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CLD's

*Reduce noise by the use
of Constrained Layer
Dampers (CLD's)*



CLD's reduce noise from Trains

Large amounts of noise can be greatly reduced by the use of these parts.

Advanced features and services to help improve your wheel and bogie performance and improve the environment for your customers.

Constrained Layer Dampers (CLD's) use a unique combination of viscoelastic polymers and constraining plates to reduce the noise generated by modern trains.

Viscoelastic dampers are engineered with a combination of performance features and technical service. Depending upon the type of carriage engineers may need one, many or all of the features that Heathcote Plastics CLD's can offer.

- Enhanced damping polymer for greater noise reduction and long service life.
- Customised materials and polymer technology.
- Statistically controlled production for consistent key damping attributes : loss factor , storage modulus , thickness and formula.
- Versatile , secure adhesion to the carriage surface.
- Noise reduction on a broad temperature range from -10 to +60C.

- Noise and damping analysis. Finite Element Analysis and Modal testing as well as design technical support available.
- Fabrication versatility for many specific constructions, shapes and sizes.

The story so far

Viscoelastic polymers have been used to reduce noise and vibration in the aircraft industry for more than 15 years.

Based upon this record Train engineers are now able to put Heathcote Plastics viscoelastic constrained layer dampers (CLD's) to work to reduce the noise generated by carriages. Heathcote CLD's help by improving the damping , reducing weight and improving the fatigue performance of the carriage structure.

The Heathcote Plastics CLD for Train carriages is a 0.05mm thick viscoelastic polymer with a 0.5mm aluminium constraining layer. When applied to the carriage the CLD converts vibrational energy into heat. This very effectively reduces the vibration amplitude and hence the noise is greatly reduced.

How do CLD's compare

The benefits of carriage CLD's when compared to alternative methods of reducing the noise from wheels are as follows:

- Better noise reduction
- Easier to apply
- Lighter weight
- Lower cost

Heavy plates or thick bituminous layers have been the traditional means of attempting to reduce noise but the effectiveness of these methods and the difficulty in fitting the systems have made them poor in use.

Compare the performance of a Heathcote Plastics CLD and see for yourself how well they work and how easy they are to use.



If you would like to see how well Heathcote Plastics CLD's perform on your Carriages then just send us a drawing or give us a call.

Customers Questions

Q: How much will a Heathcote Plastics CLD reduce the noise?

A: Practical test results prove that CLD's can reduce the noise from carriages by as much as 30 dBA and rolling noise is also reduced.

Q: How long do the CLD's last when applied to the wheel and is there any drop in noise performance?

A: Since 1989 more than 15,000 train wheel CLD's have been fitted. The polymer itself has been monitored for its damping performance for over 15 years and no loss in performance has been found.

Q: Over what temperature range does the CLD work?

A: For the best noise reduction the polymer is optimized between 10 and 40C but reasonable performance is maintained from -10 to 60C.

Q: If the wheel has tread braking

what temperature will the CLD withstand in areas near the wheel tyre which can get quite hot?

A: For the best damping performance the polymer should not be kept at above 150C for long periods but it will not be effected greatly by short exposures to temperatures up to 200C.

Q: How difficult is it really to fit the CLD's to wheels?

A: You should ask for a copy of the "Fitting Procedure". The most important feature is that the wheel web must be very clean and any oil or grease must be removed. New wheels are usually easy to clean but when the wheels are old or being refurbished it will be necessary to clean them well with something like shot or grit blasting.

Q: What does it cost?

A: This depends upon the size and complexity of the wheel. There are 2 costs - the parts themselves and the fitting cost. Send in

a drawing and we will give you a guide to the part price but most are between £40-£70 each.

Q: Do the CLD's fit on the inside or the outside of the wheel?

A: Theoretically from a vibration standpoint they can work on either but practically they are usually fitted to the outside. If you wish to reduce rolling noise then much more damping has to be used and it is best to fit dampers to both the inside and outside.

Q: Can CLD's be fitted onto wheels while the bogies are still attached to the carriages?

A: No. The CLD will not fit over the axle box and it is too difficult to clean the wheel properly. The CLD can be fitted on wheels alone or on wheels fitted to Axles.

REF -TW/CLD/704

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Ask us about any other parts where you want noise to be reduced?