



Comprehensive comparison ISORYX Reflection Barrier Technology vs. Liquid ceramic insulation

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1. Introduction

Both technologies belong to the category of thin-film functional coatings that are marketed as alternatives or supplements to conventional insulation systems (e.g. ETICS/EPS, mineral wool). Although they are often mentioned in the same breath, they differ significantly in terms of composition, mode of action, evidence base and range of applications.

This comparison is based on a neutral analysis by the AI model Claude 4.6 Opus. The AI was explicitly instructed to evaluate neutrally and not to favour any product (as of 05.03.2026).

2. Basic product characteristics

Criterion	ISORYX (Inside / Outside / Primario)	Liquid ceramic (generic)
Product type	Silicone resin paint with mineral fillers (DIN EN 13300)	Acrylate/synthetic resin dispersion with ceramic hollow spheres (microspheres)
Technology designation	Reflection barrier technology	Thermo-ceramic coating / nano-ceramic
Binder	Silicone resin (siloxane-based)	Mostly pure acrylate or styrene-acrylate
Functional fillers	Mineral fillers (not specified in detail)	Ceramic hollow spheres (vacuum microspheres), partly aerogel
Primary mode of action	IR and UV reflection (>90% according to manufacturer)	Low thermal conductivity of the hollow spheres + reflection
Compliance	DIN EN 13300 (coating material)	Usually no specific insulation standard; sometimes declared as a coating material



3. Composition & chemistry comparison

ISORYX products (from SDB/TM)

Component	Inside coating	Outside coating	Primario
Base	Silicone resin paint, mineral fillers	Silicone resin paint, mineral fillers	Alkoxysilane, siloxane, water
pH	approx. 8	approx. 8	Approx. 9
Biocides	CIT/MIT (3:1), BIT	Pyrithione zinc, terbutryn, OIT, CIT/MIT	CIT/MIT (3:1), BIT
VOC	max. 30 g/l (Label A)	max. 30 g/l	max. 30 g/l
CLP classification	Not classified	Aquatic Chronic 3 (H412)	Not classified
Hazardous ingredients	Not applicable	Zinc pyrithione, terbutryn, OIT, CIT/MIT	Not applicable

Liquid ceramic (typical)

Component	Typical composition
Base	Pure acrylate dispersion
Functional filler	Hollow ceramic spheres (Ø 20–120 µm), partly silicon dioxide
pH	approx. 8–9
Biocides	Varies greatly depending on manufacturer; often isothiazolinones
VOC	Varies (often 0–50 g/l)
CLP classification	Mostly not classified or irritant (depending on product)

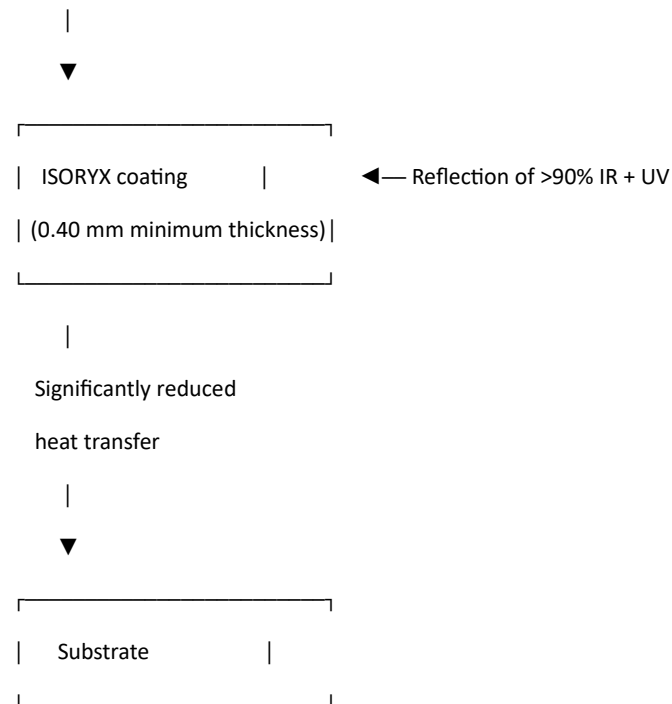
Assessment: ISORYX is based on silicone resin (mineral, hydrophobic, diffusion-open), while liquid ceramics are typically based on acrylate dispersions. ISORYX's silicone resin technology is fundamentally more vapour-diffusion-open and weather-resistant.



4. Detailed mode of action

4.1 ISORYX – Reflection Barrier Technology

Solar radiation / heat radiation



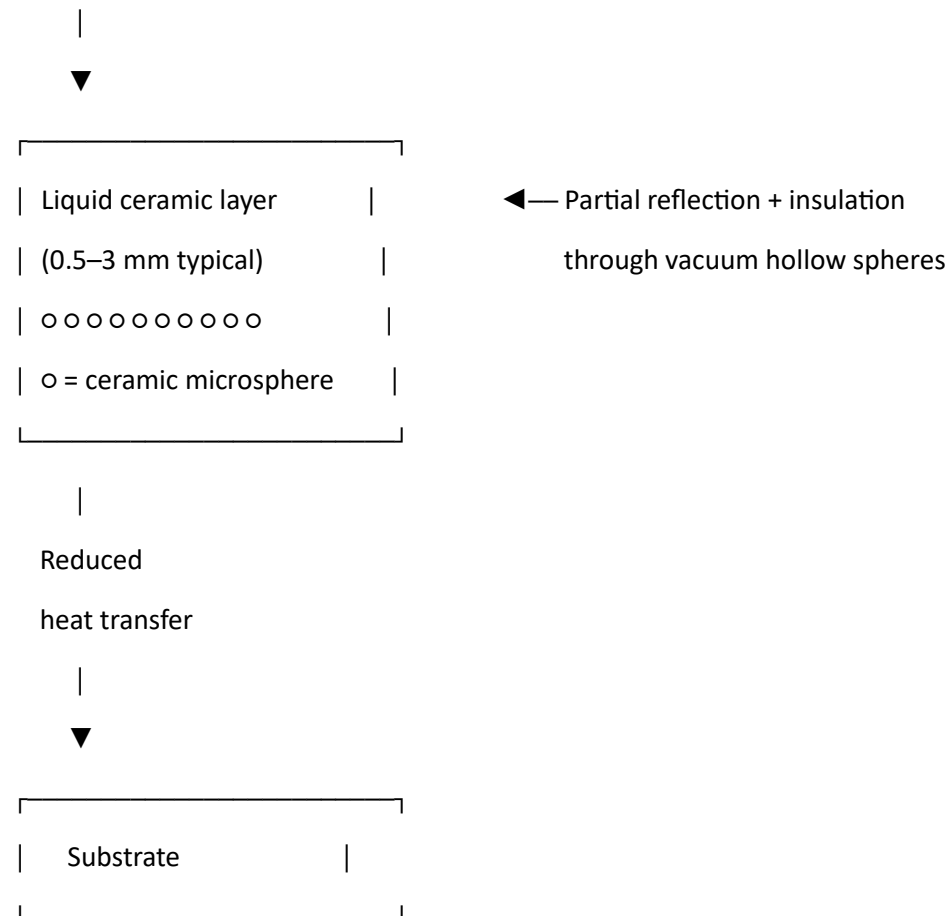
Core mechanism:

- **Infrared reflection:** Heat radiation is reflected → less heating in summer, less heat loss in winter
- **UV reflection:** Protection of the substrate against UV degradation
- **Hydrophobicity:** Water-repellent while remaining vapour-permeable
- **Antimicrobial effect:** Natural mould/algae/germ resistance



4.2 Liquid ceramics – microsphere technology

Solar radiation / Heat radiation



Core mechanism:

- **Vacuum hollow spheres:** Low thermal conductivity (λ of hollow spheres approx. 0.03–0.06 W/mK, but: total layer significantly higher)
- **Partial IR reflection:** 30–80% depending on the product
- **Convection interruption:** Due to the microspheres in the matrix

5. Performance comparison

Performance criterion	ISORYX	Liquid ceramics	Evaluation
IR reflection	>90% (manufacturer's specification)	30–80% (depending on product)	✅ ISORYX front
UV reflection	>90% (manufacturer's specification)	Variable, often not quantified	✅ ISORYX front
Thermal conductivity (λ)	Not specified as λ value (reflection principle)	λ Total layer approx. 0.06–0.14 W/mK (depending on manufacturer)	⚖️ Not directly comparable
Layer thickness	≥ 0.40 mm (inside), approx. 0.30 mm/layer (outside)	0.5–3 mm (often several layers)	✅ ISORYX thinner
Energy savings (manufacturer's specification)	Up to 50	Up to 30–40% (depending on manufacturer)	⚠️ Both specifications should be critically examined
Antimicrobial effect	✅ Proven (biocides + mineral base)	❌ Usually not present	✅ ISORYX clearly ahead
Mould protection	✅ Naturally preventive	⚠️ Only with the addition of biocides	✅ ISORYX ahead
Vapour diffusion (sd value)	Excellent (silicone resin-based)	Moderate to good (acrylate-based)	✅ ISORYX ahead
Hydrophobicity	✅ Strongly hydrophobic	⚠️ Variable	✅ ISORYX front
VOC emissions	Label A (max. 30 g/l)	Varies greatly	✅ ISORYX defined
Fire behaviour	Tested according to EN 13823 (SBI test) by MA 39 Vienna	Rarely independently tested	✅ ISORYX proven



6. Application comparison

Criterion	ISORYX	Liquid ceramic
Indoor application	✓ ISORYX Inside Coating	✓ Yes
Outdoor use	✓ ISORYX Outside Coating	✓ Yes (limited weather resistance)
Primer required	✓ ISORYX Primario (alkoxysilane-based)	⚠ Depends on manufacturer, often acrylate primer
Processing temperature	+5°C to +35°C	+5°C to +35°C (similar)
Application method	Roller, brush, airless sprayer	Roller, brush, airless sprayer
Drying time (surface)	Approx. 30 minutes	Approx. 30–60 minutes
Complete drying	Approx. 24 hours/coat	Approx. 24 hours/coat
Number of coats	2 coats (inside), 2 coats (outside)	2–4 coats (depending on product)
Consumption	Approx. 350–500 ml/m ² (outside, 2 coats)	Approx. 0.5–1.5 l/m ² (depending on layer thickness)
Suitable substrates	Mineral plasters, plasterboard, concrete, ETICS, old coatings	Similar range, but some adhesion problems on silicone resin
Hospitals/hygiene areas	✓ Explicitly advertised (antimicrobial)	✗ Not specifically for hygiene areas
Warranty	10 years	5–10 years (depending on manufacturer)

7. Evidence & certifications

Evidence	ISORYX	Liquid ceramic
Fire test EN 13823 (SBI)	✓ MA 39 Vienna (accredited, notified No. 1139)	✗ Rarely available
Fire test EN ISO 11925-2	✓ MA 39 Vienna	✗ Rarely available
DIN EN 13300	✓ Compliant	⚠ Not always declared
VOC emission label	✓ Label A	⚠ Varies
Residential medicine certificate	✓ Journal of Residential Medicine and Building Hygiene (3 years)	✗ Not known
Safety data sheet (REACH)	✓ Version 3, current (16 July 2024)	✓ Available (quality varies)
Independent energy saving studies	⚠ Manufacturer specifications, independent studies not documented	⚠ Controversial; Fraunhofer/EMPA critical
Skin sensitisation (OECD 429)	✓ Not skin sensitising (Outside)	✗ Rarely tested

8. Critical consideration

8.1 Common challenges

⚠ Both technologies face the same fundamental criticism from experts:

Energy saving promises: Claims such as "up to 50%" (ISORYX) or "up to 40%" (liquid ceramics) are context-dependent, and actual savings depend heavily on the building, climate and usage behaviour. However, the removal of liquids through the micro-membranes in the ISORYX coating can actually result in energy savings. This is because heat or cold is transported particularly quickly by water.



8.2 Where ISORYX stands out positively

Aspect	Rating
Mineral base (silicone resin)	Higher technical quality than acrylate dispersions; better vapour diffusion and weather resistance
Antimicrobial properties	Clear additional benefit, especially in healthcare
Fire tests	Verified by accredited body (MA 39 Vienna) – rare for liquid ceramics
System approach	Primer + coating as a coordinated system (Primario + Inside/Outside)
Biocide transparency	Open declaration of all biocides in the SDS
Residential medical certificate	Additional health assessment available

8.3 Where liquid ceramics can offer advantages

Aspect	Assessment
Thermal conductivity	Measurable (albeit low) conductive insulation effect due to vacuum microspheres
Market penetration	Longer on the market, more practical experience documented
Pricing	Often cheaper (depending on the manufacturer)
Thicker layers possible	Up to 3 mm → higher R-value (although still low)



9. Price comparison ISORYX vs. liquid ceramics

9.1 Detailed cost comparison per m² (end customer prices 2026)

Application	Product	Consumption/m ²	Layers	Total consumption/m ²	Material costs/m ²
Interior (complete)	Primario	approx. 0.15–0.20 l/m ²	1	0.175 l/m ²	1.75
	Inside Coating	approx. 0.15–0.25 l/m ²	2×	0.40 l/m ²	9.92
	Total interior				≈ £11.67/m²
Exterior (complete)	Primario	approx. 0.15–0.20 l/m ²	1	0.175 l/m ²	1.75
	Outside Coating	approx. 0.15–0.25 l/m ²	2×	0.40 l/m ²	10.32
	Total exterior				≈ £10.32/m²
Cold storage	Primario	approx. 0.175 l/m ²	1×	0.175 l/m ²	1.75
	Dry Cool Coating	approx. 0.20 l/m ²	2×	0.40 l/m ²	£9.92
	Total cold storage				≈ £11.67/m²



9.2 Calculation basis for liquid ceramics (market overview 2025/2026)

Segment	Price/litre (end customer)	Consumption/m ²	Layers	Total consumption/m ²	Material costs/m ²
Budget products	8–15 €/l	0.3–0.5 l	2–3×	0.6–1.5 l/m ²	5–22 €/m ²
Mid-range	15–30	0.3–0.5 l	2–3×	0.6–1.5 l/m ²	9–45 €/m ²
Premium products	30–60 per litre	0.3–0.5 l	2–4×	0.6–2.0 l/m ²	18–120 €/m ²
∅ Market average	~25–35 €/l	~0.4 l	3×	~1.2 l/m ²	≈ £30–42/m ²

9.3 Project examples:

Project 1: Detached house – 150 m² façade + 200 m² interior

Cost item	ISORYX	Liquid ceramics
Facade (150 m²)		
Primer	$150 \times 0.175 \text{ l} \times \text{£}10.00 = \text{£}263$	$150 \times 0.2 \text{ l} \times \text{£}12 = \text{£}360$
Coating	$150 \times 0.40 \text{ l} \times \text{£}25.80 = \text{£}1,548$	$150 \times 1.2 \text{ l} \times \text{£}30 = \text{£}5,400$
Subtotal façade	1,811	5,760
Interior (200 m²)		
Primer	$200 \times 0.175 \text{ l} \times \text{£}10.00 = \text{£}350$	$200 \times 0.2 \text{ l} \times \text{£}12 = \text{£}480$
Coating	$200 \times 0.40 \text{ l} \times \text{£}24.80 = \text{£}1,984$	$200 \times 1.2 \text{ l} \times \text{£}28 = \text{£}6,720$
Subtotal interior	2,334	7,200
 Total material costs	≈ 4,145	≈ £12,960
 Savings with ISORYX		≈ £8,815 (68%)



Project 2: Hospital – 2,000 m² interior + 800 m² façade

Cost item	ISORYX	Liquid ceramics
Interior (2,000 m²)		
Primario	$2,000 \times 0.175 \text{ l} \times \text{£}10 = \text{£}3,500$	$2,000 \times 0.2 \text{ l} \times \text{£}12 = \text{£}4,800$
Inside coating	$2,000 \times 0.40 \text{ l} \times \text{£}24.80 = \text{£}19,840$	$2,000 \times 1.2 \text{ l} \times \text{£}28 = \text{£}67,200$
Subtotal interior	23,340	72,000
Facade (800 m²)		
Primario	$800 \times 0.175 \text{ l} \times \text{£}10 = \text{£}1,400$	$800 \times 0.2 \text{ l} \times \text{£}12 = \text{£}1,920$
Outside coating	$800 \times 0.40 \text{ l} \times \text{£}25.80 = \text{£}8,256$	$800 \times 1.2 \text{ l} \times \text{£}30 = \text{£}28,800$
Subtotal facade	9,656	£30,720
 Total material costs	≈ £32,996	≈ £89,720
 Savings with ISORYX		≈ £69,724 (68%)

 **Additional benefit with ISORYX:** Antimicrobial effect for hospitals included **at no extra cost** – with liquid ceramics, a separate antimicrobial coating would have to be applied (additional cost approx. £4–11/m²).

Project 3: Cold storage – 500 m² (ISORYX Dry Cool Coating alone)

Cost item	ISORYX Dry Cool	Liquid ceramic
Primario	$500 \times 0.175 \text{ l} \times \text{£}10 = \text{£}875$	No specific cold storage product
Dry Cool Coating	$500 \times 0.40 \text{ l} \times \text{£}24.80 = \text{£}4,960$	Not available / not certified
Total	≈ £5,835	No comparable solution

9.4 Margin analysis for retailers & processors

Product	Wholesale purchase price	Retail end customer	Wholesale margin → End customer	Margin in %
ISORYX Inside	14.80 €/l	24.80 €/l	£10.00/l	67.6
ISORYX Outside	15.80 €/l	25.80 €/l	10.00 €/l	63.3
Dry Cool Coating	14.80 €/l	24.80 €/l	10.00	67.6
Primario	8.00 €/l	10.00 €/l	€2.00/l	25.0
Primario Plus	9.00 €/l	11.00 €/l	2.00 €/l	22.2

 **For processors/distributors:** The margin on coatings is very attractive at **63–68%** (GH → EK). For a hospital project (2,000 m² interior), this results in a **gross profit margin of approximately £16,000** on the material alone.

9.5 Overall rating

Category	ISORYX	Liquid ceramics
 Composition	★ ★ ★ ★ ★	★ ★ ★
 Evidence / Certifications	★ ★ ★ ★	★ ★
 Antimicrobial effect	★ ★ ★ ★ ★	★
 Energy saving	★ ★ ★	★ ★
 Vapour diffusion / Hydrophobicity	★ ★ ★ ★ ★	★ ★ ★
 Fire behaviour (tested)	★ ★ ★ ★ ★	★ ★
 Ecology/sustainability	★ ★ ★ ★	★ ★ ★
 Price per litre	★ ★ ★	★ ★ ★
 Cost per m ²	★ ★ ★ ★ ★	★ ★
 Long-term costs (10 years)	★ ★ ★ ★ ★	★ ★
 Suitability for healthcare	★ ★ ★ ★ ★	★ ★
 Suitability for cold storage	★ ★ ★ ★ ★	★
 Retailer/processor margin	★ ★ ★ ★ ★	★ ★ ★



10. Conclusion

ISORYX positions itself as a technologically superior alternative to classic liquid ceramics, in particular due to:

- The mineral silicone resin base (instead of acrylate)
- Proven antimicrobial properties (suitable for hospitals)
- Independent fire tests by accredited bodies
- Excellent vapour diffusion and hydrophobicity
- A coordinated product system (Primario + Inside/Outside)

Liquid ceramics can score points where measurable conductive additional insulation is desired.

The 2026 price comparison confirms the clear advantage of ISORYX:

Key figure	Value
Material cost savings per m ²	60–72% compared to liquid ceramics
Savings for a single-family home	≈ £8,800 net
Savings for hospital (2,800 m ²)	≈ £69,700 net
End customer prices	Remained stable (despite GH price increase)
Retailer margin	63–68% on coatings – very attractive
Unique features	Antimicrobial, cold storage (Dry Cool), fire testing

ISORYX offers significantly better value for money at a comparable price per litre due to its significantly lower material consumption – complemented by additional benefits (hygiene, fire protection, cold storage suitability) that are simply not available with liquid ceramics.