



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

TEST REPORT NR. 01SI00075

PAGE: 1 OF 5

DATE 2008/06/13

**Product** Control e power cables, Rated voltages 0,6/1 kV  
**Model type** FG7OM1 2X1 mm<sup>2</sup>  
**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** 2008-05-27  
(sample shipped and sampling by the applicant)  
**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**

F. Facchetti

**Approved by**

F. Giorgi

The results referred in this report are only relevant to the samples tested and described in this report.  
Only complete reproduction of this test report is permitted without written authorization of IMQ.

## 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 x 1 mm<sup>2</sup>  
FG7OM1 0,6/1 KV 2 x 1 mm<sup>2</sup>****Conductor**

Plain annealed copper conductor according to IEC60228 cl. 5.

**Insulation**

High modulus ethylene propylene rubber to IEC 60502-1

Thicknes of insulation &gt; 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 =&gt; 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 : &lt; 19,5 Ohm/Km

Insulation resistance : &gt; 3.000 Mohm x Km

Test voltage - Core/core : 4.000 V

Operating voltage max 1 KV



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

**TEST REPORT NR. 01SI00075**

*PAGE: 3 OF 5*

*DATE 2008/06/13*

## **SUMMARY**

### **FIRE RETARDANT TEST**

4

<b>Reference Document</b>	<b>Title of Document</b>
IEC 60332-3-22   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   Ed. (2000)	"Test for vertical flame spread of vertically-mounted bunched wires or cables – Apparatus "

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

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

<b>Number of samples under test</b>	1 one		
<b>Test sample</b>	Number of test pieces	118	
	Length of each pieces	3,5	m
	Non-metallic material volume	0,059	dm <sup>3</sup>
	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
<b>Samples conditioning</b>	20 °C ± 10 °C for 16 h		
<b>Test Procedure</b>	➤ 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** Maximum extension of charred portion: **0.7 m**  
 (values taken from CSI  
 Test Report DC01/514F08  
 enclosed)

**IMQ**

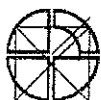
INSTALLATION MATERIAL AND LIGHTING  
PRODUCTS DEPARTMENT  
INSULATED CABLES AND ADHESIVE TAPES  
LABORATORY

**TEST REPORT NR. 01SI00075***PAGE: 5 OF 5**DATE 2008/06/13*

## **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**

<b>RAPPORTO DI PROVA</b> <i>(Test Report)</i>	Pag. di/of	1
	pag.	6
N° <b>DC01/514F08</b>	Data:	<b>09.06.2008</b>
	Date:	

IDENTIFICAZIONE E DESCRIZIONE DEL CAMPIONE:  
SPECIMEN DESCRIPTION:Nome commerciale .....: **FG7OM1 2x1 mm2**  
Product NameDescrizione .....: **Vedi pag. 2/See pag. 2**  
DescriptionDATI 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:**Originale cliente**  
**Original : Client**DISTRIBUZIONE INTERNA:  
INSIDE DISTRIBUTION:**Copia capo laboratorio**  
**Copy: Head of laboratory**ENTE DI ACCREDITAMENTO:  
ACCREDITATION BODY:



**CSI**  
Certificazione e Testing

**RAPPORTO DI PROVA**  
*(Test Report)*

Pag. 2  
di/of  
pag. 6

N° DC01/514F08

Data: 09.06.2008  
Date:

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.*



**CSI**  
Certificazione e Testing

**RAPPORTO DI PROVA**  
*(Test Report)*

N° DC01/514F08

Pag. 3  
di/of  
pag. 6

Data: 09.06.2008  
Date:

**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, spazati 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*



**CSI**  
Certificazione e Testing

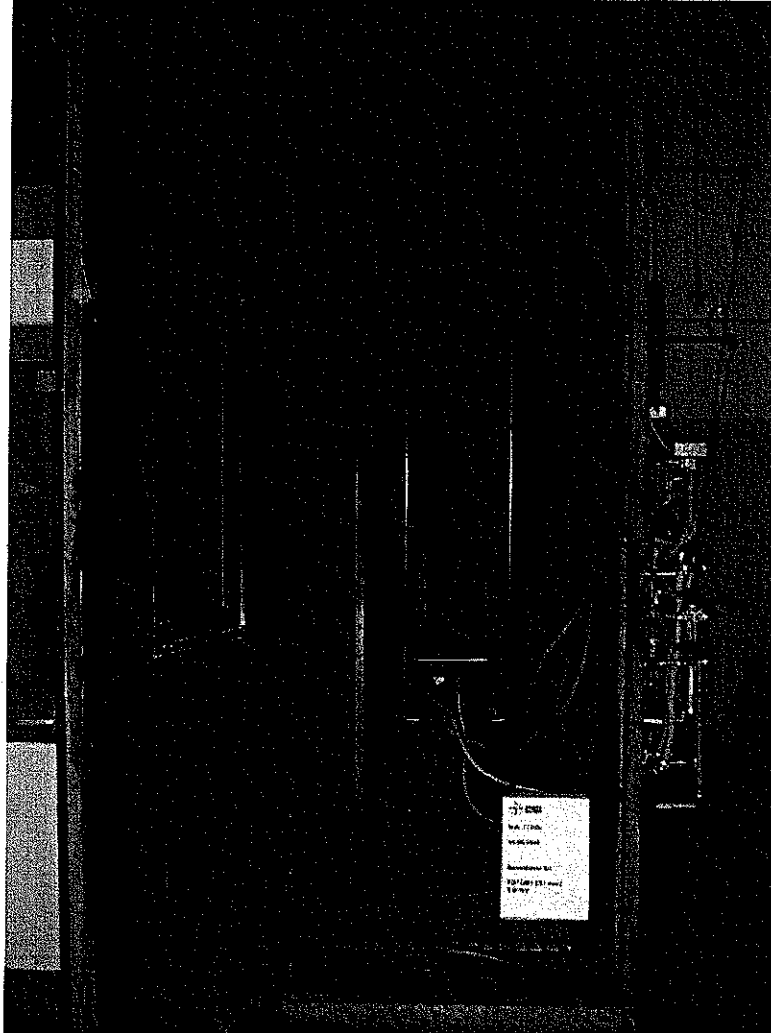
**RAPPORTO DI PROVA**  
*(Test Report)*

N° DC01/514F08

Pag. 4  
di/of  
pag. 6

Data: 09.06.2008  
Date:

FOTOGRAFIA PRIMA DELLA PROVA / PHOTOGRAPH BEFORE TEST





**CSI**  
Certificazione e Testing

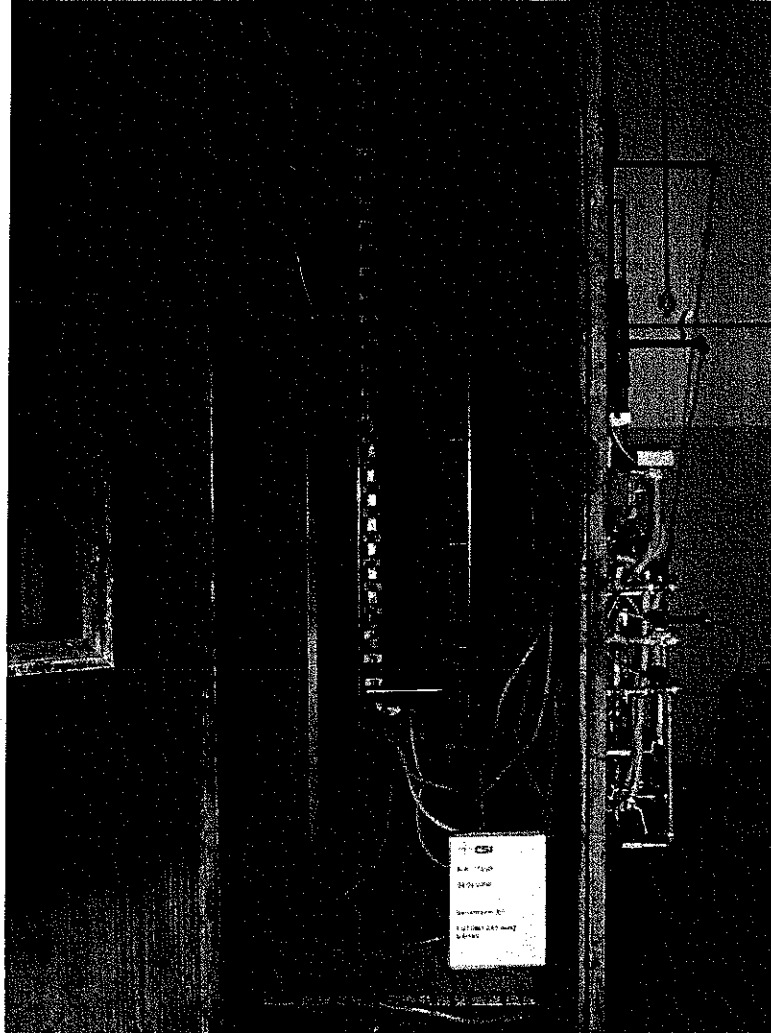
**RAPPORTO DI PROVA**  
(Test Report)

N° DC01/514F08

Pag. 5  
di/of  
pag. 6

Data: 09.06.2008  
Date:

FOTOGRAFIA DOPO LA PROVA / PHOTOGRAPH AFTER TEST





**CSI**  
Certificazione e Testing

**RAPPORTO DI PROVA**  
(Test Report)

N° DC01/514F08

Pag. 6  
di/of

pag. 6

Data: 09.06.2008  
Date:

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

09/06/2008

IL RESP. Divisione Costruzioni  
Division Head

Ing. Mele

IL RESP. DEL CENTRO  
Managing Director

P. Cau