

SEKISUI

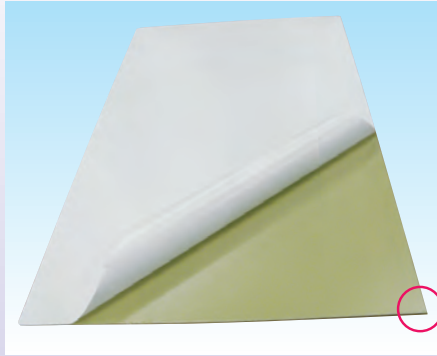


**The Cutting-Edge Technology reduces
Noise and Vibration**

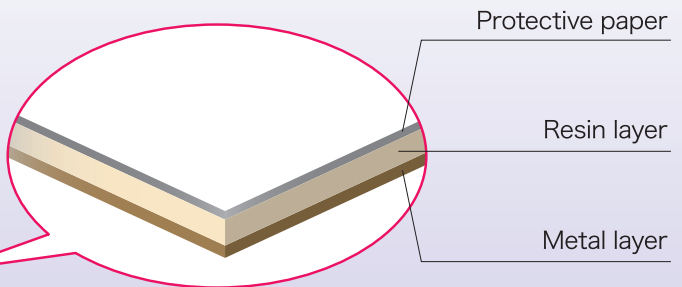


CALMMOON
Calmmoon Sheet
Simple as "peel and stick"





Cross-section view

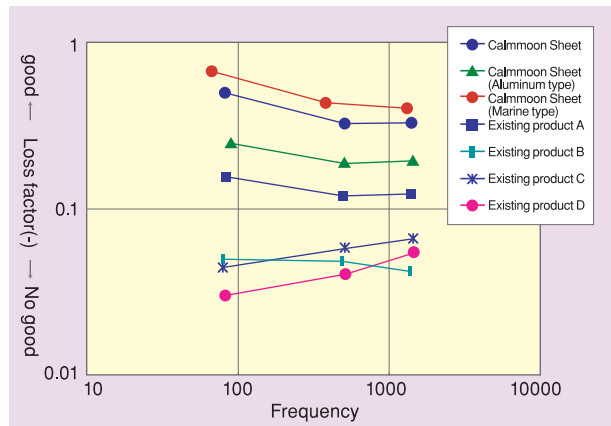


High vibration absorbing property

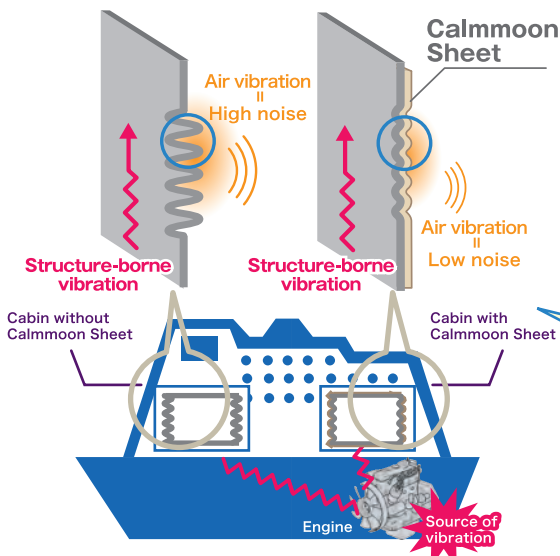
Calmmoon has significantly higher vibration absorbing capabilities than other existing vibration damping materials. It provides high damping performance in any level ranging from low frequency to high frequency.

[Measuring method]

The vibration absorbing capabilities were measured on a 1.6-mm SPC steel plate to which the noise insulation material was adhered. The adopted measuring method was the center excitation method in compliance with JIS G0602 (20° C); the half power band width technique was applied to the calculation of loss factor.



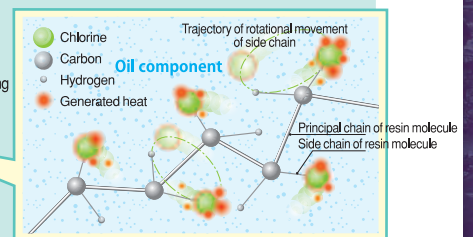
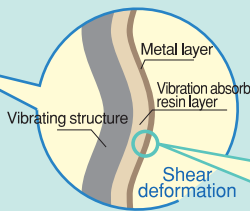
What is the vibration absorption?



Vibration Absorbing Mechanism Adopted for Calmmoon Sheet

Conversion of the vibration energy as frictional heat → Reduction of vibration

Periodic flexural deformation → Periodic shear deformation on vibration absorbing resin → Local motion of polymer molecules → Frictional heat



Local motion of polymer molecules

●What does the name Calmmoon represent?

Providing the quiet to homes in the midnight' is the origin of concept from which the development of Calmmoon started. As its image suggests, the name comes from 'Calm Moon'.

Nonflammability

With the combination of flame retardant resin (equivalent to UL94V-0) and various types of metal layers, the product is certified as a non flammability material for various applications.

■ Construction-related certification

Compliant products: 305K03S, 305K58

Certification authority Ministry of Land, Infrastructure and Transport (NM-0767)

■ Marine application-related certification

Compliant products: 305K58

Certification authority Nippon Kaiji Kyokai (NK) (06FPA35CV) EC TYPE EXAMINATION (MED) Ministry of Land, Infrastructure and Transport (JG)

Certified category name Fire retardant veneer Primary deck covering

■ Railway-related certification

Compliant products: 305K03S

Testing authority Japan Railway Rollingstock & Machinery Association

Certified category name Flammability standard for railway rolling stock material 'Nonflammable'

■ Aircraft-related

Compliant products: 305K03S, RSSK25

Testing standard CFR PART25.853(a) [Amdt.25-116] Appendix F Part 1



NM-0767



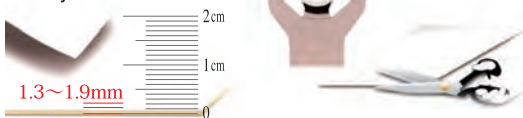
06FPA35CV



Railway-related certification

Easy installation/ Thin and lightweight

With the adhesive liner on the resin layer, you can install Calmmoon Sheet only by sticking it to the desired structure. To adjust its size, you can simply cut it on the work floor. It is lightweight and easy to handle.



| | Standard type | Marine type | Aluminum type |
|-----------|----------------------|----------------------|----------------------|
| Weight | 3.8kg/m ² | 6.9kg/m ² | 3.4kg/m ² |
| Thickness | 1.3mm | 1.3mm | 1.9mm |

Environment-friendly

■ Compliant with the regulations on the hazardous substances for various industries

Calmmoon Sheet is compliant with the following regulations for the substances including Cd, Pd, Hg, Cr+6, PBB, PBDE and DMF: RoHS (Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment), ELV (End-of-Life Vehicles Directive) and EU Directive: 2009/251/EC.

■ Low VOC emission rate

The emission rate of VOC which is deemed to be one of the causes of sick building syndrome is kept much lower than the indicative limit value announced by the Ministry of Health, Labor and Welfare.

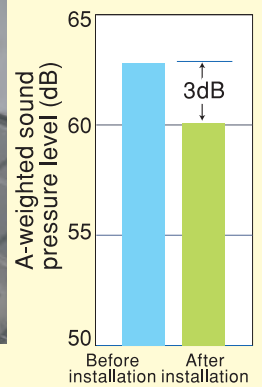
Ships and boats

Ice breaking ship 'Shirase'



Walls and floors: Reduce the noise through the vibration propagation from the facilities such as an engine room.

Effect in the application to ships (walls)



※The measurement data are the actual measurement values and not the guaranteed values.

Motorcycles and cars



Motorcycles and cars: Reduce the unpleasant vibrations and noise from the running vehicles and offer comfortable ride.

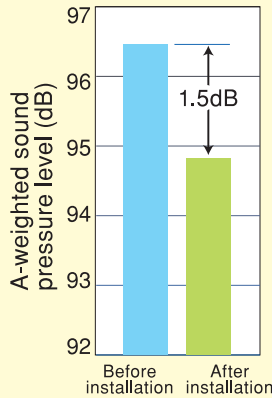
※Usage of REAL SCHILD: REAL SCHILD, the specialized vibration absorbing sheet for the improvement of sound quality of car audio systems, is a sister product of Calmmoon Sheet.

Railways



Railway carriages: Applied on the ceilings, wainscots and some parts on vestibules in N700 Series Shinkansen trains.
Sound insulating plates for the lower surfaces of bridges: Insulate the noise from bridge girders when applied onto the lower surfaces of bridges.

Effect in the application to bridges



Bridges: Reduce radiated noise from bridge girders when applied on the steel girder webs.

※The measurement data are the actual measurement values and not the guaranteed values.

Aircrafts



Reduce the noise from the galley equipment.

Other industrial applications



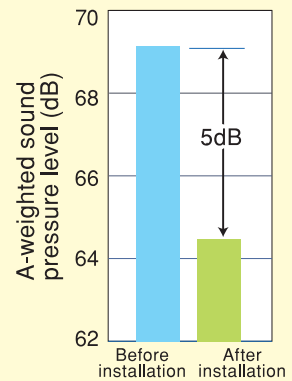
Other industrial applications: Reduce the noise caused by the vibration of various equipment (electric generators, machine tools, heavy equipment, air conditioners, etc.).

Air conditioners and ducts



Reduce the noise caused by the vibration of ducts and equipment.

Effect in the application to ducts



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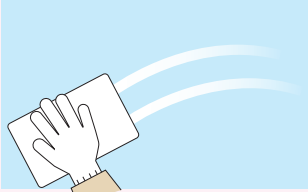
lineup

Lineup

| Product name (Model no.) | | Calmmoon General type (305K03S) | Calmmoon Marine type (305K58) | Calmmoon Resin type (KS-690) | Calmmoon Aluminum type (RSSK25) | |
|---|--|---------------------------------------|---|------------------------------------|---------------------------------------|--------------------------------|
| Quantity per carton | | 30 sheets | 15 sheets | 60 sheets | 25 sheets | |
| Width x Length (mm) | | 300x500 | 300x500 | 175x690 | 300x500 | |
| Size Color Weight | Material | Metal layer | Prepainted hot-dip zinc coated steel sheets | Corrosion-resistant steel plate | — | Aluminum |
| | | Resin layer | Chlorinated polyethylene resin | Chlorinated polyethylene resin | Chlorinated polyethylene resin | Chlorinated polyethylene resin |
| | Thickness | Metal layer | 0.3 | 0.8 | — | 0.2 |
| | | Resin layer | 1 | 0.5 | 0.55 | 1.7 |
| | | Total thickness | 1.3 | 1.3 | 0.55 | 1.9 |
| | Color | Metal layer | Silver | Silver | — | Silver |
| | | Resin layer | Beige | Beige | Beige | Beige |
| | Weight (kg) | Per sheet | 0.6 | 1 | 0.1 | 0.5 |
| | | Per carton | 17 | 16 | 7 | 13 |
| | Range of use | Allowable temperature range | 60°C or less | 60°C or less | 60°C or less | 80°C or less |
| Application to curved surface | | △ | × | ○ | ○ | |
| Nonflammability/ Flameproofness certification | Construction <small>Building Standards Act 'Certified as nonflammable'</small> | ○ | ○ | — | — | |
| | Ships and boats <small>'Flameproof surface covering material' 'Primary deck covering material'</small> | — | ○ | — | — | |
| | Railway carriages <small>Flammability standard for railway rolling stock material 'Nonflammable'</small> | ○ | — | — | — | |
| | Aircrafts <small>CFR PART25.853(a) [Amdt.25-116] Appendix F Part 1</small> | ○ | — | — | ○ | |
| | Electric appliances <small>UL94</small> | Equivalent to V-0 | — | — | Equivalent to V-1 | |
| Compliance with regulations on hazardous substances | RoHS | ○ | ○ | ○ | ○ | |
| | ELV | ○ | ○ | ○ | ○ | |
| | EU Directive: 2009/251/EC | ○ | ○ | ○ | ○ | |

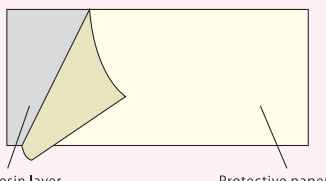
installation guidance

1 Wipe off the intended surface.



※Remove dust, powder, oil and moisture carefully.

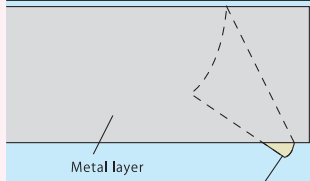
2 Peel a part of the protective paper.



Resin layer Protective paper

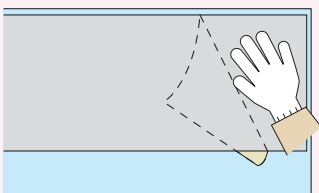
※Wear the work gloves. If not, you could cut your hands and fingers with the edge of sheet.

3 Place one edge of the sheet on the intended surface so that the entire sheet is placed in the right position. (In a manner such that a peeled part of protective paper hangs out of the sheet edge.)

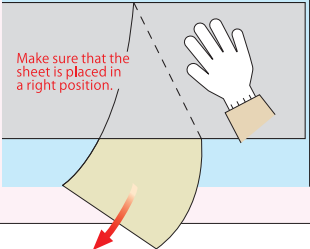


Metal layer Protective paper

4 Press a peeled part of the sheet to attach it to the intended surface temporarily.

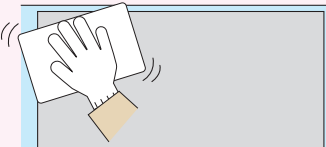


5 Peel off the protective paper by inches and rub the sheet against the intended surface as peeling progresses.



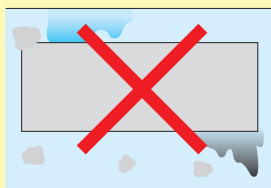
Make sure that the sheet is placed in a right position.

6 After completely peeling off the protective paper, rub the whole sheet firmly against the intended surface to complete the installation.

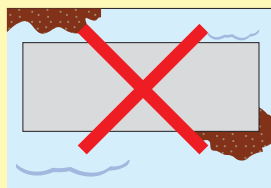


※When rubbing the sheet, use a cloth and rub it sufficiently against the surface from the center of the sheet toward its edges so that the sheet is not damaged.

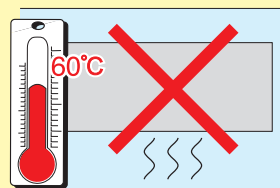
Cautions for Installation (Dos and Don'ts)



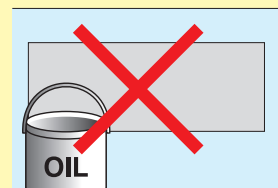
Do not attach the sheet where dust, oil or moisture adheres.



Do not attach the sheet where rust adheres or paint has lifted.



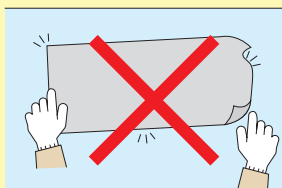
Do not install the sheet where the temperature exceeds the limit shown under the allowable temperature range on the page of 'lineup'.



Do not install the sheet where it may be subjected to oil.



Do not use the bent sheet.



Do not reuse the sheet already once attached and removed.

1. Wear the work gloves before starting the installation work because you might cut your hands and fingers with the edges of a metal layer or protective paper. When rubbing it against the structure surface, use a cloth.
2. Apply the sheet immediately after peeling a protective paper. If it is left without the protection by a protective paper for a long time, the adhesive strength can deteriorate.
3. If you fail to install the sheet properly, use a new sheet. If you reuse the sheet once removed, the bent part of sheet may come off and eventually the whole sheet can fall out from the structure surface. After removing the sheet you have failed to properly install, refrain from reusing it.
4. Before attaching the sheet, carefully remove dust, powder, oil and moisture from the intended surface of structure.
5. If the cut-off end faces are exposed to the wind and rain or the ultraviolet rays, it is recommended to apply some treatment such as caulking to the end faces to protect them from the exposure.
6. Note that the sheet is not suitable for the application where the temperature gets higher than the determined service temperature shown above. If it is used in such a high-temperature environment, it can fall out from the structure.
7. When the sheet is installed in the wintertime or where the temperature is low, warm up the sheet and the intended surface before the installation because the adhesive strength gets lower due to the low temperature.

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Performance Materials Division
SEKISUI CHEMICAL CO., LTD.

Tool code

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