Noise Barriers
European Standards – CE Marking

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« pauca sed matura »
C. F. Gauss
Traffic Noise Reduction - actions to be taken

Source: porous asphalt: expected reduction up to 5 dB(A) for all receivers

Receivers: sound insulating windows, expected reduction up to 20 dB(A) inside the buildings

Propagation: noise barrier / coverings, expected reduction up to 15 dB(A) for noise barriers, more than 20 dB(A) with coverings
Let’s call things with their name

Noise Reducing Device??
better:

Larmschutz
Barriere antirumore
Pantalla antiruido
Noise barriers

Ecran antibruit
Geluidsscherm
Ekrany Akustyczne
THE VARIETY OF THE MARKET MAY LEAD TO BARRIERS TO TRADE?

Noise barriers are construction products under CPR (Construction Product Regulation n. 305/2011) that means:

hEN 14388:2005 is the only reference harmonised European standard written by CEN under a specific EU Commission Mandate.

Manufacturers are asked to:

• Declare NOISE BARRIER performance of essential characteristics

• Affix the CE marking >> to take responsibility for the conformity of the NOISE BARRIER with the declared performances
DoP (Declaration of Performance)

Noise barrier (NOT a part if it) is the product to be incorporated into a road infrastructure and its performance has to be declared for the essential characteristics:

- Noise reduction
- Stability requirements (wind load and dynamic load of passing vehicles)
- Safety in use: resistance to impacts, light reflection
- Fire behaviour
- Long term performance
- Sustainable use of natural resources

See the doc:

CE marking for Noise Barriers to be installed alongside Road Infrastructures

ENBF – Guidelines & Recommendations
(http://www.enbf.org/outcomes.htm)
DoP of the noise barrier system
What is CE marking?

NOISE BARRIER SYSTEM is the ROAD EQUIPMENT requiring for CE marking

PERFOMANCE is to be assessed on the noise barrier system

It is NOT a mere collection of single components technical datasheets
Often may happen that:

- Wrong design
- Wrong prediction
- Faulty installation
- Consultant
- Contractor
- Manufacturer
- Authorities

Giovanni Brero – ENBF in KIELCE PL – may 2015
It should be like that:

consultant

Contractor + Manufacturer

authorities

- 8 dBA
hEN does not fix product requirements unless threshold values are established within the standards by Mandate

Authorities or Member State are in charge of establishing requirements but shall not impede the use of construction products bearing the CE marking, when the declared performances correspond to the requirements for such use in that Member State

Members State shall not introduce other regulations (Directive 98/34/EC - notification of new regulations)

Public Procurement must be open to competition (EU Directives on public procurement)

Use of hEN 14388 has to be made by all actors (regulators, engineers, producers, contractors) in a “common European technical language”
CE marking >> DoP of the noise barrier system
Acoustic performance: insulation + absorption

Reverberant chamber method (EN 1793.1 and 2)

In situ method (CEN TS 1793.5 - EN 1793.6)
Evaluation to be performed on the noise barrier system
# Acoustic Performance

Present State of the Art on Methods for CE marking

<table>
<thead>
<tr>
<th>Standard methods</th>
<th>Intrinsic characteristics</th>
<th>Insertion Loss ($D_{IL}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airborne sound insulation</td>
<td>EN 1793-2</td>
<td>EN 1793-6</td>
</tr>
<tr>
<td>Sound Diffraction</td>
<td></td>
<td>ISO 10847-1997</td>
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<tr>
<td>sound absorption</td>
<td>EN 1793-1</td>
<td>TS 1793-4</td>
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<tr>
<td></td>
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<td>TS 1793-5</td>
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</tbody>
</table>
Manufacturers shall declare maximum loads noise barrier are able to withstand provided maximum deflection of post and panels are not exceeded. Loads to be considered are wind load and variable loads due to passing vehicles.

Structural calculation is currently performed on the supporting posts.

Laboratory tests are recommended for the noise panels.
CE marking >> DoP of the noise barrier system
Structural performance: errant vehicles impact

Crash test to be performed according to EN 1317 in case of integrated noise and safety barrier
DoP of the noise barrier system
Structural performance: risk from falling debris

Risk from falling debris may occur in case of noise barrier installed on bridges or critical positions – (EN 1794-2)

Use of intrinsic resistant materials is essential as the evaluation of performance is to be made on the whole barrier (use of safety cables, secure posts etc)
DoP of the noise barrier system
Safety in use: behaviour in case of fire

Noise barrier performance are currently evaluated by testing the system against brush fire EN 1794-3 Annex A.

Classification of products according to Euroclasses (EN 13501) is recommended for some intended use as per attach table:

<table>
<thead>
<tr>
<th>Class</th>
<th>Intended use</th>
<th>Test performances</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tunnels and total covers</td>
<td>Class B or better according to EN 13501</td>
</tr>
<tr>
<td>2</td>
<td>Partial covers, on bridges and near houses</td>
<td>Class E or better according to EN 13501</td>
</tr>
<tr>
<td>3</td>
<td>All other situations where fire could be relevant</td>
<td>Test results according to Annex A</td>
</tr>
</tbody>
</table>
DoP of the noise barrier system
Long term durability  EN 14389.1,2

Material specification (corrosion protective layers, wood treatment) are essential for long term durability. Also to be considered assembling system, water drainage..
Toward a protocol for Sustainability Assessment

Noise barriers are almost always paid by public funding.

Are there possible income funds to cover costs?
Thanks for your attention

for further info pls see

www.enbf.org