

Welcome back to fibreglass...?

NAIMA.

Supported by nearly 20 companies, which produce the vast majority of the fibreglass, rock and Slag wool insulation in the USA and Canada, NAIMA cannot claim to be unbiased. It has led the campaign to give fibreglass a good image. There are different practices in North America and Europe for the use of duct linings for noise control. In general, Europeans use separate splitter silencers, with external thermal insulation on the ducts. American design tends to use long lengths of internally lined duct for both thermal insulation and noise control. So the glass fibre noise control question looms larger in North America.

NAIMA attacks the 'myths'.

NAIMA produces persuasive literature and supports research to bolster its cause. It claims to have demolished the four main 'myths' about fibreglass:

1. Fibre glass duct insulation contributes to mould growth.
2. Fibre glass duct insulation degrades over time
3. Fibres erode from the airstream surface
4. Fibre glass duct insulation cannot be successfully cleaned.

NAIMA claims that fibreglass in ducts, for noise control or other purposes, is a good, clean, harmless

substance. Indeed without fibreglass, the acoustical environment within air conditioned buildings would be "greatly compromised".

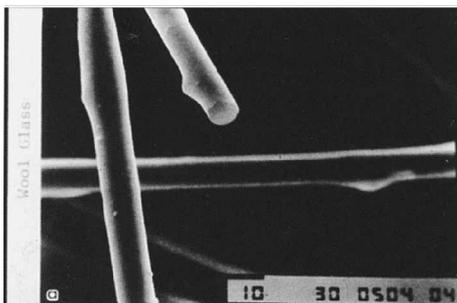
Mould growth is not specific to fibreglass but will occur in the presence of dirt for the mould to feed on, wherever moisture accumulates in the duct. Modern glass fibre materials incorporate abrasion resistance and integrated anti-microbial protection.

Standard measurements in the Underwriter's Laboratories have shown that fibreglass materials satisfied the test that "material of an air duct shall not break away, flake off or show evidence of delamination when air is passed through typical sections at 2.5 times the rated velocity". And NAIMA is delighted to quote a 1988 report of the World Health Organisation, which concluded that "fibres were not a cause of adverse health effects in building occupants". (Man-made Mineral Fibres. Environmental Health Criteria No. 77. WHO, 1988).

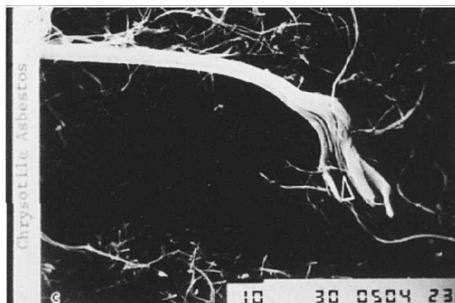
But are they myths?

Despite NAIMA's bullish confidence, which, of course, is a reaction to the attacks its materials have suffered and the potential commercial consequences for its members, others are more cautious. ASHRAE's quarterly publication 'IAQ Applications' carries in its first issue (Winter 2000), an article on 'Duct Liner: An Engineers

The widespread use of fibreglass and similar products for noise control, especially in HVAC systems, has been a cause of concern for health ever since asbestos fibre was shown to be hazardous. Although the asbestos manufacturers finally accepted that they inadvertently caused illness and death, and paid out huge compensation, fibreglass manufacturers protest the innocence of their product. In North America, the pro-fibreglass campaign has been led by the North American Insulation Manufacturers Association (NAIMA).



Glass Fibre, magnified 1000 times



Asbestos Fibre, magnified 1000 times

A comparison of Glass and Asbestos Fibres, showing how asbestos splits into ultra-fine, penetrative filaments. (NAIMA)

Perspective', by Consulting Engineer Steven Taylor. Taylor points out that until about five years ago most buildings had significant amounts of duct liner, but IAQ (Indoor Air Quality) specialists are increasingly questioning these practices. He gives as his reasons the very same four 'myths', which NAIMA has tried so hard to demolish and believes that the jury is still out on the significance of these. He recommends alternative noise control methods to the use of long lengths of lined ducts, including:

- Sound traps (Silencers) with a Mylar facing to the material
- Designing low pressure drop systems, which include slower and quieter fans
- Plenums. Abrupt discharge and intake plenums are effective noise attenuators, but the increased pressure loss must be accepted.
- Alternative liner materials, such as close cell foam, even though these are less effective than fibre glass.

Taylor's consultancy has modified its designs and specifications for typical projects. Their present approach includes:

- Not to use liner for thermal insulation alone, but only where it is definitely required for sound attenuation.

- Keep liner well away (3m) from potentially 'wet sections'.
- Use linings with toughened facings.
- If a liner might be damaged, for example in large plenums to which maintenance staff have access, use a perforated metal cover.
- Keep liner dry during storage on site.
- Cover liner with Mylar facing in particularly sensitive installations such as hospitals.

ASHRAE's input

ASHRAE's Technical Committee on Sound and Vibration Control reinforces Taylor's caution. Following a review of the scientific information, ASHRAE concludes in the 1999 Applications Handbook,

- Although there is some indication that manufactured fibre materials is carcinogenic, the balance of evidence is that a connection has not been proven.
- Removal of fibreglass from ducts will have implications on duct lengths, fan sizes, installation of plenums, whilst the alternative coated absorbers may be less effective. Complete removal of fibreglass may result in spaces with sensitive acoustics becoming unusable.

Cerainteed's ToughGard™ Duct Liner is overlaid with a tough water repellent surface, whilst maintaining acoustic absorption.



- Acoustical duct lining is both a reasonable and cost effective method of noise control, provided that it is properly installed.

In order to give an airing to the very real concerns, which many have, ASHRAE Sound and Vibration Committee organised a discussion forum at the February 2000 meeting in Dallas to enable participants to share their experiences of the use of fibreglass. An hour-long session brought out the main problems experienced by practitioners.

Many had come across problem installations and others had anecdotal evidence. Some felt that there was always a risk that fibreglass would be declared a carcinogen sometime in the future, so its use should be minimised. Silencer manufacturers recommended that for hospitals, clean rooms, schools etc, fibrous material should have a protective barrier, such as Mylar over the fibreglass, but consultants felt that this degraded the acoustical performance. An alternative is packless silencers, requiring a greater length to achieve attenuation. Active silencers could be completely fibre-free, although hybrid systems are commonly used.

A recommendation for lower design velocities to reduce erosion was countered by the suggestion that higher velocities would eliminate stagnant zones where microbes breed. It was also confirmed that fibreglass should be kept well clear of cooling coils and other potentially wet areas.

A consensus, which developed during the forum, was that correct installation and careful maintenance were essential for systems employing fibreglass internal duct liners. NAIMA has publications on installation, but ASHRAE has not yet produced its own detailed guidance on design, operation and maintenance.

The hygiene protection required for those who work with fibreglass products, causes anxiety in others whose exposure is minimal. So, whilst there is a legitimate undercurrent of doubt about fibreglass, it is clear that it will continue to be used for all but the most sensitive installations, simply because it is so effective in what it does, and at considerably lower cost than other methods.

Information:

www.naima.org
www.ashrae.org

parliament

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Noise complaints

On the 25th July, in The House of Commons, Mr Vernon Coaker asked the Deputy Prime Minister what guidelines he has sent to local authorities on the procedures for notifying those against whom complaints have been made about excessive noise prior to an investigation

being made; and if he will make a statement.

Mr. Meacher replied,

There is no formal procedure for notifying those against whom complaints have been made about excessive noise prior to an investigation being made. However, the types of noise complaints that local authorities are called upon to investigate vary considerably and not all will be considered by the investigating officer to

constitute a statutory nuisance. It is common for complaints to receive at least some investigation before the person or business against whom the complaint is made is approached or advised of its receipt.

It is not practicable to set out procedures that will satisfy all situations and it is often best that the most appropriate response to a particular complaint is judged by the case officer in the light of his or her knowledge and experience.'