



FOAMGLAS® | PAROC® | THERMAFIBER®

TECHNICAL NEWSLETTER

THE IMPORTANCE AND BENEFITS OF INDUSTRIAL ACOUSTICS IN COLD AND CRYOGENIC APPLICATIONS.

Industrial processes are often noisy as the operations and installations to process and produce (petro)chemicals often include high pressure and high temperature equipment. This can generate excessive noise which could be hazardous to workers and the environment.

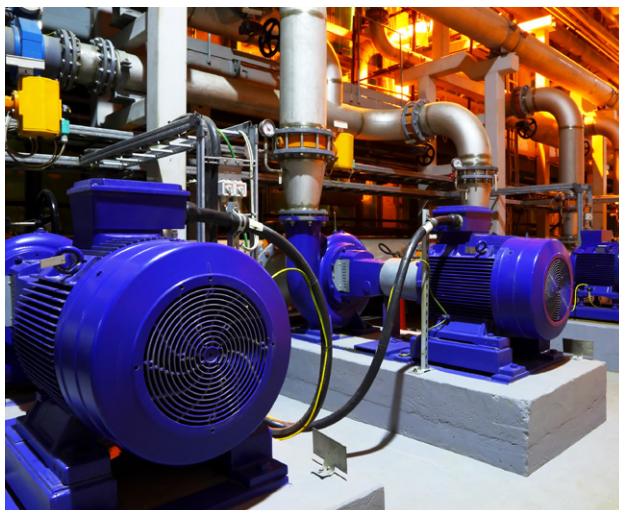
Owens Corning has multiple acoustic insulation systems available that can help you with the mitigation of excessive noise attenuation from processing piping and equipment.

What is sound and noise pollution?

Sound is a mechanical vibration that manifests as an acoustic wave through a medium and which is perceived by the human ear in the frequency range of 16 Hz to 16,000 Hz. A frequency can be defined as the number of vibrations per second. The pitch rises as frequency increases.

Noise is a sound that is perceived as loud, unwanted or unpleasant and that causes disturbance and at certain levels and durations of exposure it can even have deleterious effects on human health and environmental quality.

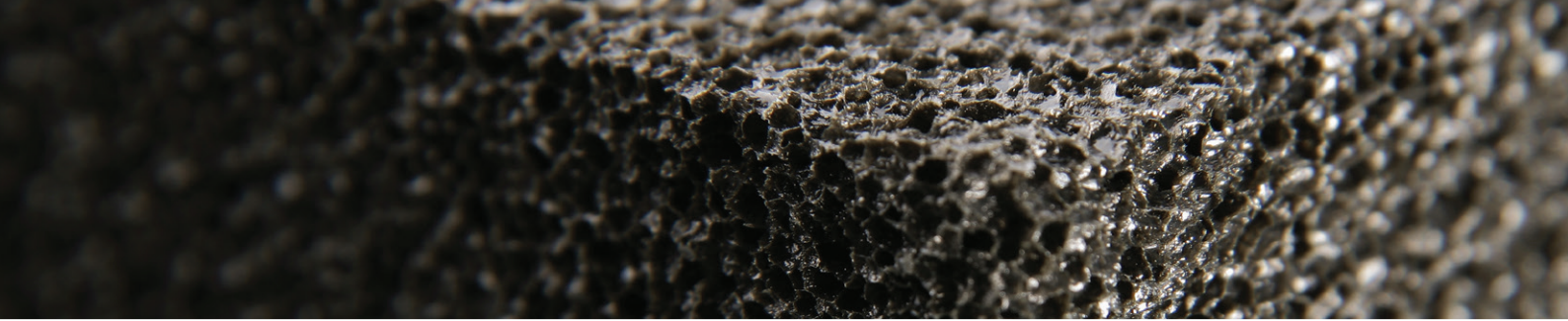
Not all sound is considered noise pollution. The World Health Organization (WHO) defines noise above 65 decibels as noise pollution (WHO - Environmental Noise Guidelines, 2018). To be precise, noise becomes harmful when it exceeds 75 decibels and is painful above 120 decibels. Exposure to noise pollution can negatively impact health and behavior for both humans and wildlife present in the environment.



Why should you care about industrial acoustics?

Industrial processes are often very noisy as the operations and equipment to process and produce (petro)chemicals often include high pressure and high temperature pumps, compressors, blowers, agitators and coolers, with limited barriers in place to restrict equipment noise from carrying beyond the confines of the installations.

The introduction of stringent health, safety and environmental regulations has led to an increase in importance when considering noise control around industrial processes. The aim of these regulations is to ensure that worker's hearing is protected by preventing them to be subject to high levels of noise which could cause long-term hearing damage. (work environments often easily go over the 80 - 85 dB(A) limit requiring workers to wear hearing protection)



From an environmental point of view, these regulations have been put in place to keep industrial facilities' property sound levels below the required noise levels that vary by zoning.

The preferred way of improving the noise protection is adding sound control to the features during installation to keep the sound levels below the required limit when the installations is operating again.

Not installing the correct acoustic protection can potentially result in expensive remedial costs and/or prohibition of use a certain installation because of a non-compliance with HSE regulations.



Insertion loss and the ISO 15665 test method

Much like sound transmission loss, insertion loss measures the amount of sound an insulation blocks as it travels through the insulation system. Insertion loss is the difference in sound power between an uninsulated pipe and an insulated pipe.

The test method used to test insertion loss is ISO 15665:2003 Acoustics - Acoustic insulation for pipes, valves and flanges.

The ISO 15665 standard was designed to enable engineers to specify the correct insulation type and thickness to achieve a specific noise level reduction. The standard is classified in 3 classes of acoustic insulation that are denoted A, B and C, in terms of requirements for minimum insertion loss. An addition to this requirement is system "D" created by one of world's largest oil and natural gas producers.

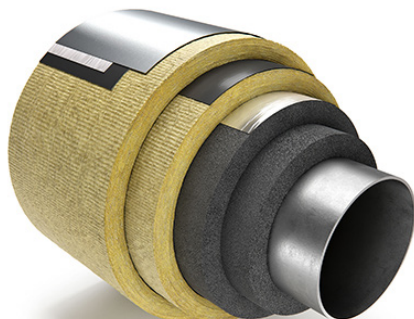
Acoustical solutions for cold & cryogenic applications.

Noise mitigation starts with right choice of equipment, material and well-planned layout. Using a proper acoustic insulation system to limit the emitted sound levels at the operating equipment and connecting pipework has shown to be one of the most effective methods to protect the workforce against excessive noise attenuation from process lines.

Excessive noise is often generated at LNG facilities by equipment that is being used during liquefaction, regasification or even just during loading/unloading.

Acoustical insulation systems are therefore often specified for the reduction of noise. For LNG or ethylene projects, insertion loss per class C and class D are typically needed.





Owens Corning has developed a new acoustic insulation system for cryogenic applications that benefits from the cryogenic properties of cellular glass insulation in combination with the acoustic properties of mineral wool.

The system is constructed of a traditional FOAMGLAS® cellular glass insulation system designed for cryogenic thermal insulation performance, and then overfit with a PAROC® mineral wool system¹ designed and tested for class C or D compliance.

By designing and testing for ISO 15665 compliance of the composite cellular glass + mineral wool system, class C or D can be achieved using less additional material which can help to reduce system weight, necessary labor, and installed costs.

¹ Thermafiber® Pro Section WR/ Industrial Wrap is available in North America. It is equivalent to PAROC® Pro Section WR 120/ Pro Mat.

Potential savings and other benefits

1. Lower material cost

By using a combined FOAMGLAS® cellular glass insulation system in combination with PAROC® mineral wool, you will be able to reduce the material thickness of the top layer needed to achieve class compliance.

2. Lower labor cost

Because the top layer can be reduced in thickness you can also reduce the cladding thickness and reduce the mass layer making the total system easier to handle and to install. This can in turn lead to quicker installations and lower labor costs.

3. Less weight on pipe

By being able to use a lower mineral wool density in combination with reduced cladding thickness and a reduction in the mass layer, the total weight on the pipe will be lower.



The information contained herein is accurate and reliable to the best of our knowledge. But, because Pittsburgh Corning LLC has no control over installation workmanship, accessory materials or conditions of application, NO EXPRESSED OR IMPLIED WARRANTY OF ANY KIND, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS MADE as to the performance of an installation containing Pittsburgh Corning LLC products. In no event shall Pittsburgh Corning LLC be liable for any damages arising because of product failure, whether incidental, special, consequential or punitive, regardless of the theory of liability upon which any such damages are claimed. Pittsburgh Corning LLC provides written warranties for many of its products, and such warranties take precedence over the statements contained herein.

FIBERGLAS™ | FOAMGLAS® | PAROC® | THERMAFIBER® | FOAMULAR®



Pittsburgh Corning LLC
ONE OWENS CORNING PARKWAY
TOLEDO, OHIO, USA 43659

For web-based Sales and Technical
Service inquiries, please visit
www.foamglas.com

To contact by phone or email:

**Industrial & Commercial Sales
Americas**
+1 800-327-6126

Asia-Pacific
Singapore: + 65 9635-9184
China: +86 (0) 21 6101 7179
Japan: +81 3 6365 4307

Europe, Middle East & Africa
+32 13-661-721

**Technical Services
Americas & Asia Pacific**
+1 800-327-6126
foamglastechnical@owenscorning.com

Europe, Middle East & Africa
+32 13-611-468
Industry.tech@owenscorning.com