



EN 14904

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EN 14904



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

- **CEN General Assembly, Administrative Board and Technical Board responsible for all formalities and progress in execution of mandates**
- **Stand still in development of national standards once EU mandate is give to CEN**
- **Members obliged to follow EN standards once Published**
- **All EN standards are based on performance criteria for the user versus product/system driven**

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- **Publications endorsed by Technical Committees
(Sports is TC 217)**
- **Publications written by Working Groups
(Indoor Multipurpose is WG 2)**
- **Participants: national standardization bodies,
institutes, industry**
- **EN standards are divided in two parts: 1 for safety
according to the EU Construction Products Directive
(CE Marking) and 1 for technical requirements**

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- **EN standards can comprise of mandatory and voluntary sub standards; EN xxxx or ENV xxxx**
- **Harmonised test methods are mandatory, performance standards can be a range so individual buyers (countries) can set their own desired performance level within the range**
- **EN standards typically contain some general environmental and safety requirements**

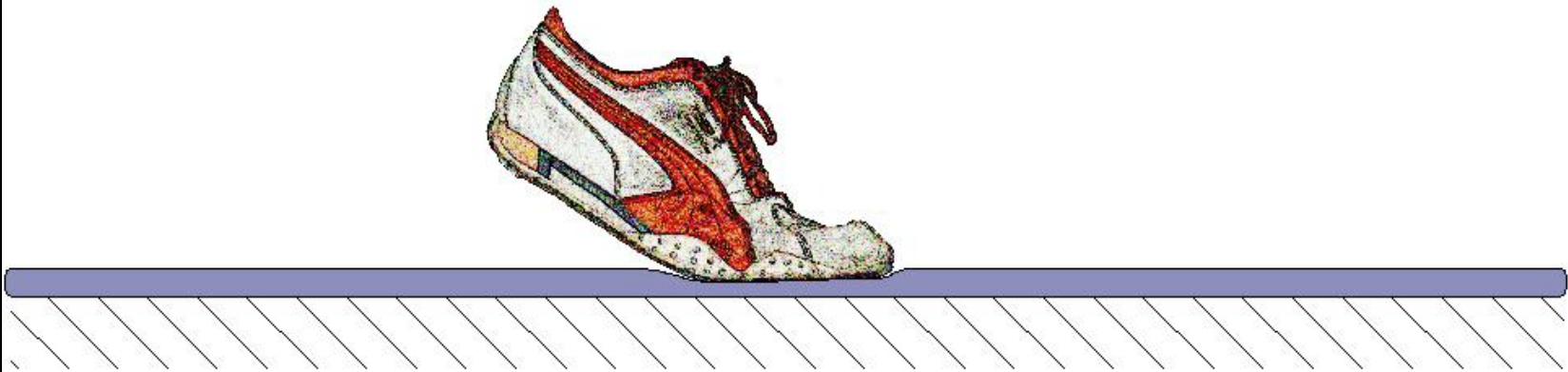
- **In order to be fully certified products need to fullfill requirements in initial laboratory type testing and fullfill continuous Factory Production Control requirements**
- **Products meeting the essential characteristics are allowed to use the CE marking:**
 - **Friction**
 - **Durability**
 - **Reaction to Fire**
 - **Shock absorbency**
 - **Release of dangerous substances**

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- **Norm content:**
 - **Definitions**
 - **Test Methods**
 - **Requirements**
 - **Certification Procedures**
 - **Informative Annexes**

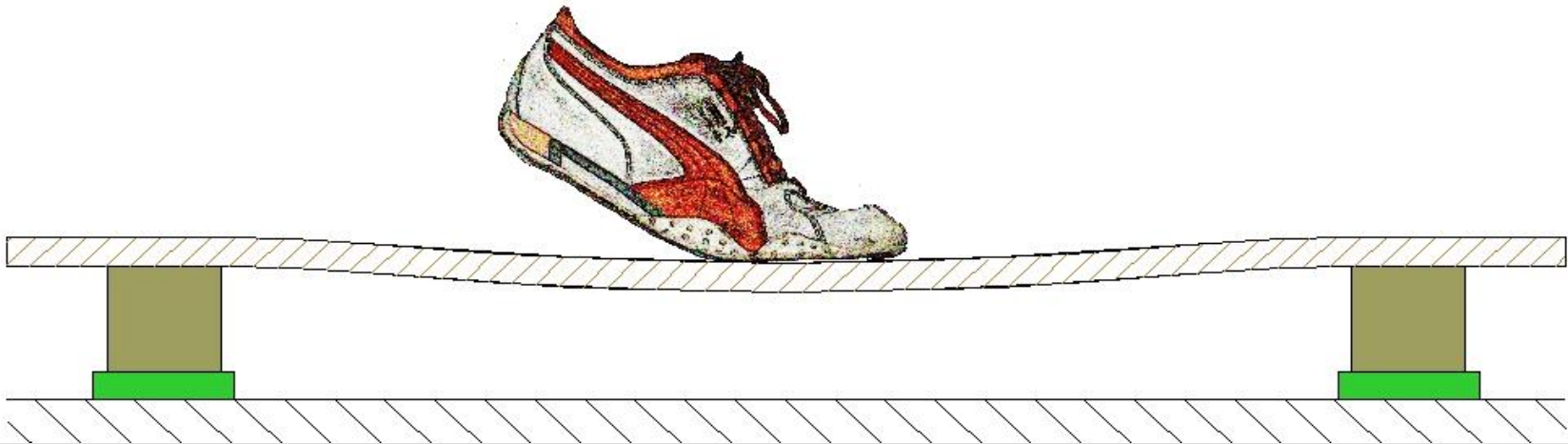
Definitions: Point-elastic floor

Applying a point force causes deflection only at or close to the point of application of the force



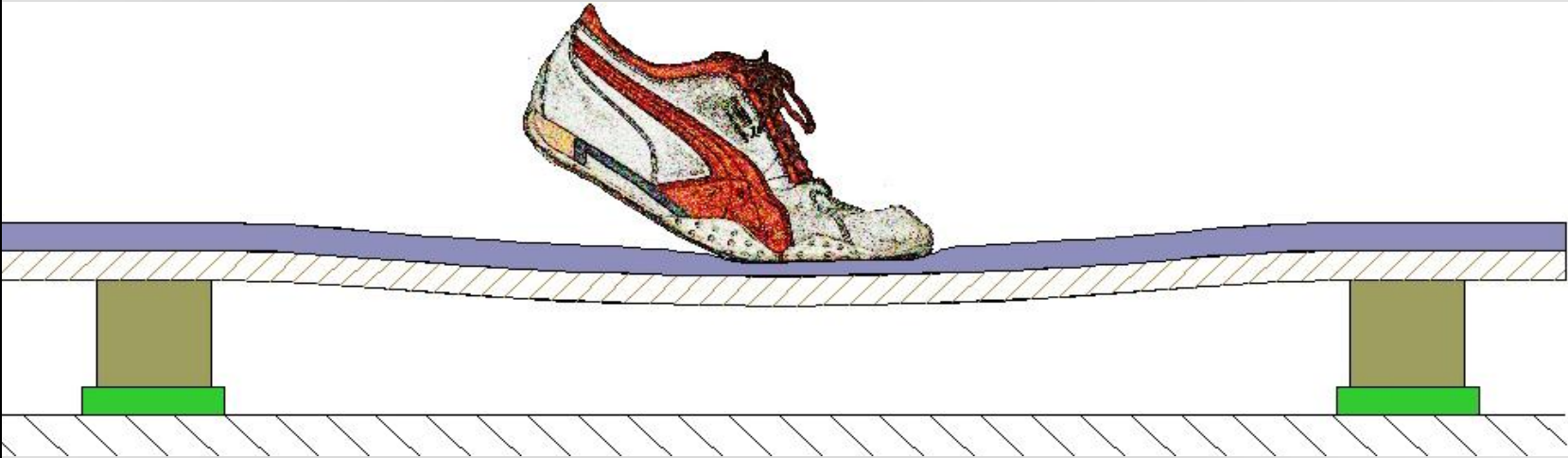
Definitions: Area-elastic floor

Applying a point force causes deflection over a relatively large area around the point of application of the force



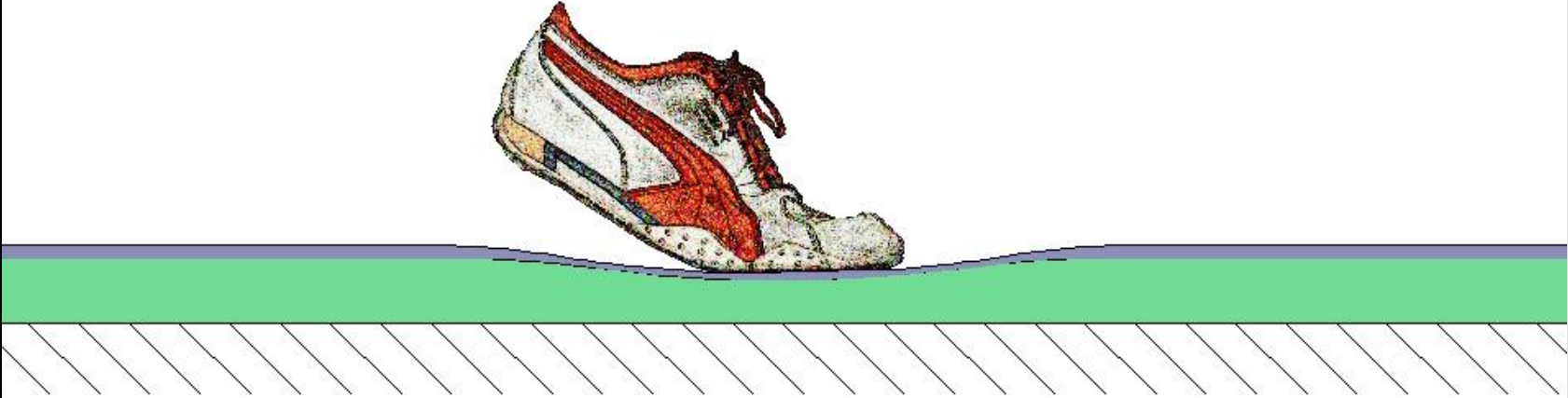
Definitions: Combi-elastic floor

An area-elastic floor with a point-elastic top layer.
Applying a point force causes both localised deflection and deflection over a wider area.



Definitions: Mixed-elastic floor

A point-elastic floor with an area-stiffening component. The floor has deflection characteristics between those of an area-elastic floor and a point-elastic floor.

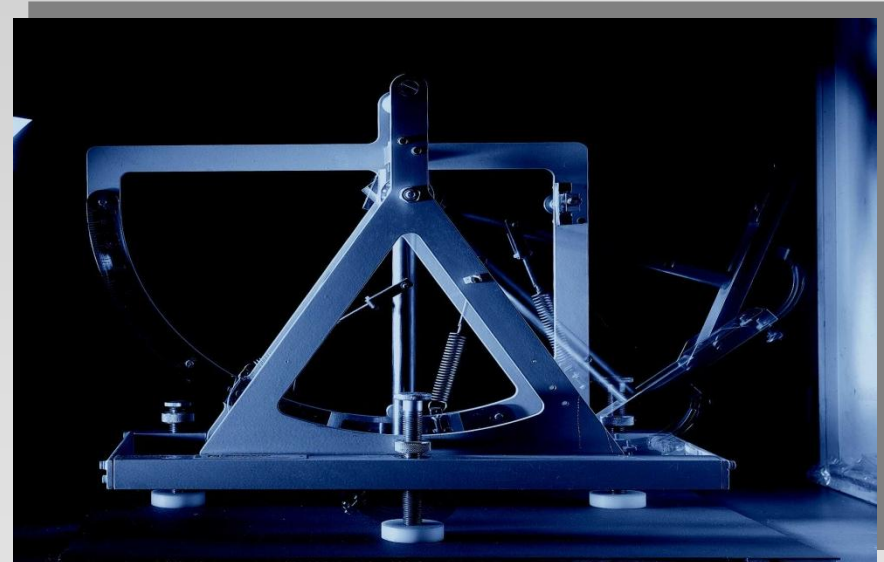


Requirements for safety in use

➤ Friction

EN 13036-4

- Skid resistance test using a CEN rubber
- Pendulum Test Value
- Value between 80 and 110



Requirements for safety in use

➤ Shock absorption

EN 14808

- A minimum of four tests plus one test for every 500 m² (5,380 SFt) of floor area
- Mass falling weight = 20 +/- 0,1 Kg (44.1 Pds)
- Force reduction between 25% and 75%



Requirements for safety in use

Typical values of force reduction (%)

Annex B

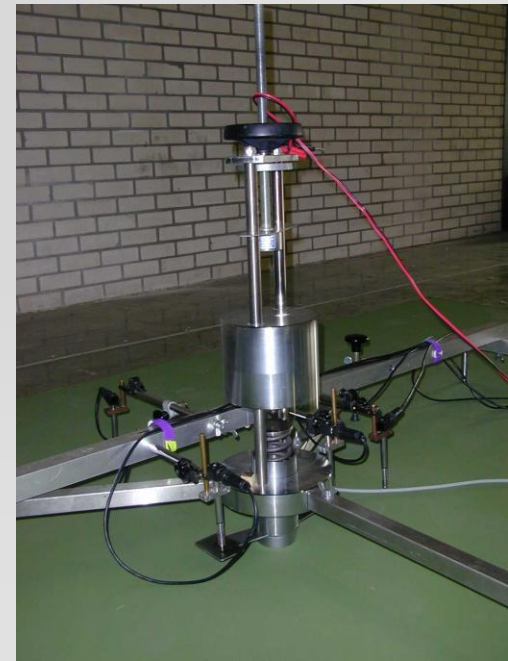
<u>Type</u>	<u>Point</u>	<u>Mixed</u>	<u>Area</u>	<u>Combined</u>
1	≥25 <35			
2	≥35 <45			
3	≥45	≥45 <55	≥40 <55	≥45 <55
4		≥55 <75	≥55 <75	≥55 <75

Requirements for safety in use

➤ Vertical deformation

- shall not exceed 5,0 mm
- Artificial athlete
- Mass falling weight = 20 +/- 0,1 kg.

EN 14809



Requirements for safety in use

Typical values of vertical deformation (mm) Annex B

Type	Point	Mixed	Area	Combined
1	$\leq 2,0$			
2	$\leq 3,0$			
3	$\leq 3,5$	$\leq 3,5$	$\geq 1,8 < 3,5$	$\geq 1,8 < 5,0$ $VD_p \geq 0,5 < 2,0^a$
4		$\leq 3,5$	$\geq 2,3 < 5,0$	$\geq 2,3 < 5,0$ $VD_p \geq 0,5 < 2,0^a$

VD_p is the vertical deformation of the point-elastic component.

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Technical Requirements

- **User Performance Requirements**
- **Durability Requirements**
- **General Construction Requirements**

User Performance Requirements

- **Vertical ball behaviour**
- **Specular reflectance**
- **Specular gloss**
- **Degree of evenness**

User Performance Requirements

➤ Vertical ball behaviour

EN 12235

- using a standard basketball
- dropheight 1,80 m
- the relative rebound height should be $\geq 90\%$ of the rebound height on concrete

User Performance Requirements

- **Specular reflectance** **EN 13745**
 - using an angle of 85°
 - mean value obtained shall be reported

- **Specular gloss** **EN ISO 2813**
 - an angle of incidence of 85°
 - specular gloss shall be ≤ 30 for matt surfaces and ≤ 45 for lacquered surfaces.

User Performance Requirements

➤ Degree of evenness

EN 13036-7

- measured on site
- the greatest distance between the straight edge and the sports surface shall not exceed 2 mm over a measuring distance of 0,3 m and shall not exceed 6 mm over a measuring distance of 3 m.

Durability Requirements

- Resistance to a rolling load
- Resistance to wear
- Resistance to indentation
- Resistance to impact

Durability Requirements

➤ Resistance to a rolling load

EN 1569

- the minimum resistance shall be 1,500 N (337 Pds)
- maximum indentation: 0,5 mm under a 300 mm (1 Ft) straight edge
- recovery time between 15 min and 20 min

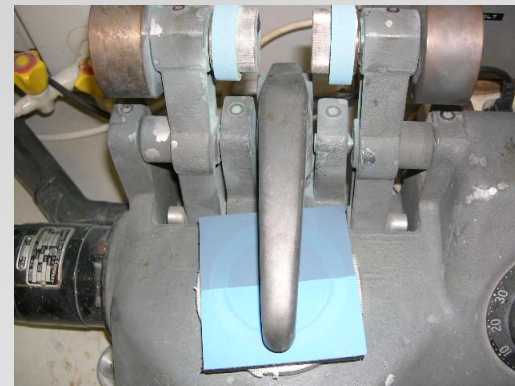
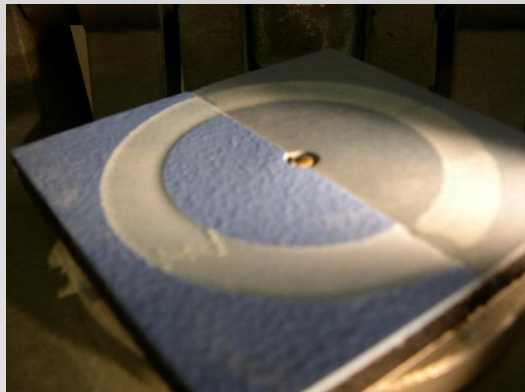


Durability Requirements

➤ Resistance to wear

EN ISO 5470-1

- Taber test
- using H18 wheels with a 1 Kg (2,2 Pds) load
- maximum loss per 1,000 cycles is 1,000 mg



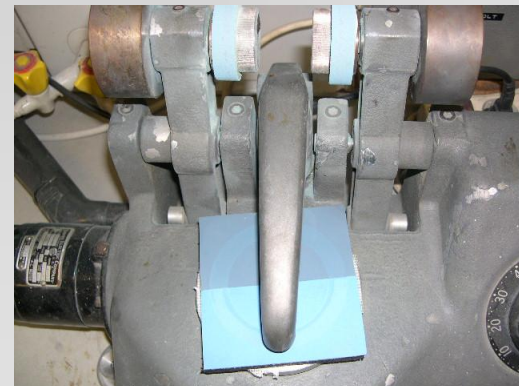
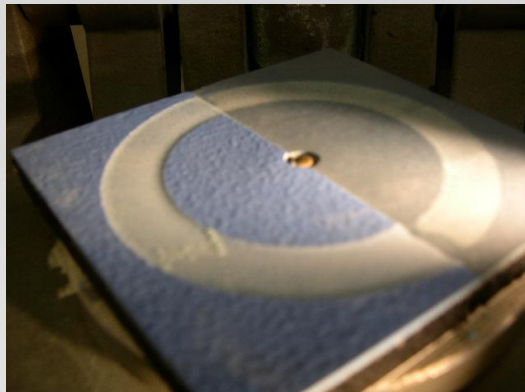
Durability Requirements

➤ Resistance to wear

EN ISO 5470-1

Maintenance Coatings and Lacquers:

- Taber test using CS10 wheels with a 0,5 Kg (1,1 Pds) load
- maximum loss per 1,000 cycles is 80 mg



Durability Requirements

- **Resistance to indentation** **EN 1516**
 - the mean indentation measured 5 min after removal of the load shall be reported and the mean residual indentation measured 24 h after removal of the load shall be $\leq 0,5$ mm.

Durability Requirements

➤ Resistance to impact

EN 1517

- Conditions: 14 days at $T = 50 \pm 1 \text{ }^\circ\text{C}$ (122 F)

Test $T = 10 \pm 1 \text{ }^\circ\text{C}$ (50 F)

Mass = 800 g (1.76 Pds)

- After testing no perceivable cracking, splitting, delamination or permanent indentation of the test piece

General Construction Requirements

- **Reaction to fire**
- **Formaldehyde emission**
- **Content of pentachlorophenol**

General Construction Requirements

➤ Reaction to fire

EN 13501-1

- 2 Classifications:

- Construction products, excluding floorings

- Floorings (f_l criteria)

- Classification for flooring contains 6 Classes:

- Class F_{fl} up to Class A_{fl}

- Tests for Burning Behaviour (spread of flames) with radiant panel and for Ignitability

General Construction Requirements

- **Smoke production** **EN 13501-1**
 - s1: Smoke $\leq 750\%$ x minutes
 - s2: Products not satisfying the class 1 criterion

- **Classification required for all products that claim reaction to fire in class D_{fl}, C_{fl}, B_{fl} or A2_{fl}.**

General Construction Requirements

➤ Formaldehyde emission

EN 717

- 2 classifications: E1 and E2
- If no formaldehyde-containing materials are added during production or post-production processing: Class E1.

General Construction Requirements

- **Content pentachlorophenol (PCP)**
 - **Sports floor coverings shall not contain pentachlorophenol or a derivative thereof as a component in the production process of the product or of its raw materials.**
 - **In cases where verification is required, if the content is less than 0,1% by mass this requirement shall be considered to be met.**

Conformity

The conformity of a sports floor covering with the requirements of this European Standard (including classes) shall be demonstrated by:

- initial type testing
- factory production control (FPC)

Conformity

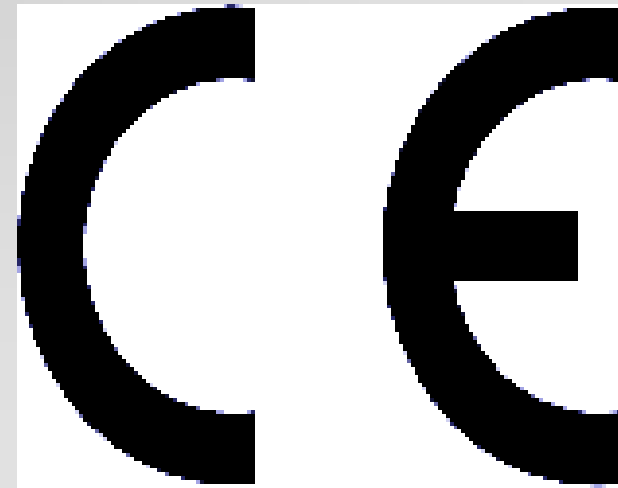
➤ Factory Production Control (FPC)

- control of raw material
- process control
- calibration plan
- testing of finished products
- traceability

A manufacturer applying EN ISO 9001:2000 made specific to the requirements of this standard is deemed to satisfy the FPC requirements.

CE Marking and Labelling

- **Marking products conform European Standard**
 - number and year of the European Standard
(EN 14904:2006)
 - manufacturer's or supplier's identification
 - product name and batch number



EN 14904

- National standards will have to be replaced by the EN 14904 now it is officially published.
- EN 14904 is officially published in April 2006
- English version available through BSI
www.bsi-global.com
cservices@bsi-global.com
+44 20 8996 9000

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- **National requirements have to be within EN 14904 range if the topic is addressed in the EN standard. Different countries can use different requirements within the range.**
- **Individual countries can enforce additional requirements for topics not covered by the standard.**

- **Individual buyers can specify required minimum performance levels within the range.**
- **Non compliance with the standard is only allowed if enforced by national legislation.**
- **Individual buyers can ask for additional certification, e.g. Sports Governing Bodies (FIBA, IHF, etc) or National Institutions (Marque NF, ISA Keur, DIN / RAL Guteüberwachung, etc.)**

Thank you for your attention !

Any questions / remarks ?