



ENVIRONMENTAL BENEFITS OF DRYWALL

Compared to brick or block
wall system

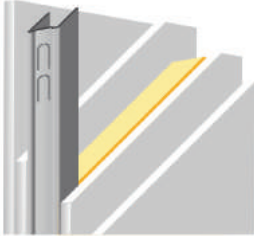


**GYPSUM
FOREVER**

Third-party
lifecycle assessment
comparison, between
plasterboard systems and
traditional partitions
systems, in **VIETNAM**

..... Two wall profiles commonly used in Vietnam, were assessed in this study, as described below:

THE GYPROC DRYWALL SYSTEM:

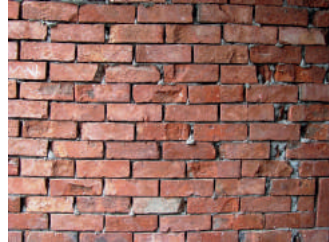


Insulated metal stud drywall

Details: Double Layer 12,5 mm Gyproc Classic board to both sides of 75 mm VTI Stud with Glasswool thk 50 mm, density 24 kg/m³ and finish by VTI paper tape + Gypfiller, selant of Hilti CP606

Reference: DW4

THE TRADITIONAL WALL SYSTEM:



Cement plastered 200 mm brick

Details: 200 mm Hollow Brick, finish both sides with S&C mortar 15 mm thk each side

Reference: 200 mm Brick wall

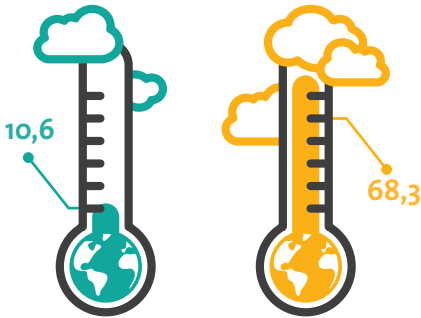
..... **Main environmental impacts of the Gyproc drywall system and the traditional brick partition wall**

Environmental parameters analysed for 1m ² of wall profile	Unit	Gyproc Drywall System	Traditional Wall System
Global Warming Potential (GWP)	kg CO ₂ equiv/FU	10.6	68.3
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ/FU	165.0	640.1
Use of net fresh water	m ³ /FU	4.5 E-02	3.4 E-01
TOTAL WEIGHT	kg/FU	37.1	314.7

..... The environmental benefit of using drywall systems instead of brick systems, on 1m² of wall profile

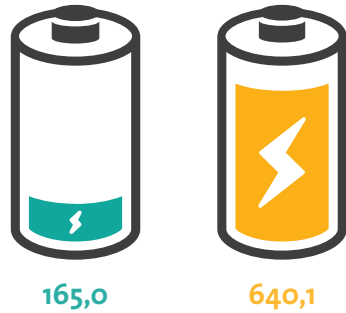
1m²

For 1 m² of partitions walls, using drywall systems instead of traditional systems **would save:**



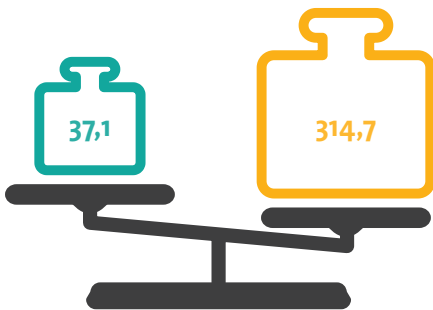
85%

reduction in global warming potential (kg CO₂ equiv/FU)



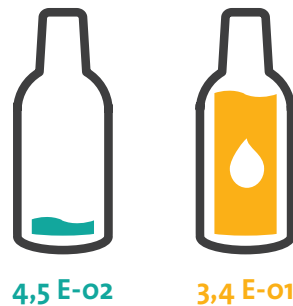
74%

reduction in primary energy use (MJ/FU)



88%

reduction in wall system weight (kg/FU)



86%

reduction in fresh water usage (m³/FU)

..... The environmental benefits from using drywall systems at building level:



For an average building with **10 000 m²** of partitions walls, using drywall systems instead of traditional systems **would save:**



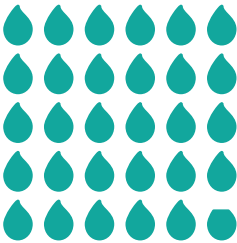
→ **68 trips** around the circumference of the Earth by car¹

Equivalent to **2 732 580 km** travelled by car or **570 tonnes** of CO₂ emissions



→ The weight of **675 elephants**²

Equivalent to **2 700 tonnes** of material to be installed and also removed at the end of life



→ **2 900 m³** of net fresh water



→ The electricity usage of an Vietnamese city of **385 000 people** for 24h³

Equivalent to **4 900 GJ** of energy used in materials manufacture

¹ CO₂ emissions for average petrol cars is 0.2086 kgCO₂e/km (carbon trust UK 2011: https://www.carbontrust.com/media/18223/ctl153_conversion_factors.pdf). Thus, 1 tonne CO₂e is equivalent to drive 4794 km by car. Circumference of the Earth is 40 075 Km.

² Average of 4 tonnes for one African elephant - <http://animals.nationalgeographic.com/animals/mammals/african-elephant/>

³ Electric power consumption (kWh per capita) - <http://data.worldbank.org/indicator/EG.USE.ELEC.KH.PC/countries>

*All stated figures are an approximation based on the 2016 study conducted by Renuables.

METHODOLOGY OF THIS STUDY



PRODUCTION

This life cycle assessment (LCA) comparison was conducted by a **third-party** – **Andrew Norton** – *Renuables UK*.



STANDARDS

This study has been produced with reference to international LCA and EPD standards, **ISO 14040 series** and **EN15804**.



SCOPE AND SYSTEM BOUNDARIES OF THE STUDY

The LCA addresses the life cycle stages **from Cradle to Gate**. I.e. raw material supply, transport to manufacturing, manufacturing and materials for installation at construction site, but did not include waste at construction site, transport to site, service life or disposal.



FUNCTIONAL UNIT (FU) USED IN THIS LCA COMPARISON*

“A representative 1m² section of a standard partition wall system (non-load bearing) installed with finishing plaster and not including final decoration”.



DATA MODELLING

For drywall systems, data was taken from **Saint-Gobain Environmental Product Declaration** (EPD) results. For traditional systems, the databases or libraries within **SimaPro version 7.2** that include **Ecoinvent v2.2** data, have been used for all processes and materials concerning the traditional wall types and for sundry materials not covered by EPD information for the drywall materials.

References: Study conducted by Andrew Norton – Renuables UK; (www.renuables.co.uk) for Gyproc. May 2016. This study has not been critically reviewed and input and comment has not been invited from interested parties, external to the LCA.



Saint-Gobain Gyproc Vietnam
www.gyproc.vn

Concept/Design: Clara Vidal • Figures: Andrew Norton, Renuables, UK • Photos: Saint-Gobain Imagin • June 2016