



BUILDING HAS EVOLVED

Insulated concrete forms









Nudura is committed to leading the industry in product innovation and is unmatched by any other insulated concrete formwork. We are strongly committed to improving the building process to support environmental issues, reduce energy consumption, and to save our valuable environmental resources for future generations. When specifying Nudura you can be sure that you are using the best building solution available today.

Nudura is a brand of CPG Europe which manufactures high performance building materials in order to solve the complex challenges faced by today's construction industry. It is the home for multiple European construction product brands, including illbruck, Flowcrete, Nullifire, Tremco, Vandex and Dryvit. Find out more about CPG Europe's portfolio on pages 16-17.



Enermodal aimed high during the design of its new, 2,150 m² office. The goal was to create a healthy work environment for its employees in a building that uses less energy than any other office in Canada.

Energy Performance = 69 kWh/m²/yr



innovation makes Nudura the better building choice.

the principle is simple.



Nudura Insulated Concrete Formwork offers a variety of superior benefits when building your structure. Nudura forms consist of two panels of Expanded Polystyrene (EPS) that are 67mm in thickness and connected together with our patented web system that is made of 100% recycled material. Nudura forms are stacked, steel reinforced and filled with concrete, which completes the building envelope of your commercial or residential structure in one building step. Nudura forms are available in a variety of shapes and sizes to accommodate all types of building requirements and designs.

eco-friendly building.



Nudura Insulated Concrete Formwork provides greater energy solutions for any structure providing a standard U-Value of 0.24, while providing solutions that offer U-Values as low as U 0.11*, resulting in energy savings over 70%* when compared to traditional building methods. The superior performance value of Nudura comes from the stable thermal mass that the concrete provides. Nudura offers form sizes that provide a solid concrete core of up to 305mm, providing you maximum energy efficiency, strength, safety and comfort.

what you can expect from Nudura.



Nudura has an extensive Authorised Distributor network worldwide that can provide you with assistance from concept to completion of installation with a Nudura Trained Installer. Nudura prides itself on providing you the best support from a strong, reputable businesses within the UK to represent our products.

*When the 150 mm insulation insert is used in conjunction with Nudura's 305mm core form, this delivers completed wall assemblies with U-Values as low as U.011. Based on actual energy consumption case studies of Nudura residential homes when compared to energy claims cited under Publication No. ECG019 "Energy Consumption Guide 19" by Action Energy, UK (formerly Best Practice Programme)

Products and Technology



Nudura forms are manufactured with industry-leading patented technologies that are exclusive to Nudura, offering you a full line of innovative products designed to provide superior energy efficiency, greater strength, and sound resistance. Our building envelope provides an affordable eco-friendly building solution that allows you to build faster, more efficiently and offers substantial benefits over traditional construction.

The Technology



DURALOK Technology - securely locks forms into place with a triple tooth interlock eliminating the need to wire or glue forms, resulting in reduced labour costs during installation. Once the forms are stacked together a continuous full height-fastening strip ensures the wall becomes one unit, making it the strongest in the industry.



DURAFOLD Technology® - allows the entire Nudura form line up to be shipped flat, allowing for 40% more product on a lorry compared to other Insulated Concrete Form products. Nudura forms are packaged securely to protect the transport of product to the site. Once on-site, contractors simply unfold and stack. This unique technology eliminates onsite assembly and the cost of shipping air.



DURAMAX Technology $^{\circ}$ - largest standard form on the market (2438mm \times 457mm) creates 60% fewer joints in the wall compared to other wall systems and allows installers the ability to place 1.115m2 of wall area with one form. Building with Nudura allows you to build in all types of weather, allowing projects to progress and stay on time.



4-WAY REVERSIBLE System - The patented foam interlock allows the form to be 4 way reversible, almost eliminating waste. The reversibility also eliminates left and right corners, which allow Nudura forms to be used in twice as many scenarios as non reversible forms. The innovative technology speeds up the building process as installers don't have to distinguish between top and bottom or left and right corners.

innovation makes the difference.

nudură

The Nudura Wall System completes six building steps with one product:

1. Form system 4. Air barrier

2. Wall structure 5. Vapour control barrier

3. Insulation 6. Interior & exterior fixing points

The Nudura ICF Series offers a form line up that includes 90°, 45°, T Forms, Radius forms, Straight (standard) forms, Brick Corbel along with a variety of other form combinations to meet the requirements of any design. To meet any building requirement Nudura forms are offered in 102, 152, 203, 254 and 305mm concrete core widths.



The Integrated Series from Nudura combines building envelope products that work in conjunction with our line of Insulated Concrete Formwork to provide maximum energy efficiency. The Integrated Series offers, RetroFit Insulation Technology, a 1.2m X 2.4m sheet that installs inside and out. Floor and Ceiling Technology, insulation for floors and roofs, HYDROFOAM®, a radiant heat insulation base.



The One Series is the industry's first multi-link form system that enables the creation of a fully exposed concrete surface that extends to the face of a standard Nudura form panel. This offers builders and architects unmatched versatility for projects designed to use ICFs. At the core of this innovative line is our DURA MULTI-LINK TM , a newly designed web that enables the builder to create custom multi-sided form combinations for a variety of commercial and residential building projects.

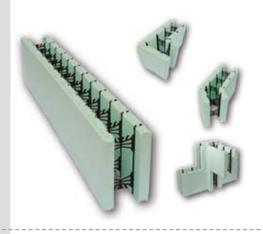


The Plus Series product line introduces an innovative way for designers and engineers to build their own U-value. The Plus Form and the U-Value Plus+ insert offers the ability to optimize U-Value with thermal mass to provide significant energy savings for building

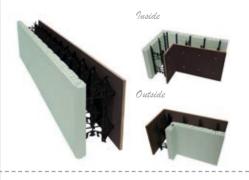
Nudura Standard Form offers standard U-Values of U.024, with the Nudura U-Value Plus System performance is significantly increased.

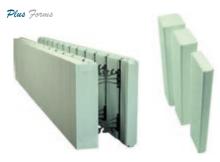


Nudura has revolutionized the ICF industry from its inception, and the innovation continues with our XR35 Plus Series Form. The XR35 has been created with increased insulation values, U0.16, due to its 4''/102mm EPS panels. It is available with a 6''/152mm and 8''/203mm core as a standard form and a 90° corner form.











sustainable building starts with Nudura.







maximum energy efficiency

A Nudura structure can provide U-Values as low as 0.11*, saving building owners over 70% in annual energy costs. The energy performance that comes from a Nudura form is the combination of thermal mass and airtightness tested as low as 0.33 m³.m²/hr. Building with Nudura reduces a building's operational energy demands, and as a result, the structure's carbon footprint on the environment.

comfort.

Nudura offers superior performance when it comes to thermal bridging, resulting in even temperatures throughout the structure with reduced draughts and cold spots, ensuring occupants are comfortable no matter what the temperature is outside. Nudura offers 17 different thermally modelled junctions as per SAP, British Regulations and Passivhaus Planning Package (PHPP).

greater sound, fire & impact resistance

Nudura forms act as an effective sound barrier by dampening sound vibrations from unwanted outside noise, ideal for both residential and commercial construction, providing SRI (Sound Reduction Index) ratings SRI 51* and higher.

The strength of Nudura comes from the solid concrete core. Nudura walls are built with steel reinforced concrete and a non-toxic fire retardant expanded polystyrene foam, providing a fire protection rating of up to 4 hours. Nudura also provides greater impact resistance and will withstand winds of up to 250 mph (402 km/h) ensuring that the occupants of the building or home are safe and secure in almost any situation. Nudura also provides structural tables as per Eurocode 2 and 8.

long-term value

A Nudura structure is built to last and retains its value longer. The main structural element in a Nudura building is reinforced concrete, which offers substantially better durability and requires less maintenance and repair over its lifetime.

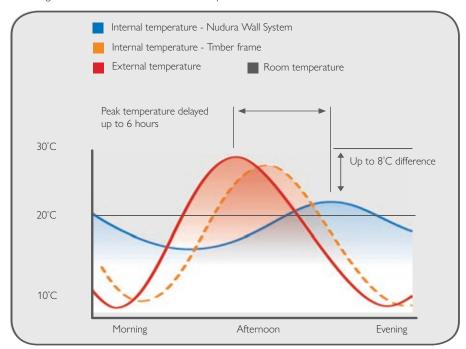
"When the 150 mm insulation insert is used in conjunction with Nudura's 305mm core form, this delivers completed wall assemblies with U-Values as low as U.011. Based on actual energy consumption case studies of Nudura residential homes when compared to energy claims cited under Publication No. ECG019 "Energy Consumption Guide 19" by Action Energy, U.K (former Best Practice Programme)

*SRI 51 rating based on minimum 152 mm Nudura form and concrete core thickness or larger installed with code compliant finishes mounted both side of wall assembly in accordance with Nudura Installation procedures.

thermal mass

The solid mass of the Nudura wall has some very unique qualities. The monolithic concrete is layered between two continuous pieces of 67mm EPS foam, which isolates the concrete and significantly reduces the flow of heat through the wall. Nudura walls have a high storage capacity with low thermal conductivity, providing the most useful level of Thermal Mass. This helps to stabilize the internal temperature from day to night temperature fluctuations and provides a largely self-regulating environment. The result is less energy consumption, reducing the need for mechanical heating and cooling, resulting in greater cost savings throughout the year.

Stabilising effect of thermal mass on internal temperature



Based on no additional mechanical heating or cooling. For more information visit nudura.co.uk

wall construct comparison

	Nudura Wall System	Timber Frame	Masonry Wall
Energy Efficiency	 Low thermal bridging Energy savings over 70% compared to timber and masonry Thermal concrete mass Low air permeability < 2 m³/m².hr 	High thermal bridging Provider lower efficiency performance*** Hollow cavity (Batt insulation) Permeability >5 m³/m².hr	 High thermal bridging Cavity insulation subject to gap & encourages water ingress High air permeability > 10m³/m³.hr
The Environment	Reduces greenhouse gases Saves environmental resources Lifetime value	Minimal greenhouse gas reduction Uses environmental resources	Increased site waste Transport energy and pollution Mlnimal greenhouse gas redution
Safety & Strenght	Withstands up to 250 mph4 hour fire protectionSolid dense concrete coreFlood resistance	Minimal or no resistance to windborne debris damage Cavity walls invite insects & rodents 4 minute fire rating only Batt insulation/wood subject to sagging, dry rot, moisture	Heavy repetitive handling Construction delys from rain and frost Poor dimensional accuracy I hour fire protection Low lateral resistance Poor fit & gaps at reveals, cavity closure lintels and cills
Living space	Nudura forms are non-toxic & do not emit CFCs or HCFCs Does not support mold growth SRI ratings varies from 51-56** depending on core thickness	Manufactured wood products can contain adhesives and formaldehydes Wood walls can retain moisture; allowing mould to grow Sound easily travels through wood walls (typically SRI33****)	Cold spots Draughts causing reduced comfort Condensation, allowing mould to grow Reduced noise level SRI45

- * Based on actual in-field comparisons of ICF vs traditional frame constructed buildings of similar size
- ** Nudura SRi ratings based on 152 mm core wall and above
- *** BAsed on timber frame buildings constructed to meet minimum building code requirements
- **** Framewall SRI ratings based on standard code constructed frame wall for both US and canada

exterior finishes

When designing with Nudura, building finish options are virtually limitless. Nudura forms can have a variety of wall finishes applied to them to match any desired look and style.



interior finishes

Interior finishes are no different to exterior. Plasterboard or trowel-applied plaster materials can be easily attached directly to the Nudura Wall System using our fastening strips that are embedded within the EPS foam at 203 mm centres.



Eco-Friendly Building



The combination of rising energy requirements and fuel costs means that we need to make the most of building technology to heat and cool new buildings. This requires a whole building approach to design, which doesn't have to be complicated. Nudura Insulated concrete forms are energy efficient construction materials that provide maximum comfort and energy solutions for your entire home. Nudura energy efficient construction materials provide over 70%* energy savings when compared to traditional building methods.



Nudura Energy Efficient Construction Materials Contribute to BREEAM & LEED®

If you are thinking about building to a BREEAM or LEED® Standard, Nudura can contribute. Visit Nudura.co.uk for more information

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eco-friendly structures for future generations.

GREEN GUIDE RATING - Nudura can provide an A+ rating when using 102mm core wall and an A rating for 152mm core wall. Nudura has 0 Ozone Depletion / 0 Global Warming Potential for the Expanded Polystyrene in Nudura Forms and 0 Ozone Depletion Potential / <5 Global Warming Potential for a fully assembled wall. EPS (Expanded Polystyrene) has a Green Guide Rating of A+.

RECYCLED MATERIALS - Nudura forms are manufactured from EPS. Nudura's unique folding web design is manufactured from 100% recycled polypropylene and steel.

BUILDING DURABILITY - Nudura forms offer a structure built out of Concrete, one of the most durable building materials, which result in buildings that stand the test of time. Building with Nudura also offers maximum safety in high wind areas due to its high impact resistance along with providing safety in flood-prone areas.

WASTE REDUCTION - Nudura Insulated Concrete Formwork technology creates less waste during the construction process, sending less waste to our landfills. All waste is 100% recyclable*.

MOULD RESISTANT - Nudura forms have been laboratory tested and will not support mould growth unlike timber frame structures.

ENERGY PERFORMANCE - Nudura forms combined with other energy efficient construction methods significantly reduce the amount of carbon emissions, due to the structures high energy efficiency levels, reducing the amount of fossil fuels needed for heating and cooling reducing a buildings carbon footprint.

IMPROVED INDOOR AIR QUALITY - The end result is an airtight structure that enables building mechanical systems to heat, cool and ventilate the structure more efficiently, creating a healthier living or working environment. Nudura forms do not emit CFC or HCFC's thereby improving indoor air quality.

CODE COMPLIANCE - Nudura meets and exceeds Building Regulations and Passivhaus requirements.









Achieve Net-Zero Design



achieve net-zero with Nudura

Once thought of as building methods of the future, has now arrived. Buildings are now being constructed to a new standard known as Net-Zero. Net-Zero structures maximize the use of on-site renewable energy, thereby producing more energy than they consume over the course of a year. Nudura's superior building envelope is a key element in achieving Net-Zero construction by creating an airtight structure that significantly reduces the flow of heat through the wall due to the thermal mass advantage Nudura forms provide. The Nudura Wall System allows mechanical equipment to run at optimal levels to provide maximum energy performance, resulting in greater cost savings throughout the year.

Projects specifying Nudura Insulated Concrete Formwork provide much greater potential for saving valuable environmental resources, reducing energy consumption and C02 emissions; a few key factors facing today's commercial and residential buildings.



Hear from the Architect and Engineer behind a high performance school, watch a video about Richardsville Elementary at Nudura.co.uk/netzero.

Building Types

Building with Nudura concrete forms offer a variety of benefits to building owners once the structure is completed. Nudura also offers benefits during the building process providing self-builders and contractors with a simplistic approach to construction.

Nudura Insulated Concrete Formwork provides many benefits for residential and commercial construction projects. Nudura provides an ideal solution for the construction of basements, providing a dry and damp free area that can be used to create a larger living space. Not only does Nudura make the ideal solution for basements, building to the roof line, has many benefits to owners as well, energy efficiency, better acoustics, flood resistance, air tightness and a long life cycle.

residential







commercial











multi-storey & hotels







educational, medical & care facilities







Getting Started

service is our foundation for customer **satisfaction**.









The next step to building with Nudura is to find a Nudura trained installer (contractor). You can contact a local distributor who can provide you with the information you need on Nudura, and a list of installers.

To locate a distributor please contact Nudura at 0800 014 8901 or visit us online at Nudura.co.uk.

quality assurance

Nudura forms are manufactured in house to allow full control over the manufacturing process, ensuring our forms are manufactured to the highest standards. Nudura is audited quarterly by Warnock/Hersey which conducts regular plant inspections to ensure all aspects of Nudura products are consistent. Our forms undergo rigorous testing everyday to ensure the quality is the same for every Nudura product.

code approvals and evaluation

Nudura distributors provide the information needed to make sure your home is built with proven installation methods and provide necessary information about local building codes. In various tests Nudura walls have met and exceeded building codes around the globe. Nudura has a wide variety of code approvals for the Middle East, UK, Europe and North America.

Nudura products (when installed per Code requirements) have been designed, tested and approved to comply (i.e. meet or exceed minimum compliance benchmarks) with the BBA (British Board of Agrément), NHBC, LABC and Premier Guarantee. Nudura also conforms to the Council of Mortgage Lenders as an acceptable form of construction.

Please visit our Technical Centre at Nudura.co.uk for Testing Standards
Compliance and Code Compliance Evaluations.

Training & Support Tools



Nudura Training Academy

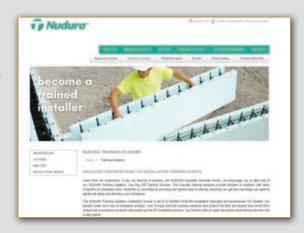
Learn from our experience. If you are thinking of building with Nudura Insulated Concrete Formwork, we encourage you to take one of our One Day ICF Training Courses. The One-day training seminars provide Builders & Installers with basic Nudura ICF installation skills. Nudura is committed to providing the highest level of training, ensuring you get the knowledge you need to get the job done with efficiency and confidence. The Nudura Installation Course is led by a Certified Nudura Installation Specialist and experienced ICF installer. Our trainers break down the ICF installation process, work through common building scenarios that arise in the field, and explain how Nudura's unique line of accessory products help speed up the ICF installation process. Our trainers offer an open discussion style training seminar with a Q&A period. We invite contractors, architects, engineers and design professionals to register today to learn more about the benefits of building with Nudura Insulated Concrete Formwork. To learn more about the Nudura Training Academy or to locate a training course held in your area visit Nudura.co.uk/training.

Professional online tools and resources

Nudura makes the design process with the Nudura Wall System as easy and efficient as possible. Our website provides valuable design tools and resources for homeowners, contractors, architects, and other design professionals.

- BIM object library
- Design specification guides
- Installation manuals and videos
- Project photo gallery

Have access to industry leading technical and informational support from Nudura and our Authorised Distributors, located throughout the UK.



Continuing professional development and training

Nudura is committed to providing the highest level of training and continuing professional development. Nudura is proud to be part of the RIBA CPD Providers Network along with providing an ICF Training Program that covers the use of Nudura and the basic installation procedures used in the construction field.







Code & Testing Compliance

Nudura products (when installed per Code requirements) have been designed, tested and approved to comply (i.e. meet or exceed minimum compliance benchmarks) set by all the following applicable Codes Standards and Evaluation Criteria for the use in both combustible and non-combustible construction for all types of building occupancies and construction types.

code compliance evaluations

Canada: National Certification to CAN/ULC S717.1 - Intertek SPEC ID 29103

New Brunswick - NBFMO: File: 3955 - Compliance to 82-20

Europe: European Union (BBA): ETA-07/0034

USA: National - ICC-ES: ESR-2092

Florida - BCO: FL1585-R

Miami Dade County - BCCO: NOA No. 11-0720.02

Wisconsin - DOC S&BD: 200427-I

New York City - OTCR: Complies with BB 2009-020

Los Angeles: RR25595

Middle East: United Arab Emirates (UAE): ASTM C578-14

testing standards and compliances

• Form EPS Foam certified to meet ALL requirements of ASTM C578, ASTM E2634 (USA) / CAN/ULC S701, S717.1 (CAN)

• Structural Design Nudura forms structurally reinforced flat uniform thickness monolithic concrete walls:

Engineered Design: USA per ACI 318, CAN per CAN/CSA A23.3

Prescriptive Design: USA per R404, R611 IRC 2006/2009, PCA/EB 118 / PC-100-2007

: CAN per NBC 2005, Sections 9.15 and 9.20 : Europe per Eurocode 2 & Eurocode 8

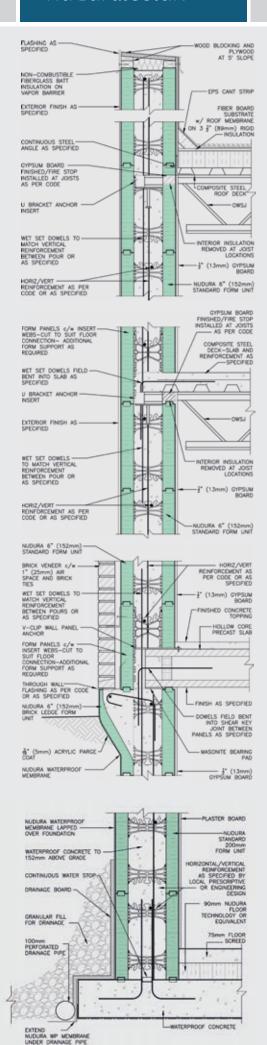
: Nudura Installation Manual Structural Tables per Appendix D & E

• Fire Resistance Testing per UL-263/ASTM E-119 (USA) and CAN/ULC S-101 (CAN)

152 mm Core & above : 4 Hours102 mm Core : 2 Hours

- UL Classified: BXUV.U930 (USA) / UL Listed: BXUVC.WO12 (CAN)
- Reaction to Fire Certification per EN 13501-1, Classification E (Europe)
- Resistance to Fire Certification per EN 1365-1:2012 (Europe)
- Assembled Thermal Resistance/Conductance
 - R 24 (RSI 4.1) /U Value : 0.24 W/m2.K
 - Based on Standard Finished 152 mm Core Form calculated to ASHRAE Handbook of Standards and confirmatory testing of EPS to ASTM C518 (USA & CAN) & ISO 8301 (EUR)
- Wall Assembly Sound Transmission Classification
 - STC 50 (RW 50) minimum for Finished 152 mm Core Walls and above / SRI 51
 - Testing per ASTM E336 (USA/CAN)/ ISO 140-4 (EUR)
- Wall Assembly Vapor Permeance
 - Inner or Outer Panel (EPS) Foam qualifies as a vapor barrier when tested to ASTM E-96
 - 36 Ng/Pa.s.m² for 67mm thickness of EPS Foam
- Thermal Barrier Protection Testing
 - Standard 12.7 mm Gypsum board qualifies as a Thermal Barrier as per code requirements
 - Gigacrete Plastimax coatings qualify as a Thermal Barrier per listings as specified by Gigacrete (USA only)
 - Tested/Comply with NFPA 286 (UBC 26-3) (USA) & CAN/ULC S-101 & CAN4-S124 (CAN)
- Fastener Withdrawal and Shear Resistance
 - Various screw fasteners tested for both Lateral Pullout Withdrawal and Vertical Shear
 - Testing conducted per ASTM D-1761 (Test results available from www.Nudura.com)
- Flash Ignition/Self Ignition Testing EPS Foam
 - Flash Ignition Temperature 698° F (340° C)
 - Self Ignition Temperature 806° F (430° C) Tested per ASTM D-1929
- Flame Spread and Smoke Developed Indices -EPS Foam
 - Flame Spread Index 5* (USA) 180** (CAN)
 - Smoke Developed Index 200* (USA) over 410** (CAN)
 - *From UL file no. BRYX.R4775 **From ULC File no. BTLIC.R4775. Used by permission of NOVA Chemicals INC
- Nudura System Approved for Types I through V Construction (USA)⁺ and for Non-Combustible Construction (Part 3 Design) (CAN)⁺

^{*}When exterior EPS foam finished with approved non-combustible finishes (consult Nudura for details)



Nudura ICFs: Completed in 6 Building Steps Step 2:

Prepare footings for block

Stack forms & create openings

Place rebar in the walls





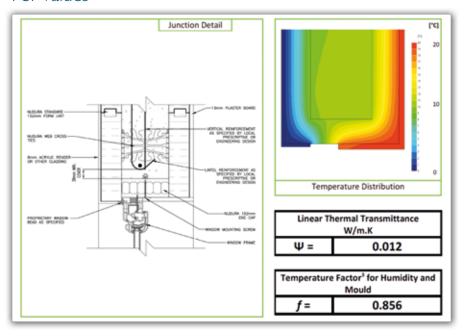
Step 6:

Align wall for concrete pour

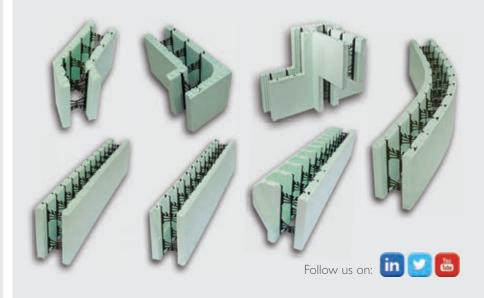
Pour concrete into walls

Install electrical, plumbing & roof

PSI Values



Nudura Insulated Concrete Formwork Products





CPG Europe manufactures high performance building materials in order to solve the complex challenges faced by today's construction industry. It is the home for multiple European construction product brands, including illbruck, Flowcrete, Nullifire, Tremco, Vandex and Dryvit. With over 1,400 employees across Europe, we are committed to shaping a world where buildings and structures save energy, last longer and exceed sustainability benchmarks.

From joint sealing, bonding and insulation through to passive fire protection, flooring, waterproofing and roofing solutions – the product brands housed within CPG Europe cover a wide array of different construction needs. Combined with the wealth of expertise, services and support we provide a truly unique offer – to make our customers more successful time after time.

CPG Europe is part of RPM International Inc. – one of the world's leading construction products companies for both the industrial and consumer segments.

CPG Europe's Core Values



Collaboration



Honesty & Integrity



Respect



Engagement



Sustainable

Europe's leading construction products brands...



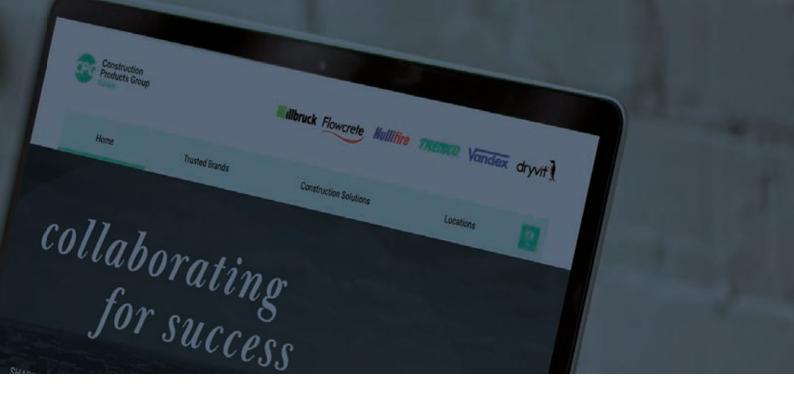












Delivering World-Class Construction Product Solutions.

The product brands housed within CPG Europe cover a wide array of different construction needs and provide a wealth of complex services, support and systems that are rarely found together under one roof.



Window Insulation, Façade Construction, Exterior Insulation & EIFS, Structural & Inplant Glazing



Intumescent Coatings, Fire Stopping



Seamless Resin Flooring, Subfloor Preparation, Car Parking Structure**s**



Potable & Waste Water Industry, Balconies and Podia, Terraces, Basements & Foundations



Liquid Applied Systems, Felt Systems, Vegetated Roofing



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