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Technical Report No. 0071319734

Rev. 0
Dated 10.04.2007

Client: Adam Hall GmbH
Mr. Martin Drumm
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DE-61267-Neu-Anspach
Germany

Manufacturing place: Not known

Test subject: Produkt: Cable Crossover
Typ: Defender series consists of models XXL / III / Ultra / Midi / Compact

Test specification: Following to EN 61537:2007; [IEC 61537:2006]

Purpose of examination:

- inspection according to the observance of the protection aims of the EG-directive 73/23/EEC modified by 93/68/EEC new codified as 2006/95/EEC
- Test according to the applicable chapters of the test specification

Test result: The introduced test subject was found to be in compliance with the protection aims of the EG-directive mentioned above.

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1 Description of the test subject

1.1 Function

Manufacturer's specification for intended use:

The cable crossovers are suitable for hoses and isolated low voltage cables until 500 volts which have to be protected against heavy loads on the ground. They are manufactured from Polyurethane with textured non-slip surface. The crossover lengths are joined by connector plugs. Depending to the type variation the crossovers can be stressed with passenger traffic up to heavy goods vehicle traffic.

Manufacturer's specification for predictive misuse:

In case of road traffic usage the road traffic regulation is to take in consideration. If fragile connections and connector housings inserted the diameter shall not exceed the limitation. Not suitable for inflexible gas pipes.

1.2 Technical Data

Introduced samples for the test against the requirements of the low voltage directive:

Technical data	Model Defender MIDI	Model Defender Compact
Length ca.	870 mm	805 mm
Width ca.	530 mm	435 mm
Height ca.	50 mm	37 mm
Ducts / channels	5 (32x35mm)	7
Weight ca.	11,5 kg	3,76 kg
Material (Upper-/Lower part)	Polyurethane (PU)	TPU (Thermoplastic PU)
Flame resist classification acc. DIN 4102-1	B 2	
Spread of fire	Flame propagating	
Load bearing	5 t (at tire imprint 20x20 cm)	Only passenger traffic
Operating temperature range	- 40°C to + 70°C	- 40°C to + 70°C
Hardness	88 Shore A	Not spec.

Included models of the DEFENDER series: XXL / III / Ultra / Midi / Compact

Basic material: High Quality recycled polyurethane with determined purity grade and controlled contaminants. Purity grade $\geq 98\%$. Free of metallic impurity.

2 Order

2.1 Date of Purchase Order, Customer's Reference

2007-03-26., Mr. Drumm

2.2 Receipt of Test Sample, Location

2006/12, TÜV SÜD Product Service GmbH Eschborn

2.3 Date of Testing

2007-03-23 – 2007-03-28

2.4 Location of Testing

TÜV SÜD Product Service GmbH, Mergenthalerallee 27, D- 65760 Eschborn / Ts.

2.5 Points of Non-compliance or Exceptions of the Test Procedure

No.

3 Accomplished Tests

Testing regarding the conformity of the Low Voltage Directive 2006/95/EEC. Applicable chapters of the test specification: Topic 11.2 / 13.1.2

3.1 Positive Test Results

- Electrical safety EN 61537

The electrically non conductivity was affirmed by measuring the surface resistance acc. to Chap. 11.2. All values are above 100 MΩ.

Tab. 1: Calculated surface resistivity values

Modell / Probe	Surface resistivity R_s
Defender MIDI / Base (black)	51,0 GΩ
Defender MIDI / Top (yellow)	15,9 GΩ
Defender Kompakt (black)	60,0 GΩ

- Reaction to fire acc. EN 61537

Contribution to fire (Glow-Wire-Test 650°C):

While expose of abnormal heat due to an electrical fault in the mean of Chapter 13.1.2 the system components are limited ignitable.

3.2 Points of non-compliance according to the test specification

None.

4 Remark Non-flame propagating system components shall either not ignite or, if ignited shall have a limited spread of fire.

The introduced cable crossovers DEFENDER are classified as B 2 according to the reaction of fire for building materials. This means that the crossovers can be seen as an ordinary inflammable building material with a flame propagating character.

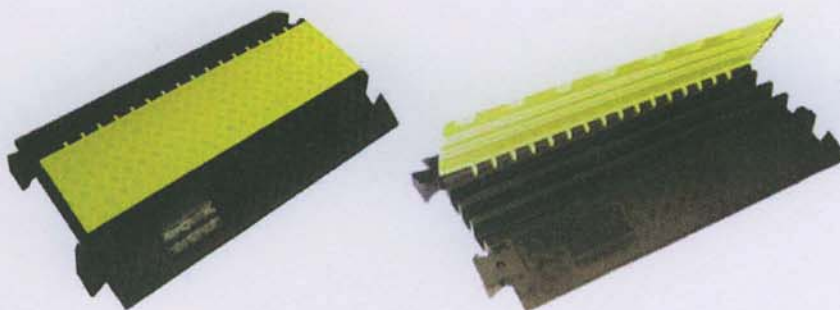
Due to this fact for the declaration of conformity an investigation and rating of the spread of fire according EN 61537, Chapter 13.1.3 is not applicable.

The product features should include a reference that the material must be seen as flame propagating.

4.1 Remarks to Factory

The assembly of the product has to comply with the documentation. Before the implementation of safety relevant modifications to the product into the ongoing production the product must be assessed for acceptance. The results must be implemented to the documentation and if necessary the certificate must be updated.

5 Documentation



Pic.: Cable Crossover exemplary for DEFENDER series

6 Summary

After the tests in section 3 at the test samples as shown in Chapter 1.2 the crossovers of the DEFENDER series can be characterized as

- electrically non conductive and
- limited ignitable

Due to the results the introduced test subjects were found to be in compliance with the protection aims of the EG-directive 2006/95/EEC.

TÜV SÜD Product Service GmbH

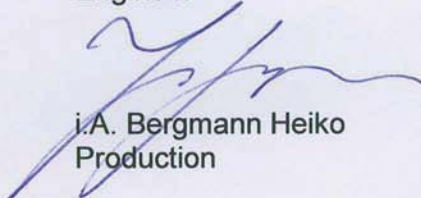
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