TIBTECH innovations

- Connected textiles
- Composites functionalization
- Catalyse and high temperatures

La FRENCH FAB

NANOFIBERS
THE SUPER MATERIAL OF THE FUTURE

Magic fiber

OIL ABSORBENT

WHAT IS MAGIC FIBER OIL ABSORBENT?

M-TEchX has developed a system that enables the mass production of nano-scale fibers. The Nanofiber brand "MAGIC FIBER" was born.

Nanofibers are ultra-fine fibers that are less than 1/100 the thickness of a hair.

Mass Production Technology

1. *Mass production possible*
Production volume: 30kg/h
⇒Creation of fibers with unique effects

When M-TEchX melting system equipment is used

2. *Technology allows replacement of diverse plastic materials into those made from nanofibers*
**Plastic materials, etc.*

3. *Technology makes realization of fiber-layered (3D) structures possible*

OIL ABSORBENT

Name	Magic Fiber Oil Adsorbent (for professional use)
Use	Adsorption of oil, including industrial and cooking oil
Specification	20 g per sheet, 30 cm x 30 cm (can be customized upon customer's request)
Raw materials	Polypropylene
Structure	Special structure containing nano-sized fibers.
Performance	Adsorbs about **50 times its own weight** in oil.
Uses	• Disposal of used or leaked oil, e.g. in manufacturing plants • Removal of oil from water • Grease trap oil removal • Oil removal during disasters (oil spills) • Emergency reserves e.g.

TIBTECH innovations

FEATURES AND ADVANTAGES

Fiber structure that meets the characteristics required for oil absorbents, with unparalleled performance compared to conventional products.
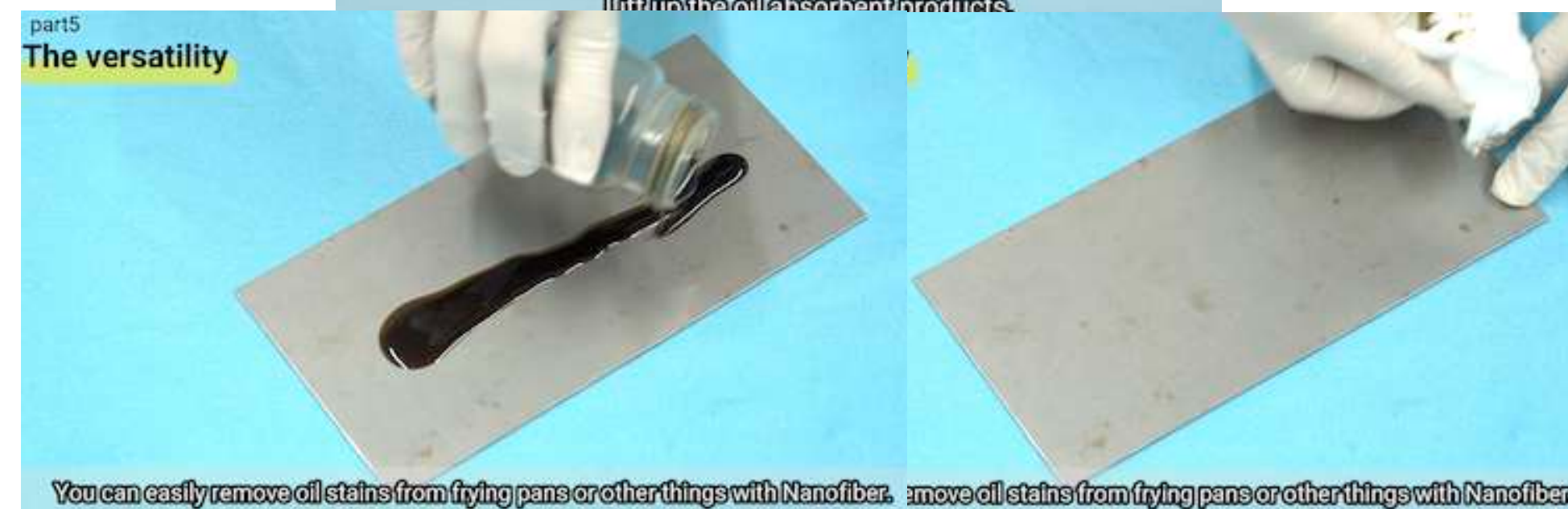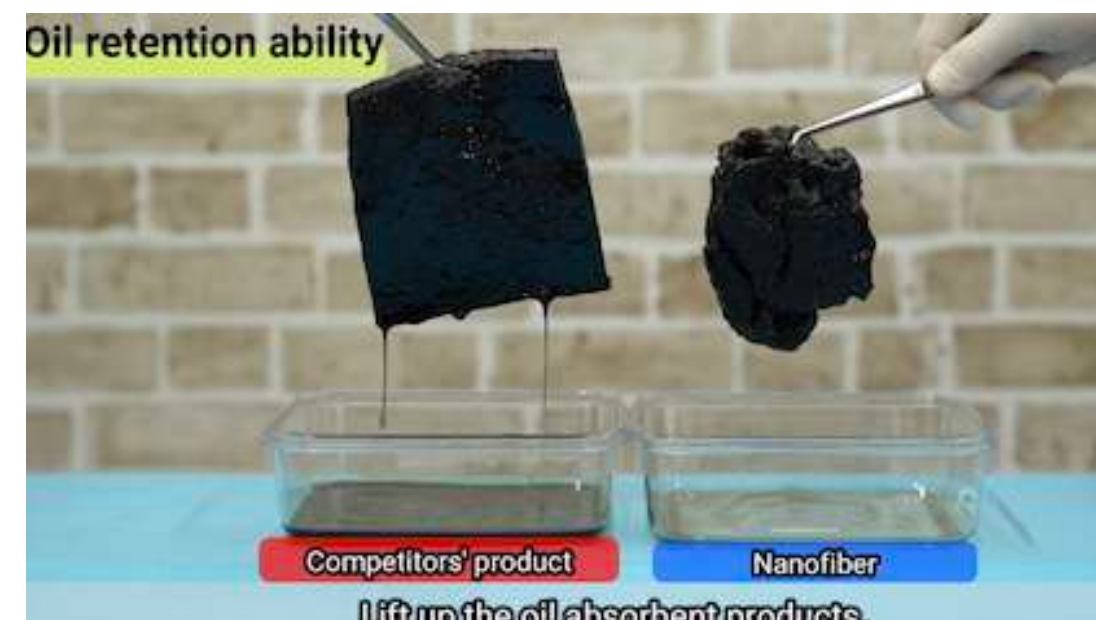
SUPER ABSORBENCY: 50 TIMES ITS OWN WEIGHT	ULTRA STRONG HOLDING POWER	HYDROPHOBIC, ABILITY TO ABSORB OIL ONLY

(10X that of competitors' products)

Absorbed oil doesn't leak out, but is strongly retained

Absorbs only oil, repels water

Absorbs a large amount of oil

1 sheet (20g) - 1L MAX

No secondary cleaning:

Work time and effort reduced by 1/2
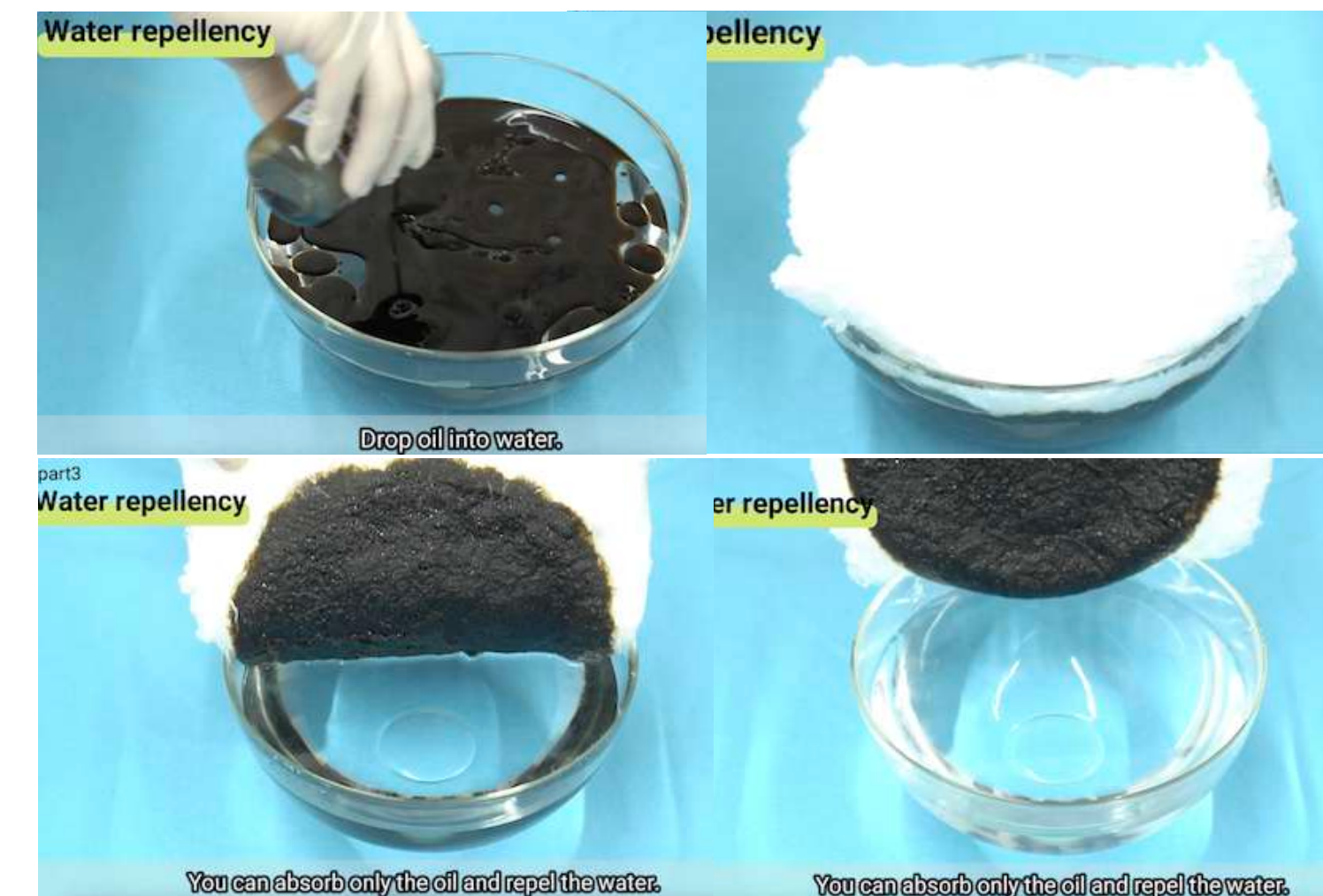
Effectively removes oil from the water surface.
Number of used sheets reduced Work time shortened

Other MAGIC FIBER Applications

INSULATION MATERIALS

THERMAL CONDUCTIVITY : 0,0136 W/m Kn

DENSITY : 0,0048 g/ cm³

THICKNESS : +/- 20 mm

Comparison of Thermal Conductivity W/(m K) n

Glass Wool	MAGIC INSULATION
0,036	0,0136

Can boast more than twice the insulation capacity of existing insulation materials such as glass wool.

The combination of thin and thick fibers creates numerous spaces and gaps.
Succeeded in providing ultra-high-performance insulation performance (thermal conductivity).

MTechX in-house investigation

[Performance Comparison by Insulation Material]

Category	Type	thermal conductivity	adiabatic property	sound absorption property	flame retardance	moisture permeability	environmental	price
Inorganic fiber system	glass wool	0.036	○	○	◎	△	○	◎
	glass wool	0.038	○	○	◎	△	○	◎
Woody fibre system	cellulose fiber	0.034	○	◎	◎	△	◎	△
Wool system	wool insulation	0.040	○	○	◎	△	◎	○
Synthetic fiber system	Polyester heat insulating material	0.045	△	○	○	△	◎	○
New textile materials	Sample (nanofiber)	0.014	◎	◎	◎*	◎	◎	◎
Extruded polystyrene foam (one species)		0.040	○	△	△	◎	△	△
Polyethylene foam		0.028	◎	△	△	◎	△	△
Rigid urethane foam (one species)		0.029	◎	△	△	◎	△	△

* Incombustibility can be realized by mixing with incombustible materials.

TIBTECH *innovations*

Other MAGIC FIBER Applications
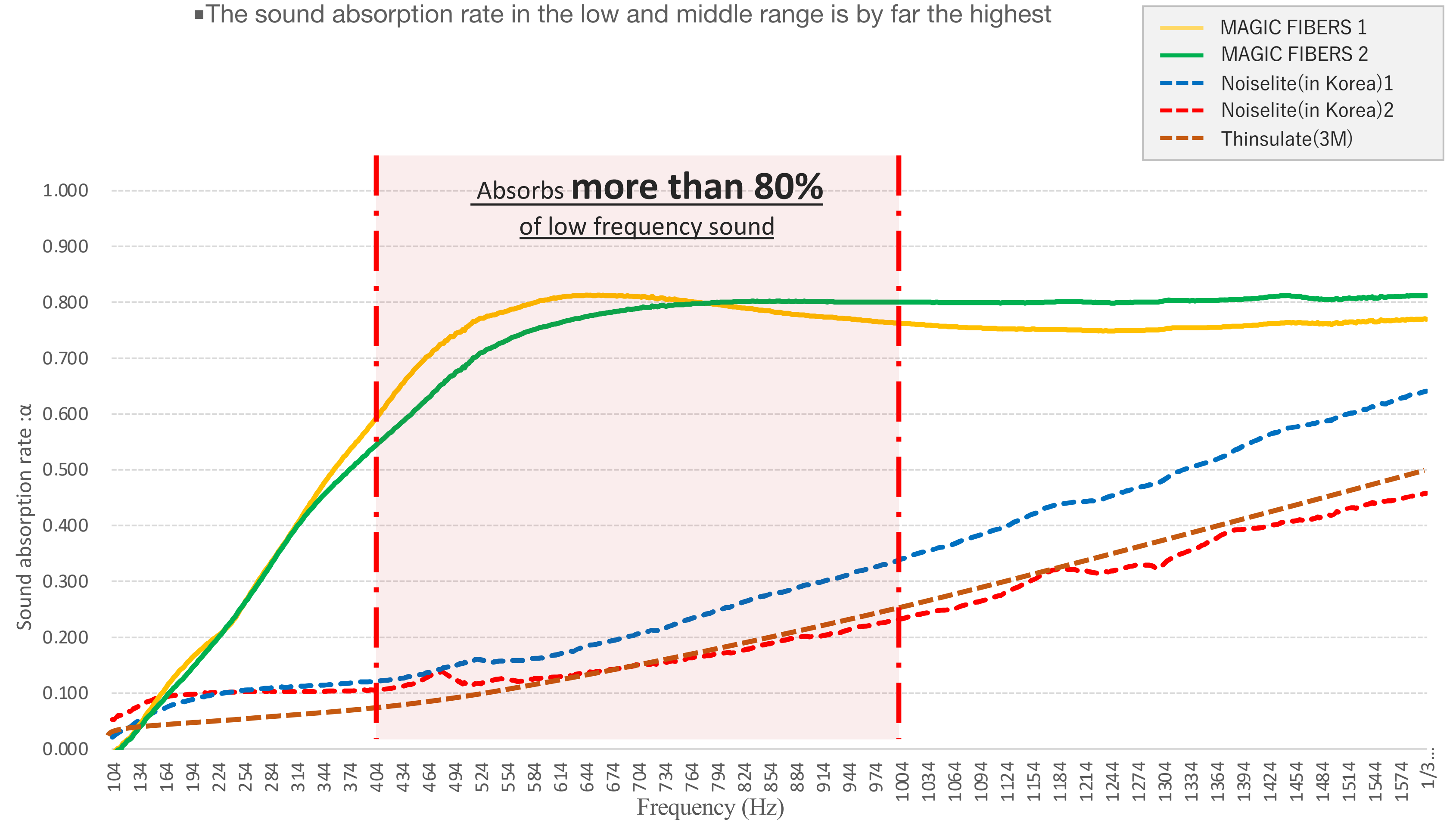
Low frequency 600 Hz sound absorption coefficient
Other companies' products: 40% MAGIC FIBER : 90% or more

Magic fiber's sound absorbency in low sound ranges outperforms competitive products. It is especially effective at absorbing vehicle vibration and noise. High-range sounds are also absorbed. A new generation of sound absorbent materials

The main feature of MAGIC FIBER absorber is that it can absorb low frequency sound (400 Hz~1500 Hz), which cannot be achieved with conventional products. It can absorb low frequency sound (400 Hz~1500 Hz), which conventional products cannot.

The sound absorption rate in the low and middle range is by far the highest

Absorbs **more than 80%** of low frequency sound

Legend:
- MAGIC FIBERS 1
- MAGIC FIBERS 2
- Noiselite(in Korea)1
- Noiselite(in Korea)2
- Thinsulate(3M)

Frequency (Hz)

Sound absorption rate: α

Other MAGIC FIBER Applications

Achieves HEPA level performance with one substrate
(For ready-made products, multiple sheets are used)

1 High collection efficiency with low pressure drops
2 High performance possible with single filters
3 Mass production and highly profitability possible

1 High collection rate and low pressure loss
⇒ Collection rate of 99.99% or more, with good
breathability.

2 A single filter delivers all the performance users
need
⇒ High-performance filters at a low cost without
multiple uses

3 Mass production potential
⇒ M-TEchX unique nanofiber mass production
technology enables stable large-scale manufacturing

HEPA standards and comparison with other companies' products

Item	HEPA filter criteria	Products from other companies	MAGIC FIBER
Collection rate (The higher the better)	99.97%or more	99.97%	99.99% or more
Pressure drop (the lower the better)	245 Pa or less	200 Pa or less	189 Pa or less
Number of sheets used (lamination)	Lamination needed (Use of multiple sheets)	Lamination needed (Use of multiple sheets) Often consists of multiple layers to implement the HEPA standard	1 filter sheet sufficient A single filter layer can achieve higher performance than HEPA filter standards
Cost	—	High	Low

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