

LEED COMPLIANCE PRODUCT CARD

Technical insulation



TECHNICAL
INSULATION



COOLING



AIR
CONDITIONING



VENTILATION

AF/Armaflex Class 0

AF/Armaflex Class 0 is a flexible, closed-cell insulation material with built-in Microban® antimicrobial protection¹.

LEED 2009

for Green Building Design and Construction

LEED is a multi-criteria scheme to assess and certify buildings. Established in USA, it emphasises sustainable development by promoting green, healthy and eco-friendly buildings. Features of the buildings which may be assessed are: materials, quality of indoor environments and energy efficiency etc. Nowadays it has become a standard in real estates markets.





LEED compliance product card for AF/Armaflex Class 0 was prepared to assist designers, architects, engineers, consultants and developers to provide clear information and to facilitate choosing proper product. Appropriate LEED categories related to AF/Armaflex Class 0 features were chosen and checked. AF/Armaflex Class 0 compliance and contribution to LEED categories are presented below.



Product compliant



Product contributes to a better rating

LEED Issue	Credit	LEED Requirements	Points	Product compliance
EA Prerequisite 2	Minimum Energy Performance	Building's energy performance calculated using computer simulation model should demonstrate a 10% improvement for new buildings, or a 5% for major renovations in comparison to the baseline as a compulsory achievement by using energy efficient measures.	-	AF/Armaflex Class 0 is a part of building's systems. Adjusting proper design parameters will enable to improve energy efficiency and its supply to the system appliances. For energy efficiency the main parameter of the AF/Armaflex Class 0 is thermal conductivity which is product thickness dependant: from $\lambda_{0°C} < 0,033 \text{ W/mK}$ to $\lambda_{0°C} < 0,036 \text{ W/mK}$ ¹ . 
EA Credit 1	Optimize Energy Performance	Building's energy performance calculated using computer simulation model should demonstrate an improvement in comparison to the baseline. Number of points awarded depends on percentage improvement and building type.	21**	
IEQ Credit 3.2	Construction Indoor Air Quality Management Plan – before occupancy	A building flush-out or IAQ testing should be conducted prior to occupancy to demonstrate contaminant limits are not exceeded. The maximum concentration of formaldehyde in air is: 27 parts per billion while volatile organic compounds (VOC): 500 micrograms per cubic meter.	1**	Product AF/Armaflex Class 0 may contribute reducing air contamination. Sampling, testing and evaluation of the product determine low levels of formaldehyde and VOC ² . 
IEQ Credit 7.1	Thermal Comfort	An appropriate level of thermal comfort within the building should be provided by designing HVAC systems in accordance with ASHRAE 55-2004 Thermal Environmental Conditions for Human Occupancy.	1**	AF/Armaflex Class 0 has got an indirect impact on achieving acceptable range of operative temperature and humidity by providing protection for pipes or air ducts. Therefore it prevents condensation of the humidified air. Water vapour diffusion resistance of AF/Armaflex Class 0 which is product thickness dependant is: from $\mu > 7000$ to $\mu > 10000$ ¹ . 
IEQ Credit 7.2	Thermal Comfort – Verification	A measurements of relevant environmental variables in potential problem areas indicated by building's occupants should be conducted. Measurements should be carried out in accordance with ASHRAE standard 55-2004.	1**	
IEQ Credit 10	Mold prevention (Schools only)	HVAC systems and controls should be designed to limit space relative humidity to 60% or less at all load conditions. Addition requirements should be met: compliance with IEQ Credits c3.1, c7.1, c7.2 and implementation an IAQ management program in line with the U.S. Environmental Protection Agency (EPA).	1**	AF/Armaflex Class 0 may contribute protecting against mold and mildew within the building. It is equipped with MICROBAN® technology which is EPA-registered antimicrobial protection. 

For detailed information please refer to the documents provided by manufacturer:

¹ AF/Armaflex Class 0 product card

² Eurofins Product Testing A/S Attestation and Test report No. 392-2013-GSH-CEFEP_01

** AF/Armaflex Class 0 has an indirect impact on the following categories. Using AF/Armaflex Class 0 with another appropriate products may contribute to achieve credits. Maximum number of credits influenced by the product for each category was stated above.

www.armacell.com

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LEED v4

for Building Design and Construction

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LEED Issue	Credit	LEED Requirements	Points	Product compliance
EA Prerequisite Minimum Energy Performance	Option 1. Whole-building energy simulation	An energy calculation should be carried out based on a simulation model in accordance to the ANSI/ASHRAE/IESNA Standard 90.1-2010, Appendix G with errata. An improvement of 5% (new construction projects), 3% (major renovations projects), 2% (core and shell projects) over a baseline should be demonstrated.	-	AF/Armaflex Class 0 is a part of building's systems. Adjusting proper design parameters will enable to improve energy efficiency and its supply to the system appliances. For energy efficiency the main parameter of the AF/Armaflex Class 0 is thermal conductivity which is product thickness dependant: from $\lambda_{0°C} < 0,033 \text{ W/mK}$ to $\lambda_{0°C} < 0,036 \text{ W/mK}$.
EA Optimize Energy Performance	Option 1. Whole-building energy simulation	Building's energy performance calculated using computer simulation model should demonstrate an improvement in comparison to the baseline. Number of points awarded depends on percentage improvement.	18**	
EQ Thermal Comfort	Thermal Comfort Design Option 2. ISO and CEN Standards	A thermal comfort analysis should be carried out in accordance to the standards: ISO 7730:2005 and EN 15251:2007.	1**	
MR Building Product Disclosure and Optimization – Environmental Product Declarations	Option 1. Environmental Product Declarations (EPD)	At least 20 materials sourced from 5 different manufacturers should have product specific Type III EPD. EPD should conform standards: ISO 14025, ISO 14040, ISO 14044 and EN 15804, at least cradle to gate scope and include an external verification.	1*	
EQ Low-Emitting Materials	Option 1. Product category calculations	Up to 7 product categories of finishing materials should be compliant with relevant volatile organic compounds (VOC) emission levels and testing standards: - CDPH Standard Method (2010) or - German AgBB Testing and Evaluation Scheme (2010) or - ISO 16000-3/6/9/11:2010 in conjunction with AgBB or French legislation on VOC emission class labeling or the DIBt testing method (2010).	3*	
EQ Thermal Comfort	Thermal Comfort Design Option 1. ASHRAE Standard 55-2010	An appropriate level of thermal comfort within the building should be provided by designing HVAC systems in accordance with ASHRAE 55-2010 Thermal Environmental Conditions for Human Occupancy with errata or a local equivalent.	1**	

For detailed information please refer to the documents provided by manufacturer:

¹ AF/Armaflex Class 0 product card

² Environmental Product Declaration: EPD-ARM-20150110-IBB1-DE

³ Eurofins Product Testing A/S Attestation and Test report No. 392-2013-GSH-CEFEP_01

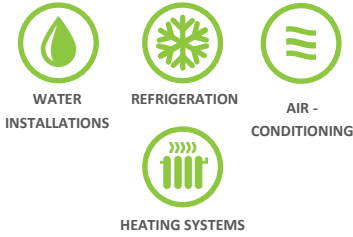
* AF/Armaflex Class 0 has a direct impact on the following categories. While using AF/Armaflex Class 0 with another appropriate products - credits stated above may be awarded. Maximum number of credits influenced by the product for each category was stated above.

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www.armacell.com

WELL COMPLIANCE PRODUCT CARD

Technical insulation



AF/Armaflex Class 0

AF/Armaflex Class 0 is a flexible, closed-cell insulation material with built-in Microban® antimicrobial protection. Product AF/Armaflex Class 0 is used as insulation and protection of pipes, air ducts, vessels for hot and cold water services, chilled water lines, heating systems, air conditioning ductwork and refrigerated pipework





WELL Building Standard version 2 (WELL v2)

WELL is a performance-based system for measuring, certifying, and monitoring features of the built environment that impact human health and wellbeing, through air, water, nourishment, light, fitness, comfort, and mind. WELL Certification requires a passing score in each of these seven categories. WELL Certified spaces can help create a built environment that improves the nutrition, fitness, mood, sleep patterns, and performance of its occupants. WELL is grounded in a body of medical research that explores the connection between the buildings and the health and wellness of its occupants.

WELL compliance product card for AF/Armaflex Class 0 was prepared to assist designers, architects, engineers, consultants and developers to provide clear information and to facilitate choosing proper product. Appropriate WELL features related to AF/Armaflex Class 0 product were chosen and checked. AF/Armaflex Class 0 compliance and contribution to WELL features are presented below.

 Product compliant

 Product contributes to a better rating

WELL feature	Feature type	WELL Requirements	Product Compliance
X01: Material Restrictions Część 1: Restrict asbestos	Preconditions*	For newly installed or applied products, including all insulation (lagging) applied to pipes, fittings, boilers, tanks and ducts, do not contain over 1,000 ppm of asbestos by weight or area .	AF/Armaflex Class 0 product is completely asbestos-free. Product compliance was confirmed on the basis of manufacturer's statement 
X06: VOC Restrictions Part 2: Restrict VOC Emissions from Furniture, Architectural and Interior Products	Optimization**	At least 75% by cost or surface area of insulation was tested per methods and VOC emission thresholds established in one of the following: a. California Department of Public Health (CDPH) Standard Method v1.2. b. AgBB. c. European Union LCI VOC thresholds ¹⁰ following EN 16516-1:2017 testing methods.	Sampling, testing and evaluation of the SH/Armaflex product was performed in accordance with AgBB standard. On the basis of the research, the insulation meets an adequate level of VOC emission. 
X07: Materials Transparency Part 1: Select product with Disclosed Ingredients	Optimization**	For at least 50% by count or 25 distinct, permanently installed products, including insulation, ingredients are disclosed by the manufacturer, a disclosure organization or a third party through one of the following: a. A Declare label, operated by the International Living Future Institute b. A Health Product Declaration (HPD) published in the HPD Public Repository, operated by the Health Product Declaration Collaborative c. A Cradle-to-Cradle Certified™ product, or a product with a Material Health Certificate from the Cradle to Cradle Products Innovation Institute d. A Product Lens Certification™, operated by UL e. A Product Health Declaration, operated by Global Green Tag f. A manufacturer's inventory containing CAS numbers of all individual compounds down to 1,000 ppm (0.1%).	Composition of the the SH/Armaflex product, which includes CAS numbers of all individual compounds down to 1000 ppm was disclosed by the manufacturer and confirms material's transparency. Product compliance was confirmed on the basis of VOC emission's reaseach, where CAS numbers were specified. 
X07: Materials Transparency Part 2: Select product with Enhanced Ingredients Disclosure	Optimization**	For at least 15 distinct permanently installed products, including insulation, all ingredients are disclosed down to 100 ppm by the manufacturer, a disclosure organization or a third party through one of the following: a. A Declare label, operated by the International Living Future Institute b. A Health Product Declaration (HPD) published on the HPD repository c. Manufacturer's disclosure and/or through a third-party materials database platform.	The AF/Armaflex Class 0 product has Environmental Product Declaration (EPD) of Type III that complies with ISO 14025 and EN 15804. The product's EPD was externally verified and includes „cradle to gate,, scope. Product compliance was confirmed by manufacturer's disclosure. 


WELL COMPLIANCE PRODUCT CARD



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WELL feature	Feature type	WELL Requirements	Product Compliance
X08: Materials Optimization Part 1: Materials selection	Optimization**	<p>For at least 25 distinct permanently installed products , including insulation, ingredients are inventoried to 100 ppm and one of the following is met:</p> <ul style="list-style-type: none"> a. Product is free of compounds listed in the Living Building Challenge's Red List v.4.0. b. Product meets the chemical thresholds in the Cradle to Cradle Basic Level Restricted Substances List, version 4. c. Product does not contain compounds listed in REACH Restriction, Authorization and SHVC lists. d. Product meets an optimization path listed under 'Advanced Inventory & Assessment' in Option 2 of LEED v4.1 credit 'Building Product Disclosure and Optimization - Material Ingredients'.⁵ 	<p>The AF/Armaflex Class 0 product has Environmental Product Declaration (EPD) which indicates the product does not contain substances (SVHC) specified in annex XIV (List of Substances Subject to Authorisation) as laid down in Article 57 and article 59 of REACH.</p> 

For detailed information please refer to the documents provided by manufacturer:

¹ Eurofins Product Testing A/S attestation and test report No. 392-2013-GSH-CEFEP_01

² AF/Armaflex Class 0 product card

³ Environmental Product Declaration (EPD) for AF/Armaflex: EPD-ARM-20200223-IBB1-EN

* AF/Armaflex Class 0 has a direct impact on the following categories. While using AF/Armaflex Class 0 with another appropriate products– Preconditions or Optimizations in current concept will be available.

** AF/Armaflex Class 0 as an indirect impact on the following categories. Using AF/Armaflex Class 0 with another appropriate products may contribute to meet Preconditions or Optimizations in current concept.

Preconditions– these are fundamental features, for WELL v2 certification or compliance to be awarded, all applicable Preconditions must be met.

Optimizations– these features include optional technologies, strategies, protocols and designs that can be applied to a project to qualify for WELL v2 Certification at either Bronze, Silver, Gold or Platinum level.