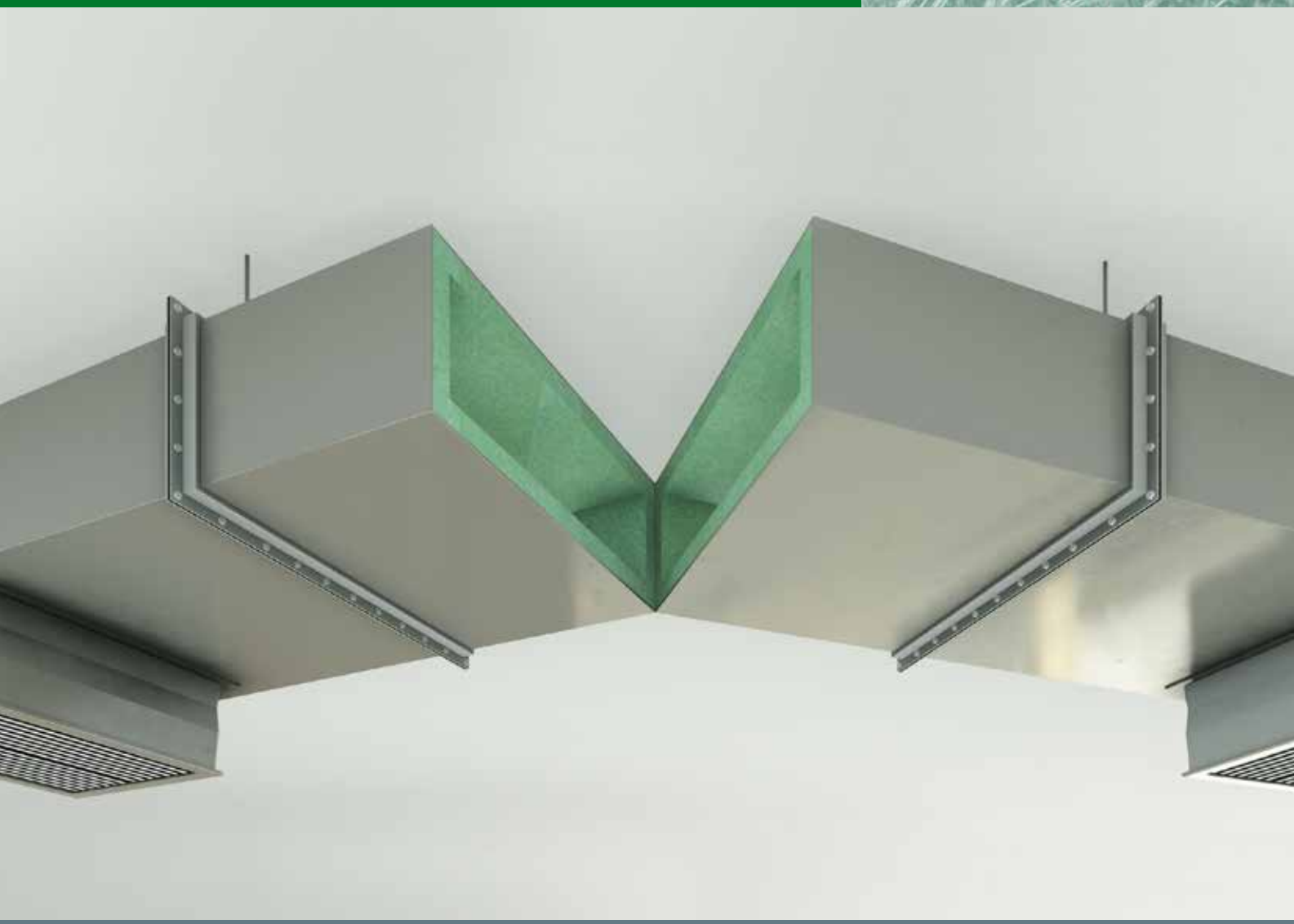
MAPPY DUCT LINER

THERMO MECHANICAL CROSS LINKED LONG FIBERS



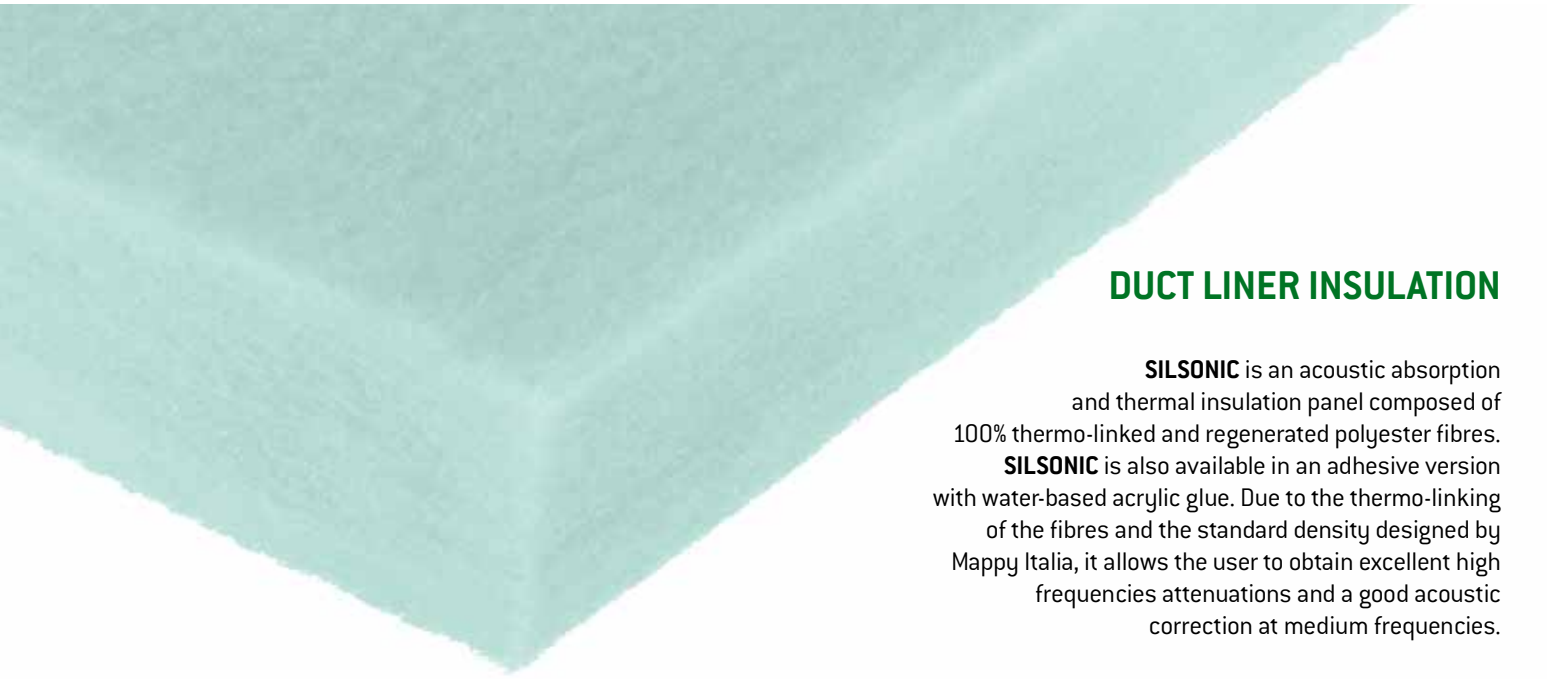
MEETING VOC STANDARDS - VDI CERTIFIED

Mappy ITALIA SPA

SINCE 1974 ACOUSTIC AND THERMAL INSULATION

NEW GENERATION INSULATION

MAPPY SILSONIC



DUCT LINER INSULATION

SILSONIC is an acoustic absorption and thermal insulation panel composed of 100% thermo-linked and regenerated polyester fibres. **SILSONIC** is also available in an adhesive version with water-based acrylic glue. Due to the thermo-linking of the fibres and the standard density designed by Mappy Italia, it allows the user to obtain excellent high frequencies attenuations and a good acoustic correction at medium frequencies.

WHY NEW GENERATION INSULATION – SILSONIC

- Better indoor air quality than other insulations
- No erosion of fibers without any facing due to smoothing finish process from Mappy
- Binder free insulation – mechanically thermo-linked long fibers
- More durable acoustic liner than other insulations
- Consistent acoustic perfromance for years – no more disintegration of fibers over years
- Available with aluminum foil, tnt finish
- Does not get effected by moisture or presence of water
- Better thermal, acoustic and fire properties

REASONS FOR ACOUSTIC LINING FAILURE

- The weight of elastomeric closed cell lining, the lining can tear out from the GI DUCTS and can cause major permanent costlier damage to the duct lining system
- Due to closed cell in nature, acoustic absorption properties are very less on the medium and high frequencies
- Fiber erosion through ducts and effecting Indoor Air Quality
- Bacterial, fungicidal and mold growths inside ducts due to moisture presence
- Right acoustic absorption inside ducts to reduce noise level

CRITICAL FACTORS TO CONSIDER

Using the correct lining material, installation has many advantages, including:

IAQ CONTROL INDOOR AIR QUALITY

AIR EROSION

NOISE REDUCTION (NRC)

HIGH CONSISTENT ACOUSTIC PERFORMANCE FOR YEARS

NO BINDER & NO FUNGAL GROWTH

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SINCE 1974 ACOUSTIC AND THERMAL INSULATION



TECHNICAL DATA

Colour	Green Black
Material	Polyester
Reaction to fire	B s2 d0 (EN ISO 13501-1) CL A (ASTM E 84)
Temperature range	-50 +100 °C
Specific heat capacity	0.25 kJ/kgK
Thermal conductivity	λ = 0.0321 W/mK (EN 12667, EN 12664)
Water vapour resistance	μ < 10 (UNI EN 12086)
Water absorption (ISO 2896)	1.0 %

VOC	Compliant
VDI 6022-1	Compliant
Evaluation of microorganisms action	It is not a nutrient medium for microorganisms (inert, fungistatic, batteriostatic) (ISO 846 - A,C)
Antimicrobial activity of immobilized agents, under conditions of dynamic contact	<LoQ Limit of quantification (ASTM E 2149 13)
Air erosion test	No erosion, cracking, flaking, peeling or delamination (ASTM C1071-16)

- No fungal growth, bacteria growth
- Open structure with high acoustic absorption at all frequencies
- Green product - eco friendly, recycled, reusable

VDI CERTIFIED

BENEFITS:

- Produced from plastic bottles recycling
- Respect the environment
- 100% recyclable
- Exceptional acoustic and thermal insulation
- Excellent reaction to fire properties
- Contribution to the LEED certification points
- The preformances remain unchanged over time
- Does not irritate the skin of those handling it
- During installation gloves and masks are not required
- Does not rot in humid environments
- Resistant to moth attack
- Low VOC

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SINCE 1974 ACOUSTIC AND THERMAL INSULATION

IAQ (INDOOR AIR QUALITY) CONTROL

No VOC (Volatile organic compounds)
SILSONIC has been certified according to VDI 6022 which ensures its compliance with the most stringent hygienic requirements in the sector. It has been tested for indoor air quality according to various standards that have demonstrated low formaldehyde and VOC emissions.

BACTERIA, MOLDS AND FUNGI RESISTANCE

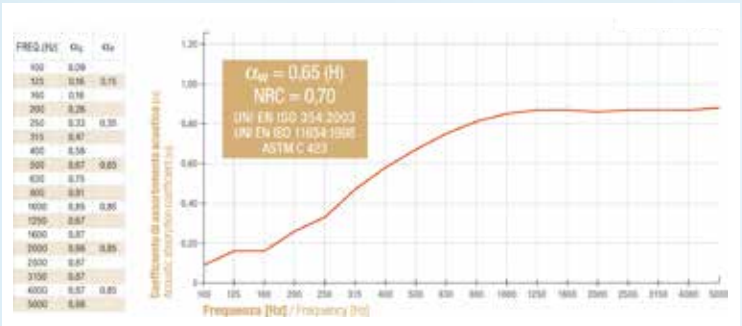
Tests of the effects of mold and bacteria have shown that **SILSONIC** is not a nutrient medium for microorganisms (inert or fungistatic/ bacteriostatic), in other words, this product does not contain any nutritional components, so the fungi/bacteria cannot grow.

NO AIR EROSION

The polyester fibers are safe and inside the ventilation channels do not show erosion, i.e. they do not show breakage, flaking, abrasion or delamination resulting from the air flow.

NOISE REDUCTION

For duct lining application, the primary objective is to achieve noise reduction through the absorption of air borne sound waves and conversion of sound energy.
The **SILSONIC** absorbs noise from the air handlers (Fan) and room, and prevents it from travelling down the duct exiting at the vend opening. **SILSONIC** acoustic lining is having much better absorption properties than other kinds of elastomeric and foam insulations. The below table shows that the absorption properties:



SOUND ABORTION	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
ELASTOMERIC INSULATION	0.06	0.17	1.06	0.32	0.67	0.54	0.55
SILSONIC–NEW GENERATION INSULATION	**0.15**	**0.35**	**0.65**	**0.85**	**0.85**	**0.85**	**0.70**
FOAM INSULATION	0.08	0.22	1.00	0.37	0.68	0.50	0.60
OTHER FIBOROUS INSULATION	0.08	0.19	0.69	0.94	0.99	0.98	0.70

DIFFERENCE BETWEEN SILSONIC AND OTHER ACOUSTIC LINING

The Purpose of these technical comparison is to offer designers and those working in the HVAC departments a through overview of insulation materials commonly used for the purpose of acoustic lining ofn HVAC ducts.

1. SILSONIC – NEW GENERATION INSULATION
2. ELASTOMERIC INSULATION
3. FIBOROUS INSULATION
4. FOAM INSULATION

TECHNICAL PROPERTIES	MAPPY SILSONIC (NEW GENERATION INSULATION)	Flexible Elastomeric Foam Insulation	Crossed linked Foam Insulation	Other Fibers Insulation
CELL STRUCTURE	Mechanically thermo-linked long fiber with no chemical binders. Improve fiber and IAQ	Rigid structure semi open cell with applied adhesive to retain rubber together	Closed cell structure with physically or chemically crossed link in nature	Fibrous structure with chemical binders with additional facing
ACOUSTIC PROPERTY	Excellent acoustic properties due to fibrous structure	Low acoustic properties due to semi open cell structure	Low acoustic properties due to closed cell structure	Good acoustic properties due to fibrous structure
FIRE PROPERTY	ASTM E 84 Tested Class A fire rating	ASTM E 84 Tested	ASTM E 84 Tested	ASTM E84 Tested
SOUND ABSORPTION	High NRC category insulation	Low acoustic performance	Low acoustic performance	High NRC category insulation
SOUND ABSORPTION IN OCTAVE BAND	Excellent performance across the spectrum	Low absorption in high and medium frequencies	Low absorption in high and medium frequencies	Good performance in across the spectrum
FRIABILITY	Not friable - does not disintegrate with vibration or air pressure	Fibre free insulation	Fibre free insulation	Extremely friable - release of harmful fibers, causing degradation & loss of insulating properties & health concerns
ABILITY TO PROMOTE GROWTH OF MOLD AND BACTERIA.	Never allow fungi and bacterial growth (Test available)	Never allow fungi and bacterial growth	Never allow fungi and bacterial growth	Very high
IAQ	Better indoor air quality, Insulation free from chemical binder such us phenol, formaldehyde.	Better indoor air quality	Better indoor air quality	Poor IAO since it contains chemical binders such as phenol, formaldehyde
FIBRE EROSION	No fibre erosion, so no additional facing necessary (Tested)	Fibre free insulation	Fibre free Insulation	High fibre erosion, so additional facing necessary
DENSITY RANGE OF PRODUCTS	Low density insulation with high acoustic absorption	High density in structure	High density in structure	Low density insulation with high acoustic absorption
ABILITY TO ABSORB WATER	High	Low	Low	High
EXTRA FACING	No facing required due to the smoothing process done on the SILSONIC	No facing required	No facing required	Facing required – aluminum foil /BGT

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