

griwecolor GmbH

Flame-Retardant Sound Deadening to Absorb Structure-Borne Noise in Trains

Solvent-Free Artificial Resin Dispersion Achieves High Acoustic Effectiveness



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Passengers enjoy a more comfortable journey when structure-borne noise is absorbed by griwecolor's sound-deadening solutions

When talking about travel comfort, it's not only speed, comfortable seating and legroom that are important; so too is a sense of spaciousness.

Passengers wishing to work or rest can choose quiet carriages on trains. But trains themselves can be noisy. To reduce structure-borne noise of the rail carriages themselves and therefore to create the quietest-possible environment inside, many rolling stock manufacturers use sound deadening.

Sound insulation and the reduction of structure-borne noise in rail vehicles is a big challenge for engineers.

Although some components can be produced from alternative materials, it's often not possible to avoid thin-walled sheet metal constructions, where significant vibration is unavoidable.

The metal sheets used in the interior construction of carriages are covered in sound-deadening materials. The paint and coating experts at griwecolor GmbH have two products in their portfolio that have been developed for this application: griwephon AN2-800 and griwephon light AN2-900.

The product range has now been expanded to include griwephon AN2-750/EU, which is classified as a non-flammable product, class A2, according to DIN EN

13501-1. The product passed the toxicity and smoke gas density test in line with the DB Systemtechnik specifications with flying colours, meeting the requirement set R1 for HL1, HL2 and HL3 for application in rail vehicles with regard to smoke development and toxicity. Griwephon AN2-800 and AN2-900 meet the requirement sets R1, R2, R3, R6, R7 and R17 in the hazard levels HL1, HL2 and HL3. All three ready-to-use one-component solutions have been tested for fire behaviour in accordance with EU standard EN 45545-2. Furthermore, all three have very high acoustic effectiveness in accordance with DIN EN ISO 6721-3. Like the two variants already on the market, the new sound deadening solution based on aqueous synthetic resin dispersion is also hydrophobic and solvent-free.

“The development of our sound-deadening griwephon AN2-750/EU is based on the extensive experience that we have collected with AN2-800 and AN2-900 as well as in the construction material sector,” reports Jörg Grieshaber, Managing Director Technology and Development at griwecolor GmbH. *“We have gathered decades of know-how in the noise reduction of rail vehicles.”*

Sound Insulation through Structure-Borne Noise Absorption

Structure-borne noise is caused by the vibration of components – sheet metal. It can spread almost unhindered, causing the sound waves to be transmitted to the air, leading to noise. To prevent this noise generation, homogeneous layers are placed between the individual elements for internal damping. griwecolor’s sound-deadening solutions achieve a very high acoustic damping effect. When the griwephon layer penetrates the material to which it has been applied, the vibrational energy of the material is largely eliminated because it converts high-frequency vibrations into low-frequency ones. As a result, rail vehicle bodies emit less noise to the air in their interior space. *“The loss factor, depending on the installation situation, application thickness and material in accordance with DIN EN ISO 6271-3, is between 0.22 and 0.24, so that large parts of the structure-borne noise energy are absorbed by the sound deadening,”* explains Grieshaber. Thanks to the application of a filler combination, as well as the development of a special binder with high toughness, an application thickness in double sheet thickness up to 5mm is possible. The



An application thickness in double sheet thickness of up to 5mm is possible © griwecolor GmbH

quality of the filler and the unusual layer thickness are responsible for the high absorption rate. Another advantage of the mineral components is their low thermal conductivity.

Easy Processing without Health Risks

“As with all of our products, we have paid attention to environmental and health compatibility and easy application,” explains Grieshaber. *“We have achieved a VOC proportion of just 0.6g/litre by avoiding all solvents.”*

The sound-deadening solution can be applied with airless devices, with a ratio of at least 60:1; and with reciprocating pump devices, with atomising air of roughly 12:1; or screw conveyors with atomising air with an inlet pressure of 3 to 4 bars. Manual application is also possible. The sound-deadening solution has a high level of stability when applied to vertical surfaces. In wet application, a layer thickness of up to 5mm is possible in one go, without the product slipping off or cracks forming on the surface.

After the drying process, the layer thickness is approximately 4 to 4.5mm. *“The processing is quick, safe, clean and does not contain any health risks,”* summarises Grieshaber. *“Even in the case of fire, griwephon AN2-750/EU doesn’t generate any toxic gases. Our griwephon sound deadening therefore connects fire protection with simple handling and efficient noise protection.”*

Watch our video [here](#).

Further information at: www.griwecolor.de



A young boy with short brown hair and blue eyes, wearing a red and blue plaid shirt, is looking out of a window. Outside, a train track is visible with a blurred train in the background.

griwephon product series



**Innovative noise
and fire protection
for rail vehicles**

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