

COATED-EPS ARCHITECTURAL CLADDING SYSTEM

Technical Submittal

Product description, technical data, test compliance, installation guidance and project references for architects, consultants and specifiers.

PRODUCT

CLADECO® coated EPS

MANUFACTURER

Insutech, Egypt

PRODUCT LINES

Facades · Elements

REFERENCE

cladecobyinsutech.com

Document scope & contents.

This submittal sets out the information required to specify CLADECO® on a project: system description, technical data, test compliance, installation guidance and project references. Full certified test reports, third-party certificates, accessory product datasheets and project approval records are held in the supporting **CLADECO® Technical Evidence Pack**, issued on request.

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SUMMARY DATA

3–8 kg/m ² INSTALLED WEIGHT	0.032 λ W/M·K · EN 12667	3–4 mm ACRYLIC SHELL	10 yr PRODUCT WARRANTY
C _{-s2,d0} FIRE CLASS · SYSTEM	≤3 %vol WATER ABSORPTION	2–6 wk TYPICAL LEAD TIME	100 % CUSTOM · NO MOQ

Product summary. CLADECO® is a coated-EPS cladding system manufactured by Insutech. Each component is CNC-machined from white expanded polystyrene produced in-house, then factory-coated with a 3–4 mm meshless acrylic shell. It is fixed by adhesive, mechanical fastener, or both, and is used in place of GRC, GRP and cast-stone cladding.

System description.

CLADECO® is a coated-EPS cladding system supplied as decorative architectural components or full-facade panels. It is used in place of GRC, GRP and cast-stone cladding, at reduced weight and installation time.

Each component is CNC-machined from white expanded polystyrene, produced in-house at the Insutech plant, and then factory-coated with a 3–4 mm meshless acrylic shell. The shell provides the component's surface strength, weather resistance and a paint-ready finish.

Components are custom-cut from client drawings; there are no moulds and no minimum order. The same production line produces components ranging from small trims to full-height column shafts. Joints and any site repairs are carried out using the same acrylic material, producing a continuous surface without visible joints.



CLADECO® cornice profiles — coated EPS, with the white EPS core visible at the cut ends.

PRODUCTION SEQUENCE

01 · CORE

EPS machining

White expanded polystyrene billets, produced in-house, are cut to the project geometry on hot-wire and milling CNC equipment from client drawings or CAD profiles.

02 · COATING

Acrylic shell

Components receive a multi-pass 3–4 mm meshless acrylic coating, formulated in partnership with international acrylic manufacturers.

03 · FIXING

Installation

Components are fixed by cement-based adhesive, mechanical fastener, or both in combination. No sub-frame or crane is required for standard applications.

HEADLINE DATA

15–35 kg/m³

EPS CORE DENSITY

3–8 kg/m²

INSTALLED WEIGHT

0.032 λ

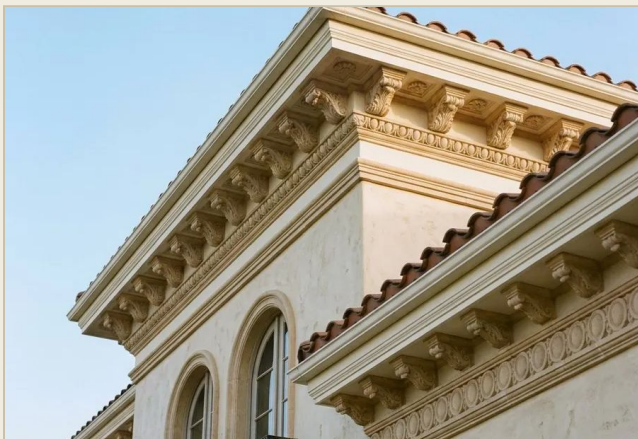
THERMAL · W/M·K

3–4 mm

ACRYLIC SHELL

Product lines.

CLADECO® is supplied in two product lines. Both share the same white EPS core and meshless acrylic shell, and both are custom-cut to project drawings.



LINE 01 · DECORATIVE COMPONENTS

CLADECO® Elements

Discrete architectural components — cornices, columns, capitals, window sills, arches, keystones and balustrades — machined to specification and supplied for individual installation.

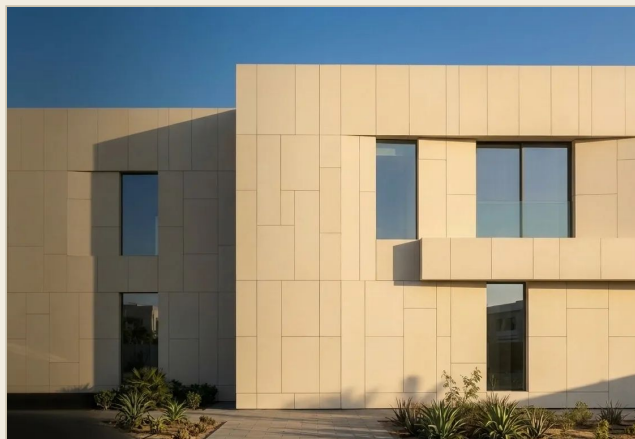
Components Cornices · columns · sills · arches · keystones · trims

Installed weight 3–8 kg/m² · set by hand

Finish Paint-ready acrylic surface

Customisation Custom-cut · no moulds · no MOQ

Lead time 2–6 weeks from approved drawings



LINE 02 · FACADE CLADDING

CLADECO® Facades

Panelised coated-EPS cladding for full elevations, custom-cut to project drawings and bonded to the substrate. The EPS body provides a continuous insulation layer across the elevation.

Systems Flat panels · fins & reveals · decorative facades

Sub-frame Not required on standard substrates

Substrates Render · concrete · brick · block

Thermal Continuous insulating layer · raises wall R-value

Joints Filled with the same acrylic material

SUBSTRATES

Standard walls

Bonds to render, concrete, brick and block using cement-based or ceramic adhesives.

GEOMETRY

Made to drawing

Every component is CNC-cut to the project geometry; profiles are not constrained by mould tooling.

FINISH

Paint-ready

The acrylic shell accepts standard masonry paint or mineral render in any colour.

Performance characteristics.

The principal engineering characteristics of the CLADECO® system. Values reference EN test methods or Insutech in-house quality-control procedures; project-specific certified figures are issued per project.

01 · MASS

Weight

3–8 kg/m² · coated component

The white EPS core and coated assembly require no structural sub-frame. Components can be handled at height by a two-person crew without a crane.

02 · COST

Installed cost

~0.3–0.5× vs cast stone

Material, labour and plant cost are below those of GRC and cast stone. No mould-tooling charge applies, as components are CNC-cut.

03 · THERMAL

Thermal insulation

0.032 λ · W/m·K · EN 12667

In continuous facade applications the EPS body reduces the envelope U-value. Same-material joints limit thermal bridging.

04 · FIXING

Installation

Adhesive + mechanical fastener

Cement-based or ceramic adhesives compatible with concrete, brick, block and render. No specialist trade or proprietary tooling is required.

05 · DURABILITY

Weather resistance

UV-stable acrylic finish

The acrylic finish is UV-stable under direct sunlight. Wind loading is addressed by the project-specific structural assessment.

06 · FINISH

Joints & repair

Same-material jointing

Joints and any site damage are treated with the same factory-grade acrylic, producing a continuous surface without visible joints.

Note on fire performance

CLADECO® has a combustible expanded-polystyrene core (Euroclass E). The coated system has been classified C-s2, d0 to EN 13501-1 on the tested build-up. A fire build-up appropriate to the application and local regulations should be specified for each project. See **Standards & testing** (p.09).

SECTION 04 · COMPARISON

Comparison with alternative materials.

CLADECO® compared with GRC and natural-stone cladding for an equivalent profile. The figures are indicative design-order values for comparative study; certified figures are issued per project.

FACTOR	CLADECO® Coated EPS	GRC Glass Reinforced Concrete	NATURAL STONE Limestone / marble
Material density	~15–25 kg/m ³ (EPS core)	~1,900–2,100 kg/m ³	~2,200–2,800 kg/m ³
Installed weight	~3–8 kg/m ²	~35–55 kg/m ²	~80–95 kg/m ²
Handling	By hand · 1–2 crew · no crane	Hand + crane for larger units	Crane + multiple masons
Fixing	Adhesive + fasteners · bonds to wall	Mechanical fixings to a frame	Anchors, cramps & dowels
Custom shapes	CNC-cut · no moulds · no MOQ	Mould-bound · MOQ applies	Carved / CNC from block · high waste
Thermal conductivity	0.032–0.040 W/m·K	~0.5–1.0 W/m·K	~1.3–5.4 W/m·K
Water absorption	Low (closed-cell core)	~5–15% by mass	~0.2–12% by mass
Reaction to fire	System C-s2,d0 · core class E EN 13501-1	Non-combustible ≈ A1	Non-combustible · A1
Typical lead time	2–6 weeks	6–12+ weeks	10–20+ weeks
Relative installed cost	~0.3–0.5×	~0.7–0.9×	1.0× (baseline)

Indicative, order-of-magnitude design values compiled from published industry data and Insutech product information, for comparative study only. CLADECO® has a combustible EPS core; a fire build-up appropriate to the application should be specified. Project-specific certified figures are issued with the submittal package.

Technical data — EPS core.

Mechanical and thermal properties per EN test methods, across the five EPS density grades used in CLADECO® production.

PROPERTY	CODE	15±5%	20±5%	25±5%	30±5%	35±5%
Density kg/m³	—	15	20	25	30	35
Thermal conductivity λD EN 12667 · W/m·K	λD	≤0.036	≤0.035	≤0.034	≤0.033	≤0.032
Compressive stress at 10% EN 826 · kPa	CS(10)	≥70	≥100	≥150	≥200	≥250
Tensile strength EN 1607 · kPa	TR	≥70	≥100	≥150	≥200	≥250
Bending strength EN 12089 · kPa	BS	≥115	≥150	≥200	≥250	≥350
Dimensional stability 48h/70°C EN 1604 · %	DS(70)	3	3	3	3	3
Reaction to fire — Euroclass EN 13501-1	—	E	E	E	E	E
Water absorption — immersion EN 12087 · % vol	WL(T)	≤3	≤3	≤3	≤3	≤3
Water absorption — diffusion EN 12088 · % vol	WD(V)	≤3	≤3	≤3	≤3	≤3
Water-vapour diffusion resistance EN 12086 · μ	μ	20–40	30–70	30–70	40–100	40–100
Specific heat EN 12524 · J/(kg·K)	—	1450	1450	1450	1450	1450
Service temperature — continuous °C	—	75	75	75	75	75

THERMAL RESISTANCE R_D — BY THICKNESS (M²·K/W)

GRADE →	15	20	25	30	35
30 mm	0.83	0.86	0.88	0.91	0.94
40 mm	1.10	1.14	1.18	1.21	1.25
50 mm	1.39	1.43	1.47	1.52	1.56
60 mm	1.67	1.71	1.76	1.82	1.87

Values are typical and reference the cited EN test methods (R_D = d / λ_D, EN 12667). Project-specific certified figures and full test reports are issued in the Technical Evidence Pack. Insutech reserves the right to modify product specifications without prior notice.

Technical data — acrylic coating.

The 3–4 mm meshless acrylic shell applied to every CLADECO® component: composition, physical properties and bond performance on EPS.

GENERAL CHARACTERISTICS

Use	Binder for fabrication of EPS coats — exterior
Colour	Semi-transparent off-white
Consistency	Viscous liquid
Curing	Temperature curing 30–45°C · moisture evaporation
Workability	4 hours at 25°C
Drying	24 h at 40°C, 10% RH, 3 mm layer
Ambient temp (use)	+5°C to +45°C
Service temp	–30°C to +80°C

FIRE REACTION & STORAGE

Flammability	Not flammable
Decomposition	CO ₂ and CO when burning
Storage	+5°C to +35°C · 40–80% RH
Shelf life	12 months if storage conditions respected
Packaging	1,000 kg IBC · 2-level stack

CHEMICAL COMPOSITION

Composition	93.5% acrylic copolymer + 6.5% additives
pH	6.0 – 9.0
Density	1.08 kg/L ± 0.2
Solubility	Miscible with water
Viscosity	400 – 3,000 cP at 20°C
UV resistance	Resistant · non-degrading
Water absorption	3.67% EN 1062-3 · max 6%
Not resistant to	Solvents · freezing before cure

BOND & MECHANICAL

Adhesion on EPS	≥ 313 kPa (rupture in EPS) EN 13494 · 3 mm / 24 kg/m ³ EPS
Impact strength	No damage at 10 J EN 13497 · 3 mm base
Vapour permeability	Per system EN ISO 7783-2
Resistant to	Weathering · water · aggressive atmospheres · cracks · algae & fungus

Values shown are typical and reference the cited EN test methods. Project-specific certified figures and full third-party test reports are issued in the Technical Evidence Pack. The acrylic system is formulated in partnership with international acrylic manufacturers.

Standards & testing.

The coated-EPS system has been tested against European (EN) test methods at accredited third-party laboratories. The results below are summarised; the full certified reports are provided in the Technical Evidence Pack.

PROPERTY TESTED	STANDARD	RESULT	LABORATORY · REFERENCE
Reaction to fire — system	EN 13501-1	C-S2, D0 coated-EPS system	TSE · Notified Body 1783 Rep. 274622 / 11-15
Reaction to fire — EPS core	EN 13501-1	Euroclass E	Per EPS product data sheet
Liquid water permeability	EN 1062-3	$w_{24} = 0.241 \text{ kg/m}^2\cdot\text{h}^{0.5}$ — CLASS W2 · LOW	Dr. R. Murjahn Institute (TÜRKAK) Rep. AB-0169-T · 11-54-1.1-1
Resistance to impact	EN 13497	No damage at 2 J & 10 J	Dr. R. Murjahn Institute (TÜRKAK) Rep. AB-0169-T · 11-54-1.1-4
Tensile bond strength — coat to EPS	EN 13494	$\geq 313 \text{ kPa}$ · 100% rupture within EPS	Dr. R. Murjahn Institute (TÜRKAK) Rep. AB-0169-T · 11-54-1.1-2
Coating water absorption	EN 1062-3	3.67% (standard max 6%)	Per coating data sheet
Fire & technical characteristics — coated EPS board	ERA test programme	EPS 24 kg/m ³ · 9 mm coating · tested	ERA Laboratories (TÜRKAK) Rep. AB-0330-T · ERA-14-000212

INTERNATIONAL TEST REPORTS

Testing of the coated-EPS facade system has been carried out at accredited European laboratories: the **Dr. Robert Murjahn Institute** — Façade Systems Laboratory, Gebze, Turkey (TÜRKAK-accredited); the **TSE** Construction Materials Fire & Acoustics Laboratory (Notified Body 1783); and **ERA Laboratories** (TÜRKAK-accredited). Reports cover reaction to fire, liquid water permeability, impact resistance and tensile bond strength to the cited EN methods.

LOCAL TESTING & SCOPE

Local testing has additionally been undertaken in Egypt (EOS — Egyptian Organization for Standardization & Quality). The results reported here relate to the coated-EPS facade system and its acrylic coating, as documented by the named laboratories. The EPS core is combustible (Euroclass E); the system fire classification applies to the coated build-up on the tested substrate and thickness. Project-specific certified data is issued per project.

Accessory products & fixings.

CLADECO® is installed using established third-party bonding and mechanical-fixing products, selected per component geometry and substrate. The fixing schedule for each project is confirmed in the project-specific installation plan. Full manufacturer datasheets for all accessories are provided in the Technical Evidence Pack.

BONDING & ADHESIVES

Soudabond Easy — polyurethane foam adhesive (Soudal)
Rapid bonding of panels and components to substrate

Nitoseal PU40 — polyurethane joint sealant (Fosroc)
Flexible weather-sealing of movement joints

Multibond 35 — cement-based bonding adhesive
Component bonding on masonry / render

Purocol — high-performance adhesive
General bonding applications

Tillex A — waterproofing tile/board adhesive
Bonding on cementitious substrates

MECHANICAL FIXINGS & ANCHORS

MDD-CE — insulation fixing (plastic nail)
Supplementary mechanical fixing of EPS components

B-LONG — frame anchor, zinc / stainless
Through-fixing into masonry substrates

Mungo MQL — universal nylon frame plug (ETA)
General anchoring in concrete and masonry

Mungo MSS — torque-controlled shield anchor
Heavy-duty fixing in concrete

CA1400 · Mungo MIT-S — chemical anchor resin & rod
Bonded anchoring for higher loads

Threaded studs — zinc-plated / stainless steel
Connection of components to structure

Selection & substrate compatibility

Adhesive and fixing selection depends on component geometry, weight, exposure and substrate type (render, concrete, brick or block). Where wind loading or component size requires it, mechanical fixings are combined with adhesive bonding. The recommended fixing schedule, including anchor type, spacing and embedment, is issued with each project's installation plan and supported by the relevant accessory datasheets and anchor ETAs in the Evidence Pack.

Project approvals.

CLADECO® components and systems have been reviewed and approved for use in construction by leading Egyptian consultants and project authorities. Approved material submittals and consultant review records are held in the Technical Evidence Pack.

CONSULTANTS & AUTHORITIES — MATERIAL SUBMITTALS REVIEWED / APPROVED

CONSULTANT / AUTHORITY	TYPE	REPRESENTATIVE PROJECTS
Engineering Consultants Group (ECG)	Consultant	Capital City · New Cairo / New Alamein developments
Arab Consulting Engineers (ACE)	Consultant	Roofing cladding solution & mock-up
Dar Al-Handasah	Consultant	Large-scale residential & commercial
Armed Forces Engineering Authority	Authority	El Alamein institutional & residential
NUCA — New Urban Communities Authority	Authority	New Alamein City projects
Project management consultants (PMC)	Supervision	Submittal review & on-site approval
Developer technical offices	Developer	Emaar Misr · Mountain View (DMG) · Dorra · Kounouz

MATERIAL SUBMITTAL — CONTENTS

Product data sheet — EPS core & acrylic coating

EN test-compliance summary + full certified reports

Fixing schedule — anchor type, spacing & embedment

Method statement — project-specific installation plan

Sample / mock-up for visual & technical approval

Accessory datasheets & anchor ETAs

Warranty terms & certified-applicator details

HOW APPROVALS ARE DOCUMENTED

For each project, CLADECO® is submitted as a material submittal for review by the project consultant and, where applicable, the relevant authority.

The Technical Evidence Pack contains representative approved submittals and consultant review records — for example, contract-submittal approval forms carrying consultant and project-management comments — which can be provided on request for reference on a new project.

Installation.

An outline of how CLADECO® is installed on a prepared substrate. Each project is supported with a project-specific method statement and fixing schedule from the Insutech technical team.

Step 1 • Substrate

Substrate preparation

The substrate is cleaned and levelled; primer is applied where required. Compatible substrates: render, concrete, brick, block.

Step 3 • Placement

Component placement

Components are positioned to the layout drawing. A two-person crew typically dresses ~80–120 m²/day without a crane.

Step 5 • Inspection

Inspection & repair

Edges and faces are inspected; any chips or transport damage are repaired in place with the same acrylic material.

Step 2 • Fixing

Fixing method

Cement-based adhesive, mechanical fastener, or both — selected per component geometry, weight and exposure.

Step 4 • Joints

Joint treatment

Joints are filled with the same factory-grade acrylic to produce a continuous surface without visible joint lines.

Step 6 • Finish

Final finish

The acrylic shell is paint-ready and accepts standard architectural finishes — paint, render or decorative texture.



On-site application and installation. Site conditions, component geometry, substrate type and crew size determine the final method. Wind-load fixings follow the project-specific structural assessment. Insutech can connect clients with certified applicators — see **Warranty & installation support** (p.15).

SECTION 11 • REFERENCES

Project references.

CLADECO® facades and decorative components have been supplied to developments across Egypt. A selection is shown below.



Marassi

EMAAR MISR

Sidi Abdel Rahman, North Coast — coated-EPS cladding and decorative components on residential buildings.



El Alamein Hospital

NUCA • ARMED FORCES ENG. AUTHORITY

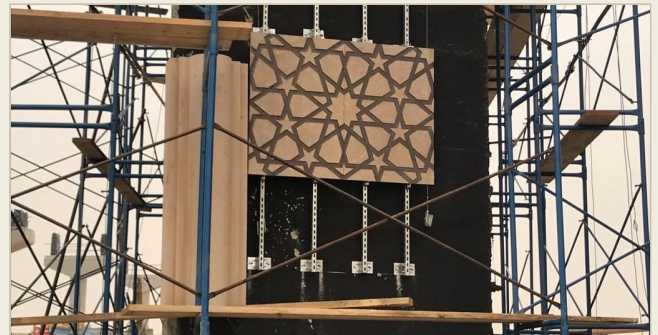
New Alamein City, North Coast — cornices, window surrounds and decorative banding on an institutional facade.



Address East

DORRA GROUP

New Cairo — facade components and decorative trim on residential elevations.



Capital City Gates

NEW ADMINISTRATIVE CAPITAL

New Cairo — decorative facade components installed on multi-storey elevations.

FURTHER REFERENCES

Mountain View (DMG) — Cairo • **Kunouz** — West Assiut • **R05** — Capital City • **SHELL** — October City • **Emaar** shed solution & decorative components • **ACE** roofing cladding solution & mock-up • **BINA** projects • Boligon / Sa'ada — New Cairo.

SECTION 12 · PHOTOGRAPHS

Reference photographs.

Site and completed-facade photographs from CLADECO® projects across Egypt.



Marassi — residential compound, North Coast



Emaar — decorative components & banding



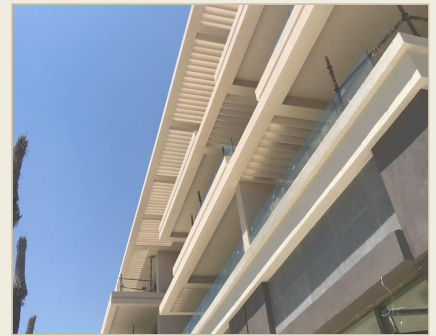
Capital City — multi-storey elevation



Cornice detail — installed roofline component



On-site application — same-material finishing



Facade panels — contemporary elevation

DEVELOPERS & AUTHORITIES SERVED

EMAAR

 MOUNTAIN VIEW

DORRA

 Kunouze

 HASSAN ALLAM
CONSTRUCTION



Warranty & installation support.

10

YEAR PRODUCT WARRANTY

Every CLADECO® supply is backed by a written ten-year warranty from Insutech, covering the manufactured product — the EPS core and acrylic coating — against material defects under normal service conditions.

Scope of the warranty

The warranty applies to the CLADECO® product itself. It does not cover defects, damage or performance issues arising from incorrect or non-compliant installation, unsuitable substrate preparation, third-party materials used contrary to the specification, or conditions outside the agreed design parameters. Installation in accordance with the project-specific method statement is required for the warranty to apply.

Certified applicators

To support correct and warranty-compliant installation, Insutech maintains a network of certified applicators trained in CLADECO® systems. Insutech can connect clients and contractors with certified applicators for a project, and provides installation supervision and on-site technical support on request.

SUPPORT 01

Project method statement

A project-specific installation plan and fixing schedule is issued with each order.

SUPPORT 02

Site supervision

Installation supervision and on-site technical support available on request.

SUPPORT 03

Detailed technical report

A more detailed technical report, with additional test data and project-specific figures, is available on request.

Manufacturer & contact.

CLADECO® is manufactured by Insutech, an Egyptian construction-materials company established in 1987, with in-house engineering and production across insulation, EPS, bituminous membranes and EPS packaging.

Production runs across five manufacturing facilities in Egypt — the head office and bituminous plant in 10th of Ramadan, and EPS facilities in 10th of Ramadan and 6th of October. The white EPS, CNC machining and acrylic coating for CLADECO® are all carried out in-house, with the acrylic system formulated in partnership with international acrylic manufacturers.

Insutech material has been supplied to landmark Egyptian projects, including the Iconic Tower (New Administrative Capital) and Alamein Towers, and to major contractors including Hassan Allam and Orascom.

35+YEARS IN
OPERATION**5**

FACILITIES

100+COUNTRIES
REACHED**500+**

PROJECTS

Supporting documentation

This submittal is supported by the **CLADECO® Technical Evidence Pack** — certified EN test reports, third-party certificates, accessory product datasheets, project approval records and CAD profiles. A more detailed technical report with additional data is available on request, together with certified-applicator referrals for installation.

SPECIFY CLADECO®

Request the full specification.

Send project drawings, a site survey or a reference photograph and the Insutech technical team will prepare a tailored specification. A more detailed technical report and certified-applicator referrals are available on request.

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