



Technical Advantages of the NUDURA Integrated Building Technology Insulated Concrete Form System

The following is a summary of key advantages which the NUDURA Wall System delivers:

Greater Energy Efficiency – in terms of Energy Consumption Savings:

The NUDURA Wall System (including internal concrete core and exterior and interior applied finishes) yields an actual calculated U-value of 0.24 for its standard forms (R 23.59/RSI 4.158) The NUDURA Plus System can also give R-values of R- 4.7 to R- 9.09 We also have 17 Thermally Modeled Junctions as per UK Regulations and PHPP. The thermal mass obtained by the concrete core being sandwiched between the insulation layers, in a building utilizing NUDURA can expect to yield heating cost savings up to 80% compared to traditional building methods. NUDURA Wall System can also give values that meet and exceed Code for Sustainable Homes and Passivhaus, easily and affordably.

Cost Savings – in terms of Heating Equipment Size Requirements:

The thermal mass performance of the wall can also result in reduction in size of equipment needed. Performance statistics in temperate climates have illustrated examples where buildings have required only 25% of their projected design capacity of mechanical equipments in order to heat or cool the spaces for comfort.

Superior Sound Attenuation Performance

NUDURA's 150mm core concrete form when combined with standard interior gypsum wall board finish and applied exterior finish of acrylic/silicon render delivers a Sound Reduction Index of SRI 51 (STC 50) and can be easily modified to achieve an SRI of SRI 72 (STC 71). Electrical or service conduits can be fitted into EITHER side of the NUDURA wall assembly without breaching the overall sound performance.

Airtight Envelope

NUDURA's 150mm form has been analyzed, both in lab and on-site testing and has established performance as an air barrier to provide a maximum air leakage of 0.117 l/s/m² under a pressure of 8 mm (0.3-inch) water. Air Permeability tests of NUDURA builds have given on-site results as low as 0.35 m³/h.m² @ 50 pascals. A Code for Sustainable Homes Code 4, 5 & 6 home calls for a maximum leakage of 3 m³/h.m² @ 50 Pascals and PHPP requires 1 m³/h.m².

Superior Wind Resistance

NUDURA's 150mm core wall can be designed to heights as high as 4.3M within a single story and be efficiently reinforced to be capable of withstanding wind velocities as high as 402 km/hr (250mph)

Superior Fire Resistance

NUDURA's 150mm core wall has been successfully tested by UL/ULC and has proven to be able to deliver a fire resistance rating of 4 hours using standard siliceous concrete (without fibers) and standard gypsum plaster board.

Superior Mold Resistance

The expanded polystyrene foam used in the NUDURA wall system has been tested and has proven to support "zero" growth of the 5 most common mold spores in existence.

Superior Structural Stability

NUDURA have structural design tables for below ground walls, above ground walls and lintels as per Eurocode 2 & 8, as well as Canadian and American standards.

NUDURA forms have been used to construct many military buildings that comply with the United States Department of Defense's Unified Facilities Criteria 4-010-01 (Minimum Anti-Terrorism Standards for Buildings) and 4-023-03 (Design of Buildings to Resist Progressive Collapse)

Speed of Construction

Proven history of construction with the NUDURA wall system has clearly established that it can be installed up to 50% faster than conventional concrete cavity block wall construction with labour rates as low as 0.5 man-hours/m². For example, a 2.75m high x 7.3m long wall assembly without openings constructed using NUDURA can be erected and poured by 2 men in 5 hours. The same wall in cavity wall construction would require 3 men and least 16 hours to complete.

Simplicity & Flexibility of Architectural Design

The NUDURA wall system is designed for maximum efficiency of performance and design flexibility by providing ALL of the following wall elements within one single product: concrete form, steel positioning and anchorage grid, vertical load bearing and lateral bearing structural capacity, exterior and interior insulation elements, exterior and interior finishing anchorage, air and vapour barrier elements. The system can be shaped contoured and formed to any desired vertical wall profile including radii as tight as 60 cm without evidence of facets and can be easily cut to suit any desired shape at the top of the wall condition including being able to be contoured to rock conditions.

In addition, the NUDURA form line-up is the most comprehensive in the industry enabling forming of walls in 100, 150, 200, 250 and 300mm core widths complete with preformed 90 degree, 45 degree, Tapered Top Forms, Brick Corbel Forms and extensions in every available core thickness as well as T-Form Wall combinations across virtually every core thickness offered. Insulation products for floors, roofs and ceilings in various thicknesses are available to help create the perfect building envelope.

NUDURA can also be used easily to build basements that are warm, dry and structurally strong as well as being very cost effective, thus giving the option of extended living space with minimal impact.

NUDURA also supply the NUDURA One Series which gives a concrete on one side that can be used for lift shafts, stairwells, swimming pools, etc.

With our custom cut radius forms, NUDURA can help give designers the flexibility of design they demand.

Superior U-Values

NUDURA also have our Plus Series with inserts with thicknesses of 50, 110 and 150 mm to allow for increased R-values of R 5.55 and R- 9.09 can now be easily obtained with the added bonus of the interior and exterior fixing points easily reached. Using our two types of Plus Series, we are able to easily construct a wall with R-values as high as 20

Efficient Steel/Concrete Placement

The capture lugs that are featured in the web ties within the NUDURA wall system enable quick and accurate horizontal and vertical reinforcing steel placement and anchorage of the steel grid at precise locations WITHOUT the requirement of wire tying. This enables the engineer to specify reinforcing in the system without any concerns that the steel will float out of position during concrete placement and internal vibration which ensures proper consolidation and rebar coverage.

Easier to Handle on Site

NUDURA forms are extremely light which results in greater crew efficiency in terms of shipping, handling and movement around site. For example, one man can easily transport a 3.34 m² bundle of forms by hand weighing a total of 20 kg (without forklift) to any location on a floor or a building site. The forms are wrapped in recyclable plastic which protect them from the elements and effect their easy transport and handling.

More Efficient On-Site Storage Capability

NUDURA's patented folding hinge mechanism enables its product to be folded flat --- not only for shipping but for on-site storage as well. For example, in the same space that 2 skids of 100 mm blocks, 20 m² of product but 10 m² of erected cavity wall takes, 15 bundles of NUDURA can be stacked enabling the construction of 50 m² of wall.

Sustainable Building Advantages

NUDURA features many attributes that contribute towards sustainable building into the future and contribute to a more environmentally friendly method of construction. These features include:

- More than 50% of the product by weight is comprised of recycled material
- The product contributes to energy efficiencies between 44% and 80% over other construction methods
- The product does not emit or use in its production any CFC (Chlorofluorocarbons), HCFC (Hydrochlorofluorocarbons) and no VOC (Volatile Organic Compound) emissions which makes it non-toxic and safe for the environment, inside and out.
- BRE Green Guide Ratings: A+ (100mm core) A (150mm core and thicker)
- 0 Ozone Depletion Potential (ODP) / 0 Global Warming Potential (GWP) for expanded polystyrene
- 0 Ozone Depletion Potential (ODP) / <5 Global Warming Potential (OGP) for the assembled wall
- The product contributes to a proven 50% reduction of construction waste in comparison to conventional cavity block construction. And if the projects are designed using the dimensions of the NUDURA products, on site waste can be as low as 1%. Also, all parts of the NUDURA products are 100% recyclable.
- The product contributes to greater Indoor Air Quality (IAQ) by enabling tighter control of ventilation and conditioning air.
- The product also gives Architects the ability to design buildings can have over a 100 years durability.
- A big jumpstart towards BREEAM/LEED Certification with a total of 26 credit points available under LEED.
- At the end of life cycle the entire wall assembly is 100% recyclable.

Building Types

NUDURA has been used from basements to multi-story residential, agricultural, industrial, institutional, health care and commercial projects. With our standard products, they give clients the ability to build to at least 33 floors. The first Net Zero/Zero Carbon School in the USA, Richardsville Elementary, has been constructed with NUDURA which was a direct result of the many schools already built with NUDURA and its proven energy efficiency, build times and cost effectiveness. NUDURA is recognized by NHBC, LABC and Premier Guarantee insurance schemes, as well as being a Super E product.

Versatile Finish Flexibility

NUDURA's embedded fastening strip network combined with exposed EPS enable a broad range of finishing options which cover anything from directly applied Acrylic hard coat render systems to ceramic tiles, brick, stone, marble, timber, cement board, steel, aluminium to architectural pre-finished panel systems.

PHD BUILDING LTD distributor of Nudura ICF South Island
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