WOOD MARKETING FEDERATION

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*a series of fact sheets on timber and timber products*

Timber Acoustic Barriers

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# Timber Acoustic Barriers

Timber acoustic barriers, often referred to as noise barriers, are structures designed to reduce the level of noise from motorway traffic. They are aesthetically pleasing, sustainable and long lasting noise reducers.

Timber acoustic barriers provide a two-fold function: noise absorption and reflection. They are now widely used by road designers, engineers, contractors and other specifiers.

The purpose of this Wood Marketing Federation document is to act as a guidance note to the specifier, supplier and the end-user of timber acoustic barriers and act as a reminder of the importance of proper design, installation and maintenance.

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# Timber Acoustic Barriers

**Noise barriers can be classified into two categories:**

## ABSORPTIVE

where noise transmission through the barrier and noise reflection off the barrier are negligible. Noise is absorbed by the barrier through incorporating a high density mineral/fibre mattress into the barrier which is protected by a suitable air breathing cover. The design should allow for adequate drainage to prevent water saturation and subsequent damage to the mineral wool.

## REFLECTIVE

where noise transmission through the barrier is negligible. Noise is reflected away from the barrier. Reflective barriers may be either single skinned (one layer of timber with cover boards) or double skinned (two layers of timber) where an improved acoustic performance is required.

The primary goal of noise mitigation measures on national road schemes is to ensure that they are capable of doing the job they were designed for. The contractor's designer must initially specify the barrier to achieve the noise design commitments outlined in the Environmental Impact Study.

The National Roads Authority document: "Guidelines for the Treatment of Noise and Vibration in National Road Schemes" sets a noise design goal performance standard of 60Lden (free field) to be achieved, where feasible, on all new national road schemes for 15 years after the road opens and sets a desired service life of 30 years.

Achievement of the performance specified in the European standards for noise barriers, I.S. EN 1793 and I.S. EN 1794 is now mandatory on all new road projects. I.S. EN 1793 covers the test methods to determine acoustic performance and I.S. EN 1794 covers the assessment methods to determine non acoustic performance.

## I.S. EN 1793

Under I.S. EN 1793 barrier test samples are assembled in a laboratory as they would be on site. An overall Sound Absorption coefficient "DL" or Airborne Sound Insulation coefficient "DLR"is determined. Performance is expressed as a single number rating A0 to A4 for absorption, where A4 has a very high coefficient and B0 to B3 for insulation, where B3 has a very high coefficient.

The contractor's designer shall provide documented evidence demonstrating how the barriers meet the specified standards. Certification is required from an accredited body that has accreditation to undertake the specified tests for the approved standards and the documentation must indicate the absorptive performance and airborne sound insulation categories of the barriers.

Where absorptive barriers are used they must have a minimum absorption index of A3 and all barriers must have a minimum insulation performance of B3.

## I.S. EN 1794

I.S. EN 1794 covers the structural, mechanical and environmental aspects of the barrier performance. The first part of this standard deals with Wind and Static Loading, Self Weight, Impact of Stones, Safety in Collision and the Dynamic Force of Snow Clearing. The second part deals with Resistance to Bush Fires, Environmental Protection, Falling Debris, Access Points, Light Reflection and Transparency.

## Useful Links

Coford - **www.coford.ie**

Woodspec - **www.woodspec.ie**

NSAI - **www.nsai.ie**

Wood Marketing Federation - **www.wood.ie**


## Acknowledgments

This document is brought to you by the Wood Marketing Federation – **www.wood.ie**

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Detailed reference material can be accessed at:- www.nsai.ie, www.woodspec.ie, www.woodforgood.com, www.trada.co.uk.