

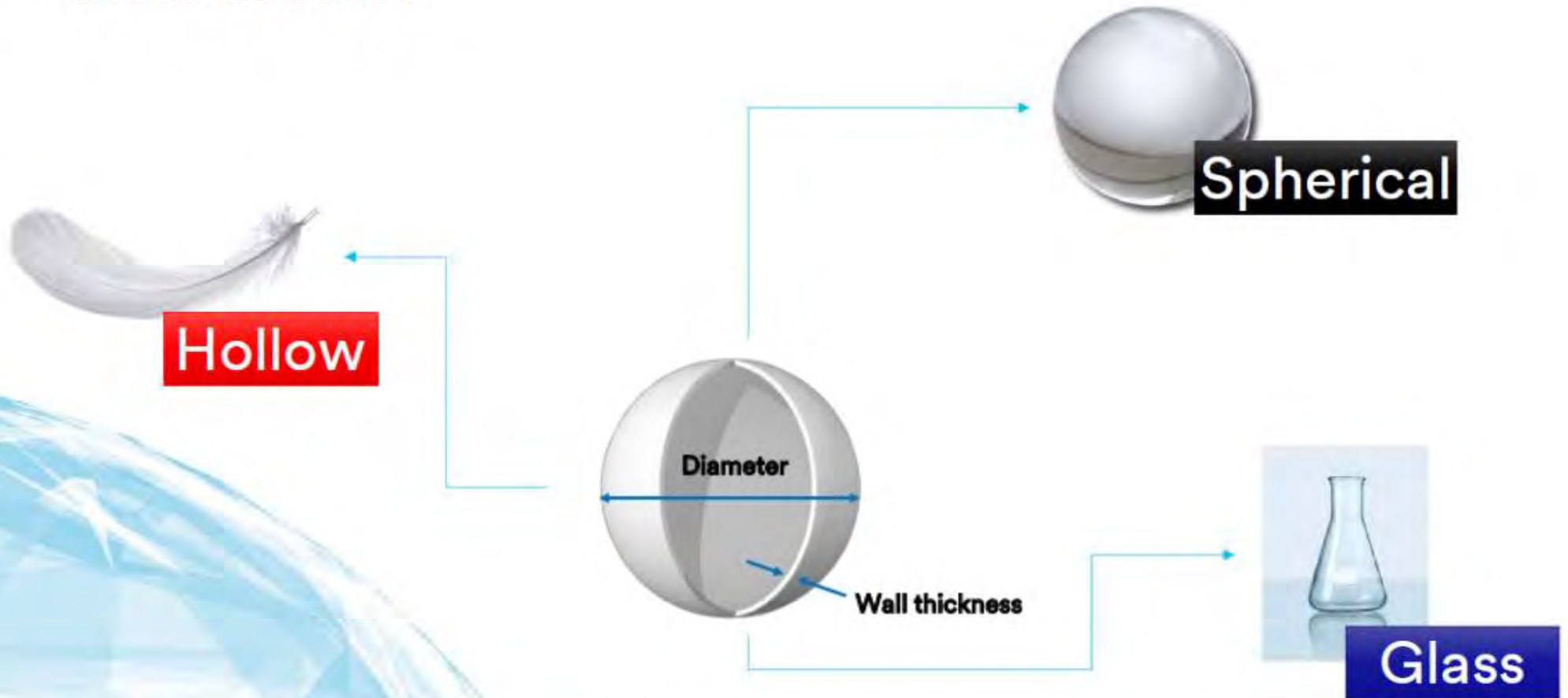
# 3M Glass Bubbles for Insulative Dry Mortars and Plasters

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January 2022



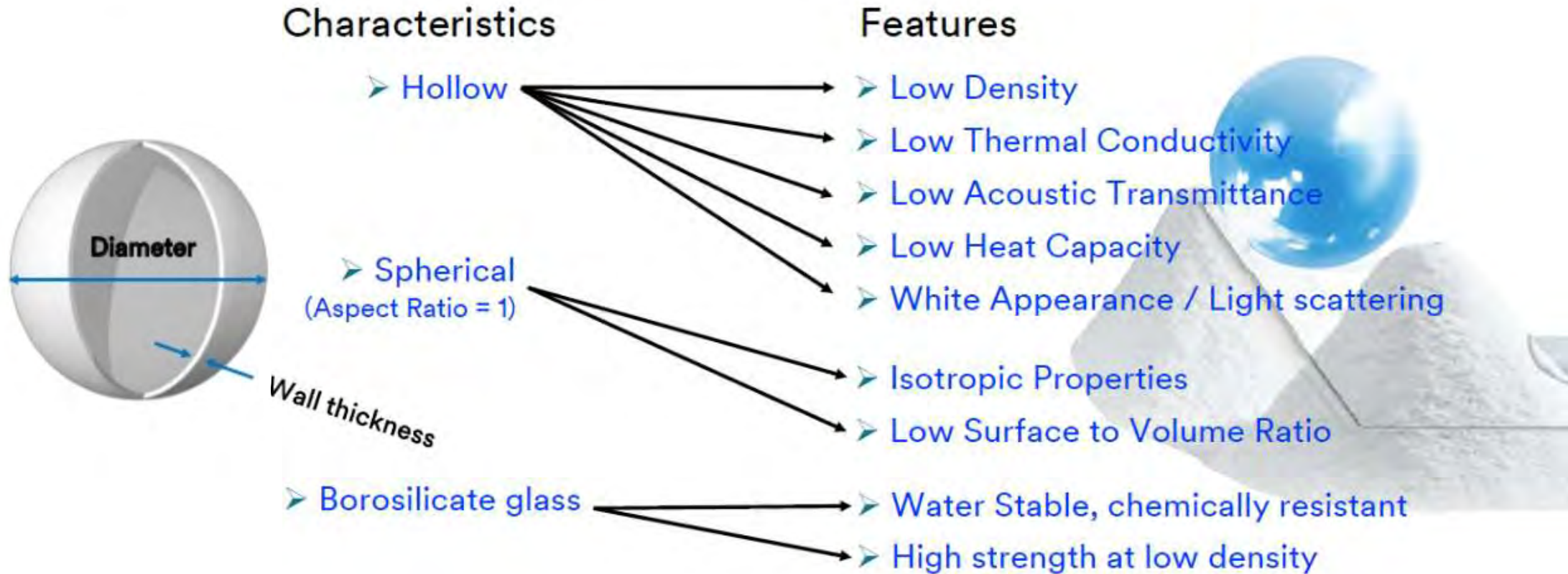
# 3M™ Glass Bubbles



Three characteristics that bring along many features

# 3M™ Glass Bubbles

## From Characteristics to Features



# Glass Bubbles for Anti-condensation Paint

## Main Characteristics

Anticondensation paints represent the best solution to prevent mold creation, granting a wholesome environment. Thanks to the “warm touch” effect they improve the comfort in your home



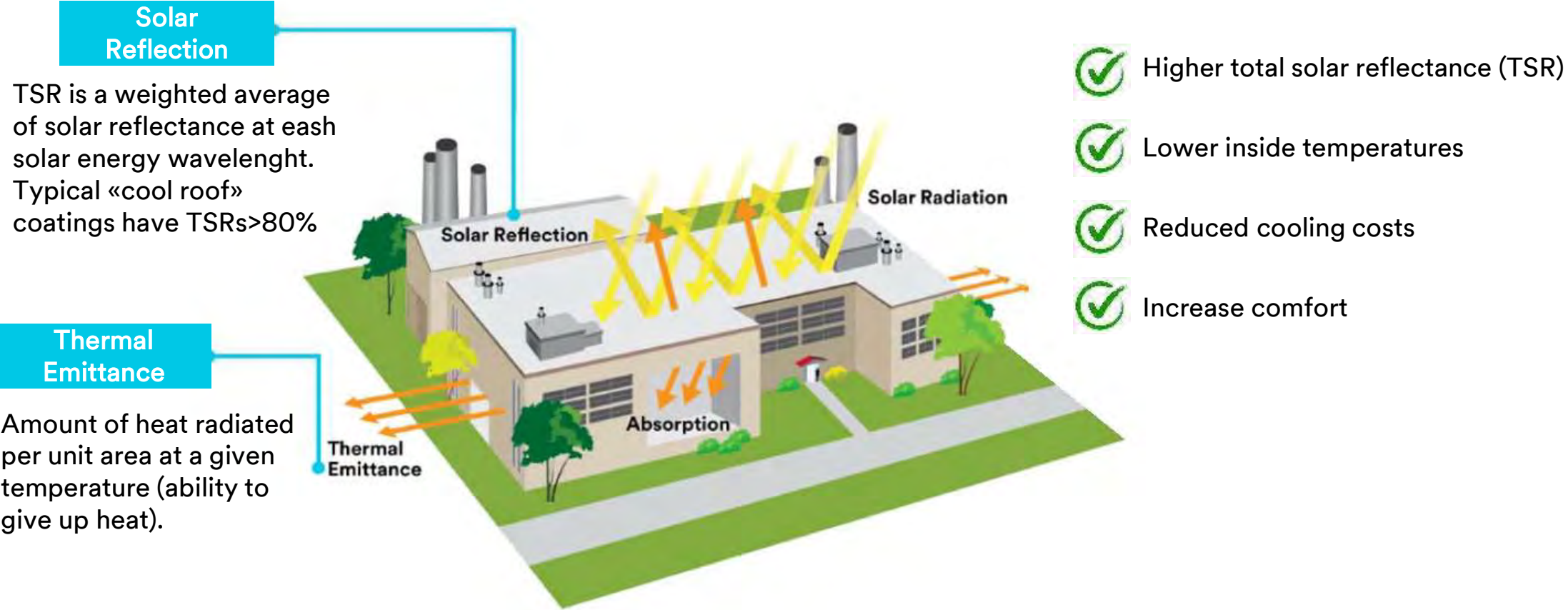
- ✔ Mitigate thermal bridges
- ✔ Increase the surface temperature
- ✔ Avoid condensation on the wall
- ✔ Increase comfort



# Glass Bubbles for Solar Paints

## Main Characteristics

Testing shows that solar reflective roof coatings formulated with 3M glass bubbles can offer a number of performance and cost benefits compared to typical "cool roof" coatings.



# Energy Efficient buildings

## EU starts the “Renovation Wave”

Europe aims to be climate-neutral by 2050.

Across Europe, greenhouse gas emissions must drop by at least 55 percent by 2030

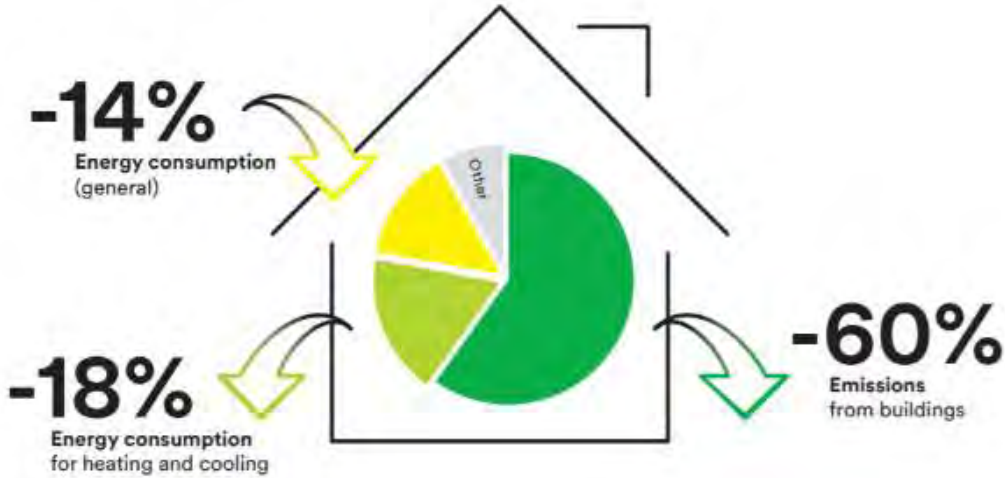


Buildings account for:

- 40 percent of energy consumption in the EU
- 36 percent of the greenhouse gas emissions caused by energy consumption.

To achieve EU targets:

- Emissions from buildings must be reduced by 60%
- Their total energy consumption by 14%
- Energy consumption for heating and cooling by 18%.



# Energy Efficient buildings

EU starts the “Renovation Wave”

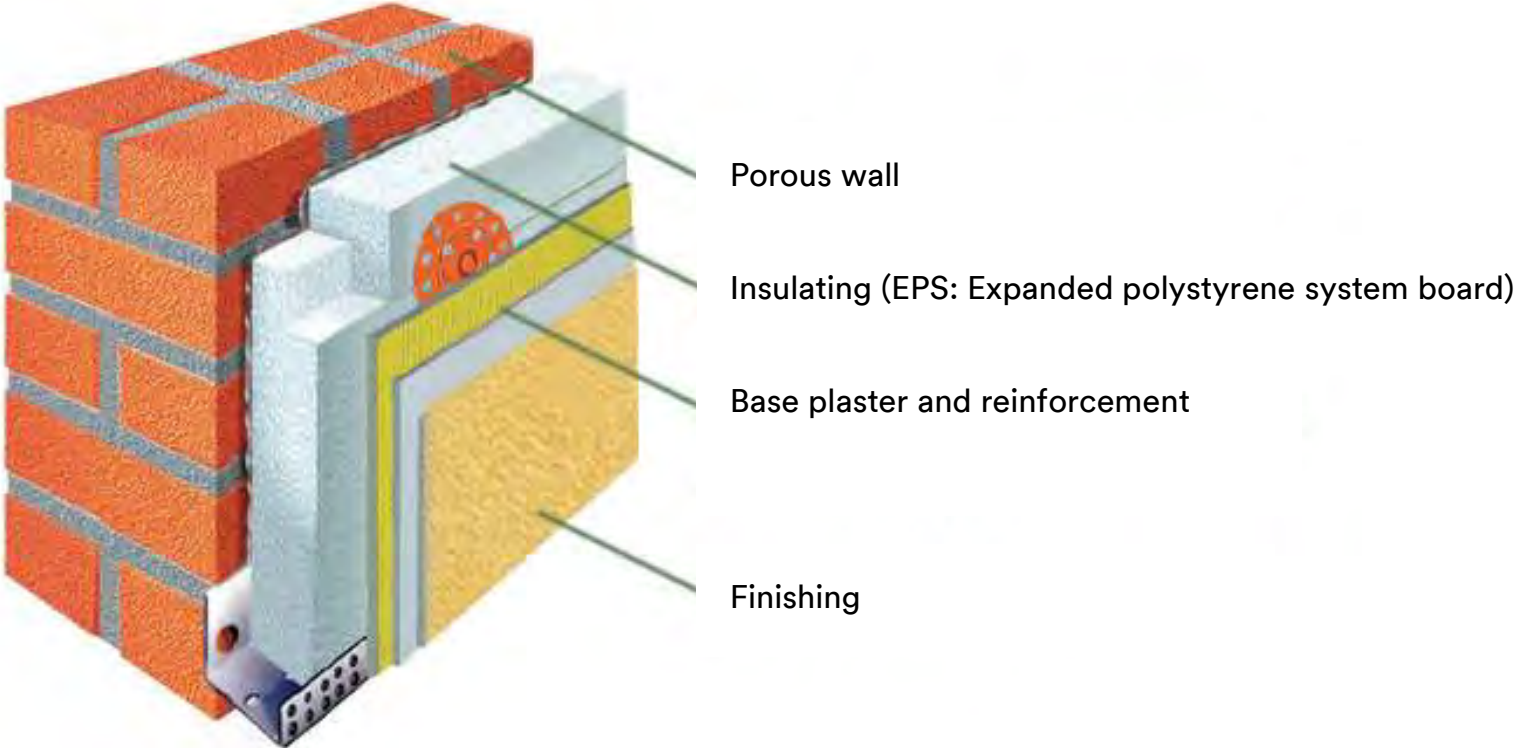


## Three focal points of the “Renovation Wave”

The core measures captured in the Europe-wide “Renovation Wave” focus on three areas:

- 1 Decarbonisation of heating and cooling
- 2 Combating energy poverty and taking measures for buildings with the lowest energy efficiency
- 3 Sustainable renovation of public buildings such as schools, hospitals, administration buildings

# External Thermal Insulation





# Thermal Conductivity

Typical building materials

Material	Therm. Cond. W/mK
Blockwork (light)	0.38
Blockwork (medium)	0.51
Blockwork (dense)	1.63
Brick (exposed)	0.84
Brick (protected)	0.62
Concrete (dense)	1.4
Mortar	0.80
Phenolic foam (PIR)	0.020
Plaster (gypsum)	0.46
Plasterboard (gypsum)	0.16
Polystyrene foam	0.032
Polyurethane foam (PUR)	0.025
Steel	16 - 80
Stone (sandstone)	1.50
Stone (granite)	1.7 - 4.0

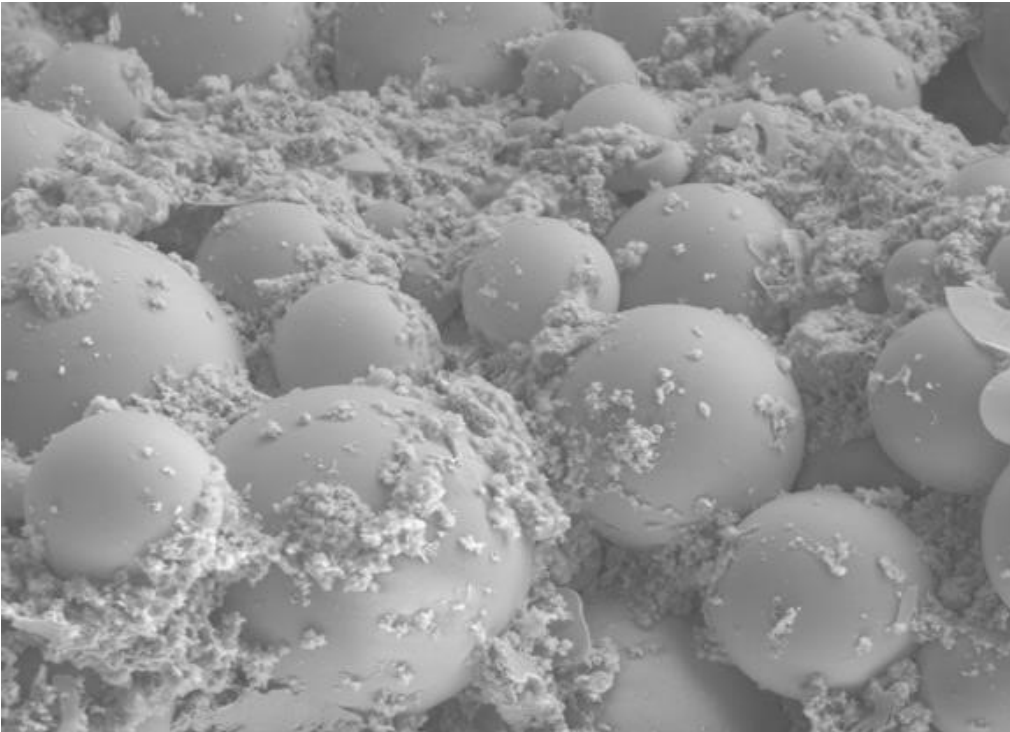
## 3M Glass Bubbles



3M Glass Bubbles	Real density g/cc	Particle size D50	Therm. Cond. W/mK
K1	0.125	65	0.044
K15	0.15	60	0.051
K20	0.20	60	0.065
K25	0.25	55	0.085

# Glass meets Mortars and Plasters

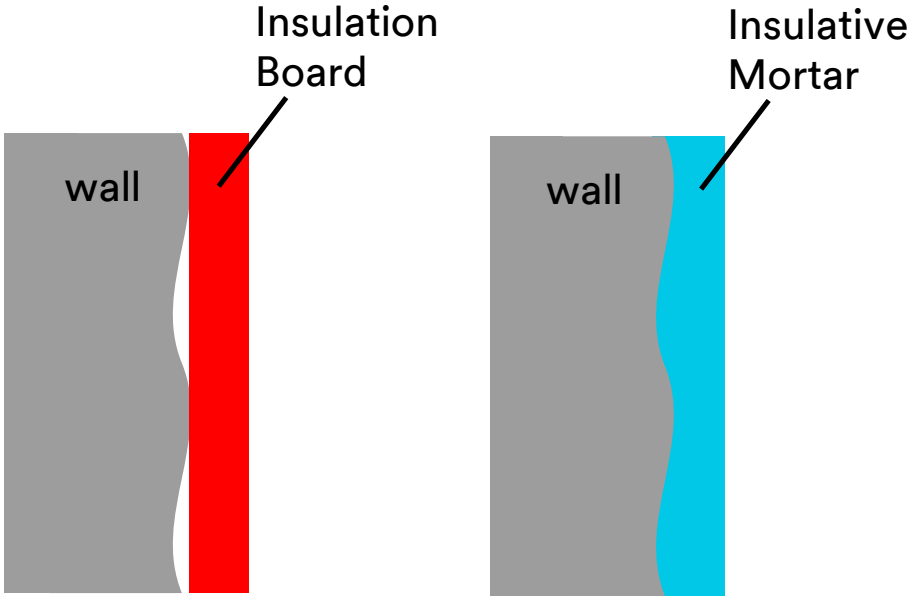
## Thermally Insulative Dry Mortars and Plasters



- For inside and outside applications
- Standard plaster processing
- Low Thermal Conductivity
- No thermal bridges
- Long term stable
- 100% mineral based (inorganic)
- Heat and frost resistant

# Glass meets Mortars and Plasters

## Thermally Insulative Dry Mortars and Plasters



- Easy and cheaper to apply
- No cavities between wall and insulation
- Eliminate risk of damages by moisture and mold
- High performance and wall protection
- Long term stable
- Recyclability

# Products available on the Market

## Thermally Insulative Dry Mortar

- ✓ From 2 to 10 cm without lathwork support
- ✓ Easy application «wet-on-wet»
- ✓ Specific products for Interior and Exterior
- ✓ Insulation in just working day



bulk density	125 kg/m <sup>3</sup>
fresh mortar density	250 kg/m <sup>3</sup>
dry bulk density	125 kg/m <sup>3</sup>
thermal conductivity (dry)	0.040 W/mK
compressive strength	0.8 N/mm <sup>2</sup>
bending tensile strength	0.2 N/mm <sup>2</sup>
fire protection class	A1, non flammable

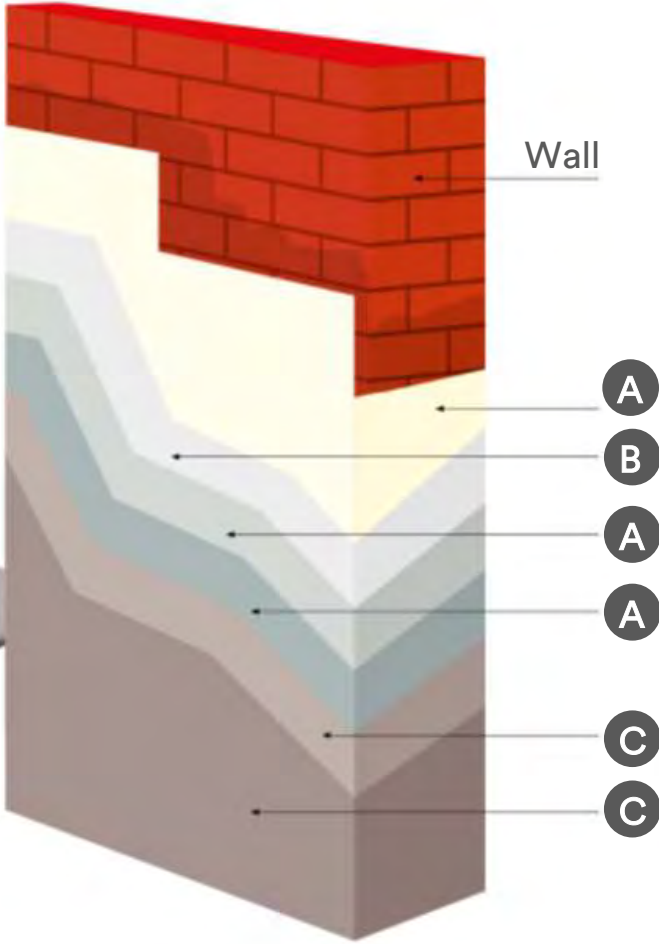




# Products available on the Market

## Thermally Insulative Plaster

- ✔ Complete system (from plaster to paint)
- ✔ Easy to apply
- ✔ Low thickness
- ✔ Improve energy saving and comfort



**A**  
Insulative plaster, ready to apply formulated with 3M Glass Bubbles

**B**  
Low thickness insulative flexible board

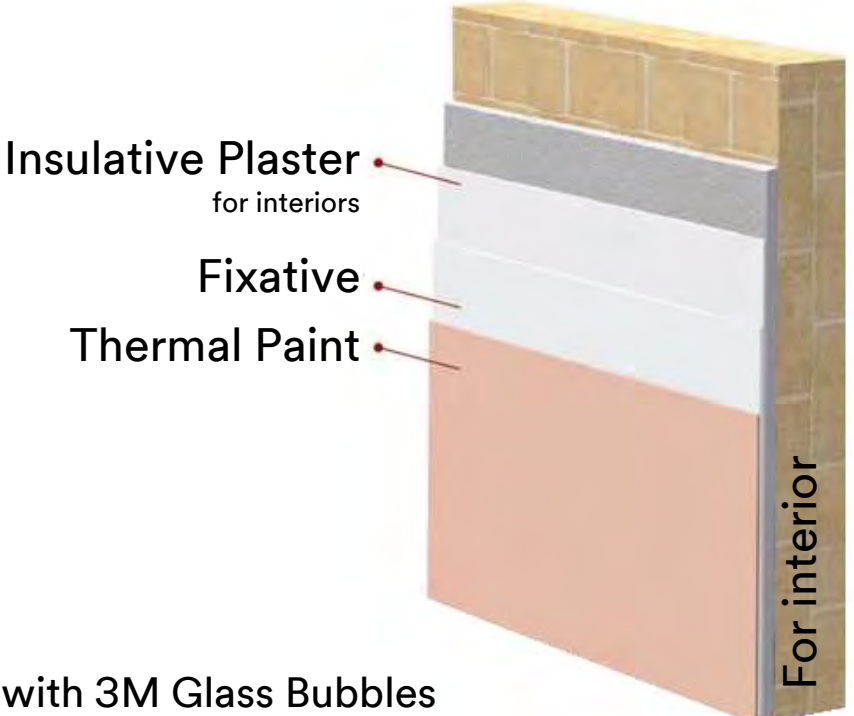
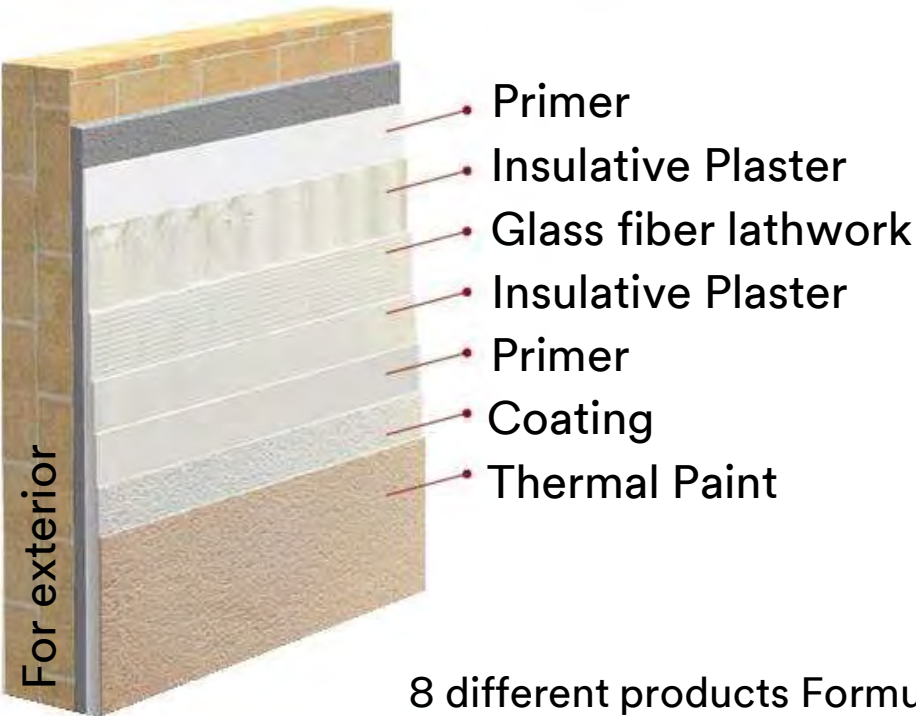
**C**  
Thermal paint formulated with 3M Glass Bubbles

# Products available on the Market

## Thermally Insulative Plaster

- ✓ Complete system (from plaster to paint)
- ✓ Easy to apply

- ✓ Low thickness
- ✓ Improve energy efficiency and comfort



8 different products Formulated with 3M Glass Bubbles



# Thank you.

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