



# FOAMGLAS® products in LEED certifications

LEED BD+C v4 and v4.1 material requirements



03.10.2022

## PREFACE

This document is an assessment of the compliance of FOAMGLAS® products with LEED environmental rating system requirements. The aim is to present the environmental qualities of FOAMGLAS® products as well as highlight the essential FOAMGLAS® sustainable best practices. The features have been presented in a way that contributes to meeting the requirements of global environmental certifications.

This document applies to following FOAMGLAS products produced in Tessenderlo, Belgium and Klasterec, Czech Republic:

- T3+, T4+, S3, F

The following environmental rating systems for buildings are assessed:

- LEED v4.1 Building Design + Construction
- LEED v4 Building Design + Construction



The document focuses on providing information on how well FOAMGLAS® products follow LEED's guidelines in different categories. Especially in categories Materials and Resources (MR 2, 3, 4 and 5) and Indoor Environmental Quality (IEQ 2).

Additionally, FOAMGLAS® products do have a contribution towards EA 2 Optimize energy performance, IEQ 5 Thermal Comfort and IEQ 9 Acoustic Performance, where insulation products contribute on a general level, and can be also used in constructing a green roof system which contribute to the Sustainable Sites -category credits (SS 2, 3, 4 and 5). Separate documents are not required to prove these categories' requirements.





All the necessary approvals and certificates can be found on the website [www.foamglas.com](http://www.foamglas.com) or be provided upon request via the local customer service team.

## TABLE OF CONTENTS

GENERAL CONTRIBUTION .....	4
CREDITS THAT REQUIRE DOCUMENTATION OF FOAMGLAS® PRODUCTS.....	5
MATERIALS AND RESOURCES .....	5
MR 2 ENVIRONMENTAL PRODUCT DECLARATIONS – OPTION 1 .....	5
MR 2 ENVIRONMENTAL PRODUCT DECLARATIONS – OPTION 2 .....	7
MR 3 RESPONSIBLE SOURCING OF MATERIALS.....	9
MR 4 MATERIAL INGREDIENTS.....	11
MR 2, 3, & 4 – LOCALLY SOURCED PRODUCTS.....	13
MR 5 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT .....	14
INDOOR ENVIRONMENTAL QUALITY.....	16
IEQ 2 LOW-EMITTING MATERIALS .....	16
CREDITS THAT REQUIRE NO DOCUMENTATION OF FOAMGLAS® PRODUCTS .....	18
SUSTAINABLE SITE .....	18
ENERGY AND ATMOSPHERE .....	19
INDOOR ENVIRONMENTAL QUALITY.....	20

## GENERAL CONTRIBUTION

The table below shows LEED assessment categories that FOAMGLAS® products contribute. In some credits the criteria's requirements can't be met with only one product, or credit awarding depends on many other aspects without any link on the products. Therefore, the "total credits available" on the level of the project, is the same or higher than the number of credit contribution by using FOAMGLAS® products.

	<b>Sustainable Sites</b>	<b>Total credits available</b>	<b>Contribution</b>
	SS Protect or restore habitat	2 (+1)	2 (+1)
	SS Open Space	1	1
	SS Rainwater management	3 (+1)	3 (+1)
	SS Heat island reduction	2 (+1)	2 (+1)
	<b>Energy and Atmosphere</b>	<b>Total credits available</b>	<b>Contribution</b>
	EA Optimized energy performance	18 (+1)	1 (+1)
	<b>Materials and Resources</b>	<b>Total credits available</b>	<b>Contribution</b>
	MR Environmental product declarations	2 (+1)	1 (+1)
	MR Sourcing of raw materials	2 (+1)	2 (+1)
	MR Material ingredients	1 (+1)	1 (+1)
	MR C&D waste management	2 (+1)	2 (+1)
	<b>Indoor Environmental Quality</b>	<b>Total credits available</b>	<b>Contribution</b>
	IEQ Low emitting materials	3 (+1)	1 (+1)
	IEQ Thermal comfort	1	1
	IEQ Acoustic performance	1 (+1)	1 (+1)

*Note: The +1 in the table means that there is an exemplary performance credit available if the exemplary level criteria of the credit have been met.*

## CREDITS THAT REQUIRE DOCUMENTATION OF FOAMGLAS® PRODUCTS

### Materials and Resources



#### MR 2 ENVIRONMENTAL PRODUCT DECLARATIONS – OPTION 1

#### FOAMGLAS® practices in brief

- Type III EPD's according to EN 15804 and ISO 14025

#### LEED V4 BUILDING DESIGN AND CONSTRUCTION

<b>FOAMGLAS® contribution</b>	<b>All FOAMGLAS® included products have a product specific type III EPD. FOAMGLAS® products contribute with 1 product for this credit.</b>
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<b>Assessment</b>	One credit can be achieved by using at least 20 different permanently installed products sourced from at least five different manufacturers have either a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 or an EPD according to ISO 14025, ISO 14040 and ISO 14044 and EN 15804 or ISO 21930.
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<b>Documents</b>	Product specific EPD's from company website
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## LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

<b>FOAMGLAS® contribution</b>	<b>All FOAMGLAS® included products have a product specific type III EPD. FOAMGLAS® products contribute with 1,5 product for this credit.</b>
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### Assessment

One credit can be achieved by using at least 20 different permanently installed products sourced from at least five different manufacturers (10 different permanently installed products from three different manufacturers for Core & Shell and Warehouses & Distribution Centers) that have either a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 or an EPD according to ISO 14025, ISO 14040 and ISO 14044 and EN 15804 or ISO 21930.

In Core and Shell and Warehouses and distribution centres systems only 10 products are required.

### Documents

Product specific EPD's from company website

## FOAMGLAS PRACTICES IN DETAIL

- FOAMGLAS® EPD's for all included products follow the ISO 14025 and EN 15804 standards. These type III EPD's include products produced in the Belgium (T3+, T4+, S3 and F) and Czech (T3+ and T4+) factories.
- EPD's are on 4 different program operator databases (France, Germany, Belgium, and Netherlands)
- The EPD's have Cradle to Grave -scope.

## MR 2 ENVIRONMENTAL PRODUCT DECLARATIONS – OPTION 2

### FOAMGLAS® practices in brief

- **Type III EPD's** according to **EN 15804** and **ISO 14025**
- EPD's contain information on the **CO<sub>2</sub>, CFC-11, SO<sub>2</sub>, phosphate and ethene (C<sub>2</sub>H<sub>4</sub>)** emissions, additionally all the information according to EN 15804

## LEED V4 BUILDING DESIGN AND CONSTRUCTION

### FOAMGLAS® contribution

**Type III EPDs contain information on the amounts of emissions in the following categories: CO<sub>2</sub>, CFC-11, SO<sub>2</sub>, phosphate and ethene (C<sub>2</sub>H<sub>4</sub>) which account for four of the required categories. This credit can not be awarded yet with Option 2 because impacts categories are not benchmarked, but we are looking into publishing Optimized EPDs in the upcoming years.**

### Assessment

Based on costs, 50 % of the permanently installed products must be third party certified products that demonstrate impact reduction below industry average in at least three of the following categories: kg CO<sub>2</sub>-e; kg CFC-11, kg H+ or SO<sub>2</sub>; kg nitrogen or phosphate; and formation of tropospheric ozone ( kg NO<sub>x</sub>, kg O<sub>3</sub> or ethene C<sub>2</sub>H<sub>4</sub>) as well as depletion of nonrenewable energy resources (MJ). No specific programs have been approved yet.

### Documents

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## LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

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### FOAMGLAS® contribution

Type III EPDs contain information on the amounts of emissions in the following categories: CO<sub>2</sub>, CFC-11, SO<sub>2</sub>, phosphate and ethene (C<sub>2</sub>H<sub>4</sub>) which account for four of the required categories. This credit can not be awarded yet with Option 2 because impacts categories are not benchmarked, but we are looking into publishing Optimized EPDs in the upcoming years.

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### Assessment

Use at least 5 permanently installed products sourced from at least three different manufacturers that have a compliant embodied carbon optimization report or action plan separate from the LCA or EPD. Reports include such factors as reduction in GWP relative to baseline and reduction in impact categories (kg CO<sub>2</sub>-e; kg CFC-11, kg H+ or SO<sub>2</sub>; kg nitrogen or phosphate; and formation of tropospheric ozone (kg NO<sub>x</sub>, kg O<sub>3</sub> or ethene C<sub>2</sub>H<sub>4</sub>) as well as depletion of nonrenewable energy resources (MJ) ) relative to baseline

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### Documents

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## MR 3 RESPONSIBLE SOURCING OF MATERIALS

### FOAMGLAS® practices in brief

- Self-reported **Corporate Sustainability Report (CSR)** according to **GRI** guidelines
- Recycled content about 60 % in all products.

## LEED V4 BUILDING DESIGN AND CONSTRUCTION

<b>FOAMGLAS® contribution</b>	<p><b>Option 1 - Sustainability Report by OC according to GRI, third party verification from SCS Global Services according to AccountAbility's AA1000 Principles.</b></p> <p><b>Option 2 - FOAMGLAS® products contain about 60 % of recycled material by weight. The content and valuation vary between production plants.</b></p>
<b>Assessment</b>	<p>In option 1 (1 point), use at least 20 different permanently installed products from at least five different manufacturers that have publicly released a report from their raw material suppliers which include raw material supplier extraction locations, a commitment to long-term ecologically responsible land use, a commitment to reducing environmental harms from extraction and/or manufacturing processes, and a commitment to meeting applicable standards or programs voluntarily that address responsible sourcing criteria.</p> <p>AND/OR</p> <p>In option 2 (1 point), use products that meet at least one of the responsible extraction criteria for at least 25%, by cost, of the total value of permanently installed building products in the project.</p>
<b>Documents</b>	<p>Owens Corning Sustainability Report from company website</p> <p>Assurance document for recycled content given upon request</p>

## LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

<b>FOAMGLAS® contribution</b>	<b>FOAMGLAS® products contain about 60 % of recycled material by weight. The content and valuation vary between production plants.</b>
<b>Assessment</b>	Use products sourced from at least three different manufacturers that meet at least one of the responsible sourcing and extraction criteria for at least 15% (1 point) or 30% (2 points), by cost, of the total value of permanently installed building products in the project. Exemplary from achieving 45 %.
<b>Documents</b>	Assurance document for recycled content given upon request

## FOAMGLAS® PRACTICES IN DETAIL

- When it comes to corporate sustainability reporting (CSR), FOAMGLAS® does self-reporting and follows the guidelines of GRI (Global Reporting Initiative) providing information on the company's sustainable practices and principles. The report is verified by SCS Global Services according to AccountAbility's AA1000 Principles
- Recycled content of FOAMGLAS® products is about 60%. From the total content 25 % is counted as post-consumer material which includes materials from glass specialized waste/recycling companies. 35 % of the total content is counted as pre-consumer recycled material.

## MR 4 MATERIAL INGREDIENTS

### FOAMGLAS® practices in brief

- No substances listed on the **REACH Authorization** or **Candidate** list used in FOAMGLAS cellular glass products

## LEED V4 BUILDING DESIGN AND CONSTRUCTION

<b>FOAMGLAS® contribution</b>	<p><b>FOAMGLAS® cellular glass products contain no substances of very high concern listed in the REACH Authorization or Candidate list</b></p> <p><b>Contribution towards option 2. Products are valued at a 100 % weight (by cost) in the credit calculations.</b></p>
<b>Assessment</b>	<p>In option 1 (1 point), Use at least 20 different permanently installed products from at least five different manufacturers that use any of the identified programs to demonstrate the chemical inventory of the product to at least 0.1% (1000 ppm).</p> <p>AND/OR</p> <p>In option 2 (1 point), use products that document their material ingredient optimization using the paths identified in the criteria for at least 25%, by cost, of the total value of permanently installed products in the project.</p>
<b>Documents</b>	<p>REACH exemption report given upon request</p> <p>Material content in eBVD documents, found at Swedish company website</p>

## LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

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<b>FOAMGLAS® contribution</b>	<b>FOAMGLAS® cellular glass products contain no substances of very high concern listed in the REACH Authorization, Candidate or Restriction list.</b> <b>Contribution towards option 2. Products are valued at a 100 % weight (by cost) in the credit calculations.</b>
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### Assessment

In option 1 (1 point), use at least 20 different permanently installed products from at least five different manufacturers that use any of the identified programs to demonstrate the chemical inventory of the product to at least 0.1% (1,000 ppm). (10 different permanently installed products from at least three different manufacturers for CS and Warehouses & Distribution Centers)

AND/OR

In option 2 (1 point), Use products that have a compliant material ingredient report or action plan. Use at least 5 permanently installed products sourced from at least three different manufacturers. Exemplary from 10 products from 5 different manufacturers.

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### Documents

REACH exemption report given upon request

Material content in eBVD documents, found at Swedish company website

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## FOAMGLAS® PRACTICES IN DETAIL

- FOAMGLAS® cellular glass products do not contain (nor are they added in production) substances mentioned in the Candidate list (substances of very high concern), Authorization list or Restriction list of REACH, therefore products apply with the compliant material ingredient report.
- Glass as a material is exempted from REACH registration according to Annex V

## MR 2, 3, & 4 – LOCALLY SOURCED PRODUCTS

### LEED V4 AND V4.1 BUILDING DESIGN AND CONSTRUCTION

<b>FOAMGLAS® contribution</b>	<b>FOAMGLAS® production plants are located in Tessenderlo, Belgium and Klasterec, Czech Republic.</b>
<b>Assessment</b>	V4 & V4.1: For credit achievement calculations (in MR 2, MR 3 and MR 4), products sourced (extracted, manufactured and purchased) within 160 km (100 miles) of the project site are valued at maximum of 200% of their base contribution cost.
<b>Documents</b>	Documents are given upon request

### FOAMGLAS® PRACTICES IN DETAIL

- FOAMGLAS® products are manufactured in Tessenderlo, Belgium and Klasterec, Czech Republic. Raw materials are harvested from various locations in Europe. Further details on regional materials and harvesting or production locations of various FOAMGLAS® products will be given project-specifically upon request.

## MR 5 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

### FOAMGLAS® practices in brief

- The FOAMGLAS® cellular glass products are reusable and recyclable

## LEED V4 BUILDING DESIGN AND CONSTRUCTION

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### FOAMGLAS® contribution

**FOAMGLAS® cellular glass is recyclable and can help the constructor to meet their recycling targets, if insulation waste materials are collected separately.**

**Contribution towards option 1 for 2 credits, 75 % recycling rate.**

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### Assessment

In option 1 (1-2 points), at least 50 % of the construction site or demolition waste, including waste from a minimum of three different waste streams, has to be recycled. An additional point is awarded if the recycling rate exceeds 75 % and at least 4 different waste streams included.

OR

In option 2 (2 points), do not generate more than 2.5 pounds of construction waste per square foot (12.2 kg of waste per square meter) of the building's floor area.

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### Documents

No documents needed

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## LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

### FOAMGLAS® contribution

**FOAMGLAS® cellular glass is recyclable and can help the constructor to meet their recycling targets, if insulation waste materials are collected separately.**

**Contribution towards both options, 50 % recycling rate (1 credit) or less than 75 kg/m<sup>2</sup> through reuse and source reduction design (2 credits).**

### Assessment

In option 1 (1 point), by following the Waste Management Plan divert at least 50% of the total construction and demolition materials from landfills and incineration facilities.

AND/OR

In option 2 (1-2 points), prevent waste through reuse and source reduction design strategies. Generate less than 75 kg/m<sup>2</sup> (1 point) or 50 kg/m<sup>2</sup> (2 points).

### Documents

No documents needed

## FOAMGLAS® PRACTICES IN DETAIL

- FOAMGLAS® products can be recycled on the site or send back to the manufacturer
- A layer of FOAMGLAS® products can be reused as a substrate for new layer of FOAMGLAS® product

## Indoor Environmental Quality



### IEQ 2 LOW-EMITTING MATERIALS

#### FOAMGLAS® practices in brief

- **NaturePLUS** for all products - VOC emission evaluation

### LEED V4 BUILDING DESIGN AND CONSTRUCTION

#### FOAMGLAS® contribution

**All FOAMGLAS® products have NaturePLUS certification which is valid for VOC emission evaluation.**

**Contribution towards ceiling, wall, thermal and acoustic insulation category.**

#### Assessment

Achieve the threshold level of compliance with emissions and content standards for the number of product categories introduced. Credits based on the project scope, 2-7 categories for 1-3 credits.

Ceilings, walls, thermal and acoustic insulation products are evaluated as one category and evaluation is based on the General Emissions Evaluation (VOC emission evaluation). 100 % of the ceilings, walls, thermal and acoustic insulation products must meet the evaluation.

#### Documents

NaturePLUS certifications from company website



## LEED V4.1 BUILDING DESIGN AND CONSTRUCTION

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### FOAMGLAS® contribution

All FOAMGLAS® products have NaturePLUS certification which is valid for VOC emission evaluation.

**Contribution towards insulation category.**

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### Assessment

Use materials on the building interior (everything within the waterproofing membrane) that meet the low-emitting criteria. Points are awarded according to number of categories counted as low-emitting. 2-4 categories for 1-3 credits. Exemplary for additional category (5th) or 90 % threshold achieved in three categories (additional point if only 2 credits achieved).

At least 75 % of the insulation materials must meet the VOC emission evaluation for the category to be counted as low-emitting.

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### Documents

NaturePLUS certifications from company website

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## FOAMGLAS® PRACTICES IN DETAIL

- All FOAMGLAS® products have NaturePLUS classification, which is compliant with the General Emission Evaluation to be counted as low-emitting materials in the Insulation category for V4.1 and ceiling, wall, thermal and acoustic insulation category for V4.

## CREDITS THAT REQUIRE NO DOCUMENTATION OF FOAMGLAS® PRODUCTS

FOAMGLAS® products have a general contribution towards following categories and credits. Products can be used in systems that have effect on the credit but by themselves have no effect whether the credit is achieved or not. Therefore, no documentation is needed to prove credit compatibility.

### SUSTAINABLE SITE

#### SS 2 – Protect or Restore Habitat

*Preserve and protect from all development and construction activity 40% of the greenfield area on the site (if such areas exist).*

AND

*Restore a portion of the site (including the building footprint) identified as previously disturbed and follow vegetation and soil requirements below. **Vegetated roof surfaces** may be included in the habitat area calculations if the plants are native or adapted and provide habitat.*

Thanks to its loadbearing properties as well as its fully waterproof behaviour, FOAMGLAS® insulation solutions are the most secure insulation support to achieve enhanced site ecology as part of the green roof system.

FOAMGLAS® products can be used as a part or vegetated roof system. Vegetated roofs can be included in the area calculations if plantations are done according to the requirements and other credit requirements are achieved.

#### SS 3 – Open Space

*Provide outdoor space greater than or equal to 30% of the total site area (including building footprint). At least 25% of the calculated outdoor open space must be vegetated space planted with two or more types of vegetation or have overhead vegetated canopy.*

Thanks to its loadbearing properties as well as its fully waterproof behaviour, FOAMGLAS® insulation solutions are the most secure insulation support to achieve enhanced site ecology as part of the green roof system.

FOAMGLAS® products can be used as a part or vegetated roof system. Vegetated roofs are counted as open space and vegetated area (if the roof is accessible for people) in the credit calculations.

## SS 4 - Rainwater Management

**Option 1** - In a manner best replicating natural site hydrology processes, retain on site the runoff from the associated percentile of regional or local rainfall events. The percentile event volume must be retained (i.e. infiltrated, evapotranspired, or collected and reused) using **low-impact development (LID)** and green infrastructure (GI) practices. GI and LID strategies can be either structural or non-structural.

**Option 2** - Calculate the difference between the projected runoff volume under the proposed design conditions and the runoff volume under natural land cover conditions that existed prior to any disturbance. Retain (i.e. infiltrate, evapotranspire, or collect and reuse) on site the increase in runoff volume using **LID** and GI practices.

Thanks to its loadbearing properties as well as its fully waterproof behaviour, FOAMGLAS® insulation solutions are the most secure insulation support to achieve enhanced site ecology as part of the green roof system.

FOAMGLAS® products can be used as a part of vegetated roof system, which are counted as low-impact development (LID) practices.

## SS 5 – Heat Island Reduction

**Option 1** – Provide area of nonroof measures, high-reflectance roof and **vegetated roof** larger than the total site paving area. Nonroof measures is weighed at 0,5, high reflectance roof and **vegetated roof** are weighed at 0,75.

**Option 2** - Place a minimum of 75% of parking spaces under cover. Any roof used to shade or cover parking must (1) have a three-year aged SRI of at least 32 (if three-year aged value information is not available, use materials with an initial SRI of at least 39 at installation), (2) **be a vegetated roof**, or (3) be covered by energy generation systems, such as solar thermal collectors photovoltaics, and wind turbines.

Thanks to its loadbearing properties as well as its fully waterproof behaviour, FOAMGLAS® insulation solutions are the most secure insulation support to achieve enhanced site ecology as part of the green roof system.

FOAMGLAS® products can be used as a part of vegetated roof system. Area of the vegetated roof is divided with 0,75 in the credit calculations. This equals larger contribution area for the calculations

## ENERGY AND ATMOSPHERE

### EA 2 – Optimize Energy Performance

Analyze efficiency measures during the design process and account for the results in design decision making. Use energy simulation of efficiency opportunities, past energy simulation analyses for similar buildings, or published data (e.g., Advanced Energy Design Guides) from analyses for similar buildings.

*Analyze efficiency measures, focusing on load reduction and HVAC-related strategies (passive measures are acceptable) appropriate for the facility. Project potential energy savings and holistic project cost implications related to all affected systems.*

FOAMGLAS® products can be used as a part of building envelope, which influences the total energy efficiency of the building, and therefore effect on the credit calculations.

## INDOOR ENVIRONMENTAL QUALITY

### IEQ 5 – Thermal Comfort

*Design heating, ventilating, and air-conditioning (HVAC) systems and **the building envelope** to meet the requirements of ASHRAE Standard 55–2017, Thermal Comfort Conditions for Human Occupancy with errata or a local equivalent.*

FOAMGLAS® products can be used as a part of building envelope, which influences the thermal conditions of the building, and therefore effect on the credit calculations.

### IEQ 9 – Acoustic performance

*Provide workspaces and classrooms that promote occupants' well-being, productivity, and communications through effective acoustic design.*

*For all occupied spaces, meet two of the following: HVAC background noise, Sound Transmission, and/or Reverberation time. Meet all three for an exemplary performance point.*

FOAMGLAS® products can also be used as an acoustic insulation material.