



# Solutions: Machinery Space Insulation

SOUND SHIELD

ENGINE

SERVICE CHANNEL

Soundown has been a leader in supplying noise control materials in yachts applications for over 30 years. In this time we have seen the insulation in machinery spaces evolve from a rare luxury found only on select vessels to a standard component of every vessel. However, while insulating the machinery space is now a standard, the type of materials and the insulation system requirements are anything but standard.

Machinery space insulation packages must meet specification requirements related to shipboard noise levels, structural fireprotection, weight limits, appearance/finish and fit within the space allowed by the designer.

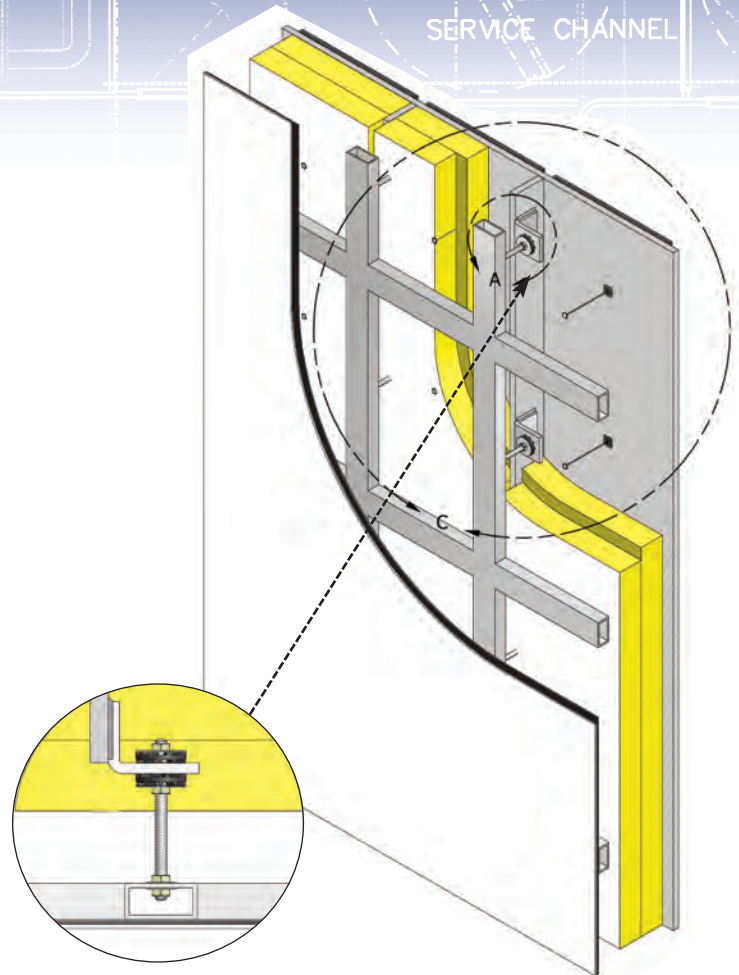
Soundown's Machinery Space Insulation System is specified from our selection of insulating blankets or boards (fibrous, foam and nonwovens), mass layers, isolation components and finish materials. The diagram to the right details two layers of insulating blanket and a grid hanging on Ring/Bushing mounts supporting a QuietClad damped finish panel. This is a typical system that provides a fire rating of up to A-60\*, significantly increases the transmission loss of the bulkhead, and has an aesthetically pleasing and durable finish.

Insulating blankets serve two purposes in this system. First of these is structural fire protection. As an increasing number of vessels are being built to classification society guidelines, ratings of A-30 and A-60 have become the norm. Soundown offers materials with such ratings for bulkheads and decks aboard steel, aluminum and FRP vessels. In areas where A rated materials are not required, Soundown can supply materials with ratings ranging from not readily ignitable to incombustible.

The second purpose served by the insulating blankets is acoustic absorption. Acoustic absorption materials are installed both exposed and behind mass layers to reduce the amount of noise transmitted to accommodations and on deck areas of the vessel. Soundown can aid in selecting the proper type and thickness of these materials based on information in a vessels specification.

Soundown's selection of mass layers includes lead, Tuffmass (barium loaded vinyl) and QuietClad (damped metal sheet). Mass layers can be added between layers of insulation blanket as a premade composite or assembled in place and in the case of QuietClad can also be installed as a finish material. This system of insulating blanket and mass layer creates a decoupled mass layer effect, significantly increasing the transmission loss of a bulkhead as compared to untreated bulkheads of similar mass.

\*Fire rating are dependant on insulation material, substrate and proper installation



Machinery spaces aboard today's yachts must combine form with function. Soundown's QuietClad provides an attractive, cleanable finish in addition to its acoustic advantages. In areas where absorption is needed, Soundown QuieTech perforated aluminum is recommended. Both of these materials can be installed on an isolated grid system or attached to ship structure. When isolated, the grid provides a solid foundation for mounting the finish and, when isolated, reduces the acoustic energy transmitted to ship structure.

Soundown's Machinery Space Insulation System is adaptable and designed to be tailored to your specific application. Whether you are building a vessel capable of sailing around the world without touching land or set a trans ocean speed record, Soundown has the experience and products help you meet these goals in peace and quiet.



2010.1.A

DUAL-LIFT (0.123m<sup>2</sup>)

8"ID (203,2mm) ENGINE EXHAUST PIPE



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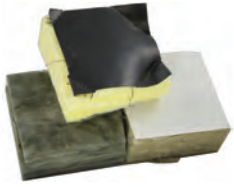
SOUNDOWN CORPORATION

ACOUSTIC INSULATION DETAIL

SIZE: A PART NO.: W/1010 DWG NO.: 1010

SCALE: NONE DATE: 09-00-10 SHEET

## Insulation Blankets/Boards



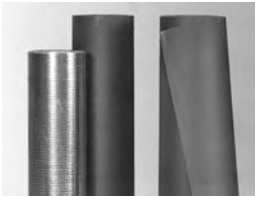
Soundown's range of insulation materials include Rockwool (mineral wool), Firemaster (Ceramic), Promoguard (silica) and Polyimide Foam as well as a range of fiberglass, urethane foam and non wovens. The materials can be fabricated with a number of mass layer and/or facing options to provide required transmission loss and aesthetic characteries.

Individual data sheets available for the Soundown insulation products.

### ADVANTAGES

- Polyimide Foam offer a light wieght option at 0.4lbs/ft<sup>2</sup> (6.4kg/m<sup>3</sup>).
- A rated\* options available for Steel, Aluminum and FRP bulkhead and deck constructions.
- Weight and Thickness customizable for optimal performance
- Wide range of materials and facing options.

## Mass Layers



Soundown's range of barriers are designed to to combine high mass in a low guage thickness with damping to provide a superior mass barrier affect. Tuffmass, a barium loaded vinyl sheet, and lead are avialble with or without a rininforced backing and are suitable for use in a numbr of machinery space applications.

QuietClad is a highly damped sheet metal product That can either be used as a finish as described below installed behind perforated cartridges with acoustic fill.

### ADVANTAGES

- Increase transmission loss of bulkhead assmeblies by up to 30dBA
- Highly adaptable for use in a wide range of shipboard applications

## Finish Materials



Soundown's QuietClad damped metal sheet is a composite of two steel or aluminum skins with a constrained damping layer. The acoustic propertied of the metal's mass is improved by the addition of damping and provides a highly affective mass layer that increases transmission loss of airborne noise.

Soundown's QuieTech is an 0.040" thick perforated aluminum sheets, powered coated white, with an black acoustic backing. The open weave of the backing provides increased flow resistance which improves the acoustic absorption over materials without acoustic backing.

### ADVANTAGES

- Perforated and solid finshes available, either white or unfinished.
- QuieClad acts as a finish materials and mass layer.
- QuieTech is pretreated with acouistic backing that provides enhanced acoustic absorption when compared to untreated perforated sheet.

## Isolation Grid



Typically engine room overhead finished are suspended on a frame or grid that is suspended on threaded rod protruding through the structural fire protection material. isolating the grid on rubber mounts isolates structure noise that originates from the acoustic excitation of the finish panel.

Soundown Ring/Bushing Mounts are a two piece mount that can be easily incorporated into a yard's standard hanging grid system and is an effective isolator in both tension and extension. Also avialble is Soundown's IsoGrid System that provides all necessary components to build a suspended overhead grid.

### ADVANTAGES

- Options available that are easily adapted to yard a variety of constructions or complete solutions.
- Signifiant reduction of acstically driven structure borne noise.

*\*Fire rating are dependant on insulation material, substrate and proper installation*

*All statements herein are expression of opinion that we believe to be accurate and reliable, but are presented without guaranty or responsibility on our part.*

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