

Section 7: Environmental Product Declarations

- 7.1 Eco-Friendly Production and Qualities of AAC Construction.....3
- 7.2 Energy Consumption4
- 7.3 Green Building Rating Program Requirements5

7.1 Eco-Friendly Production and Qualities of AAC Construction

Hebel AAC meets the intent of a sustainable building product on many levels. It combines low material and energy usage in manufacture with a range of environmental benefits. With AAC, energy conservation begins with production and continues throughout its life as an extraordinary insulating material which increases the energy efficiency of the completed building.



Sustainable building products have been defined in many ways, but the most frequently quoted definition is: *"building products that meets the needs of the present without compromising the ability of future generations to meet their own needs."*

Hebel AAC scores exceptionally well in all stages of the product life from the raw material and manufacturing stage through packaging and transport, to construction processes and the building life itself.

Stage 1: Raw Materials and Manufacturing

AAC is manufactured in an environmentally responsible manner, using renewable materials which are found in abundance - lime, fine sand, water and a small amount of aluminum powder (manufactured from a by-product of aluminum), plus cement. More than 99.9% of the raw materials used in the production of AAC are sourced within 400 miles of the manufacturing plant.

Table 7.1: Hebel AAC Raw Material Resource Locations

Hebel AAC Manufacturer location:		Adel, GA	Distance from Adel
Raw Material Resource:	Sand	Valdosta, GA	25 miles
	Cement	Branford, FL	94 miles
	Lime	Luttrell, TN	389 miles
	Gypsum	Savannah, GA	198 miles
	Aluminum paste comes from overseas as it is not sold in the U.S. It accounts for 0.1% of the finished product.		

The aeration and expansion of AAC makes extended use of these raw materials. From the chart below, the consumption of raw materials and energy needed for AAC production is well below the norm for solid building materials. Rarely in a construction material are the Earth's resources used so effectively and sparingly.

Embodied energy in AAC is relatively low and the

environmental impact is low. With Hebel AAC there are no risks of pollution to the air or water. The only manufacturing by-product is harmless steam, which is reused in production. Nearly all production waste material is crushed and recycled into the production mix. No harmful chemicals are added and Hebel AAC emits no toxicity. AAC is a safe, natural material made from some of our planets most abundant minerals- silica and calcium.

Stage 2: Packaging and Transport

The finished product of AAC, has low weight advantages for transporting, allowing a larger volume of material to be carried on each delivery truck, minimizes the number of deliveries and emissions from transport, adding to its sustainable attributes.

Stage 3: Construction

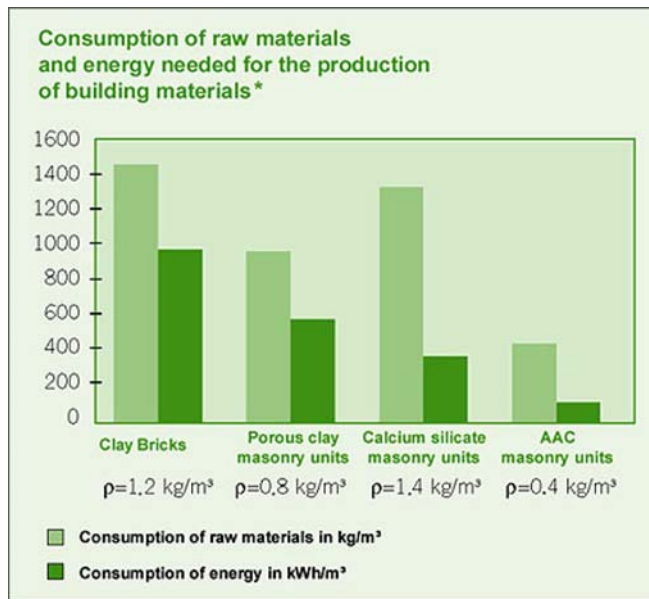
During the construction process, AAC blocks are easily modified on site to achieve maximum usage and minimum waste. AAC panels are pre-engineered and labeled to ensure orderly and fast erection of a building, also resulting in less waste, reduced construction times and faster building completion. The result is greater on-site construction material, labor and energy savings.

AAC's thin bed joint system combines the use of energy-efficient lightweight AAC with quick setting thin layer mortar which speeds the construction process.

Stage 4: Building Life

Being highly durable, a Hebel AAC building will perform over many generations and if it needs to be retired for some reason, the building's structural materials are non-toxic and recyclable.

Table 7.2: Consumption of Raw Materials and Energy



*Source: FeBeCel handbook 2000: Le Béton Cellulaire - Matériau d'Avenir, p. 32

7.2 Energy Consumption

The modest energy consumption for AAC production is paid back faster during the life of the building due to the insulating capacity. Hebel AAC excels in thermal insulation, allowing the end user to dramatically reduce energy consumption during occupancy. The comfort offered by Hebel AAC walls and floors is primarily due to the insulating effect of its small, disconnected air bubbles which resist heat movement or transfer. The conservation of energy with Hebel AAC can be found with either no or minimum addition of insulation materials.

7.3 Green Building Rating Program Requirements



USGBC's LEED® requirements:

For the latest information on the USGBC's LEED® requirements, visit: www.usgbc.org

LEED Certification Awarded for meeting criteria:

CERTIFIED 40-49 Points

SILVER 50-59 Points

GOLD 60-79 Points

PLATINUM ≥ 80 Points

Hebel AAC provides contributing value when applying for the LEED credits listed below. Total point value for each of these credits is awarded by the Green Building Certification Institute (GBCI). The points listed above are the possible point ranges which may be awarded if all credit qualifications are achieved.

Table 7.3: Leed Credits and Point Range

LEED Credit	Intent of LEED Credit	Point Range for LEED Credit					
		New Construction		School		Core & Shell	
EA Prerequisite 2: Minimum Energy Performance - Option 1	Demonstrate a 10% improvement in the proposed building performance rating for new buildings, or a 5% improvement in the proposed building performance rating for major renovations to existing buildings, compared with the baseline building performance rating.	1 of 3 points required for EA		1 of 3 points required for EA		1 of 3 points required for EA	
EA Credit 1: Optimize Energy Performance – Option 1	To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.	1-19		1-19		3-21	
EA Credit 1: Exemplary Performance Option 1 (Innovation in Design Credit 1)	Projects that use Option 1 and demonstrate a percentage improvement in the proposed building performance rating compared with the baseline building performance rating per ASHRAE 90.1-2007 by the following minimum energy cost savings percentages will be considered for 1 additional point under the Innovation in Design Category: - New Buildings: 50% - Existing Building Renovation: 46%	1 of 3		1 of 3		1 of 3	
MR Credit 2: Construction Waste Management	To divert construction and demolition debris from disposal in landfills and incineration facilities. Redirect recyclable recovered resources back to the manufacturing process and reusable materials to appropriate sites.	50%	75%	50%	75%	50%	75%
		1	2	1	2	1	2
MR Credit 2: Exemplary Performance (Innovation in Design Credit 1)	Project teams may earn an Innovation in Design credit for exemplary performance by diverting 95% or more total construction waste.	2 of 3		2 of 3		2 of 3	

LEED Credit	Intent of LEED Credit	Point Range for LEED Credit					
		New Construction		School		Core & Shell	
MR Credit 5: Regional Materials	To increase demand for building materials and products that are extracted and manufactured within the region (500 miles), thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.	10%		20%		10%	
MR Credit 5: Exemplary Performance (Innovation in Design Credit 1)	Project teams may earn an Innovation in Design credit for exemplary performance by achieving a total value of regionally harvested, extracted, and manufactured materials of 30% or more.	1	2	1	20%	10%	20%
		3 of 3	3 of 3	3 of 3	2	1	2
IEQ Prerequisite 2: Environmental Tobacco Smoke Control	To establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants.	1 of 2 points required for IEQ		1 of 3 points required for IEQ		1 of 2 points required for IEQ	
IEQ Credit 5: Indoor Chemical and Pollutant Source Control	To minimize building occupant exposure to potentially hazardous particulates and chemical pollutants.	1		1		1	
IEQ Credit 7.1: Thermal Comfort – Design	To provide a comfortable thermal environment that promotes occupant productivity and well-being.	1		1		1	

All credits listed are published in: LEED Reference Guide for Green Building Design and Construction for the Design, Construction and Major Renovations of Commercial and Institutional Buildings Including Core & Shell and K-12 School Projects.



As a manufacturing plant, Xella Aircrete North America Inc. joined ENERGY STAR as a partner to strengthen corporate energy management. ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy. AAC has been used in the construction of many ENERGY STAR qualified homes, such as The New American Home 2008 in Orlando, FL.

DISCLAIMER. This document is not intended to replace the knowledge, experience and judgment of design professionals. Xella Aircrete North America, Inc. is **not** responsible for ensuring weather-tightness, overall functionality or fitness for use of the panels, nor compliance with federal, state, or local laws, ordinances or regulations, including building, environmental and other codes.

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