



ARMAGEL.
INSULATION
JUST GOT
BETTER.

www.armacell.com/armagel

 **armacell**[®]

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INNOVATIVE AEROGEL BLANKET TECHNOLOGY.

ABOUT





Armacell®

OUR VISION // To be the global leader in providing innovative technical insulation solutions and components to conserve energy and make a difference around the world.



armacell[®]
MAKING A DIFFERENCE AROUND THE WORLD

// Armacell at a Glance

 <p>3,100 employees worldwide</p>	 <p>24 production facilities in 16 countries on 4 continents</p>	 <p>€9m invested in R&D projects in 2018</p>
 <p>Regional head offices in Chapel Hill, (AMERICAS), Singapore (APAC), Münster (EMEA)</p>	 <p>€610m total net sales in 2018</p>	 <p>Enabling Energy Efficiency for Equipment</p>

HVAC | HEATING & PLUMBING | REFRIGERATION | OIL & GAS | SOLAR | TRANSPORTATION
WIND ENERGY | SPORTS & LEISURE | CONSTRUCTION | OTHER

ABOUT

ArmaGel

Armacell extends temperature capabilities.

With the introduction of our new ArmaGel range, we've extended our temperature capabilities from -50 °C to +125 °C to **-180 °C to +650 °C.**



 **armacell**[™]
ArmaGel

-180 °C

+650 °C

Any temperature colder than -180 °C our technical services team must be contacted

ABOUT

ArmaGel HT



Say hello to the future. Today.

Introducing ArmaGel HT. One of the best performing insulation materials for high-temperature applications.

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ArmaGel

A low-angle, upward-looking photograph of a complex industrial facility. The image is dominated by large, cylindrical pipes, many of which are wrapped in silver, reflective insulation. The pipes are supported by a network of blue steel beams and ladders. In the upper left, a few pipes are painted bright yellow. The lighting is bright, coming from skylights or large windows at the top, creating a high-contrast scene with deep shadows and bright highlights. The overall color palette is industrial, featuring blues, greys, and metallic tones, with the yellow pipes providing a strong visual accent.

For an extreme world.

Keep your cool. Even in conditions up to
650 °C (1200 °F).

 **armacell**[™]
ArmaGel



ASTM C1728 compliant.

A reliable, quality solution
that ticks all the right boxes.

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// ArmaGel HT complies with ASTM C1728 Type III, Grade 1A

Standard specification with defined performance for each test method.

Classifies aerogel thermal insulation into 3 types, based on maximum use temperature:

- Type I — 125 °C (257 °F)
- Type II — 200 °C (390 °F)
- Type III — 649 °C (1200 °F)

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// ArmaGel has passed all required ASTM Type III, Grade 1A certifications

THERMAL CONDUCTIVITY

- ASTM C177 – Thermal conductivity

NON-COMBUSTIBILITY & FIRE PERFORMANCE

- ASTM E84 – Surface burning characteristics

MECHANICAL PROPERTIES

- ASTM C165 – Compressive strength
- ASTM C303 – Density
- ASTM C1101/C1101M – Flexibility or rigidity of mineral fibre blanket or board insulation

WATER RESISTANCE / PERMEABILITY

- ASTM C1763 – Water absorption
- ASTM C1104/C1104M – Moisture resistance

DIMENSIONAL STABILITY

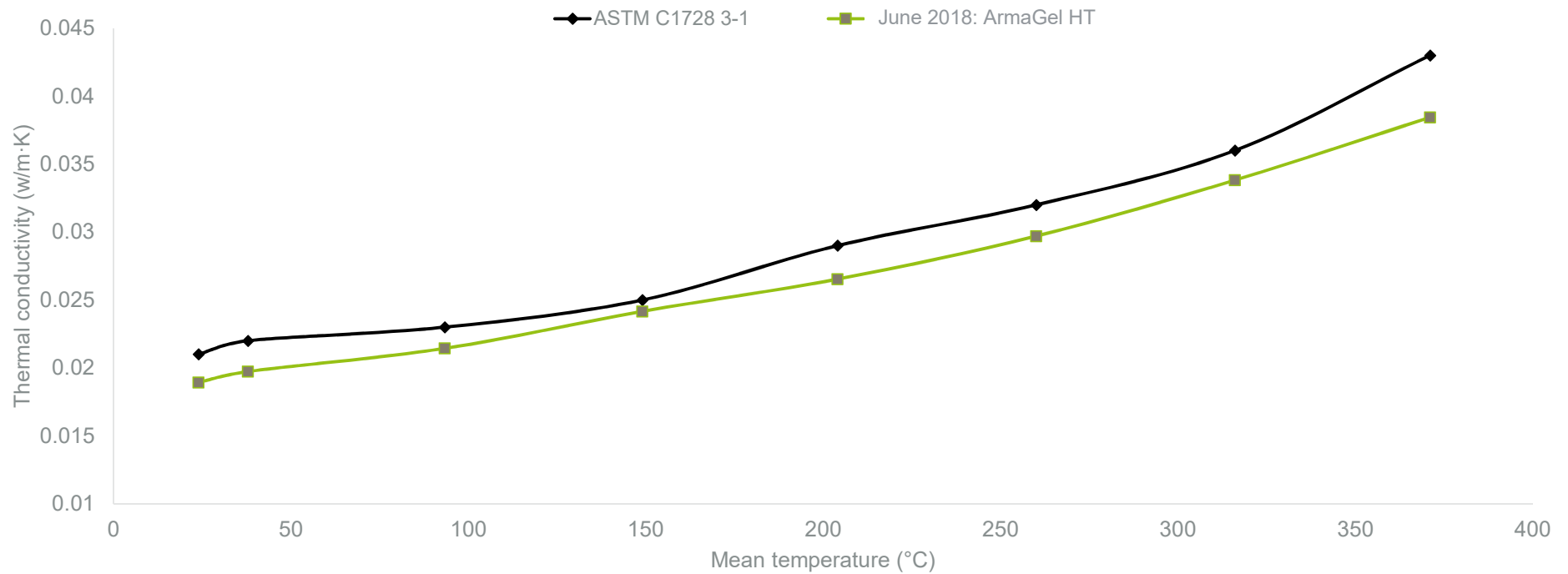
- ASTM C356 – Linear shrinkage under soaking heat
- ASTM C411 – Hot surface performance / Estimation of maximum use temperature / Sag resistance
- ASTM C411/C447 – Hot surface performance / Estimation of maximum use temperature

OTHERS

- ASTM C795 – Corrosion test for austenitic stainless steel
- ASTM C1617 – Corrosion test for metal
- ASTM C1338 – Fungi resistance of insulation materials and facings

// ASTM C177 – GHP TEST RESULTS

Korea Institute for Energy Research – June / July 2018 (W / m·K)



Lower labour cost.

Thicker blankets enable you to install your total insulation system faster at a lower cost. 5, 10, 15 and 20mm available today.

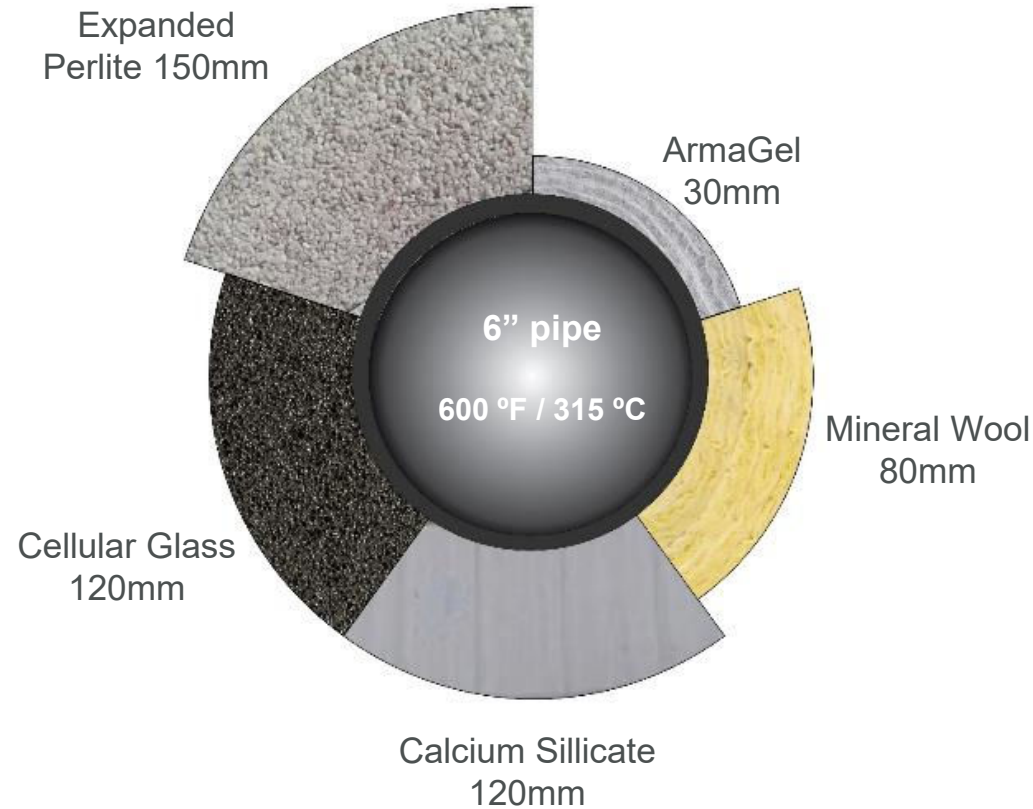
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// Superior Thermal Performance

Offering up to **5x superior thermal performance** than competing insulation products.
Systems up to **80% thinner and lighter**.

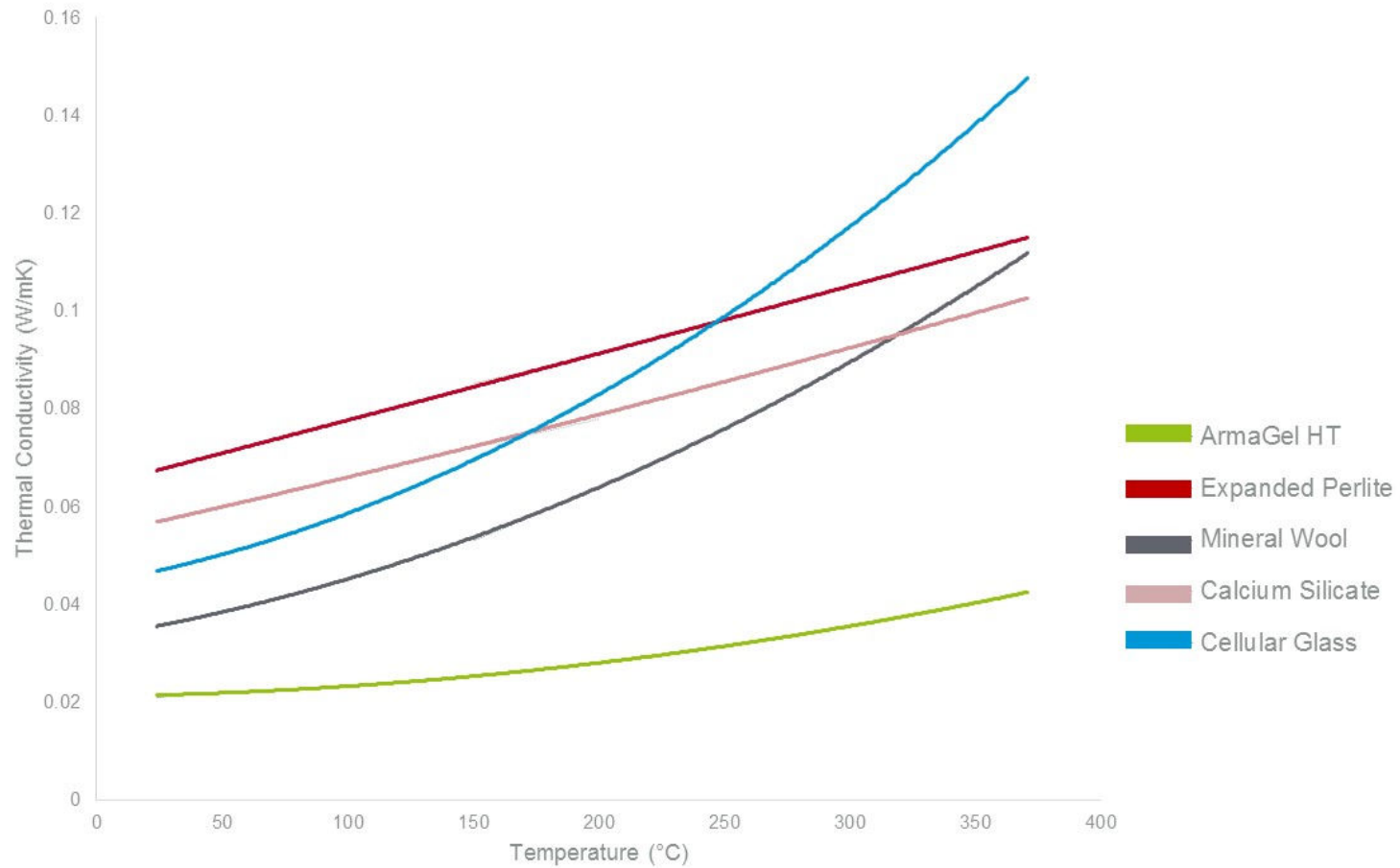
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*Heat loss [W/m²] indication based on practical equation $0.6 \cdot (\text{line temp. } [^{\circ}\text{C}]) \Rightarrow 0.6 \cdot 300 = 180 \text{ W/m}^2$
 \Rightarrow renders: 34mm of aerogel. Assumed 30mm of aerogel. Insulation thickness calculated to ensure the same linear thermal performance (heat loss in W/m) or ca. $145 \text{ W/m} = 150 \text{ Btu}/(\text{ft} \cdot \text{h})$. Insulation thermal conductivity as per the relevant ASTM specifications, incl. ArmaGel.

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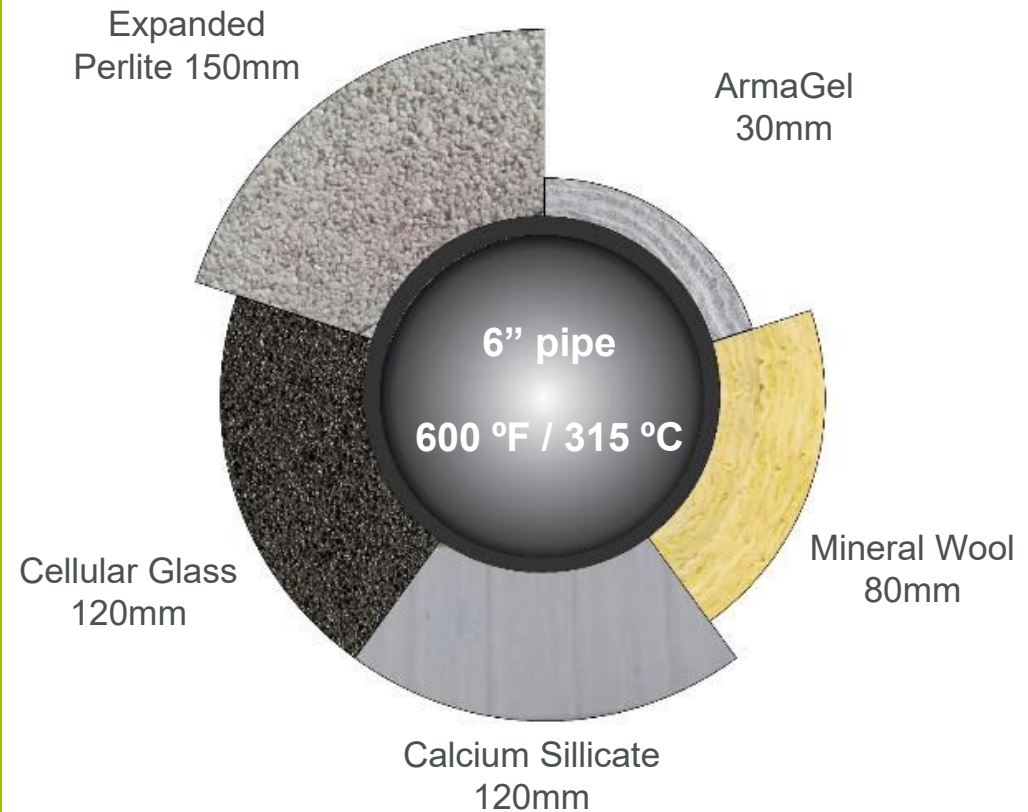
// Thermal Conductivity Performance



// Customer Benefits

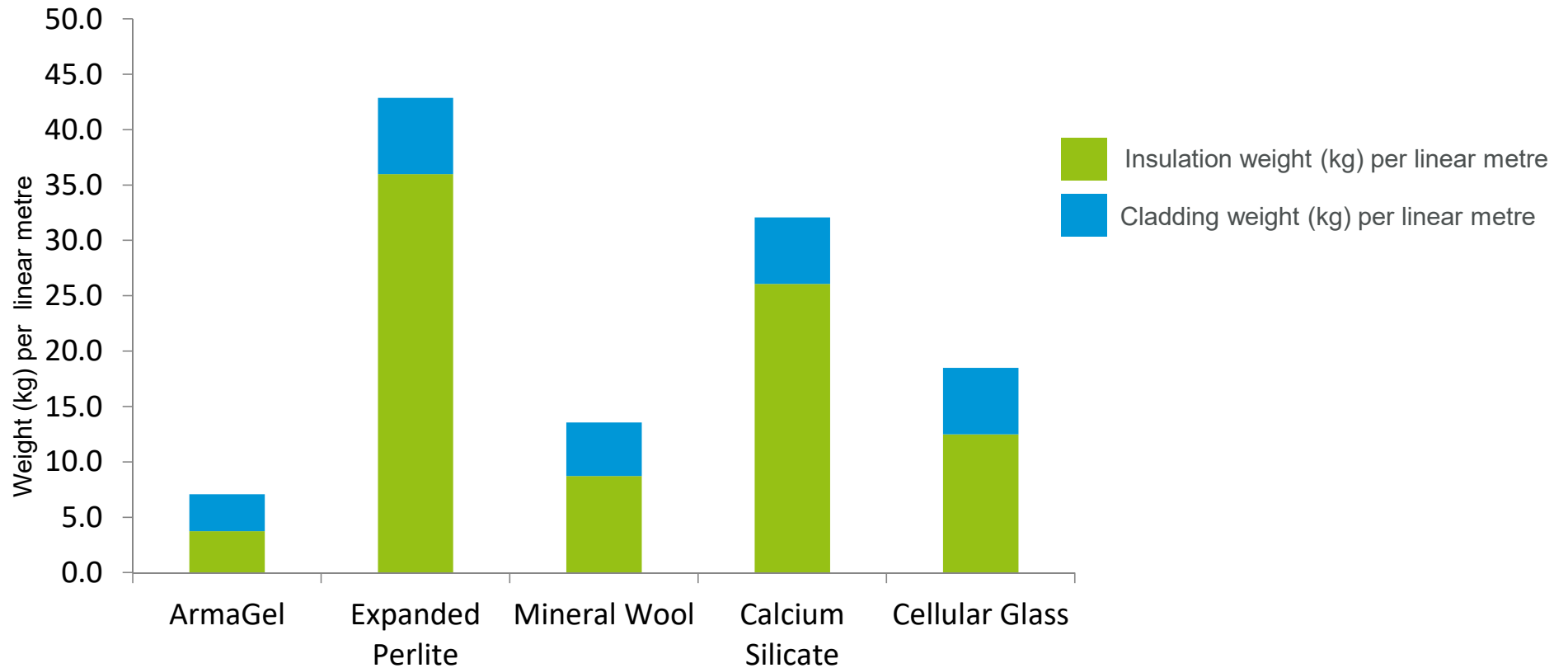
- Up to 6mm / 0.4% of cladding circumference saved per 1mm reduction of insulation thickness.
- Reduced pipe spacing, allowing for a smaller plant footprint.
- Reduced weight leads to less supporting metal work for piping.
- Decrease in noise emissions.

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// Weight Performance

ArmaGel weight in comparison to conventional materials



The background of the entire image is a close-up, black and white photograph of numerous water droplets of various sizes on a dark, reflective surface. The droplets are in sharp focus, showing their rounded shapes and the way they reflect light. In the top left corner, the Armacell logo is displayed, consisting of a small globe icon followed by the word 'armacell' in a lowercase, sans-serif font, with a registered trademark symbol. Below it, the word 'ArmaGel' is written in a smaller, similar font.

armacell[®]
ArmaGel

Hydrophobic and breathable.

Repels liquid water, but allows
vapour to escape, helping to
mitigate corrosion under insulation.

// **Insulation** material

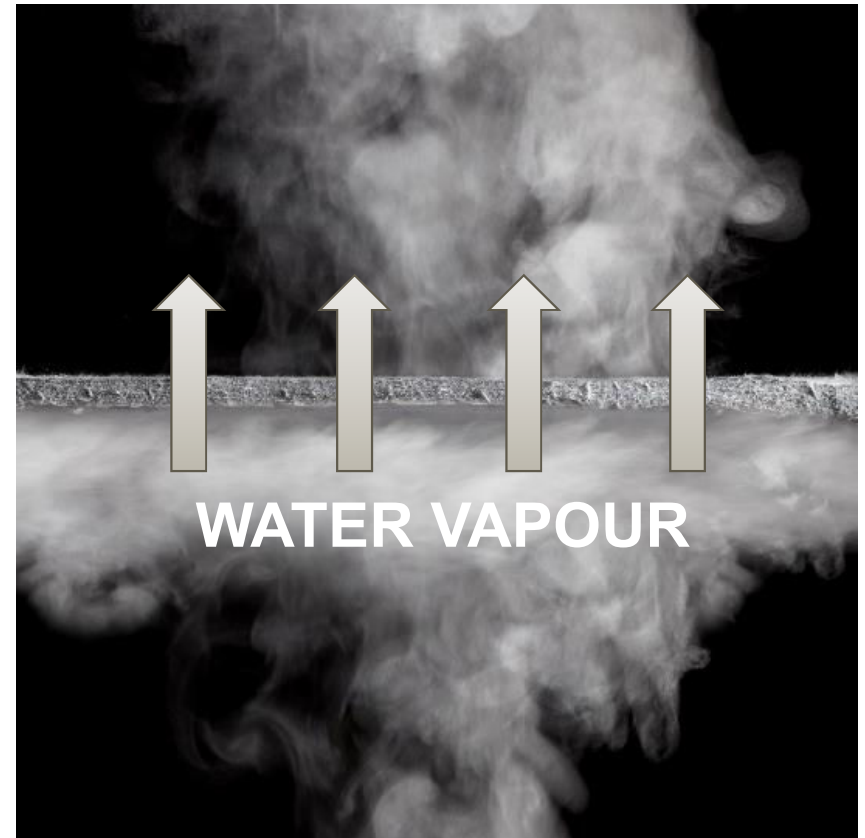
Aerogel blanket

Hydrophobic (water repellent)



and...

...Breathable
(vapour open)



// **INHERENT** MATERIAL PROPERTIES

Hydrophobicity



// The Best of Both Worlds

Hydrophobicity and breathability
enhance protection against
corrosion under insulation.

 **armacell**[®]
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Remove and re-use.

Inspect your pipework with ease.
ArmaGel's flexible nature and
mechanical resilience enables you to
remove, inspect and re-apply.

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THANK

YOU
