



PA-No.: 2649

TEST REPORT No. 2649-1

Zeichen/Ref.: Sch

Applicant: Benedict GmbH
A-1220 Wien, Liebiggasse 7

Commission / test items received: 09.02.2010
Date(s) of performance of tests: 08.02.2010-23.02.2010

Type of test item:

plastic materials used in contactors (see also table on page 2):

- .) Ultramid A3X2G5 23187 (PA6.6), colour: black
- .) Durethan DP 1801/30 (PA6), colour: black
- .) Arnite AV2-363, colour: black
- .) Ampal MPV 7500, colour: black
- .) RF656-20, colour grey
- .) Latamid 66 H2 G25, colour grey
- .) Crastin S650 FR, colour grey
- .) Akulon K222-KGV4 (PA6), colour: grey (except proof tracking index test)
- .) Kelon B FRH CET/30, colour: grey

test results have been partly overtaken from test report Ref.No.2592-1 dated 20.08.2009

Test specification (standard, test procedure):

- 1) Determination of the proof and the comparative tracking indices of solid insulating materials following IEC 60112:2003+A1:2009, test solution A
- 2) Glow-wire flammability test for end-products following IEC 60695-2-11:2000 test performed at 750°C
- 3) Glow-wire flammability test for materials following IEC 60695-2-12:2000 GWFI-test at 850°C
- 4) Abnormal heat – Ball pressure tests following IEC 60695-10-2:2003

Compiled by: M.Schnötzing

Date: 24.02.2010

Approved by: Ing. H. Bachl

Date: 24.02.2010



This report may be reproduced in whole as long as CTI-VIENNA / Gesellschaft zur Prüfung elektrotechnischer Industrieprodukte GmbH is acknowledged as copyright owner and source of the material.

Partly reproduction of this report is only allowed with the written approval of CTI-VIENNA / Gesellschaft zur Prüfung elektrotechnischer Industrieprodukte GmbH.

The test results presented in this report relate only to the items tested.

CTI-VIENNA / Gesellschaft zur Prüfung elektrotechnischer Industrieprodukte GmbH takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the produced material due to its placement and context.

Overview of test results

		IEC 60112	IEC 60695-2-11	IEC 60695-2-12	IEC 60695-10-2		IEC 60112	IEC 60695-2-11	IEC 60695-2-12	IEC 60695-10-2
		PTI	GWFI	GWFI	BPT		PTI250	GWFI	GWFI	BPT
			750°C	850°C	125°C			750°C	850°C	125°C
device type	housing					cover				
		results see:	results see:	results see:	results see:		results see:	results see:	results see:	results see:
HN	Ultramid A3X2G5	1.1), 1.4)	2.1), 2.5)	3.1), 3.7)	4.1)	-	-	-	-	-
K3-10, K3-14, K3-18, K3-22	Ultramid A3X2G5	1.1), 1.4)	2.1), 2.5)	3.1), 3.7)	4.2)	Akulon K222-KGV4	-	2.2)	3.2)	4.4)
	Durethan DP1801/30	1.2)	2.3)	3.3)	4.3)					
K3-24, K3-32, K3-40	Ultramid A3X2G5	1.1), 1.4)	2.1), 2.5)	3.1), 3.7)	4.2)	Akulon K222-KGV4	-	2.2)	3.2)	4.4)
	Durethan DP1801/30	1.2)	2.3)	3.3)	4.3)					
K3-50, K3-62, K3-74	Arnite AV2-363	1.3)	2.4)	3.5)	4.5)	Akulon K222-KGV4	-	2.2)	3.2)	4.4)
	Ultramid A3X2G5	1.1), 1.4)	2.1), 2.5)	3.1), 3.7)	4.2)					
	Durethan DP1801/30	1.2)	2.3)	3.3)	4.3)					
K3-90, K3-115	upper part Ampal MPV 7500	1.5)	2.6)	3.6)	4.7)	cover Akulon K222-KGV4	-	2.2)	3.2)	4.4)
	base Ultramid A3X2G5	1.1), 1.4)	2.1), 2.5)	3.1), 3.7)	4.6)	terminal cover Akulon K222-KGV4	-	2.2)	3.2)	4.4)
K3-151, K3-176	upper part RF656-20	1.7)	2.8)	3.9)	4.9)	Kelon B FRH CET/30	1.8)	2.9)	3.10)	4.10)
	base Latamid 66 H2 G25	1.6)	2.7)	3.8)	4.8)					
HKA	Crastin S650 FR	1.9)	2.10)	3.4)	4.11)	-	-	-	-	-

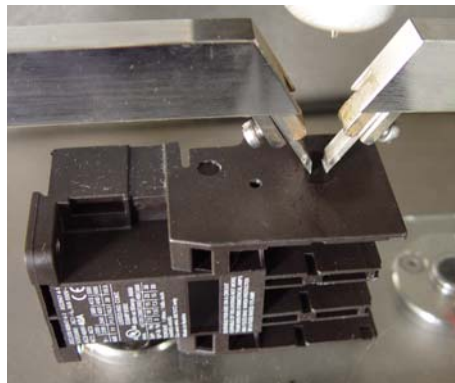
TEST RESULTS:

1) proof tracking index test:

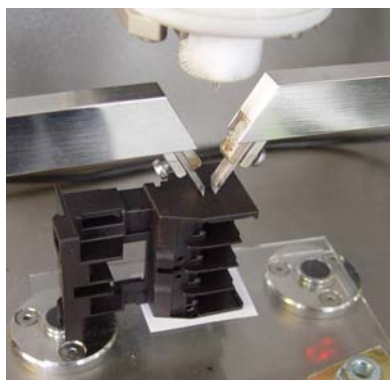
- .) test solution: A ($3,95\Omega\text{m}\pm 0,05$)
- .) test voltage: 250V~
- .) surface: smooth
- .) pre-treatment: degreased
- .) 5 test points (per test point -50 drops)

1.1) Ultramid A3X2G5 23187 (PA6.6), colour: black (test performed in CTI-PA 1990)

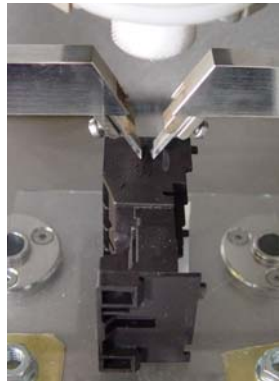
- I). test point: test has been performed on a single part taken from the whole device (K3-40A00), thickness of the material: 1,5mm



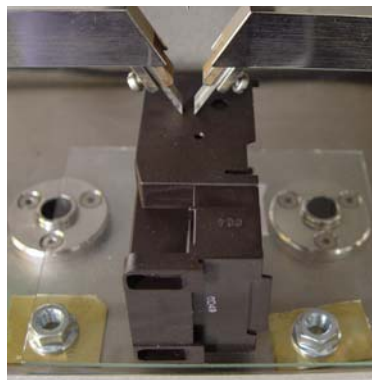
- II). test point: test has been performed on a single part taken from the whole device (K3-10A10), thickness of the material: 2,2mm



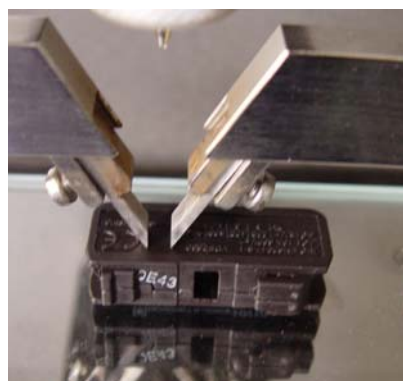
III). test point: test has been performed on a single part taken from the whole device (K3-10A10), thickness of the material: 2,2mm



IV). test point: test has been performed on a single part taken from the whole device (K3-40A00), thickness of the material: 1,5mm



V). test point: test has been performed on a single part taken from the whole device (HN10), thickness of the material: 1,0mm



⇒result: PTI250 ⇒ test passed

1.2) Durethan DP 1801/30 (PA6), colour: black (test performed in CTI-PA 2592)

- I). test point: test has been performed on a suitable test specimen, cut from a part of a product, thickness of the material: 2,0mm
- II). test point: test has been performed on a suitable test specimen, cut from a part of a product, thickness of the material: 2,0mm
- III). test point: test has been performed on a suitable test specimen, cut from a part of a product, thickness of the material: 2,0mm
- IV). test point: test has been performed on a suitable test specimen, cut from a part of a product, thickness of the material: 1,2mm
- V). test point: test has been performed on a suitable test specimen, cut from a part of a product, thickness of the material: 2,0mm

test specimen:

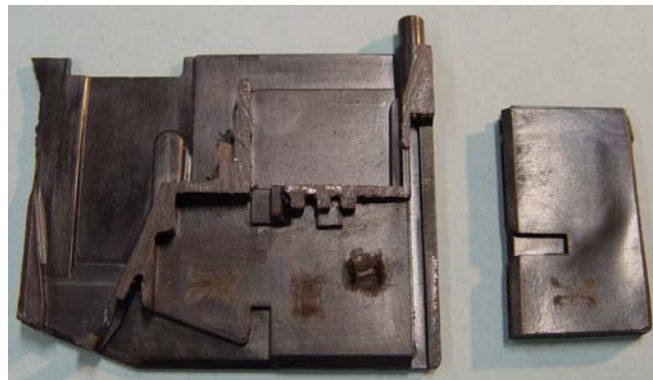


⇒result: PTI250 ⇒ test passed

1.3) Arnite AV2-363, colour: black (test performed in CTI-PA 2649)

- I). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-62A00), thickness of the material: 3,4mm
- II). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-62A00), thickness of the material: 3,4mm
- III). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-62A00), thickness of the material: 3,4mm
- IV). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-62A00), thickness of the material: 3,4mm
- V). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-62A00), thickness of the material: 3,4mm

test specimen (examples):

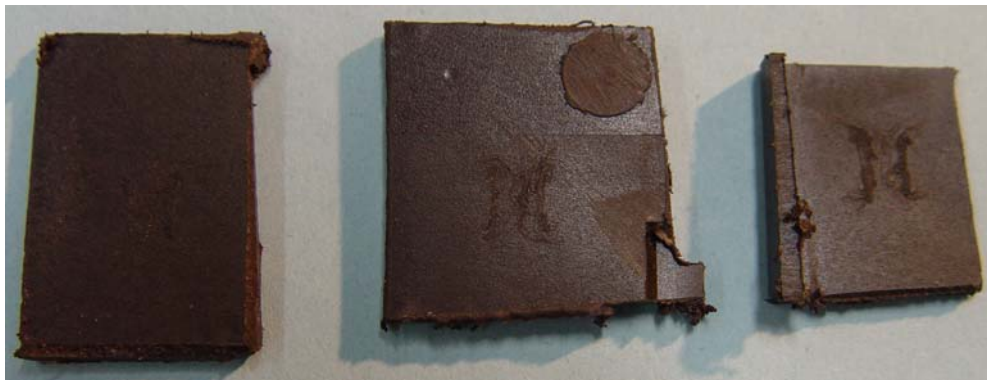


⇒result: PTI250, PTI200⇒ test not passed
PTI175 ⇒ test passed

1.4) Ultramid A3X2G5, colour: black (test performed in CTI-PA 2649)

- I). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 3,0mm
- II). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 4,0mm
- III). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 4,1mm
- IV). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 3,0mm
- V). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 3,0mm

test specimen (examples):

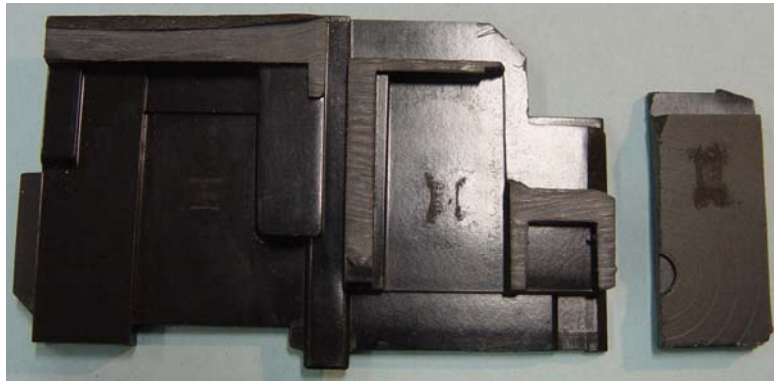


⇒result: PTI250 ⇒ test passed

1.5) Ampal MPV 7500, colour: black (test performed in CTI-PA 2649)

- I). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 2,4mm
- II). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 2,5mm
- III). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 1,8mm
- IV). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 2,5mm
- V). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 2,5mm

test specimen (examples):



⇒result: PTI250 ⇒ test passed

1.6) Latamid 66 H2 G25, colour: grey (test performed in CTI-PA 2649)

- I). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 2,7mm
- II). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 2,7mm
- III). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 2,0mm
- IV). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 2,7mm
- V). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 2,7mm

test specimen (examples):



⇒result: PTI250 ⇒ test passed

1.7) RF656-20, colour: grey (test performed in CTI-PA 2649)

- I). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 3,5mm
- II). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 3,5mm
- III). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 3,5mm
- IV). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 3,5mm
- V). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 3,5mm

test specimen (examples):



⇒result: PTI250 ⇒ test passed

1.8) Kelon B FRH CET/30, colour: grey (test performed in CTI-PA 2649)

- I). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 1,4mm
- II). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 1,4mm
- III). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 1,4mm
- IV). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 1,4mm
- V). test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 1,4mm

test specimen (examples):

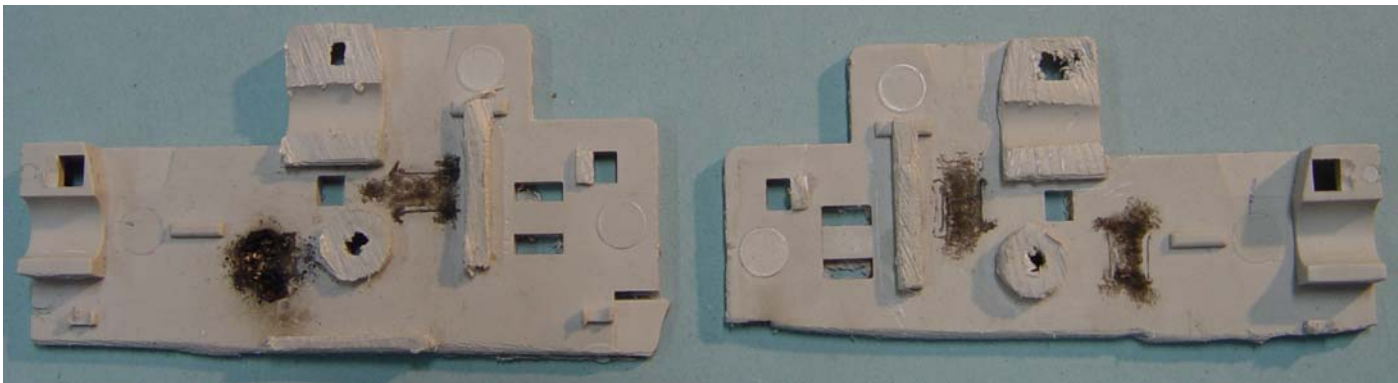


⇒result: PTI250 ⇒ test passed

1.9) Crastin S650FR, colour: grey (test performed in CTI-PA 2649)

- I). test point: test has been performed on a suitable test specimen, cut from a part of a product (HKA), thickness of the material: 2,2mm
- II). test point: test has been performed on a suitable test specimen, cut from a part of a product (HKA), thickness of the material: 2,2mm
- III). test point: test has been performed on a suitable test specimen, cut from a part of a product (HKA), thickness of the material: 2,2mm
- IV). test point: test has been performed on a suitable test specimen, cut from a part of a product (HKA), thickness of the material: 2,2mm
- V). test point: test has been performed on a suitable test specimen, cut from a part of a product (HKA), thickness of the material: 2,2mm

test specimen (examples):



⇒result: PTI250⇒ test not passed
PTI200 ⇒ test passed

2) Glow-wire flammability test on end-product (following IEC 60695-2-11:2000):

- .) the test specimen was a complete end-product
- .) test temperature: 750°C
- .) the test specimen and the specified layer to be used have been conditioned for 24h in an atmosphere having a temperature between 15°C and 35°C and a relative humidity between 45% and 75%
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was then applied for 30s

2.1) Ultramid A3X2G5 23187 (PA6.6), colour: black (test performed in CTI-PA 1990)

- I). test on contactor of type K3-10A10:
No visible flame and no sustained glowing
No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

arrangement of test specimen:



- II). test on contactor of type K3-32A00:
No visible flame and no sustained glowing
No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

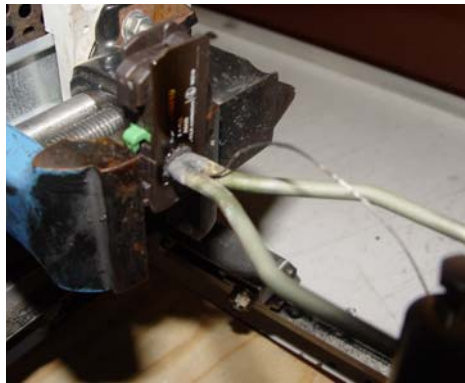
arrangement of test specimen:



- III). test on control circuit devices of type HN...:
No visible flame and no sustained glowing
No ignition of tissue paper or scorching of the pinewood board

⇒**result: test passed**

arrangement of test specimen:

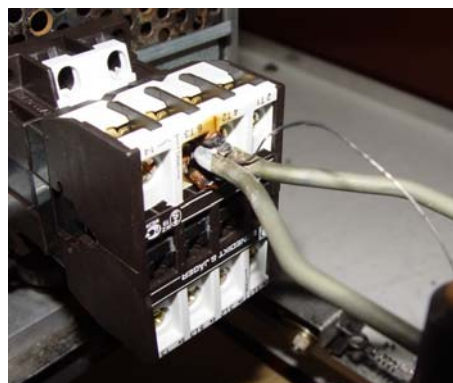


2.2) Akulon K222-KGV4 (PA6), colour: grey (test performed in CTI-PA 1990)

- I). test on contactor of type K3-10A10:
No visible flame and no sustained glowing
No ignition of tissue paper or scorching of the pinewood board

⇒**result: test passed**

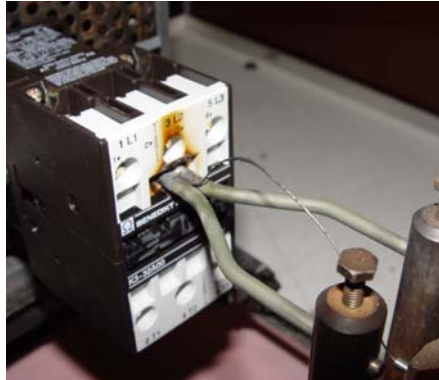
arrangement of test specimen:



- II). test on contactor of type K3-32A00:
No visible flame and no sustained glowing
No ignition of tissue paper or scorching of the pinewood board

⇒**result: test passed**

arrangement of test specimen:



2.3) Durethan DP 1801/30 (PA6), colour: black (test performed in CTI-PA 2592)

- .) the test specimen was a removed complete part of an end-product
 - .) test temperature: 750°C
 - .) the test specimen and the specified layer to be used have been conditioned for 24h in an atmosphere having a temperature between 15°C and 35°C and a relative humidity between 45% and 75%
 - .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was then applied for 30s
- l). test on housing of contactor :
- .) the duration (ti) from the beginning of tip application up to the time at which the test specimen ignites: 3 s
 - .) the duration (te) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 6s
 - .) the maximum height of any flame rounded up to the next 5 mm but disregarding the start of the ignition, which may produce a high flame for a period of approximately 1 s: <15mm
 - .) no ignition of tissue paper or scorching of the pinewood board

⇒**result: test passed**

arrangement of test specimen:



2.4) Arnite AV2-362, colour: black (test performed in CTI-PA 2649)

- .) the test specimen was a complete end-product
- .) test temperature: 750°C
- .) the test specimen and the specified layer to be used have been conditioned for 24h in an atmosphere having a temperature between 15°C and 35°C and a relative humidity between 45% and 75%
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was then applied for 30s

l). test on housing of contactor (K3-62A00) :

- .) the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites: 9 s
- .) the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 30s
- .) the maximum height of any flame rounded up to the next 5 mm but disregarding the start of the ignition, which may produce a high flame for a period of approximately 1 s: <25mm
- .) no ignition of tissue paper or scorching of the pinewood board

⇒**result: test passed**

arrangement of test specimen:



2.5) Ultramid A3X2G5, colour: black (test performed in CTI-PA 2649)

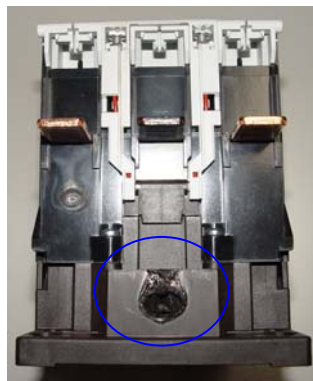
- .) the test specimen was a complete end-product
- .) test temperature: 750°C
- .) the test specimen and the specified layer to be used have been conditioned for 24h in an atmosphere having a temperature between 15°C and 35°C and a relative humidity between 45% and 75%
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was then applied for 30s

l). test on housing of contactor (K3-90A00) :

- .) the duration (ti) from the beginning of tip application up to the time at which the test specimen ignites: 1 s
- .) the duration (te) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 37s
- .) the maximum height of any flame rounded up to the next 5 mm but disregarding the start of the ignition, which may produce a high flame for a period of approximately 1 s: <10mm
- .) no ignition of tissue paper or scorching of the pinewood board

⇒**result: test passed**

arrangement of test specimen:

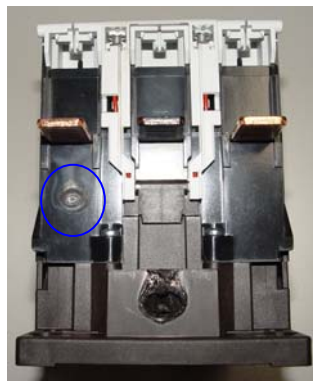


2.6) Ampal MPV 7500, colour: black (test performed in CTI-PA 2649)

- .) the test specimen was a complete end-product
 - .) test temperature: 750°C
 - .) the test specimen and the specified layer to be used have been conditioned for 24h in an atmosphere having a temperature between 15°C and 35°C and a relative humidity between 45% and 75%
 - .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was then applied for 30s
- l). test on housing of contactor (K3-90A00) :
- .) the duration (ti) from the beginning of tip application up to the time at which the test specimen ignites: no ignition
 - .) the duration (te) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
 - .) the maximum height of any flame rounded up to the next 5 mm but disregarding the start of the ignition, which may produce a high flame for a period of approximately 1 s:
--
 - .) no ignition of tissue paper or scorching of the pinewood board

⇒**result: test passed**

arrangement of test specimen:



2.7) Latamid 66 H2 G25, colour: grey (test performed in CTI-PA 2649)

- .) the test specimen was a complete end-product
- .) test temperature: 750°C
- .) the test specimen and the specified layer to be used have been conditioned for 24h in an atmosphere having a temperature between 15°C and 35°C and a relative humidity between 45% and 75%
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was then applied for 30s

l). test on housing of contactor (K3-151A00) :

- .) the duration (ti) from the beginning of tip application up to the time at which the test specimen ignites: no ignition
- .) the duration (te) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
- .) the maximum height of any flame rounded up to the next 5 mm but disregarding the start of the ignition, which may produce a high flame for a period of approximately 1 s:
--
- .) no ignition of tissue paper or scorching of the pinewood board

⇒**result: test passed**

arrangement of test specimen:



2.8) RF656-20, colour: grey (test performed in CTI-PA 2649)

- .) the test specimen was a complete end-product
- .) test temperature: 750°C
- .) the test specimen and the specified layer to be used have been conditioned for 24h in an atmosphere having a temperature between 15°C and 35°C and a relative humidity between 45% and 75%
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was then applied for 30s

l). test on housing of contactor (K3-151A00) :

- .) the duration (ti) from the beginning of tip application up to the time at which the test specimen ignites: no ignition
- .) the duration (te) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
- .) the maximum height of any flame rounded up to the next 5 mm but disregarding the start of the ignition, which may produce a high flame for a period of approximately 1 s:
--
- .) no ignition of tissue paper or scorching of the pinewood board

⇒**result: test passed**

arrangement of test specimen:



2.9) Kelon B FRH CET/30, colour: grey (test performed in CTI-PA 2649)

- .) the test specimen was a complete end-product
- .) test temperature: 750°C
- .) the test specimen and the specified layer to be used have been conditioned for 24h in an atmosphere having a temperature between 15°C and 35°C and a relative humidity between 45% and 75%
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was then applied for 30s

l). test on housing of contactor (K3-151A00) :

- .) the duration (ti) from the beginning of tip application up to the time at which the test specimen ignites: no ignition
- .) the duration (te) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
- .) the maximum height of any flame rounded up to the next 5 mm but disregarding the start of the ignition, which may produce a high flame for a period of approximately 1 s:
--
- .) no ignition of tissue paper or scorching of the pinewood board

⇒**result: test passed**

arrangement of test specimen:



2.10) Crastin S650FR, colour: grey (test performed in CTI-PA 2649)

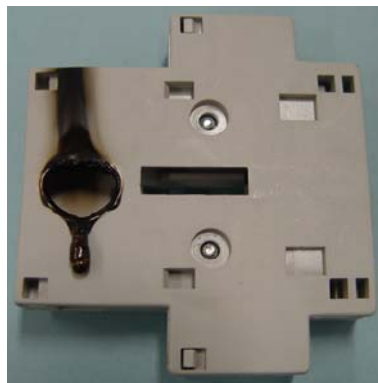
- .) the test specimen was a complete end-product
- .) test temperature: 750°C
- .) the test specimen and the specified layer to be used have been conditioned for 24h in an atmosphere having a temperature between 15°C and 35°C and a relative humidity between 45% and 75%
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was then applied for 30s

l). test on housing of contactor (HKA) :

- .) the duration (ti) from the beginning of tip application up to the time at which the test specimen ignites: 1 s
- .) the duration (te) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 3 s
- .) the maximum height of any flame rounded up to the next 5 mm but disregarding the start of the ignition, which may produce a high flame for a period of approximately 1 s: <10mm
- .) no ignition of tissue paper or scorching of the pinewood board

⇒**result: test passed**

arrangement of test specimen:



3) Glow-wire flammability test for materials following IEC 60695-2-12:2000

- .) tests have been performed on a single part taken from the whole device
- .) test temperature: 850°C
- .) the test specimen have been conditioned for 24h in an atmosphere having a temperature of 23°C and a relative humidity between 45% and 55%
- .) test performed on three samples per material
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was than applied for 30s

3.1) Ultramid A3X2G5 23187 (PA6.6), colour: black (test performed in CTI-PA 1990)

- I). test point: test has been performed on a single part taken from the whole device (K3-32A00), thickness of the material in the area of the penetration of the glow wire: 2mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 35s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

arrangement of test specimen:



- II). test point: test has been performed on a single part taken from the whole device (K3-32A00), thickness of the material in the area of the penetration of the glow wire: 2mm

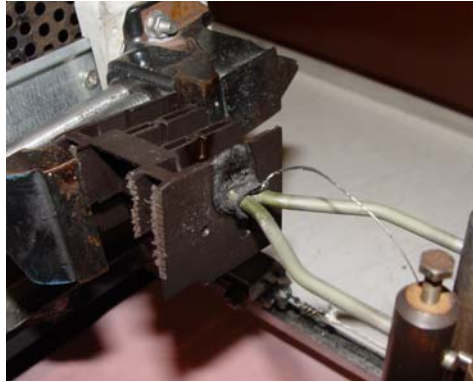
visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 35s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

arrangement of test specimen:



III). test point: test has been performed on a single part taken from the whole device (K3-10A10), thickness of the material in the area of the penetration of the glow wire: 2mm

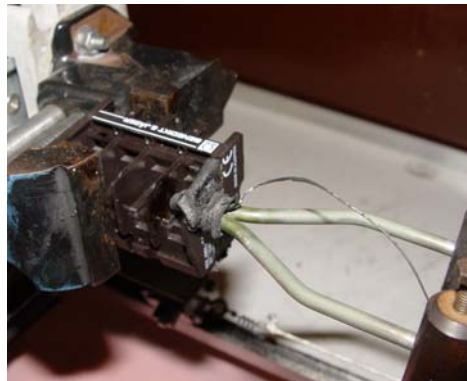
visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 42s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed ⇒ $GWFI \geq 850/2$

arrangement of test specimen:



3.2) Akulon K222-KGV4 (PA6), colour: grey (test performed in CTI-PA 1990)

- I). test point: test has been performed on a single part taken from the whole device (K3-32A00), thickness of the material in the area of the penetration of the glow wire: 1mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 31s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

arrangement of test specimen:



- II). test point: test has been performed on a single part taken from the whole device (K3-32A00), thickness of the material in the area of the penetration of the glow wire: 1mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 31s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

arrangement of test specimen:



III). test point: test has been performed on a single part taken from the whole device (K3-32A00), thickness of the material in the area of the penetration of the glow wire: 1mm

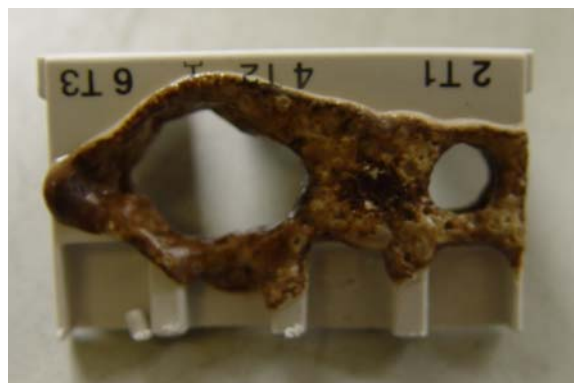
visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 31s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed ⇒ $GWFI \geq 850/1$

arrangement of test specimen:



3.3) Durethan DP 1801/30 (PA6), colour: black (test performed in CTI-PA 2592)

- .) test has been performed on a, test specimen, cut from a part of a product
- .) test temperature: 850°C
- .) the test specimen have been conditioned for 24h in an atmosphere having a temperature of 23°C and a relative humidity between 45% and 55%
- .) test performed on three samples
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was than applied for 30s

I). thickness of the material in the area of the penetration of the glow wire: 1,5mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 32s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

II). thickness of the material in the area of the penetration of the glow wire: 1,5mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 34s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

III). thickness of the material in the area of the penetration of the glow wire: 1,5mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 36s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed ⇒ $GWFI \geq 850/1,5$

test specimen:



3.4) Crastin S650 FR, colour: grey (**test performed in CTI-PA 2694**)

- .) test has been performed on a, test specimen, cut from a part of a product (HKA)
- .) test temperature: 850°C
- .) the test specimen have been conditioned for 24h in an atmosphere having a temperature of 23°C and a relative humidity between 45% and 55%
- .) test performed on three samples
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was than applied for 30s

- I). thickness of the material in the area of the penetration of the glow wire: 2,2mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 30s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

- II). thickness of the material in the area of the penetration of the glow wire: 2,2mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 30s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

- III). thickness of the material in the area of the penetration of the glow wire: 2,2mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 30s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed ⇒ $GWFI \geq 850/2,2$

test specimen:



3.5) Arnite AV2-362, colour: black (**test performed in CTI-PA 2694**)

- .) test has been performed on a, test specimen, cut from a part of a product (K3-62A00)
- .) test temperature: 850°C
- .) the test specimen have been conditioned for 24h in an atmosphere having a temperature of 23°C and a relative humidity between 45% and 55%
- .) test performed on three samples
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was than applied for 30s

I). thickness of the material in the area of the penetration of the glow wire: 2,2mm

- .) the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: 15 s
- the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 30s
- No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed**

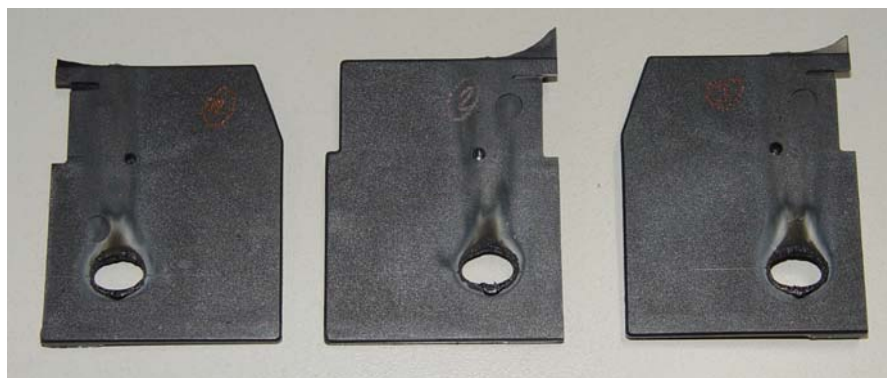
II). thickness of the material in the area of the penetration of the glow wire: 2,2mm

- the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: 13 s
- the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 30s
- No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed**

III). thickness of the material in the area of the penetration of the glow wire: 2,2mm

- the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: 12 s
- the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 30s
- No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed ⇒ $GWFI \geq 850/2,2$**

test specimen:



3.6) Ampal MPV 7500, colour: black (test performed in CTI-PA 2694)

- .) test has been performed on a, test specimen, cut from a part of a product (K3-90A00)
- .) test temperature: 850°C
- .) the test specimen have been conditioned for 24h in an atmosphere having a temperature of 23°C and a relative humidity between 45% and 55%
- .) test performed on three samples
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was than applied for 30s

I). thickness of the material in the area of the penetration of the glow wire: 3,0mm

- .) the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: no ignition
- the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
- No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed**

II). thickness of the material in the area of the penetration of the glow wire: 3,0mm

- the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: no ignition
- the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
- No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed**

III). thickness of the material in the area of the penetration of the glow wire: 3,0mm

- the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: no ignition
- the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
- No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed ⇒ GWFI ≥ 850/3**

test specimen:



3.7) Ultramid A3X2G5, colour: black (test performed in CTI-PA 2694)

- .) test has been performed on a, test specimen, cut from a part of a product (K3-90A00)
- .) test temperature: 850°C
- .) the test specimen have been conditioned for 24h in an atmosphere having a temperature of 23°C and a relative humidity between 45% and 55%
- .) test performed on three samples
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was than applied for 30s

I). thickness of the material in the area of the penetration of the glow wire: 2,4mm

- .) visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 35 s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

II). thickness of the material in the area of the penetration of the glow wire: 2,4mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 37 s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

III). thickness of the material in the area of the penetration of the glow wire: 2,4mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 39 s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed ⇒ $GWFI \geq 850/2,4$

test specimen:



3.8) Latamid 66 H2 G25, colour: grey (test performed in CTI-PA 2694)

- .) test has been performed on a, test specimen, cut from a part of a product (K3-151A00)
- .) test temperature: 850°C
- .) the test specimen have been conditioned for 24h in an atmosphere having a temperature of 23°C and a relative humidity between 45% and 55%
- .) test performed on three samples
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was than applied for 30s

I). thickness of the material in the area of the penetration of the glow wire: 2,3mm

- .) the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: no ignition
 - the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
 - No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed**

II). thickness of the material in the area of the penetration of the glow wire: 2,3mm

- the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: no ignition
 - the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
 - No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed**

III). thickness of the material in the area of the penetration of the glow wire: 2,3mm

- the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: no ignition
 - the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
 - No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed ⇒ GWFI ≥ 850/2,3**

test specimen:



3.9) RF656-20, colour: grey (test performed in CTI-PA 2694)

- .) test has been performed on a, test specimen, cut from a part of a product (K3-151A00)
- .) test temperature: 850°C
- .) the test specimen have been conditioned for 24h in an atmosphere having a temperature of 23°C and a relative humidity between 45% and 55%
- .) test performed on three samples
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was than applied for 30s

I). thickness of the material in the area of the penetration of the glow wire: 3,4mm

- .) the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: no ignition
- the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
- No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed**

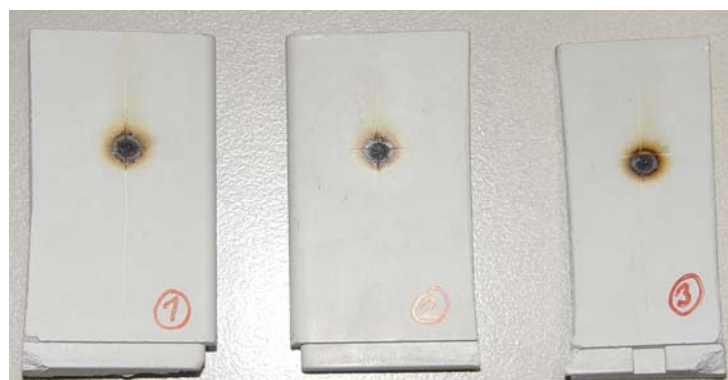
II). thickness of the material in the area of the penetration of the glow wire: 3,4mm

- the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: no ignition
- the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
- No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed**

III). thickness of the material in the area of the penetration of the glow wire: 3,4mm

- the duration (t_i) from the beginning of tip application up to the time at which the test specimen ignites permanent: no ignition
- the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: no ignition
- No ignition of tissue paper or scorching of the pinewood board
- ⇒result: test passed ⇒ GWFI ≥ 850/3,4**

test specimen:



3.10) Kelon B FRH CET/30 colour: grey (test performed in CTI-PA 2694)

- .) test has been performed on a, test specimen, cut from a part of a product (K3-151A00)
- .) test temperature: 850°C
- .) the test specimen have been conditioned for 24h in an atmosphere having a temperature of 23°C and a relative humidity between 45% and 55%
- .) test performed on three samples
- .) the tip of the glow-wire has been brought slowly into contact with the test specimen and was than applied for 30s

I). thickness of the material in the area of the penetration of the glow wire: 1,5mm

- .) visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 30 s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

II). thickness of the material in the area of the penetration of the glow wire: 1,5mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 30 s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed

III). thickness of the material in the area of the penetration of the glow wire: 1,5mm

visible flame immediately after penetration of the tip of the glow-wire into the test specimen

the duration (t_e) from the beginning of tip application up to the time when flames extinguish during or after the period of application: 30 s

No ignition of tissue paper or scorching of the pinewood board

⇒result: test passed ⇒ $GWFI \geq 850/1,5$

test specimen:



4) Ball pressure test following IEC 60695-10-2:2003

- .) the test specimen have been conditioned for 24h in an atmosphere having a temperature of 23°C and a relative humidity between 45% and 55%
- .) test temperature: 125°C
- .) test duration: 60min.
- .) dimension d does not exceed 2,0mm

4.1) Ultramid A3X2G5, colour: black (test performed in CTI-PA 2649)

test point: test has been performed on a single part taken from the whole device (HN), thickness of the material: 1,4mm

- . value of dimension d: 1,0mm

test specimen:



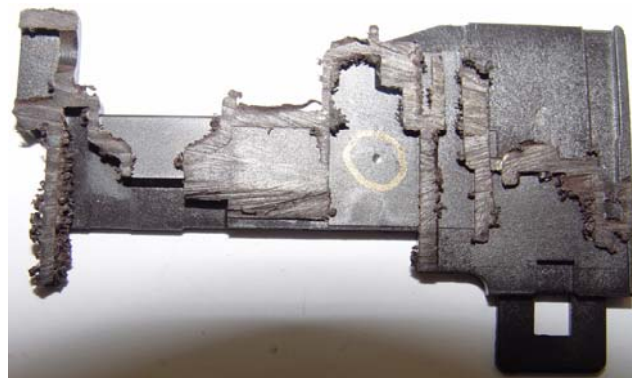
⇒**result: test passed**

4.2) Ultramid A3X2G5, colour: black (test performed in CTI-PA 2649)

test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-10A10), thickness of the material: 2,4mm

- . value of dimension d: 0,9mm

test specimen:



⇒**result: test passed**

4.3) Durethan DP1801/30, colour: black (test performed in CTI-PA 2649)

test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-32A00), thickness of the material: 2,4mm

- value of dimension d: 1,0mm

test specimen:



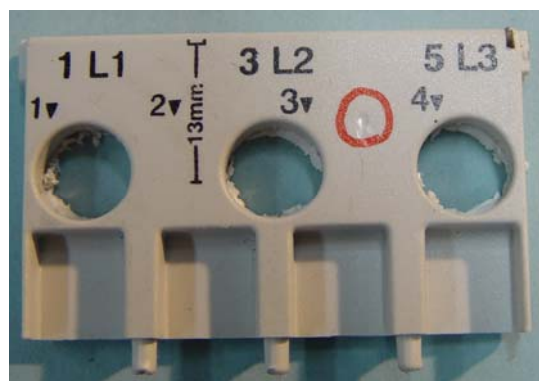
⇒result: test passed

4.4) Akulon K222-KGV4, colour: grey (test performed in CTI-PA 2649)

test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-32A00), thickness of the material: 4,7mm

- value of dimension d: 1,2mm

test specimen:



⇒result: test passed

4.5) Arnite AV2-363, colour: black (test performed in CTI-PA 2649)

- test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-62A00), thickness of the material: 3,5mm
- . value of dimension d: 1,0mm

test specimen:



⇒result: test passed

4.6) Ultramid A3X2G5, colour: black (test performed in CTI-PA 2649)

- test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 2,4mm
- . value of dimension d: 1,0mm

test specimen:



⇒result: test passed

4.7) Ampal MPV 7500, colour: black (test performed in CTI-PA 2649)

- test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-90A00), thickness of the material: 4,6mm
- value of dimension d: 0,8mm

test specimen:

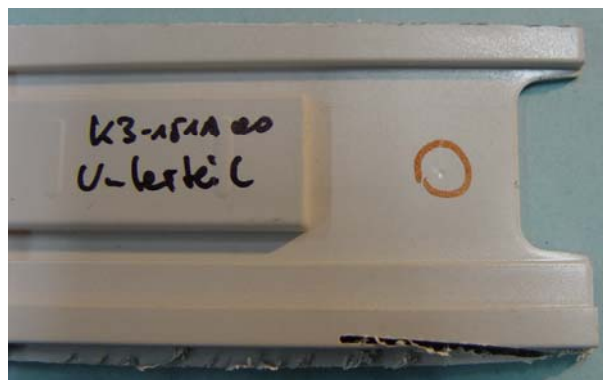


⇒result: test passed

4.8) Latamid 66 H2 G25, colour: grey (test performed in CTI-PA 2649)

- test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 1,5mm
- value of dimension d: 1,0mm

test specimen:



⇒result: test passed

4.9) RF 656-20, colour: grey (test performed in CTI-PA 2649)

test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 2,8mm

- . value of dimension d: 0,9mm

test specimen:



⇒result: test passed

4.10) Kelon B FRH CET/30, colour: grey (test performed in CTI-PA 2649)

test point: test has been performed on a suitable test specimen, cut from a part of a product (K3-151A00), thickness of the material: 1,4mm

- . value of dimension d: 1,2mm

test specimen:



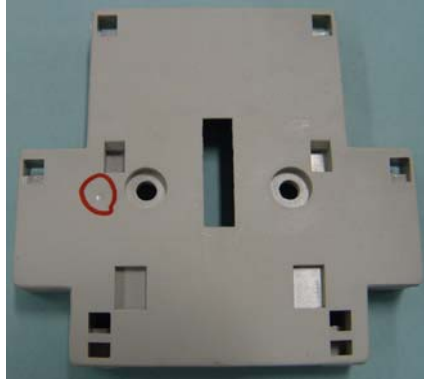
⇒result: test passed

4.11) Crastin S650 FR, colour: grey (test performed in CTI-PA 2649)

test point: test has been performed on a single part taken from the whole device (HKA), thickness of the material: 1,0mm

- . value of dimension d: 1,4mm

test specimen:



⇒result: test passed