Colorcoat HPS200® Ultra

Environmental Product Declaration

This document provides a summary of the environmental impacts of Colorcoat HPS200® Ultra, from cradle to cradle. It is based upon the product being used in a built-up system and includes all the impacts associated with this from manufacture through to installation, use and end of life.

	Units	Production & installation	End of life	Total
	kg eq. CO_2	43,581.77	-19,904.63	23,677.14
	kg eq. SO_2	105.09	-22.40	82.69
	kg eq. PO_4^-	14.16	-3.83	10.33
	kg eq. ethylene	85.00	-17.84	67.16
	kg eq. Sb	224.23	-101.92	122.31
	GJ	550.12	-206.64	343.48

Based on 1000m^2 roof area in a built-up mineral fibre insulated system. Thermal performance is specified in accordance with Part L Building Regulations 2006, nominal U-value 0.25 Wm^{-2}K for roof systems, with an air permeability bettering 10 m^3/hr/m^2.

Life cycle assessment

Environmental impact categories:

Global warming
The rising of global temperatures due to emissions of green house gases. Measured in kg eq.CO_2. Includes the impact of high global warming potential gases such as the Hydrofluorocarbons (HFCs) used in PIR foam manufacture.

Acidification
The damage caused to trees and life in lakes and rivers as a result of the increase in pH of terrestrial watercourses due to the release of acidifying gases to atmosphere.

Eutrophication
A form of water pollution that can result in the loss of plants and animals in aquatic ecosystems. The release of nitrogen and phosphorus from fertilisers and detergents and organic matter from effluent can lead to an acceleration of the natural oxygen depletion in water courses.

Photochemical oxidant formation
Emissions of Volatile Organic Compounds (VOCs) and nitrogen oxides can interact in the lower atmosphere to cause smog which can be harmful to human health and the environment.

Resource depletion
The depletion of natural resources such as oil, coal and metals due to their extraction and consumption.

Embodied energy
The quantity of energy required to manufacture, and supply to the point of use, a product, material or service. The embodied energy of pre-finished steel is comparable to many other construction materials. However, as it can be recycled without effecting quality, the embodied energy is reduced over multiple life cycles. Therefore, the embodied energy is much less significant than the energy consumed through heating, cooling and lighting of a typical building.

Material declaration

Material content per 1000 m^2 cladding system.

Steel	kg	%
Cladding (inner and outer sheet)	10,843.00	68.34
Spacer	670.00	4.22
Fixings (stainless steel)	35.00	0.22

Others	kg	%
Insulation	4,320.00	27.22

Eco-design of Colorcoat HPS200® Ultra

Eco-design is about minimising the environmental impacts of a product over its whole life, from raw material production through to manufacture, use, and end of life.

Raw materials

The raw materials used in Colorcoat HPS200® Ultra have been revised to increase its performance and reduce the potential environmental impact throughout the production and use phases. All traces of heavy metals have been removed from the top coat and it is also free from fire retardants. These have been done carefully, to ensure there is no detrimental impact on the overall performance of Colorcoat HPS200® Ultra.

Corus has ensured that substances with potential for endocrine disrupting or bioaccumulative effects are not used in Colorcoat HPS200® Ultra. Additionally, as a precaution organotin stabilisers and phthalate plasticisers have been replaced with higher performing alternatives. The phthalate-free plasticiser is more stable within the topcoat, bringing improved product performance to the use phase and, if lost from the topcoat would also be biodegradable.

Manufacture

The process used to make Colorcoat HPS200® Ultra is highly efficient in its use of raw materials and energy. All process emissions are strictly controlled and residual solvent vapours are rendered harmless by thermal oxidation with the heat generated being used in the painting process, saving energy. Computerised control ensures that virtually all the paint used is applied to the steel.

The Corus Colorcoat® manufacturing site at Shotton is accredited to ISO 14001 (International Environmental Management Standard) and there are a number of initiatives with suppliers to ensure they employ sound environmental practices and support the Corus ethical sourcing policy.

Use

The improved performance of Colorcoat HPS200® Ultra means that once installed, the product lasts longer and, for up to 40 years, requires no inspections or annual maintenance. Over the building lifetime this saves cost as well as natural resources and reduces emissions during the use phase, as a result of fewer re-paints and product replacements. The environmental impact of the use phase is reduced even further through the use of a water-based re-paint system, which minimises volatile organic compound (VOC) emissions to the environment.

Re-use and recycling

Pre-finished steel is widely recognised as easy to disassemble, segregate and is also 100% recyclable. The well-established network of scrap metal processors and recyclers ensures that almost all steel products, including pre-finished steel, can either be re-used or recycled at the end of their life. Current data suggests that 94% of construction steel is either re-used or recycled.* Recycling steel saves energy and resources by avoiding the need for steel production from virgin sources. This environmental saving is given as a credit when the steel is recycled as the end of its life.

* Steel Construction Institute recycling survey 2001 (UK).

Data sources

The data published here is based on an initial Life Cycle Assessment (LCA) study conducted by Corus in 2002 in accordance with the international standard ISO 14040-3. This LCA has been subsequently refined and extended.

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