DUPONT
The miracles of science™

DUPONT™ ENERGAIN®

Energy-saving thermal mass systems

A major breakthrough in sustainable building materials.
DuPont™ Energain® is a revolutionary new product, which provides additional thermal mass to low inertia buildings at the mercy of solar gains and temperature fluctuations. The aluminium-laminated panels help increase comfort levels, save on energy costs and reduce CO_2 emissions.

A RESPONSIBLE BUILDING SYSTEM THAT BENEFITS THE ENVIRONMENT

DuPont™ Energain® comes in aluminium-laminated sheets that can be cut to any size. Once cut, aluminium tape is used to seal the edges of the sheets and to cover any holes or abrasions that may occur during installation.

The demand for innovative construction solutions and products has never been greater. As the world moves towards the inescapable reality of the effects of climate change, the need to reduce energy and utilize sustainable materials is now of paramount importance, for governments, corporations and individuals alike.

That's why DuPont™ Energain® represents a breakthrough of major importance as a radical new concept in thermal mass materials that could revolutionize the way the world constructs. Easy to install in commercial, public and residential buildings, DuPont™ Energain® benefits buildings in three ways:

- It controls comfort levels through reducing temperature peaks by as much as 7° C;
- It reduces energy usage and costs, lessening the need for air conditioning; and
- It helps to reduce CO_2 emissions.

A NEW SOLUTION TO AN AGE OLD PROBLEM

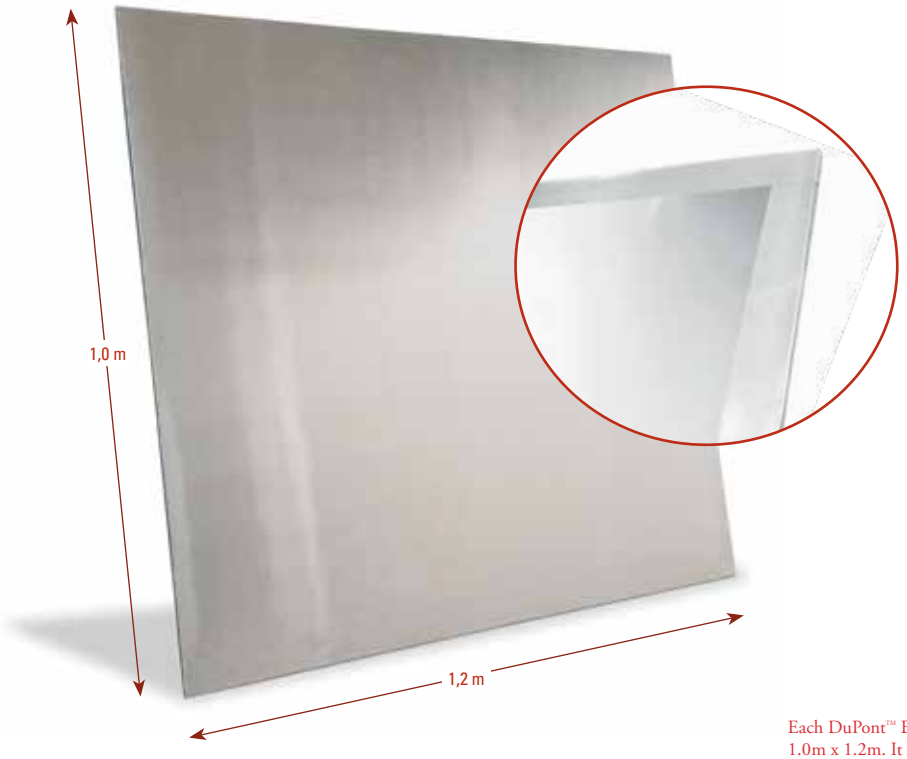
Buildings of all sizes and dimensions are at the mercy of solar gains, temperature fluctuations and the effects of internal heat sources, such as humans and electrical equipment.

In structures with a low thermal mass, for example frame-constructed buildings, the effects of fluctuating temperatures are traditionally offset by the use of air conditioning and heating systems. This comes at a price; quite literally, in terms of running costs, but also in the environmental footprint they leave on society: high energy use means high levels of CO_2 emissions: in today's geo-political climate, an unacceptable state of affairs.

HOW DUPONT™ ENERGAIN® MAKES A CRITICAL DIFFERENCE

DuPont™ Energain® comes in aluminium-laminated panels, bordered at the edge with aluminium tape, which contain a copolymer and paraffin wax compound. The panels are installed on the interior walls and ceilings of a building, behind the plasterboard lining, together with a mechanical ventilation system. The wax in DuPont™ Energain® thermal mass panels melts and solidifies at around 22° C and 18°C respectively. As the compound melts heat is absorbed from a room and as it re-solidifi es it releases heat back into the room.

- By absorbing heat, DuPont™ Energain® significantly slows down the temperature increases within a room, reducing temperature peaks by as much as 7°C;
- As temperatures drop, the absorbed heat in the panels is released, warming rooms and reducing the usage of heating systems.



Each DuPont™ Energain® panel measures 1.0m x 1.2m. It weighs 5.4kg and can be easily handled and installed by just two people.

THE BENEFITS OF DUPONT™ ENERGAIN®: COMFORT, COST AND SUSTAINABILITY

DuPont™ Energain® is beneficial in three key areas, of importance to all parties in a construction venture, from architects to engineers and project owners to the inhabitants of a building.

Maintaining acceptable levels of sustainable comfort

Heat from solar gains and temperature fluctuations can cause degrees of discomfort to the inhabitants of low inertia buildings, where thermal mass is limited. Put simply, buildings get too hot when solar gains and external temperatures are high and too cold when temperatures are low. DuPont™ Energain® regulates temperature fl uctuations at both ends of the scale, ensuring that comfort levels are readily maintained, without having to resort to excessive use of cooling and heating systems.

DuPont™ Energain® controls temperature fluctuations, keeping the inhabitants of a room comfortable without having to frequently flip between air conditioning and heating systems.

Reducing the need for cooling and heating systems saves money

With DuPont™ Energain® buildings can be fitted with smaller, more economical air conditioning units. Furthermore, standard-sized air conditioning units need not be used to the same degree as they are in a building without DuPont™ Energain®. Tests carried out by DuPont and independent third parties indicate that a saving of up to 35% on air conditioning costs can be realized with DuPont™ Energain®. Furthermore, the release of heat back into a room, as temperatures drop, lessens the need for heating systems, which also represents an energy-related cost saving.

Reduced energy use means reduced CO_2 emissions

In decreasing the amount of energy used in a building by controlling temperature levels, DuPont™ Energain® requires less electricity to be used.
The knock-on effect of this is, ultimately, to help reduce the need for fossil fuels - oil, coal and gas, which emit CO_2 into the atmosphere when burnt. This shrinks the environmental footprint of the building, in line with creating responsible building strategies that are being pursued politically at local, national and global levels.

As easy to install as standard plasterboards

The panels are very similar in dimension to ordinary plasterboard panels, yet weigh half as much, and are just as easy to install.
The panels can be easily cut to any size, then simply nailed, stapled or screwed in place.
The only specialist material needed for use with DuPont™ Energain® panels is DuPont™ Energain® aluminium tape. This tape must be used to:

- Tape any 'open' edges on a panel, where the internal compound would otherwise be exposed; and
- Repair any damage to the panel's aluminium surface.

L'utilisation réduite d'énergie entraîne une diminution des émissions de CO_2. DuPont™ Energain® est une solution ingénieuse qui répond au besoin de construire des bâtiments durables pour un avenir respectueux de l'environnement.

DUPONT™ ENERGAIN® - A THERMAL MASS SOLUTION THAT'S READY TO MAKE ITS MARK

CoDyBa* - The Dynamic Simulation Software for major projects

CoDyBa is a unique simulation software program, especially adapted for proprietary use with DuPont™ Energain®. CoDyBa enables architects and engineers to model with DuPont™ Energain®, enabling them to determine energy-savings and illustrate responses to temperature fl uctuations and the reductions in CO_2 emissions. CoDyBa simulations are offered on specific projects. Details are available upon request or can be found directly on the website.
* CDB_dDDN_V2

DuPont™ Energain® - The future of construction is here now

DuPont™ Energain® is available to order from DuPont today. The product is available in panels measuring 1.0 m x 1.2 m and weighs 5.4 kg. All panels are supplied with taped edges, and come with additional aluminium tape. DuPont provides technical assistance with simulation, specifi cations and project design.

For technical and commercial enquiries, please refer to the contact details below.

TECHNICAL PROPERTIES

THERMAL MASS PANEL

Descriptive Properties	Unit	Value
Thickness	mm	5.2
Width	mm	1000
Length	mm	1198
Area weight	kg/m²	4.5
Aluminium thickness (sheet)	µm	100
Aluminium thickness (edges)	µm	75
Thermal properties		
Paraffin loading	%	60
Melt point (paraffin)	°C	21.7
Latent heat storage capacity (15°C - 30°C)	kJ/kg	> 70
Total heat storage capacity (Temperature range 15°C to 30°C)	kJ/kg	~ 140
Physical properties		
Aluminium sheet delamination force	N/cm	> 20
Conductivity solid	W/(m.K)	0.18
Conductivity liquid	W/(m.K)	0.14
Flash Point (paraffin)	°C	148

ALUMINIUM TAPE

Descriptive Properties	Unit	Value
Thickness	µm	75
Width	mm	50

The data above is extracted from the full technical sheet, which is available at **www.energain.dupont.com**

DuPont de Nemours (Luxembourg) S.à r.l.
Rue Général Patton
L-2984 Luxembourg
Tel : 00352 3666 5772
Fax : 00352 3666 5021
E-mail : energain@lux.dupont.com
www.energain.dupont.com

02/2012