IMQ

INSTALLATION MATERIAL AND LIGHTING PRODUCTS DEPARTMENT
INSULATED CABLES AND ADHESIVE TAPES LABORATORY

TEST REPORT NR. 01SI00075

DATE 2008/06/13

Product	Control e power cables, Rated voltages 0,6/1 kV
Model type	FG7OM1 2X1 mm^2
Description	See page 2 of this test report

Applicant	*SENSITHERM SRL VIA BERLINGUER 15 20040 COLNAGO (MI)*
Manufacturer	*SENSITHERM SRL VIA BERLINGUER 15 20040 COLNAGO (MI)*

Test carried out by	➢ *CSI S.p.A (IMQ Group) Viale Lombardia 20 – 20021 Bollate (MI)*
Scope of the test	➢ Fire retardant test (IEC 60332-3 cat. A)

Date of samples receiving (sample shipped and sampling by the applicant)	*2008-05-27*		
Date of tests start	*2008-06-04*	**Date of tests end**	*2008-06-04*
This test report is composed by	11 Pages, divided as follows : 5 Report pages 6 Annex pages		

Cable Testing Lab Technician	**Approved by**
F. Facchetti	F. Giorgi

TECHNICAL DATA OF CABLE UNDER TEST

SENSITHERM S.r.l.

Halogen Free Control & Power cables **HEPR insulated, LSOH outer sheath**	

Type **HEPR/LSOH 0,6/1 KV 2 x1 mm²**
FG7OM1 0,6/1 KV 2 x 1 mm²

Conductor
Plain annealed copper conductor according to IEC60228 cl. 5.

Insulation
High modulus ethylene propylene rubber to IEC 60502-1
Thicknes of insulation > 0,7 mm
Identification cores :
Black, Blue

Layin ap
Core stranded with at least 10 twists/meter

Outer sheath
LSOH compound M1 type according to EN 50290-2-27, black
Thicknes of jacket => 1,4 mm
Overall diameter 8,2±0,3 mm

Marking
Sensitherm - FG7OM1 0,6/1 KV 2 x 1 IEC 60332-3-22

Performance

Reaction to fire - Flame propagation	a) Test of single cable	acc. IEC 60332.1
	b) Test on bunched cables	acc. IEC 60332-3-22
Halogen content		acc. CEI EN 50267-2-1

Minimum bending radius
6 times overall diameter

Technical data & Electrical properties

Temperature range -30 + 90°C
Temperature laying - 5 + 50°C
Conductor resistance : < 19,5 Ohm/Km
Insulation resistance : > 3.000 Mohm x Km
Test voltage - Core/core : 4.000 V
Operating voltage max 1 KV

SUMMARY

FIRE RETARDANT TEST 4

Reference Document	*Title of Document*
IEC 60332-3-22 I Ed. 2000	Tests on electric cables under fire conditions - Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A
IEC 60332-3-10 I Ed. (2000)	"Test for vertical flame spread of vertically-mounted bunched wires or cables – Apparatus "

Test N.4	***FIRE RETARDANT TEST***

Test carried at	*CSI S.p.A. Viale Lombardia 20 – 20021 Bollate - Milano – Italia IMQ GROUP*		
Test performed according to	IEC *60332*-3-22 Category A –		
Test apparatus	Comply with standard IEC 60332-3-10		
Samples identification	Sample "A" Completed cable		

Number of samples under test	1 one		
Test sample	Number of test pieces	118	
	Length of each pieces	3,5	m
	Non-metallic material volume	0,059	dm^3
	Total weight	109,0	g/m
	Metallic weight	24,5	g/m
	Non-metallic weight	84,5	g/m
	External diameter	8,9	mm
	Effective volume of non-metallic material	7,02	l/m
Samples conditioning	20 °C ± 10 °C for 16 h		
Test Procedure	➢ Time of flame application: 40min. ➢ Air supply: 5000 ± 500 l/min.		

Requirement	After all cable burning has ceased, the test sample has been wiped cleaned and the charred portion measured. The maximum extent of the charred portion should not exceed reache a length of 2,5 m above the upper edge of the burner.
Observed (values taken from CSI Test Report DC01/514F08 enclosed)	Maximum extension of charred portion: **0.7** m

Annex

1) **CSI** **TEST REPORT n. DC01/514F08 CSI SpA of 6 pages**

END OF TEST REPORT

CSI
Certificazione e Testing

DIVISIONE: *DIVISION:* COSTRUZIONI *CONSTRUCTION* — LABORATORIO: *LABORATORY:* CAVI *CABLES*

RAPPORTO DI PROVA
(Test Report)

N° DC01/514F08

Data: 09.06.2008
Date:

IDENTIFICAZIONE E DESCRIZIONE DEL CAMPIONE:
SPECIMEN DESCRIPTION:

Nome commerciale .....: **FG7OM1 2x1 mm2**
Product Name

Descrizione .....: **Vedi pag. 2/*See pag. 2***
Description

DATI IDENTIFICATIVI DEL CLIENTE:
CLIENT:

Nome / *Name* .....: **SENSITHERM S.r.l.**

Indirizzo / *Address*.....: **Via E. Berlinguer, 15 – Fraz. Cornate d'Adda**

Città / *City*.....: **20040 Colnago (MI)**

NORMA DI RIFERIMENTO:
REFERENCE STANDARD:

IEC 60332 – Tests on electric cables under fire conditions - Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A

DISTRIBUZIONE ESTERNA: *OUTSIDE DISTRIBUTION:*	DISTRIBUZIONE INTERNA: *INSIDE DISTRIBUTION:*
Originale cliente	**Copia capo laboratorio**
Original : Client	***Copy: Head of laboratory***

ENTE DI ACCREDITAMENTO:
ACCREDITATION BODY:

Mod 3711 - Rev. 6

DATI GENERALI / *GENERAL DATA* :

Descrizione del campione .....: **Cavo non propagante l'incendio e a bassa emissione di fumo e gas tossici e corrosivi.**

Sample description.....: ***Non spreading flame and low smoke and toxic and corrosive gasses emission cable.***

Marcatura / *Marking*.....: **2008 SENSITERM FG7OM1 0,6/1KV 2X1 IEC60332-3-22**

- Data ricevimento campioni / *Product supply date*...: **27.05.2008**
- Data esecuzione prove / *Date of test*.....: **04.06.2008**
- Procedura normalizzata / *Standard procedure* .....: **Si / *Yes***
- Deviazione dai metodi di prova .....: **No / *No***
  Standard procedure deviation

DICHIARAZIONE / *DECLARATIONS* :

- I risultati di prova contenuti nel presente rapporto si riferiscono esclusivamente al campione provato.
  Test results contained in this test report relate only to specimens tested.
- Il presente rapporto non può essere riprodotto parzialmente senza l'autorizzazione del Responsabile del Centro.
  The test report shall not be reproduced except in full without the written approval of the Managing Director.

COSTITUZIONE DEL CAMPIONE IN PROVA:
CHARACTERIZATION OF SAMPLE TESTED:

(Le misure specifiche sono riferite ad un metro di campione)
(Done for 1 meter of cable)

Volume del materiale non metallico .....: 0,059 l/m
Non-metallic material volume

Peso del campione.....: 109,0 g/m
Total weight

Peso del materiale metallico .....: 24,5 g/m
Metallic weight

Peso del materiale non metallico .....: 84,5 g/m
Non metallic weight

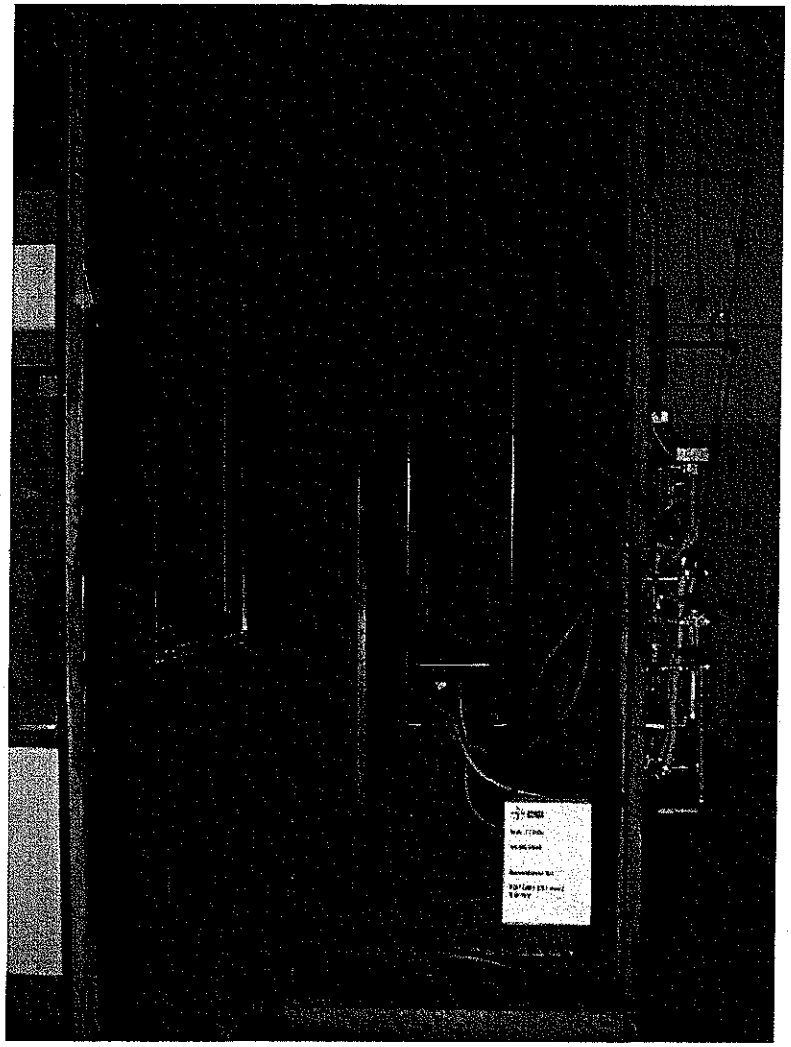
Diametro esterno del campione .....: 8,9 mm
External diameter

DISPOSIZIONE DEL CAMPIONE IN PROVA:
SPECIMEN PREPARATION FOR TESTING:

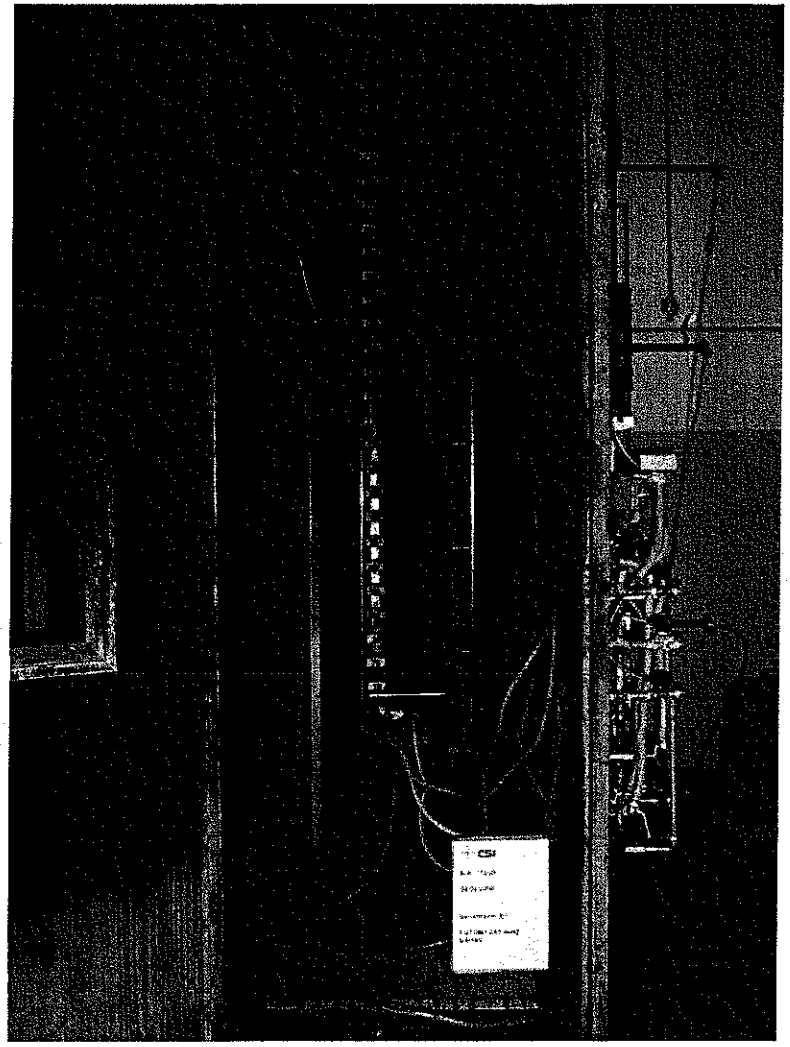
Il cavo è stato tagliato in 118 spezzoni lunghi 3,5 m che sono stati fissati alla faccia anteriore del telaio, spaziati tra loro, disposti su 4 strati con larghezza massima di 300 mm, in modo che il quantitativo di materiale non metallico non fosse inferiore a 7,0 l/m.
The cable has been cut in 118 pieces of 3.5 meter length. The test pieces have been placed spaced each other on the front of the standard ladder in 4 layers so that the width of test sample does not exceed 300 mm. The non-metallic material was not less a 7,0 l/m.

Volume effettivo del materiale non metallico: 7,02 l/m
Effective volume of non metallic material: 7,02 l/m

FOTOGRAFIA PRIMA DELLA PROVA / *PHOTOGRAPH BEFORE TEST*



FOTOGRAFIA DOPO LA PROVA / *PHOTOGRAPH AFTER TEST*



OSSERVAZIONI / *OBSERVATIONS:*

40 min. – Spento bruciatore, nessuna post-combustione sul cavo.
Burner turned off, no afterflame on the cable.

Estensione massima delle tracce di combustione dal bordo inferiore del bruciatore, nel fascio di campione:
Maximum extension of combustion traces from the burner bottom edge, on the cables :

Lato anteriore / *Front side* .....: 0.7 m

Lato posteriore / *Back side* .....: 0.7 m

DATA Date	IL RESP. Divisione Costruzioni Division Head	IL RESP. DEL CENTRO Managing Director
09/06/2008	Ing. Mele	P. Cau