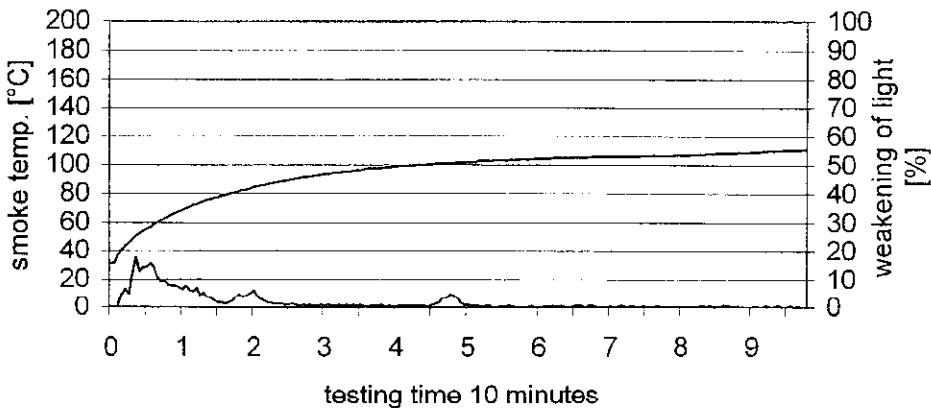
„Brandschacht“-test #2452
Preconstraint 331: Front in warp orientation



results of measurement:



#2452, Ferrari, Preconstraint 331, warp orientation
residual length.: 65 cm, smoke temp.: 111°C,
smoke-Int.: 19 %min.



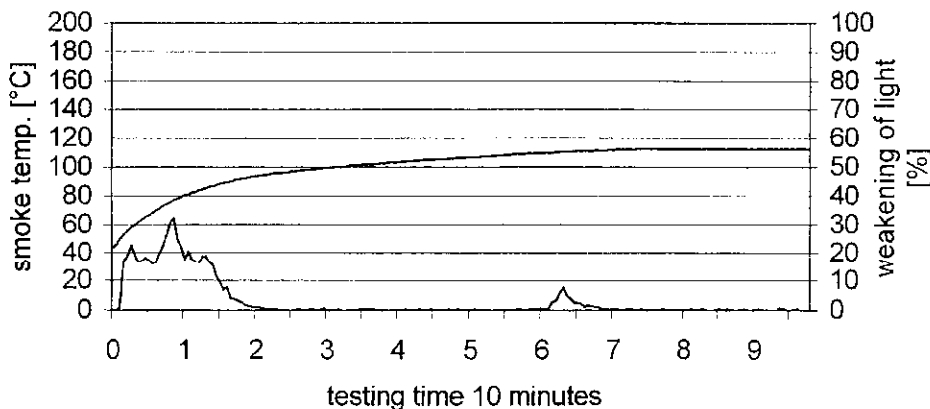
**„Brandschacht“-test #2453
Preconstraint 331: Back in weft orientation**



results of measurement:



#2453, Ferrari, Preconstraint 331, weft orientation
residual length.: 63 cm, smoke temp.: 113°C,
smoke-Int.: 32 %min.



Test for normal flammability

classifying B2 according to DIN 4102

1. Description of test material in condition as delivered

PN 1473 PRECONSTRAINT 331:

Polyester fabric, white, coated on both sides with PVC,
according to manufacturer no difference between weft and warp orientation

characteristic values determined by the test laboratory:
thickness 0,45 mm, area weight approx. 0,370 kg/m²

The testing laboratory is not provided with further details concerning composition of the tested building materials. Samples are deposited.

2. Preparation of samples:

Out of the material there have been cut samples for the ignitability apparatus.
The samples were kept in a climate 23/50 until they reached constant weight.

3. Arrangement of samples: freely suspended

4. Date of test week 3 in 2003

5. Results:

ignitability apparatus	Edge-Test					Edge-Test					
	warp orientation					weft orientation					
samples no.	1	2	3	4	5	1	2	3	4	5	
ignition ¹⁾	1	1	1	1	1	1	1	1	1	1	s
reaching the mark of measurement ¹⁾²⁾	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s
Max. flame height	12	11	13	11	12	12	13	13	12	14	cm
time	10	9	8	12	7	9	7	9	6	12	s
self cessation of the flames end of afterflame ¹⁾	11	13	10	11	8	11	8	11	8	15	s
flames were extinguished after ¹⁾	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s
smoke development (visual)	little					little					
dropping of burning material during 20 s ¹⁾	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s
appearance after test: warp orientation: burned out conical till max. height 11 cm x width 2 cm. Weft orinetation: burned out conical till max. height 8 cm x width 1,5 cm.											

¹⁾ time mentioned from the beginning of the test

²⁾ during 20 Sec

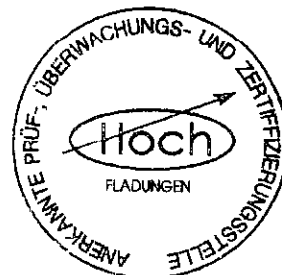
./. no appearance

- no information

6. Remarks and explanations to the testing procedure: - none -

7. Opinion concerning the dropping of burning material:

The tested material is classified as not dropping burning material.



Prüfinstitut Hoch

Lerchenweg 1
D-97650 Fladungen
Tel.: 09778 – 7480 200. Fax: 09778 – 7480 209
hoch.fladungen@t-online.de
www.brandverhalten.de



Prüfinstitut für das Brandverhalten von Bauprodukten, Dipl.-Ing. (FH) Andreas Hoch
Bauaufsichtlich anerkannte Prüf-, Überwachungs- und Zertifizierungsstelle

PRÜFZEUGNIS

zum Nachweis des Brandverhaltens nach DIN 4102, Teil 1

Nr. PZ-Hoch-03028

Auftraggeber:

FERRARI S.A.
Zone Industrielle – B.P. 54
F-38352 LA TOUR DU PIN CEDEX



Art des Prüfmaterials:

Polyestergarn beidseitig mit PVC beschichtet

**Bezeichnung
des Prüfmaterials:**

PRECONTRAI NT 331

Probenahme:

durch Antragsteller

Inhalt des Antrags:

Prüfung auf Entflammbarkeit zur Einreihung in die Baustoffklasse
B1 "schwer entflammbar" nach DIN 4102, Teil 1

**Geltungsdauer
des Prüfzeugnisses:**

31. Januar 2008*)

Ergebnis:

**Das geprüfte Produkt erfüllt freihängend oder im Abstand
größer 40 mm zu gleichen oder anderen flächigen Baustoffen
die Anforderungen der Baustoffklasse B1 für schwerent-
flammbare Baustoffe nach DIN 4102, Teil 1 (Mai 1998).**

Dieses Prüfzeugnis umfasst 4 Seiten und 3 Anlagen.

Hinweis: Falls der o.g. Baustoff nicht als Bauprodukt gemäß MBO § 2, Abs. 9, Ziffer 1, verwendet wird, ist ein allgemeines bauaufsichtliches Prüfzeugnis nicht erforderlich.

Dieses Prüfzeugnis gilt nicht, wenn der geprüfte Baustoff als Bauprodukt im Sinne der Landesbauordnungen verwendet wird (MBO § 20, Abs. 3).

Dieses Prüfzeugnis ersetzt nicht einen gegebenenfalls notwendigen baurechtlichen / bauaufsichtlichen Verwendbarkeitsnachweis nach Landesbauordnung. Dieser ist zu führen durch:

- eine allgemeine bauaufsichtliche Zulassung oder durch
- ein allgemeines bauaufsichtliches Prüfzeugnis oder durch
- eine Zustimmung im Einzelfall

Im bauaufsichtlichen Verfahren kann dieses Prüfzeugnis als Grundlage dienen

- bei geregelten Bauprodukten für die vorgeschriebenen Übereinstimmungsnachweise
- bei nicht geregelten Bauprodukten für die erforderlichen Verwendbarkeitsnachweise.

Das Prüfzeugnis darf ohne vorherige Zustimmung der Prüfstelle nur innerhalb des Geltungszeitraumes und nur nach Form und Inhalt unverändert veröffentlicht oder vervielfältigt werden. Haben sich die den Prüfungen zugrunde gelegten Normen oder sonstigen technischen Richtlinien geändert, so ist in jedem Fall vorher die Zustimmung der Prüfstelle einzuholen.

*) Verlängerung auf Antrag.

1. Beschreibung des Versuchsmaterials im Anlieferungszustand:

PN 1473: PRECONSTRAINT 331: Polyester-Gewebegitter, weiß, beidseitig mit PVC beschichtet Kett- und Schussrichtung sind laut Herstellerangaben identisch

Von der Prüfstelle ermittelte Kennwerte:

Gesamtdicke ca. 0,45 mm

Flächengewicht ca. 0,370 kg/m²

Weitere Angaben zur Zusammensetzung des geprüften Baustoffes liegen der Prüfstelle nicht vor. Muster sind hinterlegt.

2. Herstellung und Vorbehandlung der Proben:

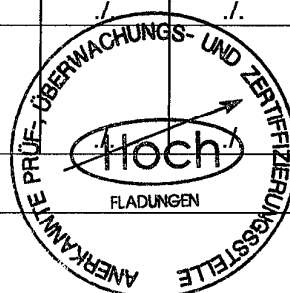
Die Proben wurden in einem Klima 23/50 bis zur Gewichtskonstanz gelagert.

3. Probenanordnung: #2452: Vorderseite in Kettrichtung, freihängend
#2453: Rückseite in Schussrichtung, freihängend

4. Prüfdatum: KW 4 in 2003

5. Versuchsergebnisse: Die Prüfung erfolgte gemäß DIN 4102 (Mai 1998)

Zeilen Nr.	Messwert-Art	Messwert für Probekörper				Dimen- sion
	Versuchs-Nr.	#2452 Vorderseite Kette	#2453 Rückseite Schuß	--	--	
1	Nr. Probenanordnung gem. DIN 4102/T15, Tab. 1	1	1	-	-	
2	Maximale Flammenhöhe über Probenunterkante	40	40	--	--	cm
3	Zeitpunkt ¹⁾	0:04	0:04	./.	./.	min:s
4	Durchschmelzen / Durchbrennen Zeitpunkt ¹⁾	0:02	0:02	./.	./.	min:s
5	Feststellungen a. d. Probenrückseite Flammen/Glimmen Zeitpunkt ¹⁾	---	---	---	---	min:s
6	Verfärbungen Zeitpunkt ¹⁾	./.	./.	./.	./.	min:s
7	Brennendes Abtropfen Beginn ¹⁾	./.	./.	./.	./.	min:s
8	Umfang vereinzelt abtropfendes Probenmaterial ²⁾	---	---	---	---	
9	stetig abtropfendes Probenmaterial ²⁾	---	---	---	---	
10	Brennend abfallende Probenteile Beginn ¹⁾	./.	./.	./.	./.	min:s
11	Umfang vereinzelt abfallende Probenteile ²⁾	---	---	---	---	
12	stetig abfallende Probenteile ²⁾	---	---	---	---	
13	Dauer des Weiterbrennens auf dem Siebboden (max.)	./.	./.	./.	./.	min:s
14	Beeinträchtigung der Brennerflamme durch abtropfendes/abfallendes Material: Zeitpunkt ¹⁾	./.	./.	./.	./.	min:s



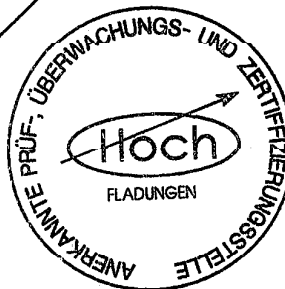
Zeilen Nr.	Messwert-Art	Messwert für Probekörper				Dimen- sion
	Versuchs-Nr.	#2452 Vorderseite Kette	#2453 Rückseite Schuß	--	--	
15	<u>Vorzeitiges Versuchsende</u> Ende des Brandgeschehens an den Proben ¹⁾	./.	./.	./.	./.	min:s
16	Zeitpunkt d. ggf. erfolgten Versuchsabbruchs ¹⁾	./.	./.	./.	./.	min:s
17	<u>Nachbrennen nach Versuchsende</u> Dauer ¹⁾	./.	./.	./.	./.	min:s
18	Anzahl der Proben	---	---	---	---	
19	Probenvorderseite ²⁾	---	---	---	---	
20	Probenrückseite ²⁾	---	---	---	---	
21	Flammenlänge	---	---	---	---	cm
22	<u>Nachglimmen nach Versuchsende</u> Dauer ¹⁾	./.	./.	./.	./.	min:s
23	Anzahl der Proben	---	---	---	---	
24	<u>Ort des Auftretens</u> Untere Probenhälfte ²⁾	---	---	---	---	
25	Obere Probenhälfte ²⁾	---	---	---	---	
26	Probenvorderseite ²⁾	---	---	---	---	
27	Probenrückseite ²⁾	---	---	---	---	
28	<u>Rauchdichte</u> ≤ 400 % * min	19	32	--	--	% * min
29	> 400 % * min ⁴⁾	---	---	---	---	% * min
30	Diagramm in Anlage Nr.	1	2	-	-	
31	<u>Restlängen:</u> Einzelwerte ³⁾					
	Probe 1	67	61	--	--	cm
	Probe 2	64	65	--	--	cm
	Probe 3	64	67	--	--	cm
	Probe 4	63	60	--	--	cm
32	Mittelwert Einzelversuch ³⁾	65	63	--	--	cm
33	Foto des Probekörpers in Anlage Nr.	1	2	-	-	
34	<u>Rauchgastemperatur</u> Maximum des Mittelwertes	111	113	--	--	°C
35	Zeitpunkt ¹⁾	10:00	10:00	./.	./.	min:s
36	Diagramm in der Anlage Nr.	1	2	-	-	
37	Bemerkungen: keine					

1) Zeitangaben ab Versuchsbeginn

2) Zutreffendes angekreuzt

3) Bei Feuerschutzmitteln Angaben von Trägerplatte/Schaumschicht getrennt.

4) sehr starke Rauchentwicklung



6. Erläuterungen zur Versuchsdurchführung: Auf Grund der Restlängen von $>>45\text{cm}$ wurden keine weiteren Prüfungen im Brandschacht durchgeführt.

7. Zusammenfassung der Ergebnisse und ergänzende Feststellung zum Brandverhalten:

Zeilen Nr.	Meßwert-Art	Meßwert für Probekörper				Dimension
		A	B	C	D	
	Probeneingangsnummer	1473	1473	-	-	
	Versuchs-Nr.	2452	2453	-	-	
1	Mittlere Restlänge	65	63	-	-	cm
2	Max. mittlere Rauchgastemperatur	111	113	-	-	°C
3	Rauchdichte	19	32	-	-	%min
4	Bemerkungen: - keine -					

Nach DIN 4102 Teil1 müssen schwerentflammbare Baustoffe auch die Anforderungen der Baustoffklasse B2 erfüllen.

Gemäß zusätzlicher Versuche im Brennkasten ist dies der Fall (siehe Anlage 3).

8. Besondere Hinweise:

- Die genannten Ergebnisse gelten nur für den in Abschnitt 1 beschriebenen Baustoff. Im Verbund mit zusätzlichen Materialien (Beschichtung, Untergrund) kann sich das Brandverhalten ändern.
- Dieses Prüfzeugnis gilt nicht als Nachweis des Brandverhaltens nach Bewitterung im Freien, waschen und chemisch reinigen.
- Dieses Prüfzeugnis gilt nicht, wenn der geprüfte Baustoff als Bauprodukt im Sinne der Landesbauordnungen verwendet wird (MBO § 20, Abs. 3).
- Das Prüfzeugnis ist kein Ersatz für eine bauaufsichtliche Zulassung oder ein allgemeines bauaufsichtliches Prüfzeugnis. Es wird unbeschadet eventueller Rechte Dritter erteilt.
- Im bauaufsichtlichen Verfahren kann dieses Prüfzeugnis als Grundlage dienen
 - bei geregelten Bauprodukten für die vorgeschriebenen Übereinstimmungsnachweise
 - bei nicht geregelten Bauprodukten für die erforderlichen Verwendbarkeitsnachweise.
- Die Erläuterungen in DIN 4102-1, Anhang D, insbesondere zur Fremdüberwachung, sind besonders zu beachten.

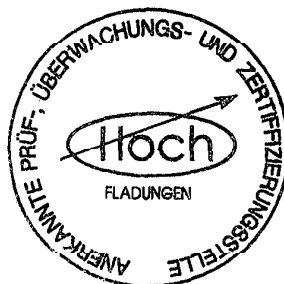
9. Geltungsdauer: Dieses Prüfzeugnis gilt bis zum auf der Seite 1 genannten Zeitpunkt.

Fladungen, den 24. Januar 2003

Sachbearbeiter:

Jürgen Hammer

(Dipl.-Ing.(FH) Jürgen Hammer)

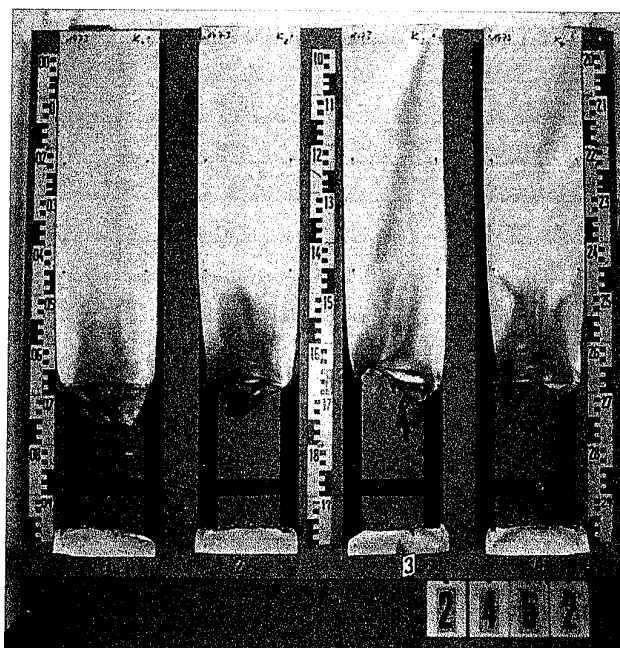


Leiter der Prüfstelle:

Andreas Hoch

(Dipl.-Ing.(FH) Andreas Hoch)

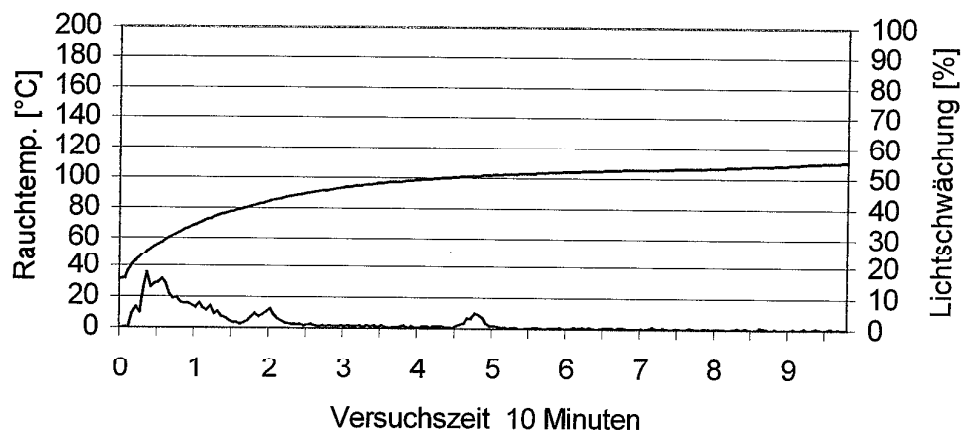
Brandschachtprüfung #2452
Precontraint 331: Vorderseite Kettrichtung



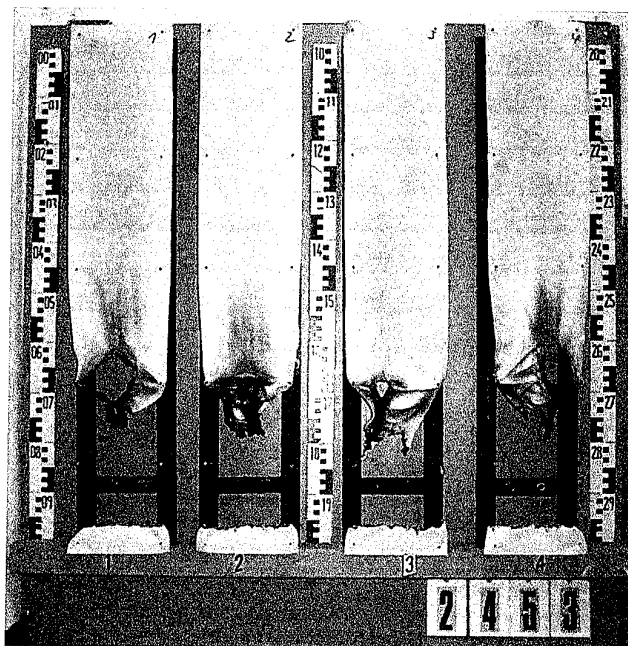
Meßdaten



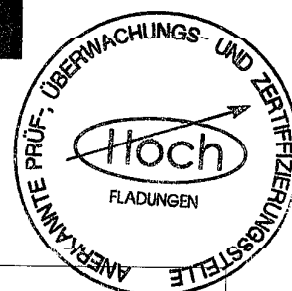
#2452, Ferrari, Precontraint 331, Kette
Restl.: 65 cm, Rauchtemp.: 111°C, Rauch-Integral. 19 %min.



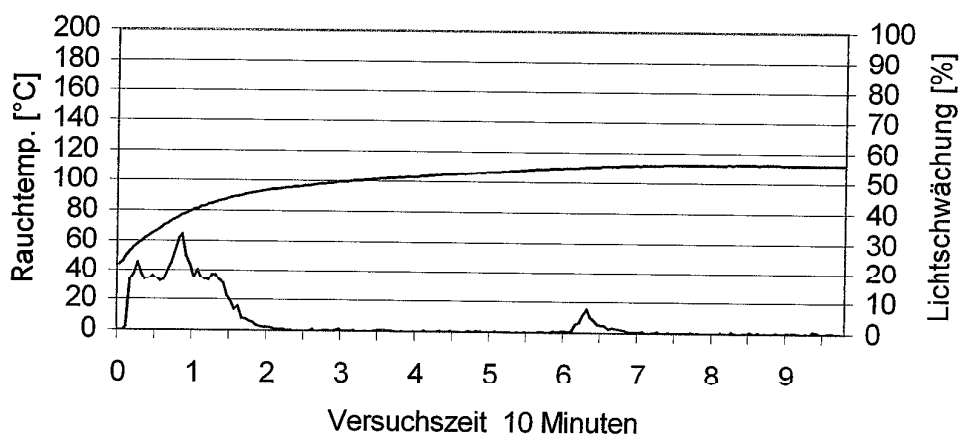
Brandschachtprüfung #2453
Precontraint 331: Rückseite Schußrichtung



Meßdaten



#2453, Ferrari, Precontraint 331, Schuß
Restl.: 63 cm, Rauchtemp.: 113°C, Rauch-Integral: 32 %min.



Prüfung auf Normalentflammbarkeit

Einreihung in die Baustoffklasse B2 nach DIN 4102

1. Beschreibung des Versuchsmaterials im Anlieferungszustand:

PN 1473: PRECONTRAI NT 331:
Polyester-Garn, weiß, beidseitig mit PVC beschichtet

Von der Prüfstelle ermittelte Kennwerte:

Gesamtdicke ca. 0,45 mm

Flächengewicht ca. 0,370 kg/m²

Weitere Angaben zur Zusammensetzung des geprüften Baustoffes liegen der Prüfstelle nicht vor. Muster sind hinterlegt.

2. Herstellung und Vorbehandlung der Proben:

Aus dem Material wurden Proben für den Kantentest herausgeschnitten.

Die Proben wurden in einem Klima 23/50 bis zur Gewichtskonstanz gelagert.

3. Probenanordnung: Versuche freihängend, Beflammung der Kante.

4. Prüfdatum: KW 3 in 2003

5. Versuchsergebnisse:

PN 1473 Proben-Nr.	Kantentest Kette					Kantentest Schuß					
	1	2	3	4	5	1	2	3	4	5	
Entzündung ¹⁾	1	1	1	1	1	1	1	1	1	1	S
Erreichen d. Meßmarke ¹⁾	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	S
Maximale Flammenhöhe	12	11	13	11	12	12	13	13	12	14	Cm
Zeitpunkt der max. Flammenhöhe	10	9	8	12	7	9	7	9	6	12	
Selbstverlöschen der Flammen Ende des Nachbrennens ¹⁾	11	13	10	11	8	11	8	11	8	15	S
Beginn des Glimmens ¹⁾	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	S
Ende des Glimmens ¹⁾	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	S
Flammen wurden gelöscht nach ¹⁾	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	S
Rauchentwicklung (visuell)	gering					gering					
Brennendes Abtropfen innerhalb 20 s ¹⁾	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	S
Aussehen nach der Prüfung: Kantentest Kette: Probe ist kegelförmig ausgebrannt bis max B 2cm x H 11cm. Kantentest Schuß: Probe ist kegelförmig ausgebrannt bis max. B 1,5cm x H 11cm.											

¹⁾ Zeitangaben ab Versuchsbeginn

²⁾ innerhalb 20 Sekunden

./. kein Auftreten des Ereignisses

-- keine Angabe

6. Bemerkungen und Erläuterungen zur Versuchsdurchführung: - keine -

7. Beurteilung bezüglich brennenden Abtropfens/Abfallens:

Das geprüfte Material gilt als nicht brennend abtropfend/abfallend.



Prüfinstitut Hoch

Lerchenweg 1
D-97650 Fladungen
Tel.: 09778 – 740 163, Fax: 09778 – 740 164
hoch.fladungen@t-online.de
www.brandverhalten.de



Prüfinstitut für das Brandverhalten von Bauprodukten, Dipl.-Ing. (FH) Andreas Hoch
Bauaufsichtlich anerkannte Prüf-, Überwachungs- und Zertifizierungsstelle

TEST REPORT

for the proof of Fire behaviour according to DIN 4102, part 1

Prüfzeugnis Nr. PZ-Hoch-03028

Translation of the German test report – no guarantee for translation of technical terms

Company:

FERRARI S.A.
Zone Industrielle – B.P. 54
F-38352 LA TOUR DU PIN CEDEX

Description of samples:

Polyester fabric coated on both sides with PVC

Name of the material:

PRECONTRAI NT 331

sampling:

by the company itself

Content of request:

Proof of flammability to classify building materials to class B1
"schwerentflammbar" according to DIN 4102, part 1

validity of test report:

31st January 2008*)

Result:

The examined product meets the requirements of class B1 for "schwerentflammbare" (hardly flammable) building materials according to DIN 4102, part 1 (May 1998) if used in one layer, suspended freely or with distance of >40 mm to same or other plain materials.



This test report includes 4 pages and 3 enclosures.

Remark: If the above mentioned building material is not used as product according to MBO § 2, Abs. 9, Ziffer 1, there is no need for a general building supervisory test report.

This test report is not valid if the examined building material is used as product in the meaning of state building prescriptions (MBO § 20, Abs. 3).

This test report does not replace an eventually necessary proof of applicability concerning building supervisory or building laws in the meaning of state building prescriptions. This has to be verified by:

- "allgemeine bauaufsichtliche Zulassung" (general building inspectorate approval) or by
- „allgemeines bauaufsichtliches Prüfzeugnis“ (general building inspectorate certificate) or by
- "Zustimmung im Einzelfall" (exceptional approval)

This test report can underlie building supervisory procedures

- for regular building products for the prescribed proofs of conformity
- for non regular building products for the needed proofs of applicability.

This test report must not be published and copied without preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents. Agreement of the test laboratory has to be given in any case if norms on which the tests are based or other technical standards have changed.

*) prolongation on request.

1. Description of test material in condition as delivered

PN 1473 PRECONTRAI NT 331:

Polyester fabric, white, coated on both sides with PVC,
according to manufacturer no difference between weft and warp orientation

characteristic values determined by the test laboratory:
thickness 0,45 mm, area weight approx. 0,370 kg/m²

The testing laboratory is not provided with further details concerning composition of the tested building materials. Samples are deposited.

2. Preparation of samples:

The samples were kept in climate chamber 23/50 until they reached constant weight.

3. Arrangement of samples: freely suspended

#2452: flaming the front in warp orientation

#2453: flaming the back in weft orientation

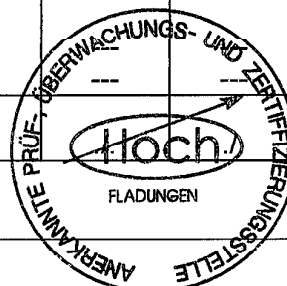
4. Date of test

week 4 in 2003

5. Results:

The test has been examined according to DIN 4102 (Mai 1998)

line No.	Measurement	Result with the tested specimen				Dimension
	Test number	#2452 front warp	#2053 back weft	---	---	
1	Number of specimen arrangement acc. to. DIN 4102/T15, schedule 1	1	1	---	---	
2	Maximum flame height above bottom edge of the specimen	40	40	---	---	cm
3	Time ¹⁾	0:04	0:04	---	---	min:s
4	Burn through / melting Time ¹⁾	0:02	0:02	./.	./.	min:s
5	Observations on the back side of the specimen Flames / Glowing Time ¹⁾	---	---	---	---	min:s
6	Change of color Time ¹⁾	./.	./.	./.	./.	min:s
7	Falling of burning droplets Start ¹⁾	./.	./.	./.	./.	min:s
8	Extent sporadic falling of burning droplets ²⁾	---	---	---	---	min:s
9	continuous falling of burning droplets ²⁾	./.	./.	./.	./.	min:s
10	Falling of burning droplets Start ¹⁾	./.	./.	./.	./.	min:s
11	Extent sporadic falling of burning droplets ²⁾	---	---	---	---	min:s
12	continuous falling of burning droplets ²⁾	---	---	---	---	min:s
13	Afterflame time at the bottom of the sieve (max.)	./.	./.	./.	./.	min:s



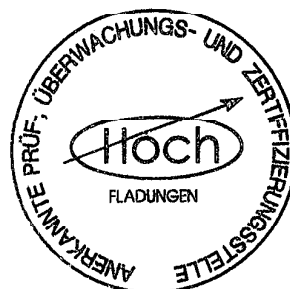
line no.	Measurement	Result with the tested specimen				Dimension
	Test number	#2452 front warp	#2053 back weft	---	---	
14	<u>Impairment of the burner by dropping or falling material:</u> Time ¹⁾	./.	./.	./.	./.	min:s
15	<u>Premature end of test</u> Final occurrence of burning at the specimen ¹⁾	./.	./.	./.	./.	min:s
16	Time of eventually end of test ¹⁾	./.	./.	./.	./.	min:s
17	<u>Afterflame after end of test</u> Time ¹⁾	./.	./.	./.	./.	min:s
18	Number of specimen	---	---	---	---	cm
19	Front side of specimen ²⁾	---	---	---	---	
20	Back side of specimen ²⁾	---	---	---	---	
21	flame length	---	---	---	---	
22	<u>Afterglow after end of test</u> Time ¹⁾	./.	./.	./.	./.	min:s
23	Number of specimen	---	---	---	---	cm
24	<u>Place of appearance</u> Lower half of the specimen ²⁾	---	---	---	---	
25	Upper half of the specimen ²⁾	---	---	---	---	
26	Front side of specimen ²⁾	---	---	---	---	
27	Back side of specimen ²⁾	---	---	---	---	
28	<u>Density of smoke</u> ≤ 400 % * min	19	32	---	---	% * min
29	> 400 % * min ⁴⁾	---	---	---	---	
30	Diagram: encl. no.	1	2	-	-	
31	<u>Residual lengths:</u> individual value ³⁾ Specimen 1 Specimen 2 Specimen 3 Specimen 4	67 64 64 63	61 65 67 60	---	---	cm cm cm cm
32	<u>Average value, individual test</u> ³⁾	65	63	--	--	
33	<u>Photo of specimen in enclosure no.</u>	1	2	-	-	
34	<u>Flue gas temperature</u> Maximum of average value	111	113	---	---	°C min:s
35	Time ¹⁾	10:00	10:00	---	---	
36	Diagram: encl. no.	1	2	-	-	
37	Remarks: - none -					

1) indication of times: from the begin of testing procedure

2) checked off if applicable

3) indication of carrier/foam layer separated in case of fire-proofing agents

4) very strong development of smoke



6. Explanations concerning the testing procedure:

There were no additional tests proceeded because of the residual length of more than 45 cm

7. Summary of results and additional establishments to Fire Behaviour:

line no.	Measurement test-no.	Result with the tested specimen				dimension
		#2452	#2453	-	-	
1	residual length	65	63	-	-	cm
2	max. smoke temperature	111	113	-	-	°C
3	density of smoke - integral	19	32	-	-	%min
4	remarks: - none -					

According to DIN 4102, part 1, "schwerentflammbare" (hardly flammable) building materials must meet the requirements of class B2.

Pursuant to additional tests in the ignitability apparatus this can be determined.

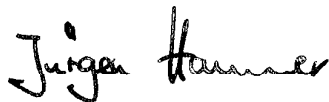
8. Special remarks:

- This report is only valid for the material as described under paragraph 1. In combination with other materials or with additional coatings or grounds etc. the burning behaviour may differ.
- This test report is not valid for the exposure to outdoor climate conditions, washing or cleaning with chemicals.
- This test report is not valid, as soon as the fabric is used as a building product in the sense of the "Landesbauordnungen" (state building requirements, MBO § 20, par. 3).
- This test report is no substitute for a General Building Inspectorate Certificate.
- This test report is granted without prejudice to the rights of third parties, in particular private proprietary rights.
- In General Building Inspectorates procedures this test report can be based for
 - regular building materials for the required proof of accordance
 - for not regular building materials for the required proof of applicability

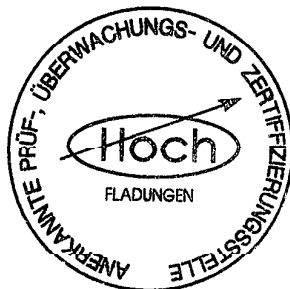
9. Validity: This test report is valid until the mentioned date on page 1.

Fladungen, 24th January 2003

clerk in charge:



(Dipl.-Ing.(FH) Jürgen Hammer)

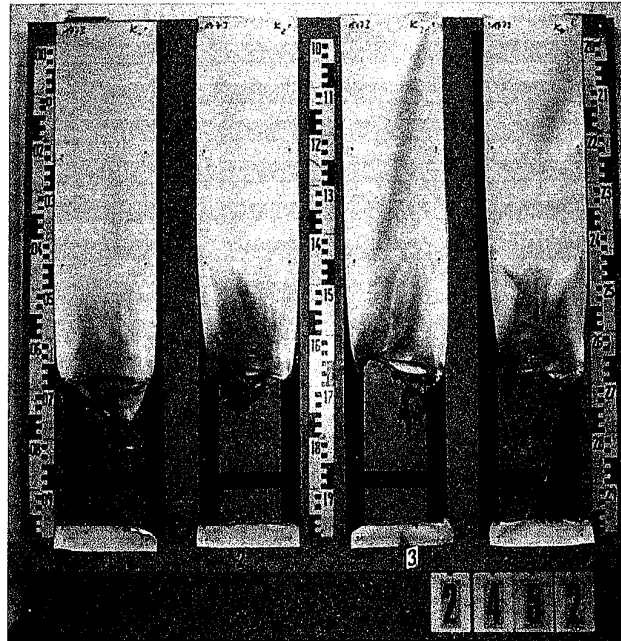


Head of the test laboratory:



(Dipl.-Ing.(FH) Andreas Hoch)

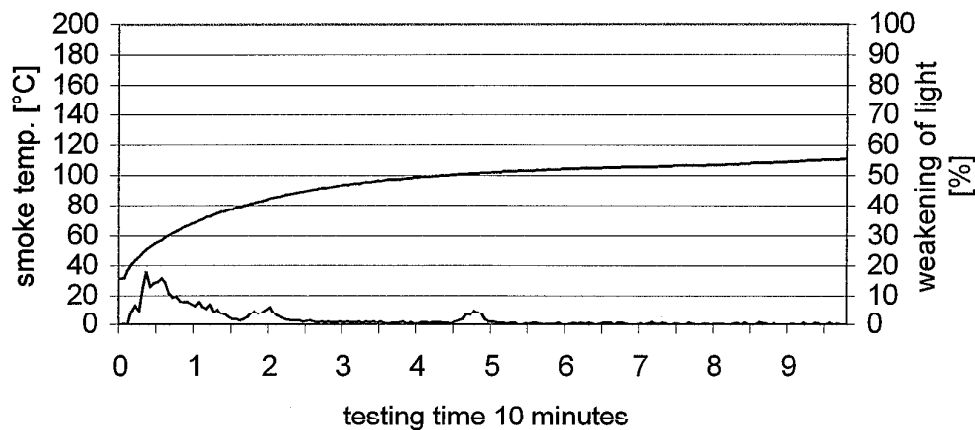
„Brandschacht“-test #2452
Preconstraint 331: Front in warp orientation



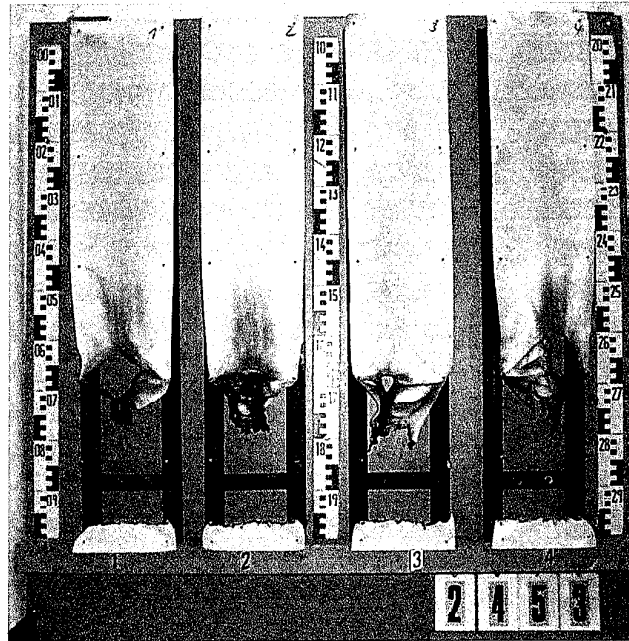
results of measurement:



#2452, Ferrari, Preconstraint 331, warp orientation
residual length.: 65 cm, smoke temp.: 111°C,
smoke-Int.: 19 %min.



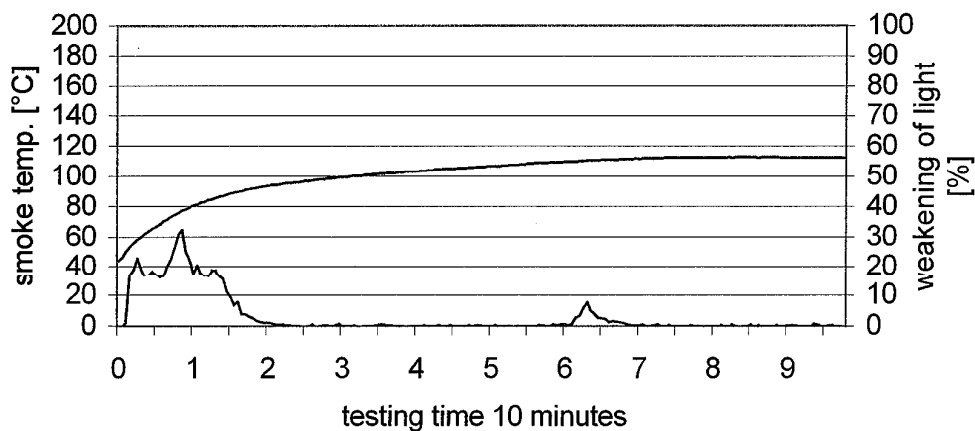
„Brandschacht“-test #2453
Precontraint 331: Back in weft orientation



results of measurement:



#2453, Ferrari, Precontraint 331, weft orientation
residual length.: 63 cm, smoke temp.: 113°C,
smoke-Int.: 32 %min.



Test for normal flammability

classifying B2 according to DIN 4102

1. Description of test material in condition as delivered

PN 1473 PRECONTRANT 331:

Polyester fabric, white, coated on both sides with PVC,
according to manufacturer no difference between weft and warp orientation

characteristic values determined by the test laboratory:
thickness 0,45 mm, area weight approx. 0,370 kg/m²

The testing laboratory is not provided with further details concerning composition of the tested building materials. Samples are deposited.

2. Preparation of samples:

Out of the material there have been cut samples for the ignitability apparatus.
The samples were kept in a climate 23/50 until they reached constant weight.

3. Arrangement of samples: freely suspended

4. Date of test week 3 in 2003

5. Results:

ignitability apparatus	Edge-Test					Edge-Test					
	warp orientation					weft orientation					
samples no.	1	2	3	4	5	1	2	3	4	5	
ignition ¹⁾	1	1	1	1	1	1	1	1	1	1	s
reaching the mark of measurement ¹⁾²⁾	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s
Max. flame height	12	11	13	11	12	12	13	13	12	14	cm
time	10	9	8	12	7	9	7	9	6	12	s
self cessation of the flames end of afterflame ¹⁾	11	13	10	11	8	11	8	11	8	15	s
flames were extinguished after ¹⁾	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s
smoke development (visual)	little					little					
dropping of burning material during 20 s ¹⁾	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s
appearance after test: warp orientation: burned out conical till max. height 11 cm x width 2 cm. Weft orinetation: burned out conical till max. height 8 cm x width 1,5 cm.											

¹⁾ time mentioned from the beginning of the test

²⁾ during 20 Sec

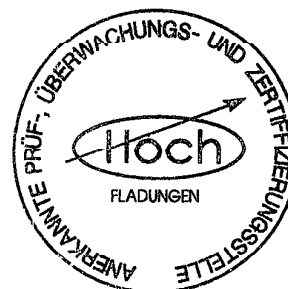
./. no appearance

- no information

6. Remarks and explanations to the testing procedure: - none -

7. Opinion concerning the dropping of burning material:

The tested material is classified as not dropping burning material.



LABORATOIRES DE TRAPPES
29 avenue Roger Hennequin - 78197 TRAPPES CEDEX
Tél : 01 30 69 10 00 - Fax : 01 30 69 12 34

PROCES-VERBAL DE CLASSEMENT DE REACTION AU FEU D'UN MATERIAU

prévu à l'article 5 de l'arrêté du 21 novembre 2002

VALABLE 5 ANS à compter du 23 février 2007

N° H020198 - CEMATE/1

et annexe de 5 pages

Matériau présenté par : TISSAGE & ENDUCTION SERGE FERRARI
Zone Industrielle - BP 54
38352 LA TOUR DU PIN CEDEX

Marque commerciale : PRECONTRAIN 331

Description sommaire : **Composition globale** :
Grille polyester enduite sur les deux faces de
polychlorure de vinyle ignifugé dans la masse
Masse : $(340 \pm 10 \%) \text{ g/m}^2$
Epaisseur : $(0,45 \pm 10 \%) \text{ mm}$
Coloris : Blanc

Rapport d'essai : N° H020198 - CEMATE/1 du 23 février 2007

Nature des essais : Essais au brûleur électrique, essais de propagation de
la flamme.

Classement :

M1

Durabilité du classement (NF P 92-512 : 1986)

NON LIMITEE A PRIORI

compte tenu des critères résultant des essais décrits dans le rapport d'essai N° H020198 - CEMATE/1 annexé.

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 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.

Est seule autorisée la reproduction intégrale soit du présent Procès-verbal de classement qui comprend 1 page soit l'intégralité du Procès-Verbal et rapport annexé qui **comporte 6 pages**.

Trappes, le 23 février 2007

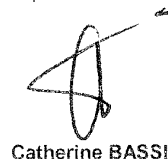
Le Chef de la Division
Comportement au Feu




Alain SAINRAT



La Responsable de l'essai


Catherine BASSI

Accréditation
N° 1-0606
Portée disponible
Sur www.cofrec.fr

Laboratoire national de métrologie et d'essais

Établissement public à caractère industriel et commercial • Siège social : 1, rue Gaston Boissier 75724 Paris Cedex 15 • Tél. : 01 40 43 37 00
Fax : 01 40 43 37 37 • E-mail : info@lne.fr • Internet : www.lne.fr • Siret : 312 320 244 00012 • NAF : 743 B • TVA : FR 92 513 320 244
Barclays Paris Centrale IBAN : FR76 3058 8600 0149 7267 4010 170 BIC : BARCFRPP

Annexe page 1

RAPPORT D'ESSAI DE REACTION AU FEU D'UN MATERIAU

prévu à l'article 5 de l'arrêté du 21 novembre 2002

VALABLE 5 ANS à compter du 23 février 2007

N° H020198 - CEMATE/1

et annexe de 4 pages

1. BUT DES ESSAIS

Le demandeur a remis au Laboratoire national de métrologie et d'essais une grille polyester enduite sur les deux faces de polychlorure de vinyle ignifugé dans la masse afin d'étudier son comportement au feu et de déterminer son classement M.

2. PROVENANCE ET CARACTERISTIQUES DES ECHANTILLONS

. Demandeur de l'essai	:	TISSAGE & ENDUCTION SERGE FERRARI
. Date et référence de la Commande	:	Courrier du 19/01/07
. Producteur	:	TISSAGE & ENDUCTION SERGE FERRARI
. Distributeur	:	
. Marque commerciale et référence	:	PRECONTRAIT 331
. Caractéristiques attestées par le demandeur	:	
Composition globale	:	Grille polyester enduite sur les deux faces de polychlorure de vinyle ignifugé dans la masse
Masse	:	$(340 \pm 10 \%) \text{ g/m}^2$
Epaisseur	:	$(0,45 \pm 10 \%) \text{ mm}$
Coloris	:	Blanc
. Caractéristiques constatées par le LNE	:	conformes à celles attestées par le demandeur
Composition globale	:	non contrôlée
. Mot Clef DSC	:	Autre - Produits divers

3. MODALITES DES ESSAIS ET RESULTATS

Annexe page 2	:	Modalités des essais, conditionnement, classement, durabilité.
Annexes pages 3 à 4	:	Résultats des essais, tableaux.
Annexe page 5	:	Observations concernant les essais
Annexe page 5	:	Conclusion et classement

Annexe page 2

**MODALITES DES ESSAIS DE CLASSEMENT DES MATERIAUX SOUPLES
D'UNE EPAISSEUR INFERIEURE A 5 MM ET MEDIAS FILTRANTS SOUPLES DE TOUTES EPAISSEURS**

1. ESSAIS AU BRULEUR ELECTRIQUE (NF P 92-503 : 1995)

Cet essai consiste à soumettre l'échantillon à une triple action :

- de rayonnement calorifique,
- de gaz chauds balayant la surface des éprouvettes en favorisant ainsi les effets éventuels de propagation de flamme,
- d'une flamme de gaz appliquée à différents instants pour enflammer le matériau.

Les éléments déterminants sont la durée de l'inflammation et la distance détruite depuis le bord de l'éprouvette.

2. ESSAIS COMPLEMENTAIRES

ESSAI DE PROPAGATION DE LA FLAMME (NF P 92-504 : 1995)

L'échantillon normalisé disposé verticalement, sur chant, subit l'action d'une flamme de brûleur à gaz. On mesure la vitesse de propagation entre deux repères distants de 25 cm ou dans le cas de la non propagation de la flamme, on note les durées de persistance de flamme, les distances de propagation et les chutes de gouttes enflammées ou non.

3. CONDITIONNEMENT DES EPROUVETTES

Les éprouvettes présentées aux dimensions normales sont maintenues dans une enceinte climatique conditionnée ($23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ et $50\% \pm 5\%$ d'humidité relative) jusqu'à masse constante. La masse est considérée constante quand deux pesées successives à 24 h d'intervalle ne diffèrent pas de plus de 0,1 % ou de 0,1 g.

4. CLASSEMENT DES MATERIAUX (NF P 92-507 : 2004)

Il est établi à la suite des essais au brûleur électrique (et éventuellement par des essais complémentaires).

Les matériaux sont classés en catégories M1, M2, M3 ou M4.

Seuls les matériaux ayant été classés M1 au cours de l'essai au brûleur électrique (pas d'inflammation supérieure à 5 secondes après le retrait de la flamme pilote), peuvent prétendre au classement M0.

5. EPREUVES DE DURABILITE

NEANT

suite du rapport page suivante

Annexe page 4

4.2. Essais complémentaires

A l'essai de propagation

	Eprouvette 1	Eprouvette 2	Eprouvette 3	Eprouvette 4	
Coloris	Blanc	Blanc	Blanc	Blanc	
Persistance de flamme après le retrait du brûleur ISO 6940	Oui	Oui	Oui	Oui	
Durée de la persistance (secondes)	0,7	0,7	0,8	0,8	Durée max. : 0,8
Durée max. inférieure ou égale à 2 s	Oui				
Durée max. inférieure ou égale à 5 s	Oui				
Chute de gouttes non enflammées	Non	Non	Non	Non	
Chute de gouttes enflammées	Non	Non	Non	Non	

suite du rapport page suivante

Annexe page 5

5. **OBSERVATIONS CONCERNANT LES ESSAIS**

Essais au brûleur électrique

Les éprouvettes se percent et s'enflamment à 20 s, 20 s, 20 s et 20 s. Elles continuent de brûler, avec émission de fumées blanches chargées de suie, pendant 1,0 s, 4,4 s, 1,2 s et 3,6 s après le retrait de la flamme pilote.

Essais de propagation de la flamme

Au retrait du brûleur, il y a des persistance de flamme pouvant atteindre une durée de 0,8 s.

Date de réception des éprouvettes fournies par le demandeur : 29/01/07

Date de réalisation des essais : 01/02/07

6. **CONCLUSION ET CLASSEMENT**

Le produit ayant les caractéristiques décrites en première page de ce rapport d'essai

obtient le classement **M1**.

7. **DURABILITE DU CLASSEMENT**

NON LIMITEE A PRIORI.

Trappes, le 23 février 2007

Le Chef de la Division
Comportement au Feu



Alain SAINRAT

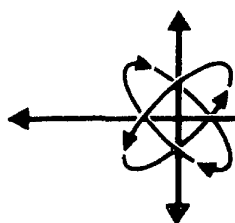


La Responsable de l'essai



Catherine BASSI

L'attention est attirée sur le fait que les résultats obtenus avec l'échantillon objet du présent rapport d'essai ne sont pas généralisables sans justification de la représentativité des échantillons et des essais.



DIVERSIFIED

TESTING LABORATORIES, INC.

"We Test Per Your Request"

336 WEST FRONT STREET
P.O. BOX 4004
BURLINGTON, NORTH CAROLINA 27215
Phone (336) 227-7710 • Fax (336) 227-1175

January 27, 2003

Ms. Dominique COMTE-GAZ
FERRARI SA
BP 54
38352 La Tour Du Pin Cedex
La Mure, France

-6 FEB. 2003

Reference: Laboratory Test Report
Lab Identification No. 5503
Invoice No. 8401 (Attached)

Dear Ms. COMTE-GAZ:

One (1) fabric sample, identified as **PRECONTRAINTE 331**, was received and tested in accordance with the National Fire Prevention Association No. 701, "Flame Propagation of Textiles and Films, 1999 Edition, (Test 2, Large Scale)". The results are as follows:

<u>Specimen Number</u>		<u>Afterflame</u> (seconds)	<u>Residual Flame</u> (seconds)	<u>Char Length</u> (inches)
Single	1	0.0	0.0	9.0
Flat	2	0.0	0.0	12.0
Specimen	3	0.0	0.0	12.0
	4	0.0	0.0	9.0
	5	0.0	0.0	9.0
	6	0.0	0.0	12.0
	7	0.0	0.0	10.0
	8	0.0	0.0	10.0
	9	0.0	0.0	11.0
	10	0.0	0.0	8.0

The sample submitted **meets** the minimum requirements of the above standard. The length of char on the individual single flat specimens shall not exceed 17.1 inches. Additionally, no specimen shall continue flaming for more than two (2) seconds after the test flame is removed and no residues shall fall to the floor of the test chamber and continue flaming for more than two (2) seconds at any time during the test.

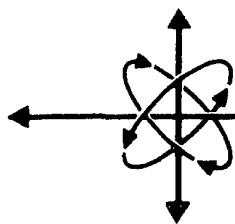
If there are any questions or when we can be of further assistance, please let us know.

Sincerely,

Karon S. Matkins
Karon S. Matkins

ISM/mr
Attachment

OUR LETTERS AND REPORTS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED. ANY COMMUNICATION TO OTHERS OR THE USE OF OUR COMPANY NAME MUST RECEIVE PRIOR APPROVAL. OUR TEST RESULTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. SAMPLES NOT DESTROYED IN TESTING ARE RETAINED A MAXIMUM OF THIRTY DAYS. THE LETTERS, REPORTS OR NAME OF DIVERSIFIED TESTING LABORATORIES, INC. MAY NOT BE USED IN ADVERTISING TO THE GENERAL PUBLIC.



DIVERSIFIED

TESTING LABORATORIES, INC.

"We Test Per Your Request"

336 WEST FRONT STREET
P.O. BOX 4004
BURLINGTON, NORTH CAROLINA 27215
Phone (336) 227-7710 • Fax (336) 227-1175

January 27, 2003

Ms. Dominique COMTE-GAZ
FERRARI SA
BP 54
38352 La Tour Du Pin Cedex
La Mure, France

-6 FEB. 2003

Reference: Laboratory Test Report
Lab Identification No. 5503
Invoice No. 8401 (Attached)

Dear Ms. COMTE-GAZ:

One (1) fabric sample, identified as **PRECONTRAINTE 331**, was received and tested in accordance with the National Fire Prevention Association No. 701, "Flame Propagation of Textiles and Films, 1999 Edition, (Test 2, Large Scale)". The results are as follows:

<u>Specimen Number</u>		<u>Afterflame</u> (seconds)	<u>Residual Flame</u> (seconds)	<u>Char Length</u> (inches)
Single	1	0.0	0.0	9.0
Flat	2	0.0	0.0	12.0
Specimen	3	0.0	0.0	12.0
	4	0.0	0.0	9.0
	5	0.0	0.0	9.0
	6	0.0	0.0	12.0
	7	0.0	0.0	10.0
	8	0.0	0.0	10.0
	9	0.0	0.0	11.0
	10	0.0	0.0	8.0

The sample submitted **meets** the minimum requirements of the above standard. The length of char on the individual single flat specimens shall not exceed 17.1 inches. Additionally, no specimen shall continue flaming for more than two (2) seconds after the test flame is removed and no residues shall fall to the floor of the test chamber and continue flaming for more than two (2) seconds at any time during the test.

If there are any questions or when we can be of further assistance, please let us know.

Sincerely,

Karon S. Matkins
Karon S. Matkins

ISM/mr
Attachment

OUR LETTERS AND REPORTS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED. ANY COMMUNICATION TO OTHERS OR THE USE OF OUR COMPANY NAME MUST RECEIVE PRIOR APPROVAL. OUR TEST RESULTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. SAMPLES NOT DESTROYED IN TESTING ARE RETAINED A MAXIMUM OF THIRTY DAYS. THE LETTERS, REPORTS OR NAME OF DIVERSIFIED TESTING LABORATORIES, INC. MAY NOT BE USED IN ADVERTISING TO THE GENERAL PUBLIC.