

Cappotto Termico Aerogel Achyra ACT650A

L'aerogel fu sintetizzato per la prima volta dall'americano John Kester nel 1930. Composto per il 98% da aria, ha una densità minima di soli 3,55 kg/m³, il che lo rende il solido più leggero conosciuto. Possiede caratteristiche di bassa densità, elevata porosità, bassa conduttività termica e basso indice di rifrazione, che lo rendono un nuovo materiale nanoporoso leggero e attualmente il materiale con le proprietà di isolamento termico più note.



Poiché il suo componente principale è il biossido di silicio, è anche chiamato aerogel di silice. Il Cappotto Termico Aerogel ACT650A è un Cappotto Termico isolante ad alte prestazioni composto da aerogel di silice, che è il conduttore termico avente la più bassa conduttività termica al mondo, e da un Cappotto Termico con aghi in fibra di vetro, adatto per le applicazioni industriali, ferrovie ad alta velocità, batterie, petrolchimica, energia elettrica, materiali da costruzione.

Profilo inorganico e infiammabile, facilmente lavorabile grazie al volume ridotto, **sicuro per l'ambiente**, il Cappotto Termico Aerogel della serie ACT650A è un prodotto all'avanguardia ed è la scelta perfetta per chi ha bisogno di prestazioni di isolamento con un minimo spessore, metallurgia, edilizia, con un intervallo di temperature compreso tra -50 °C e +650 °C, per il settore petrolifero e applicazioni LNG (gas).

Conduttività termica Testato secondo ASTM C177

Temperatura Media (°C)	Conduttività Termica (W/mK)
25°C	0.021
200°C	0.028
300°C	0.034
400°C	0.043
500°C	0.068
600°C	0.088

Proprietà principali:

Proprietà	Dati
Spessore	10 mm
Larghezza	1500 mm
Lunghezza	25 m; 30 m
Densità	210 kg/m ³ ± 20%
Resistenza alla trazione	~ 1000 KPa
Temperatura di funzionamento	-50° a 650° C
Idrofobo	Si

Vantaggi:

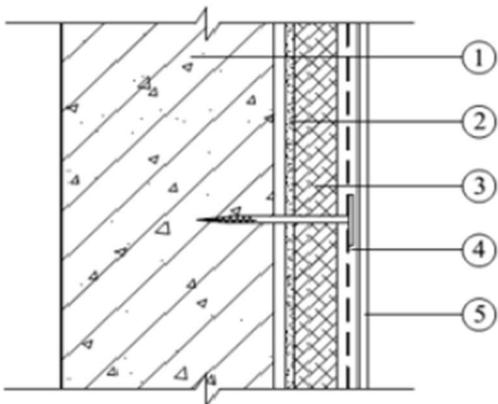
- ✓ Prestazioni termiche superiori
- ✓ Ignifugo e impermeabile
- ✓ Lunga durata
- ✓ Fisicamente robusto
- ✓ Protezione ambientale e anticorrosione
- ✓ Isolamento acustico e assorbimento d'urto
- ✓ Facile da installare

Applicazioni:

- ✓ Edifici e costruzioni
- ✓ Centrali elettriche, impianti petrolchimici
- ✓ Impianti chimici
- ✓ Serbatoi e contenitori
- ✓ Forni e fornaci
- ✓ LNG (gas)
- ✓ Condotte di vapore nella produzione petrolifera tubi preisolati

Aerogel, un materiale verde magico che cambia il mondo

- Non contiene sostanze nocive per il corpo umano
- Nessun rilascio di gas tossico sotto le fiamme
- Livello AQ secondo lo standard GB/T20285-2006
- Biossido di silicio amorfo
- Soddisfa gli standard di sicurezza dell'American Conference of Governmental Industrial Hygienists (ACGIH)
- Il processo produttivo è atossico e privo di inquinamento

Struttura di base del sistema di rivestimento termoisolante per pareti esterne				
Base ①	Strato adesivo ②	Strato isolante ③	Strato superficiale anti-crepa ④	Strato di finitura ⑤
Pareti in calcestruzzo e varie pareti in muratura + strato di livellamento (irruvidimento con malta cementizia 1:3)	Malta legante	Cappotto isolante termico nano inorganico	Malta anticrepa + rete resistente agli alcali (ancorante di installazione)	Rivestimento
Schema di costruzione			Messa in Opera	
				

Relazione tecnica Cappotto Termico

Dopo anni di utilizzo, il cappotto di aerogel generalmente non sviluppa muffe a causa delle sue proprietà intrinseche. Inoltre, può mantenere una buona tenuta attraverso un'installazione appropriata per ridurre i problemi di ventilazione non desiderata, e controllare l'impatto dell'umidità grazie alla sua eccellente idrofobicità. Ecco i dettagli suddivisi in tre punti:

1. Muffe: quasi impossibile lo sviluppo

Il componente centrale del cappotto di aerogel, l'aerogel stesso, ha una stabilità chimica elevata e non fornisce nutrienti alle muffe.

La maggior parte dei prodotti viene trattata per renderla idrofoba, quindi la superficie ha difficoltà ad assorbire acqua. Poiché la crescita delle muffe richiede un ambiente con umidità relativa superiore al 60%, la mancanza di queste condizioni inibisce direttamente lo sviluppo delle muffe.

Nella produzione del cappotto non vengono aggiunti sostanze organiche suscettibili alla muffa, e anche dopo un lungo utilizzo, il materiale non si decompone, eliminando ulteriormente le basi per l'adesione delle muffe.

2. Ventilazione: dipende dall'installazione per garantire la tenuta

Il cappotto di aerogel è un materiale isolante flessibile e non causa direttamente problemi di "ventilazione" (intesa come flusso d'aria non voluto). L'eventuale permeabilità dell'aria dipende principalmente dal metodo di installazione.

Con un'installazione corretta, aderisce strettamente alla superficie da isolare (come tubazioni, pareti), formando uno strato isolante continuo senza fessure, riducendo al minimo la possibilità di flusso d'aria attraverso le fessure.

Se durante l'installazione ci sono fessure di giunzione non trattate o bordi non sigillati, dopo un lungo utilizzo potrebbero verificarsi deformazioni leggere del materiale che allargano le fessure, causando indirettamente la circolazione d'aria. Questo problema può essere evitato attraverso un'installazione standardizzata (ad esempio, usando mastice sigillante specifico).

3. Umidità: forte capacità di resistenza all'umidità

Il cappotto di aerogel ha un'eccezionale capacità di resistere all'impatto dell'umidità, impedendo efficacemente l'ingresso di vapore acqueo dall'esterno.

La struttura idrofoba del suo corpo principale consente di mantenere il tasso di assorbimento d'acqua a livelli bassi (generalmente $\leq 8\%$). Anche in ambienti ad alta umidità, riduce l'assorbimento di acqua, evitando che il cappotto si umidisca.

Alcuni prodotti sono dotati inoltre di un rivestimento aggiuntivo, che rafforza ulteriormente la capacità di blocco del vapore acqueo. Dopo un lungo utilizzo, mantengono comunque prestazioni isolanti e fisiche stabili, senza essere significativamente influenzati dall'umidità ambientale.

TEST REPORT

No. : SHIN2508002203CM01_EN

Date : 2025-09-15

Page: 1 of 3



CUSTOMER NAME: ACHYRA HOLDING S.R.L.
ADDRESS: VIALE ANDREA DORIA 5-20124,MILANO ITALY

Sample Name : AEROGEL BLANKET
Color : White

Above information and sample(s) was/were submitted and confirmed by the client. SGS, however, assumes no responsibility to verify the accuracy, adequacy and completeness of the sample information provided by client.

SGS Ref. No. : AJFTS25005732R02
Date of Receipt : 2025-08-22
Testing Period : 2025-08-22 ~ 2025-09-11
Test result(s) : For further details, please refer to the following page(s)
(Unless otherwise stated the results shown in this test report refer only to the sample(s) tested)

Signed for
SGS-CSTC Standards Technical
Services (Shanghai) Co., Ltd..

Xander Yang

Xander Yang
Authorized signatory



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TEST REPORT

No. : SHIN2508002203CM01_EN

Date : 2025-09-15

Page: 2 of 3

Summary of Results:

No.	Test Item	Test Method	Result	Conclusion
1	Water Vapor Sorption	ASTM C1104/C1104M-19 Procedure A	See Result	Pass

Note: Pass : Meet the requirements;
 Fail : Does not meet the requirements;
 N/A : Not Apply to the judgment.

Original Sample Photo:



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TEST REPORT

No. : SHIN2508002203CM01_EN

Date : 2025-09-15

Page: 3 of 3

Test Item: Water Vapor Sorption

Test Method: ASTM C1104/C1104M-19 Procedure A

Test Condition:

Specimen: 150mm×150mm×10mm, 3pcs

Dry condition: 105°C

Treatment condition: 49°C, 95%RH, 96h

Lab Environmental Condition: (23±2)°C, (50±5)%RH

Test Result:

Test Item	Test Result	Client's Requirement	Conclusion
Water Vapor Sorption by Weight (%)	0.04	≤ 5	Pass
Water Vapor Sorption by Volume (%)	0.01	≤ 1	Pass

Original Data:

Test Item	Test Result			
	Individual Value			Average Value
Water Vapor Sorption by Weight (%)	0.03	0.05	0.05	0.04
Water Vapor Sorption by Volume (%)	0.01	0.01	0.01	0.01

The test report shall only be used for clients' scientific research, teaching, internal quality control, product research and development, etc... and just for internal reference.

Unless otherwise stated, this report provides a declaration of conformity according to whether the test results are within the specified limits or specifications without considering the measurement uncertainty.

*****End of report*****



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Achyra Holding S.r.l.

Viale Andrea Doria 5-20124, Milano Italy*

THE TEST REPORT IS TO SUPERSEDE THE TEST REPORT No.: AJFTS25005732R01_EN, DATE: Sep 02,2025.

Sample Description : AEROGEL BLANKET
Color : WHITE
Style/Item No. : /

The above sample(s) data and information was / were submitted and identified on behalf of the client. SGS is not responsible for the authenticity, integrity and results of the data and information and / or the validity of the conclusion arising therefrom. Results apply to the sample as received.

Sample Receiving Date : Aug 21,2025
Testing Period : Aug 21,2025 to Aug 29,2025
Test Required : ASTM E84-2024 Standard Test Method for Surface Burning Characteristics of Building Materials.
Test result(s) : See attached sheet

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd Anji Branch



Echo Li
Approved signatory



SGS-CSTC Standards Technical Services Co., Ltd.
Anji Branch Inspection & Testing Service

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I. Test conducted

This test was conducted in accordance with ASTM E84-2024 Standard Test Method for Surface Burning Characteristics of Building Materials.

II. Introduction

The method, designated as ASTM E84-2024, Standard Method of Test for Surface Burning Characteristics of Building Materials, is designed to determine the relative surface burning characteristics of materials under specific test conditions. Results are expressed in terms of flame spread index (FSI) and smoke developed index (SDI).

The purpose of this test method is to determine the relative burning behavior of the material by observing the flame spread along the specimen. Flame spread and smoke developed index are reported. However, there is not necessarily a relationship between these two measurements.

III. Test procedure

The tunnel is preheated to 65.6°C(150°F), as measured by the floor-embedded thermocouple located 7.09m (23.25 ft) downstream of the burner ports, and allowed to cool to 40.6°C(105°F), as measured by the floor-embedded thermocouple located 3.96m (13 ft) from the burners. At this time the tunnel lid is raised and the test sample is placed along the ledges of the tunnel so as to form a continuous ceiling 7.32m (24 ft) long, 304.8mm (12 in) above the floor. The lid is then lowered into place.

Upon ignition of the gas burners, the flame spread distance is observed and recorded every 30 seconds. Flame spread distance versus time is plotted ignoring any flame front recessions. If the area under the curve (A) is less than or equal to 97.5 ft·min, FSI = 0.515·A; if greater, FSI = 4900/(195-A).

The test results for smoke shall be plotted and the area under the curve shall be divided by the area under the curve for heptane, multiplied by 100, and rounded to the nearest multiple of five to establish a numerical smoke-developed index (SDI).

IV. Conditioning

Prior to testing, the sample was conditioned, to a constant weight at a temperature of 23±2.8°C (73.4±5°F) and at a relative humidity of 50±5%.



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Sample details

Sample description	Aerogel blanket
Color	White
Area density	1.6 kg/m ²
Exposed face	Any surface

Mounting methods:

The 20-gage, 2-in. (51-mm) hexagonal galvanized steel netting should span the width of the tunnel, then the specimen shall be placed on the netting.

The specimen is consisted of 2 pieces of 520mm wide by 3700mm long, all sections jointed end-to-end.

The assembly size is 7400mm x 520mm x 9.3mm.

Test results:

Flame Spread Index, FSI	Smoke-developed Index, SDI
0	0

Rating:

The National Fire Protection Association Life Safety Code 101, Chapter 10, Section 10.2.3 Interior Wall and Ceiling Finish Classification, has a means of classifying materials with respect to Flame Spread and Smoke Developed when tested in accordance with ASTM E84 or UL 723 Method of Test of Surface Burning Characteristics of Building Materials.

International Building Code, Chapter 8, Interior Finishes, Section 803 Wall and Ceiling Finishes, was classified in accordance with ASTM E 84 or UL 723. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.

NFPA 5000 Building Construction and Safety Code, Chapter 10.2.3.3 Interior Wall and Ceiling Finish Materials Tested in Accordance with ASTM E84 or UL 723.

The classifications are as follows:

Index	Class A	Class B	Class C
Flame Spread Index	0-25	26-75	76-200
Smoke-developed Index	0-450	0-450	0-450

Since the tested sample received a Flame Spread Index 0 and a Smoke-developed Index 0, it would **meet** the requirements of **Class A** interior Wall & Ceiling Finish Category.

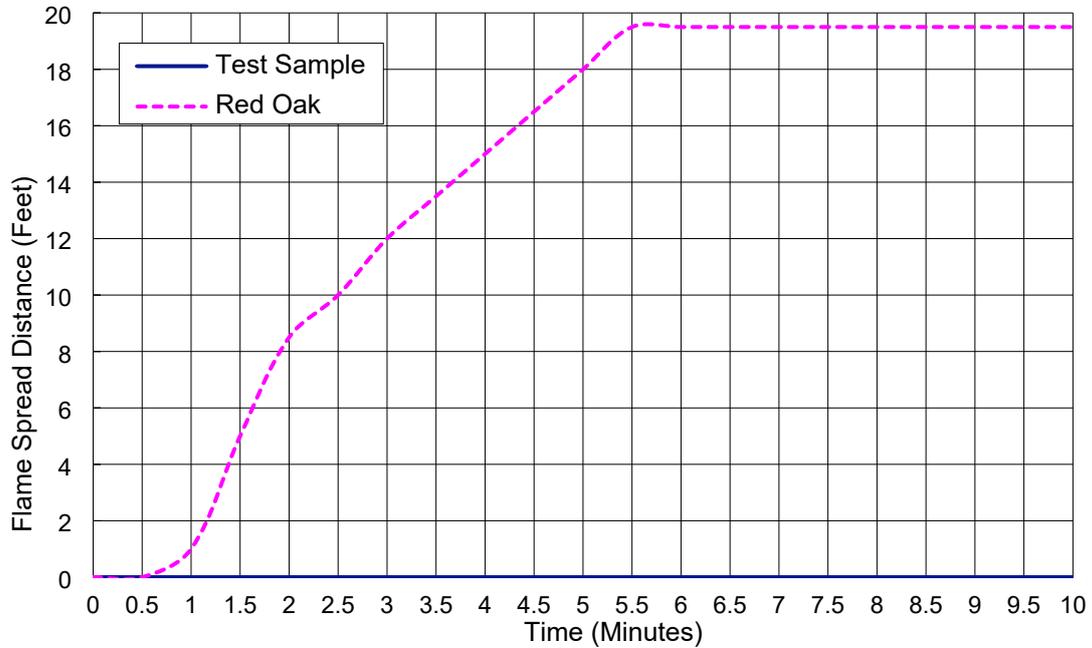


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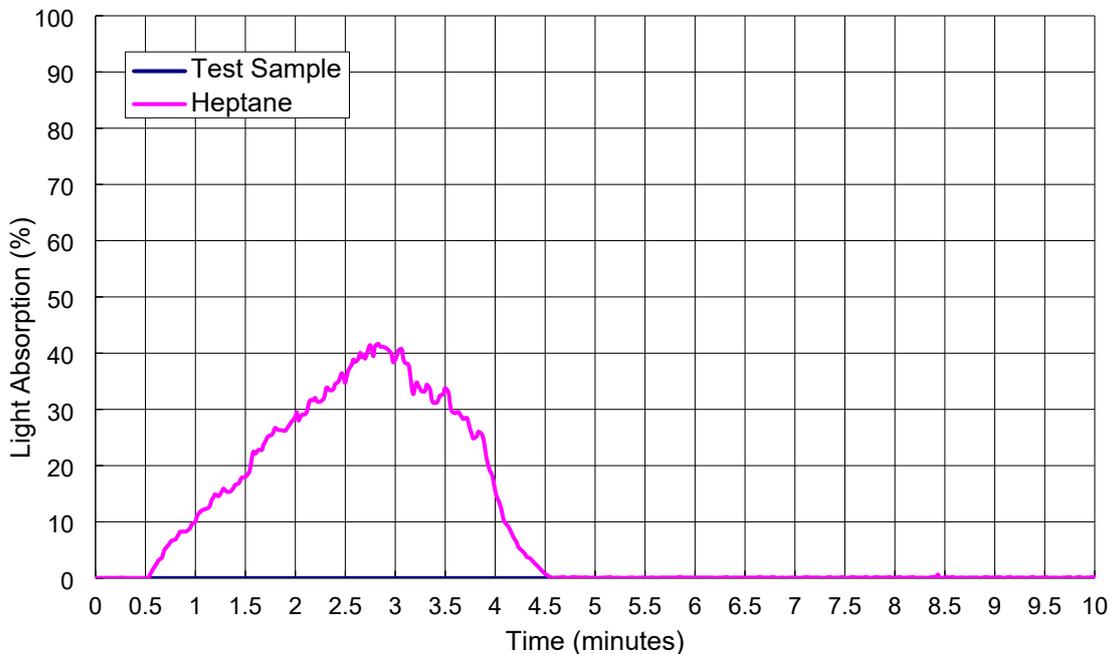
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Graphical results:

Flame Spread Chart



Smoke Developed Chart



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Observations:

Time to ignition (sec)	Not ignited
Time to Max. FS (sec)	Not Applicable
Maximum FS (feet)	Not Applicable
Observations	None

Statement: This declaration of conformity is only based on the result of this laboratory activity, the impact of the uncertainty of the results was not included.

Remark: The content remark with *are updated.

Photo Appendix:



SGS authenticate the photo on original report only

End of Report



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TEST REPORT

No. : SHIN2508002203CM02-1_EN

Date : 2025-09-11

Page: 1 of 3



CUSTOMER NAME: ACHYRA HOLDING S.R.L.
ADDRESS: VIALE ANDREA DORIA 5-20124,MILANO ITALY

Sample Name : AEROGEL BLANKET
Color : White

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SGS Ref. No. : AJFTS25005732R03
Date of Receipt : 2025-08-22
Testing Period : 2025-08-22 ~ 2025-08-28
Test result(s) : For further details, please refer to the following page(s)
(Unless otherwise stated the results shown in this test report refer only to the sample(s) tested)

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Xander Yang

Xander Yang
Authorized signatory



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TEST REPORT

No. : SHIN2508002203CM02-1_EN

Date : 2025-09-11

Page: 2 of 3

Summary of Results:

No.	Test Item	Test Method	Result	Conclusion
1	Apparent Thermal Conductivity	ASTM C518-21	0.020 W/(m·K)	Pass

Note: Pass : Meet the requirements;
 Fail : Does not meet the requirements;
 N/A : Not Apply to the judgment.

Original Sample Photo:



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TEST REPORT

No. : SHIN2508002203CM02-1_EN

Date : 2025-09-11

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Test Item: Apparent Thermal Conductivity

Test Method: ASTM C518-21

Test Condition:

Specimen: 302mm×300mm×10.0mm, 1pc

Density: about 166kg/m³

Mean temperature: 23.9°C

Temperature difference: 20°C

Lab Environmental Condition: (23±2)°C, (50±5)%RH

Test Result:

Test Item	Test Result	Client's Requirement	Conclusion
Apparent Thermal Conductivity	0.020 W/(m·K)	≤ 0.021 W/(m·K)	Pass

Note: The test result can not be compared with other results obtained from different test conditions, and should not be cited to the use condition directly.

This test report updates ADDRESS, which was/were VIALLE ANDREA DORIA 5-20124,MILANO ITALY, and supersedes the test report No. SHIN2508002203CM02_EN dated Sep 01st, 2025, original report will be invalid from today.

The test report shall only be used for clients' scientific research, teaching, internal quality control, product research and development, etc... and just for internal reference.

Unless otherwise stated, this report provides a declaration of conformity according to whether the test results are within the specified limits or specifications without considering the measurement uncertainty.

*****End of report*****



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Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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