



# EN 14904

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# EN 14904



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

# EN 14904

- **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**

# EN 14904

- **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**

# EN 14904

- **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**

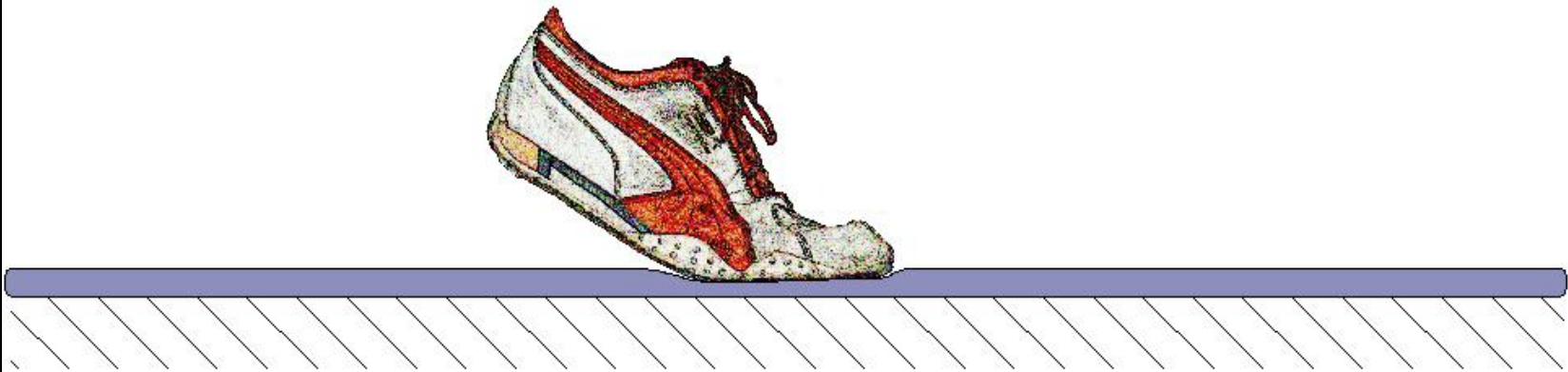
- **In order to be fully certified products need to fullfill requirements in initial laboratory type testing and fullfill continuous Factory Production Control requirements**
- **Products meeting the essential characteristics are allowed to use the CE marking:**
  - **Friction**
  - **Durability**
 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

# EN 14904

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

## Definitions: Point-elastic floor

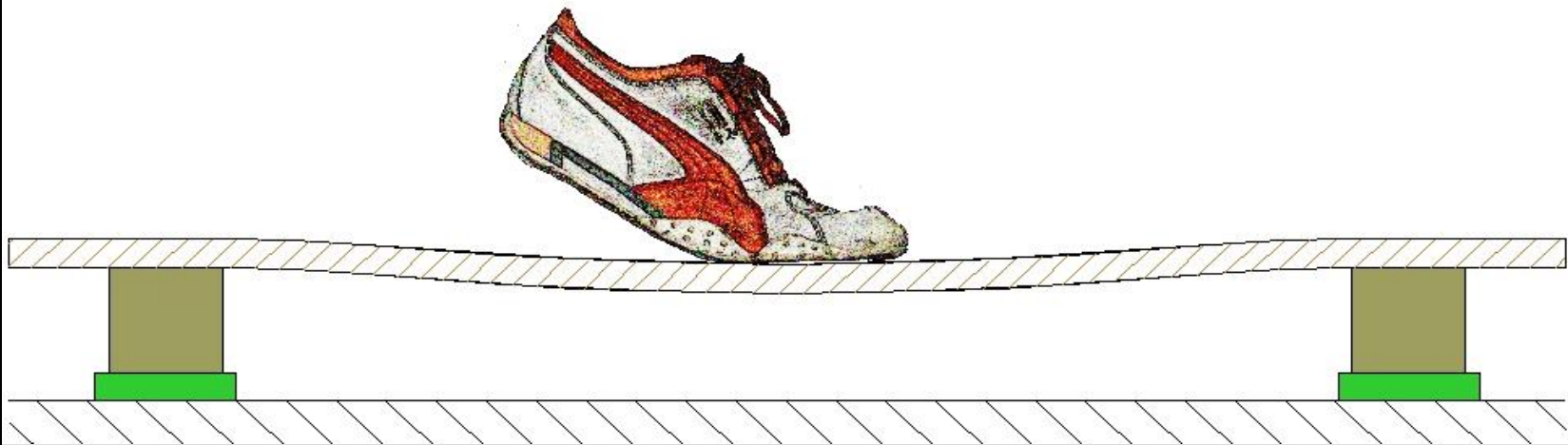
Applying a point force causes deflection only at or close to the point of application of the force





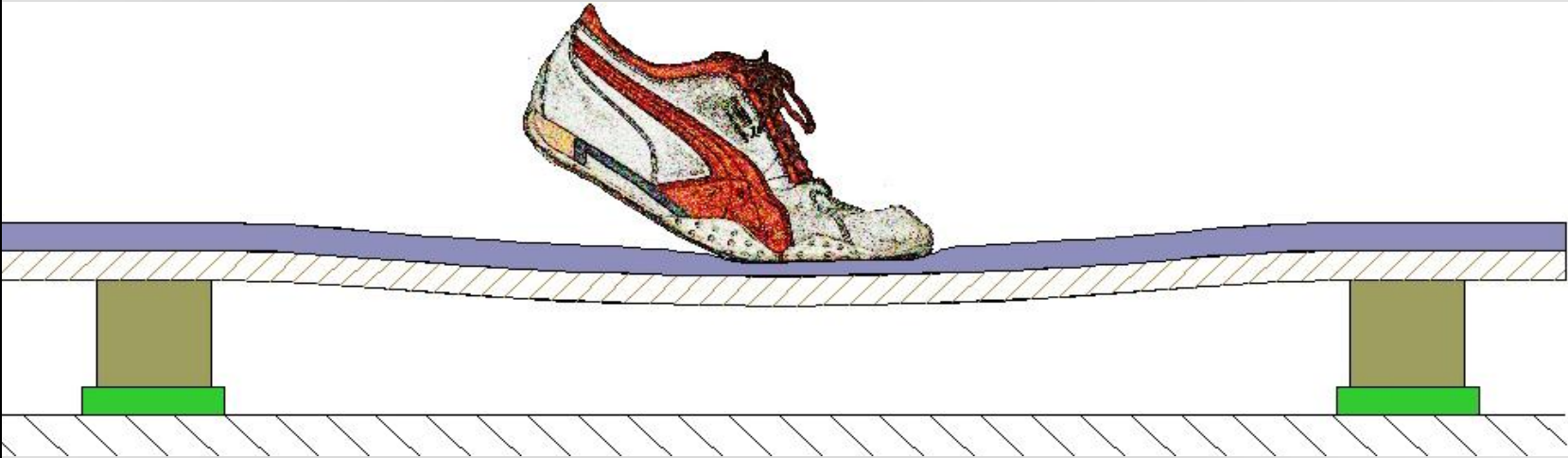
## Definitions: Area-elastic floor

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



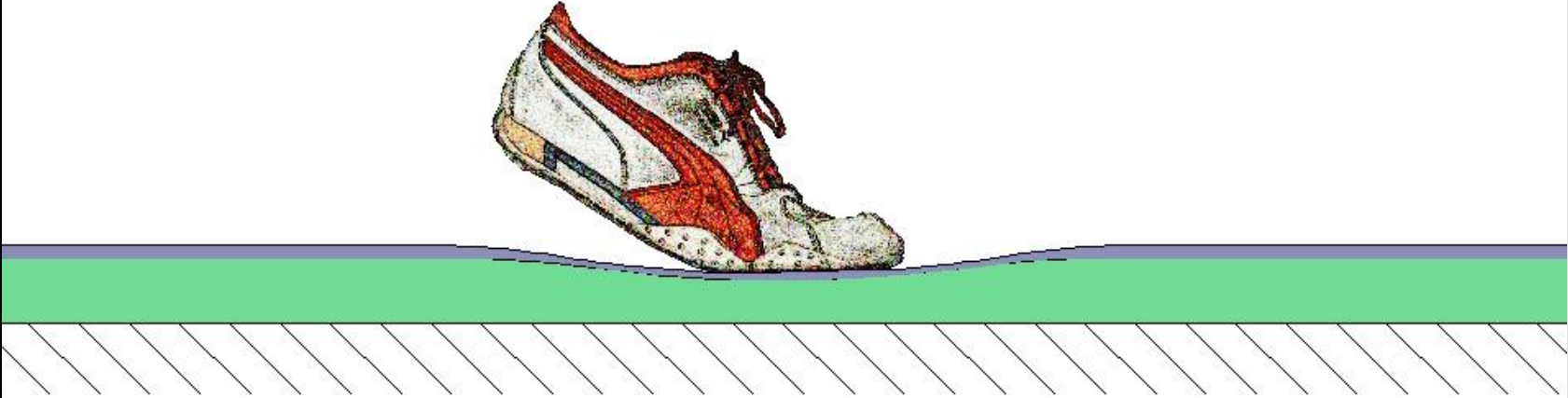
## Definitions: Combi-elastic floor

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.

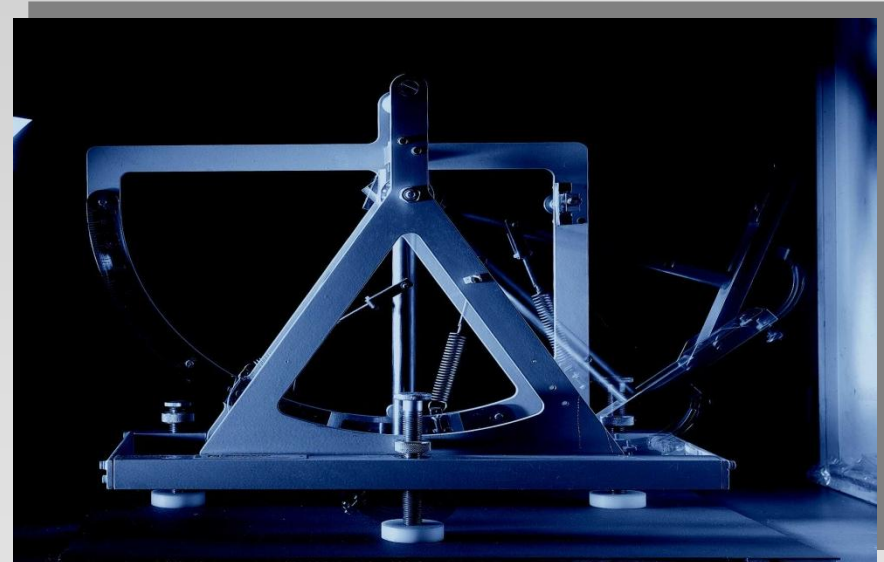


## Requirements for safety in use

### ➤ 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 m<sup>2</sup> (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

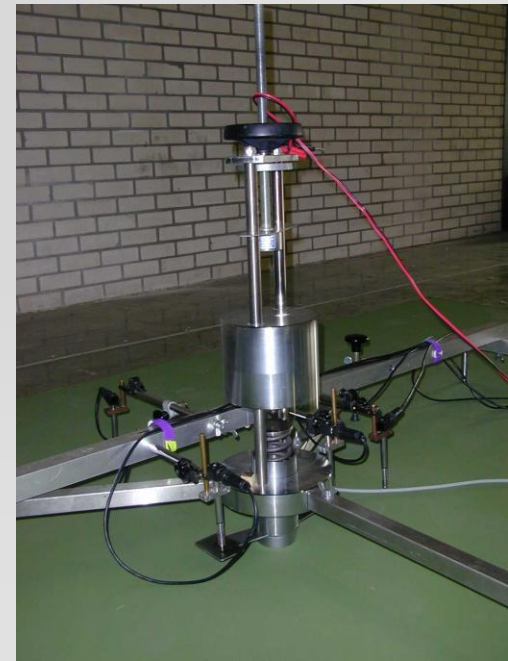
Type	Point	Mixed	Area	Combined
1	≥25 <35			
2	≥35 <45			
3	≥45	≥45 <55	≥40 <55	≥45 <55
4		≥55 <75	≥55 <75	≥55 <75

## 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<sub>p</sub> is the vertical deformation of the point-elastic component.*



# EN 14904

## 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  $85^\circ$
  - mean value obtained shall be reported
  
- **Specular gloss** **EN ISO 2813**
  - an angle of incidence of  $85^\circ$
  - specular gloss shall be  $\leq 30$  for matt surfaces and  $\leq 45$  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

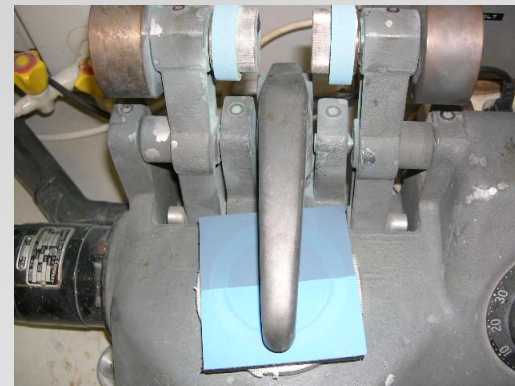
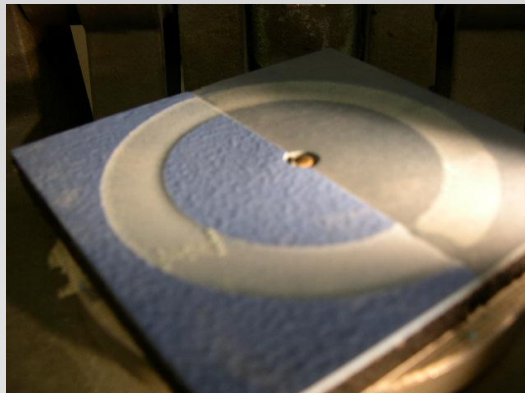


## Durability Requirements

### ➤ 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





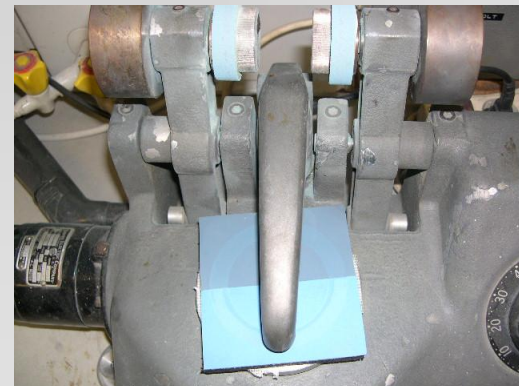
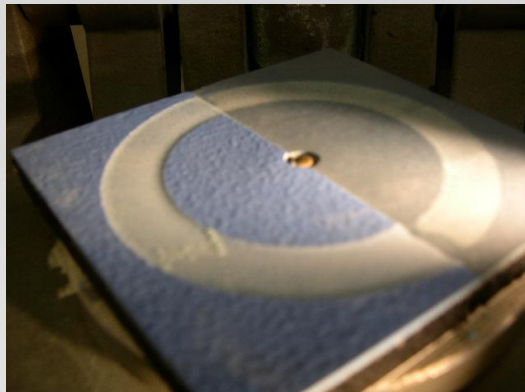
## Durability Requirements

### ➤ 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

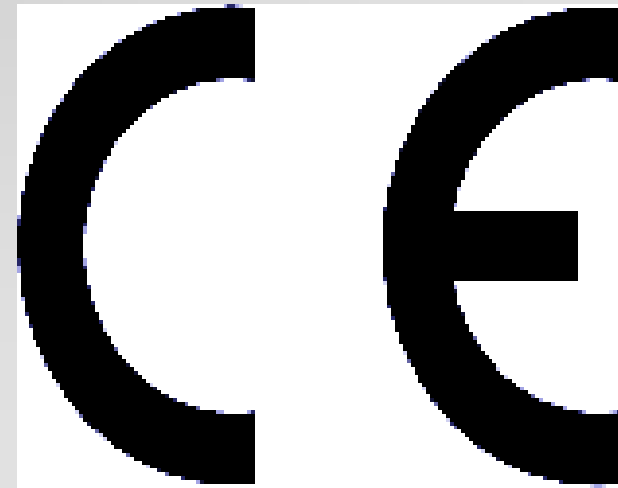
### ➤ Factory Production Control (FPC)

- 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](http://www.bsi-global.com)  
[cservices@bsi-global.com](mailto:cservices@bsi-global.com)  
+44 20 8996 9000

# EN 14904

- **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 ?**