# Recent development concerning measurement methods related to tyre/road noise

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**VTI**
TRV Seminarium i Solna 2012-12-12


# ISO/TC 43/SC 1/WG 39

# "Measurement of Pavement Surface Macrotexture Depth Using A Profiling Method"

Convener: Ulf Sandberg, VTI

# Overview – ISO 13473 standards

ISO 13473-1 - Mean Profile Depth (*revision 2013?*)

ISO 13473-2 - Terminology & Basic requirements

ISO 13473-3 - Specification of profilometers

ISO/TS 13473-4 - Texture spectrum determination

ISO 13473-5 - Megatexture measurement

*Future: ISO/TS 13473-6 - Verification of performance of contactless profilometers*

# ISO/TC 43/SC 1/WG 33

# "Measuring Method for Comparing Noise on Different Road Surfaces"

Convener: Ulf Sandberg, VTI

# Overview – ISO 11819 standards

ISO 11819-1 - The SPB method (*revision 2013?*)

ISO/DIS 11819-2 - The CPX method (*new 2012*)

ISO/TS 11819-3 - Reference tyres (*coming in 2013?*)

ISO/PAS 11819-4 - Backing board method (*new*)

# ISO 11819-1 SPB method (subject to revision)

# Some considered items:

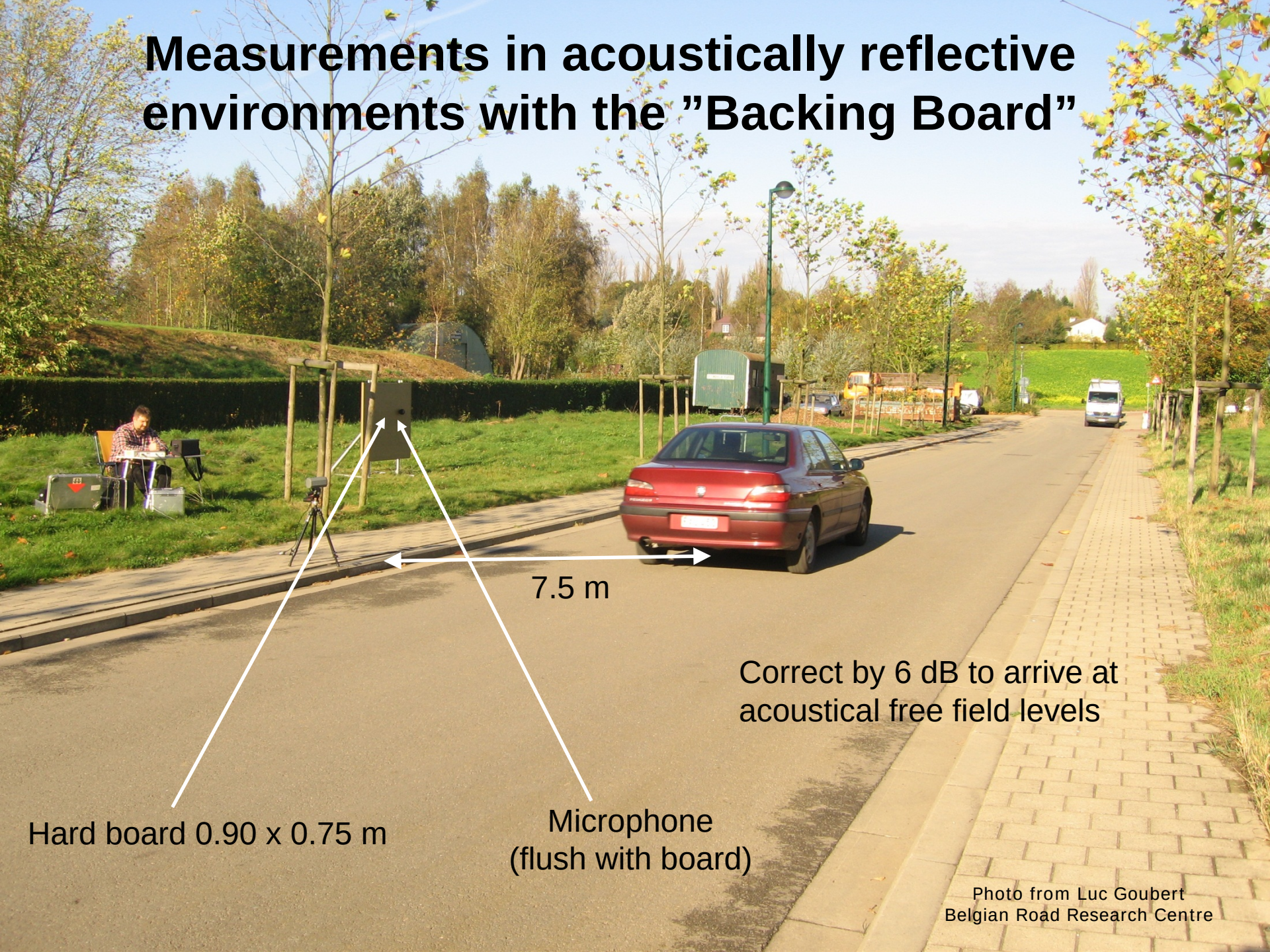
- An additional higher microphone position
- Possibility to measure at other distance than 7.5 m
- SPBI not mandatory to report
- Reference speeds replaced by reporting speed constants A and B and 95 % confidence interval
- More freedom in combining medium and heavy vehicles
- Using fixed noise-speed relation for heavy vehicles
- Microphone mounted on backing board

# ISO/PAS 11819-4 The Backing Board method

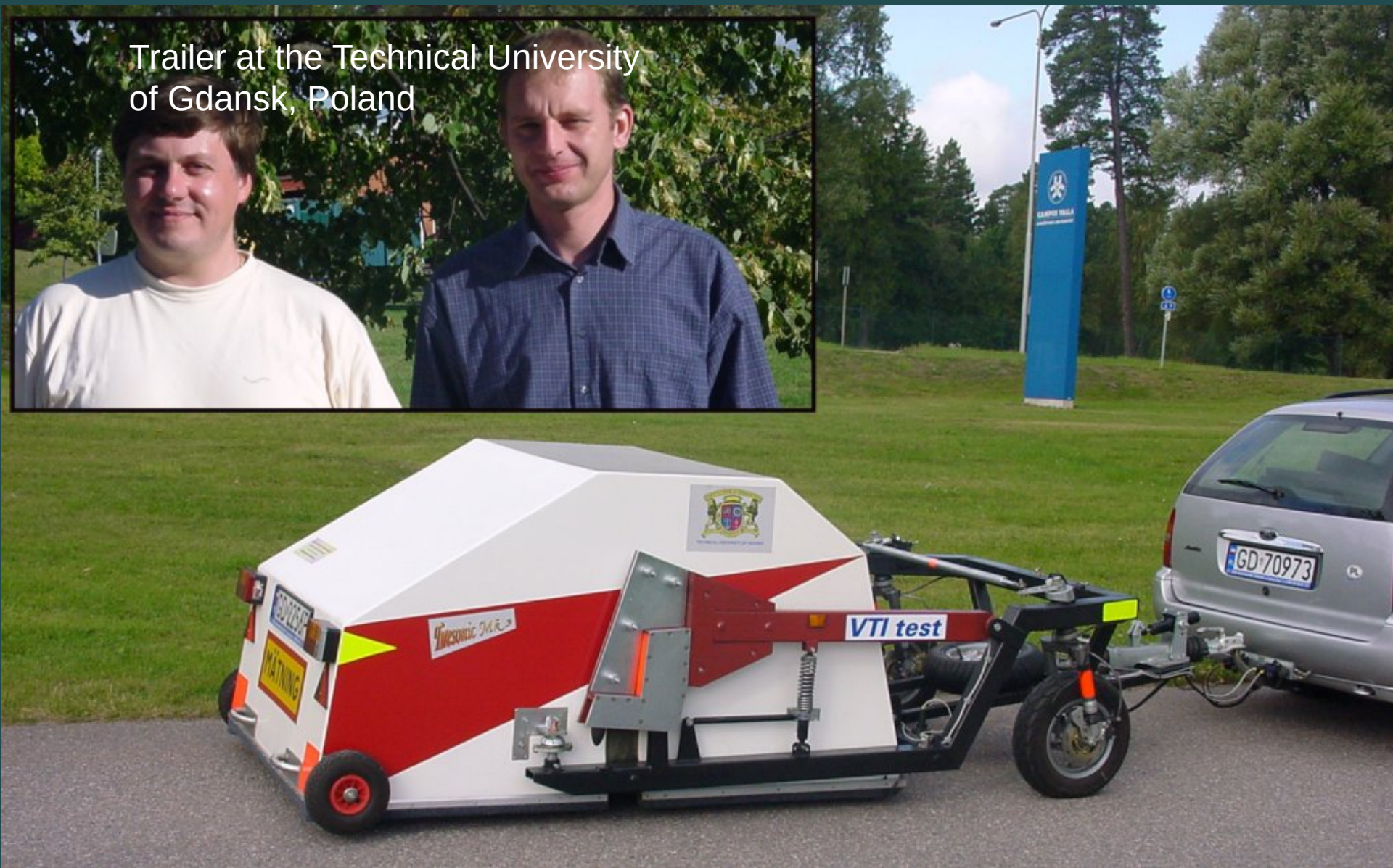
(PAS = Publicly Available Specification)

Later to be included as Annex in the SPB method

# Measurements in acoustically reflective environments with the ”Backing Board”



# The Close-Proximity (CPX) Method
# ISO/DIS 11819-2



# ISO/DIS 11819-2 submitted to ISO

# Simultaneously considered by CEN

ISO/DIS 11819-2

**ISO /TC 43/SC 1/WG 33 N 260**

Date: **2012-08-30**

**Layout for ISO/DIS 11819-2**

ISO /TC 43/SC 1/WG 33

Secretariat: DS

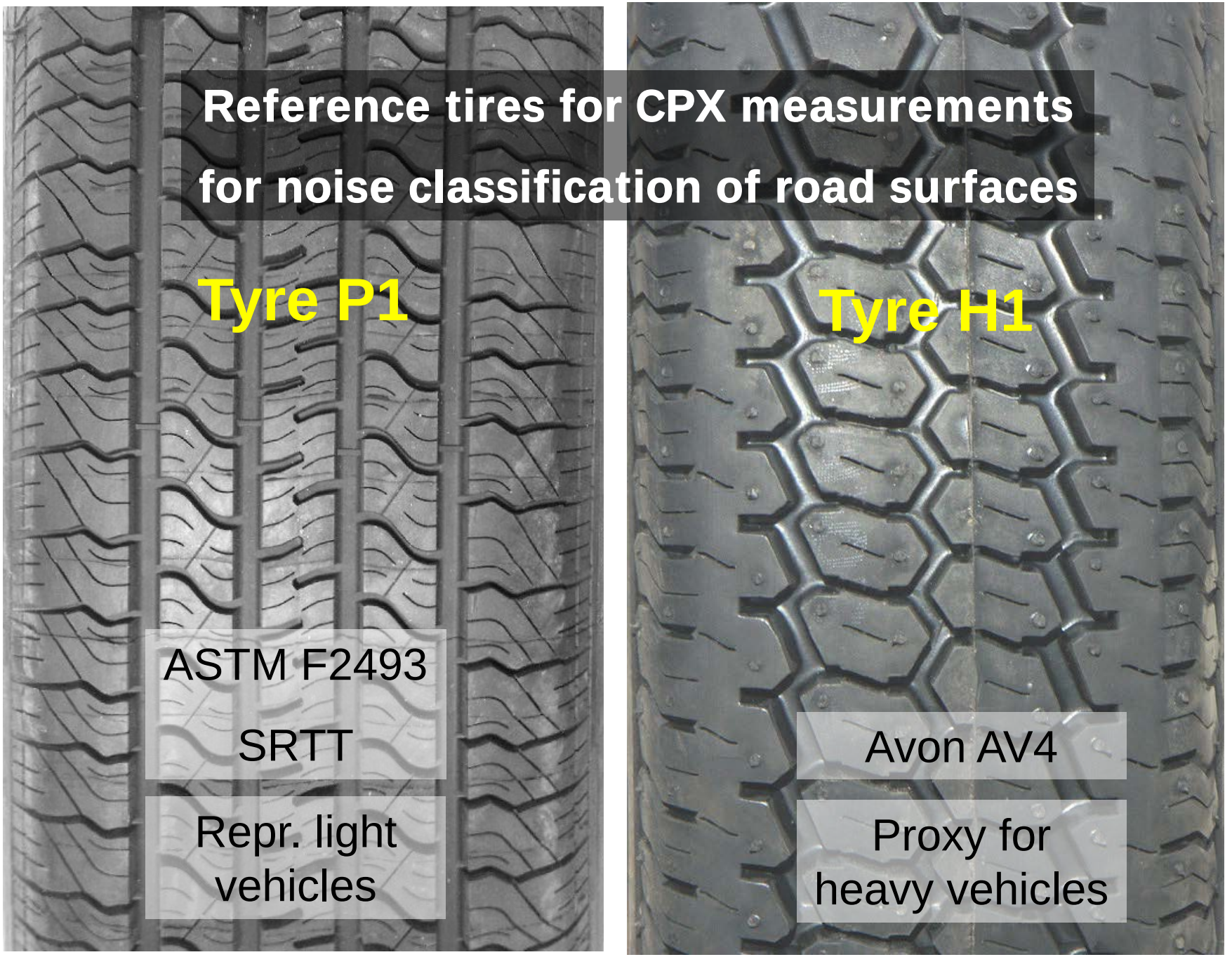
## Acoustics — Measurement of the influence of road surfaces on traffic noise — Part 2: The close-proximity method

*Élément introductif — Élément central — Partie 2 : Titre de la partie*

# Reference tyres for the CPX method

ISO/TS 11819-3 “Reference tires”
(*expected at end of 2013 or in 2014*)

Will be used to perform measurements according to ISO/DIS 11819-2


Reference tires for CPX measurements
for noise classification of road surfaces
Tyre P1
Tyre H1
ASTM F2493
SRTT
Repr. light vehicles
Avon AV4
Proxy for heavy vehicles

# Availability of ref tyres:

P1: ASTM ref – Buy from M+P

H1: Still on the market in Sweden

Will be specially made by Avon for us

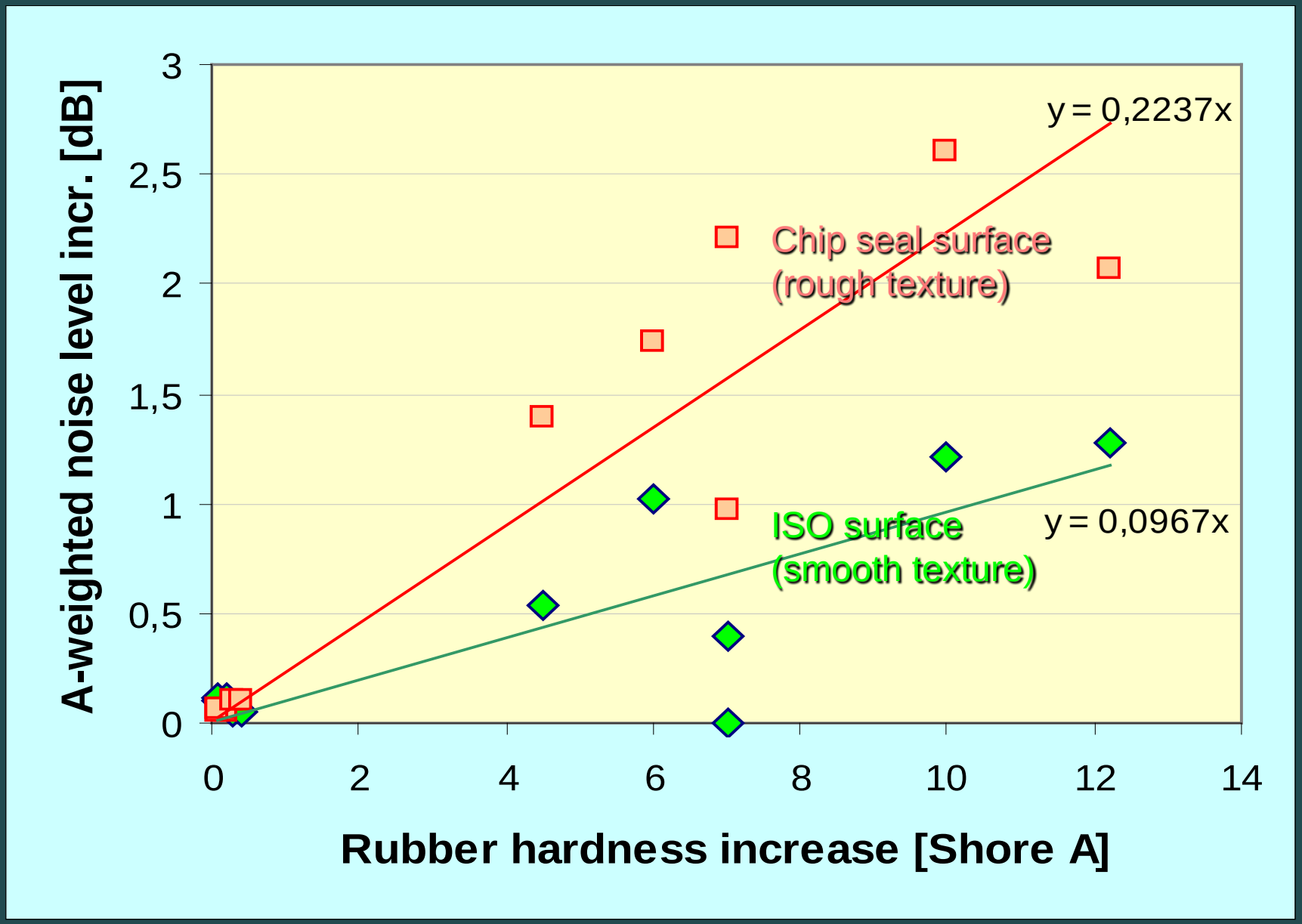
Stored at M+P

Buy from M+P


Tires are ”fresh produce”

Best before 2012-0K-KK ?

# Results of simulated ageing in the SILENCE project (heat exposure, 60°C, 6 months)



# Always measure rubber hardness!

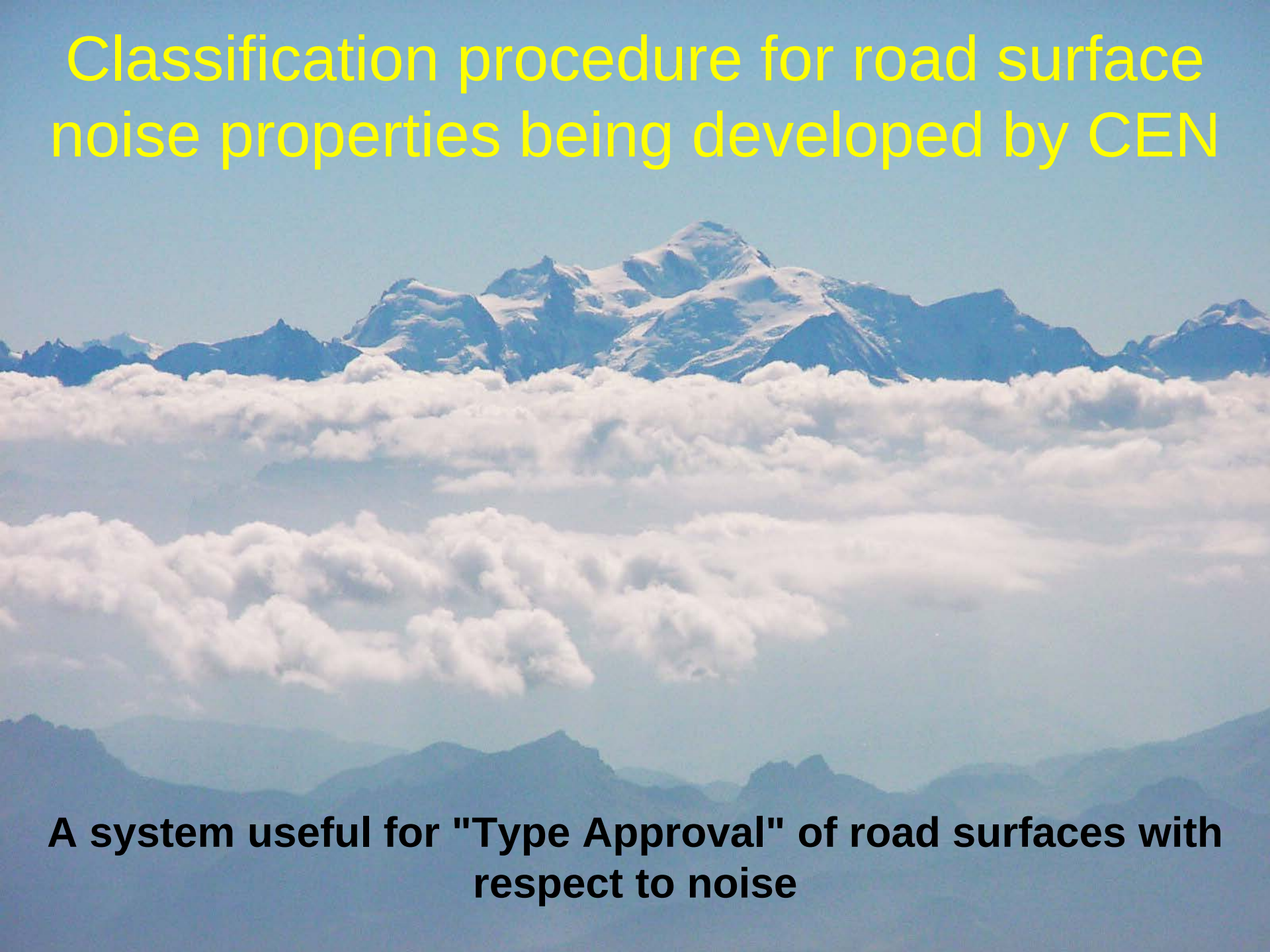
## Hardness measurement

Rubber hardness; the International Rubber Hardness Degrees (IRHD), also known as "Shore hardness"


Measures indentation resistance of elastomeric or soft plastic materials based on the depth of penetration of a conical indentor

Unitless, but often referred to as ”Shore A”

# Classification procedure for road surface noise properties being developed by CEN



**A system useful for "Type Approval" of road surfaces with respect to noise**

International Organization for Standardization

# ISO/TC 43/SC 1/WG 27

# "Acoustics – Temperature influence on tyre/road noise measurement – Correction procedure“

Convenor: Ulf Sandberg, VTI

# Temperature correction

$$L = a + bT$$

Where: $L$ - sound level [dB]
$T$ - temperature [$^{o}$C]
$a,b$ - constants

The slope b called ”temperature coefficient”

# Temperature correction

$$L = a + bT$$

The slope b ”temperature coefficient” varies between – 0.05 and -0.15 dB(A)/oC (air temperature)

Average: -0.09 (-0.07 for porous surf.?)

Value depends on generation mechanisms


THE END