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# Standardization of Kits as Construction Products

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### CPR definition

“construction product” means any product or kit which is produced and placed on the market for incorporation in a permanent manner in construction works or parts thereof and the performance of which has an effect on the performance of which has an effect respect to the basic requirements for construction works

→ in short: kits are construction products

- DoP
- AoC
- AVCP
- CE-Marking

“Kit” means a construction product placed on the market by a single manufacturer as a set of at least two separate components that need to be put together to be incorporated in the construction works.

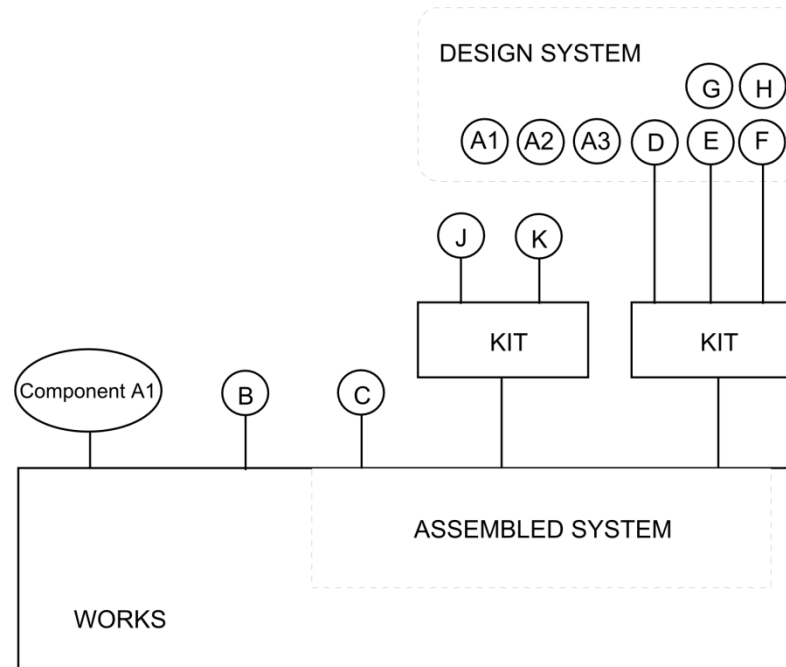
# A Challenge to Standardization

## Definition of a Product and a Kit



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**Figure 1 :** Schematic representation of concepts "systems", "kits", and "components".

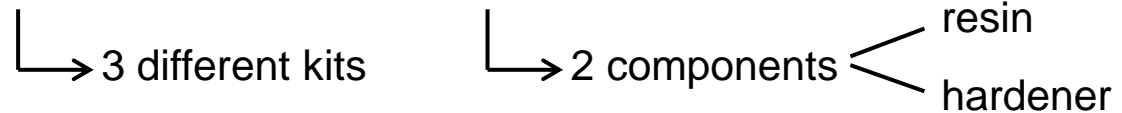


### Notes :

1. A component may, or may not, be a construction product in its own right, in the sense of the CPD.
2. A design system can give rise to one or more kits, each of which may have different combinations of components.

2K-Epoxy-Resin system:

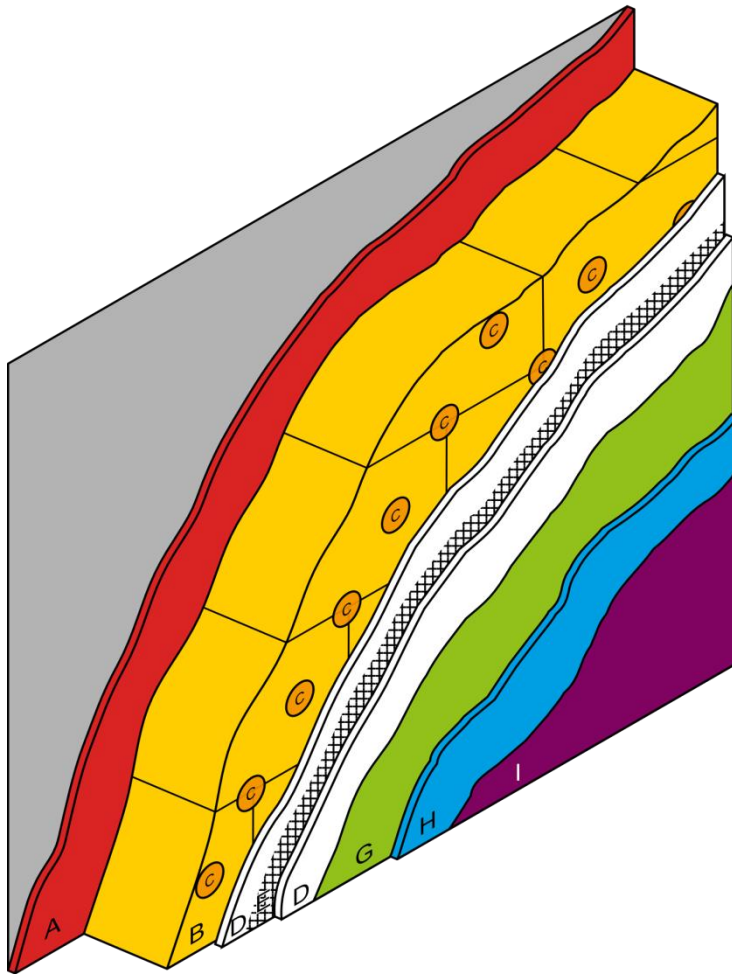
Example: one resin, three hardeners → 4 components? → 4 products



characteristics for components, e.g. vapor pressure  
characteristics for kits, e.g. adhesive tensile strength



Can only be measured as a kit



ETICS:

External Thermal Insulation Component System

CEN was charged by EU commission

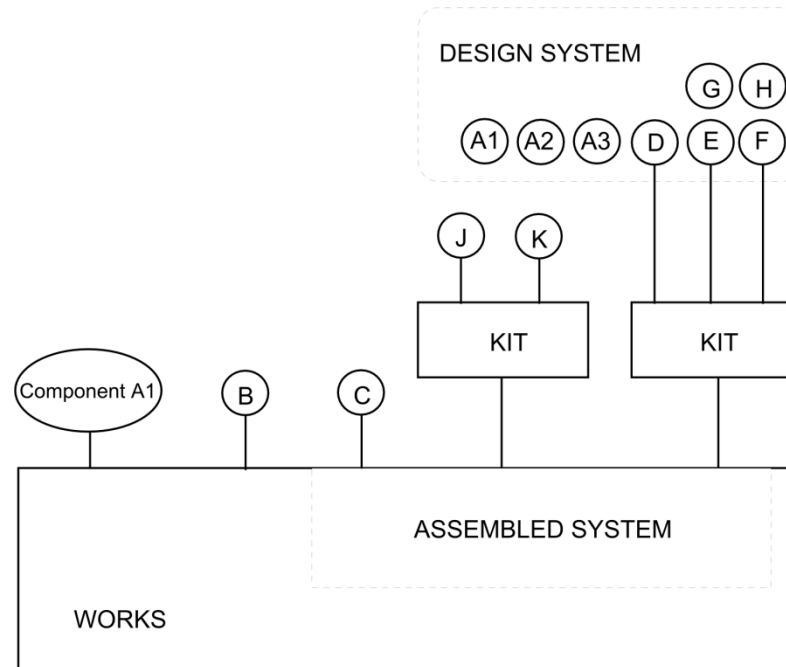
→ Harmonized standards

→ Legislature will refer to them

- a) adhesive
- b) thermal insulation product
- c) anchors
- d) base coat
- e) reinforcement (mesh)
- f) key coat
- g) finishing coat
- h) decorative coat
- i) protective layer

→ 8 components

**Figure 1 :** Schematic representation of concepts "systems", "kits", and "components".



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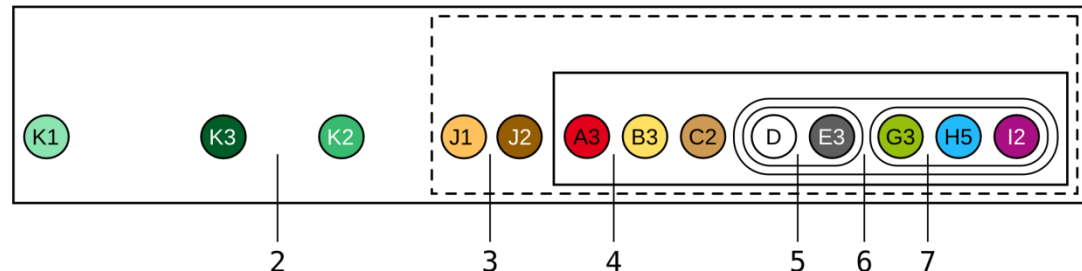
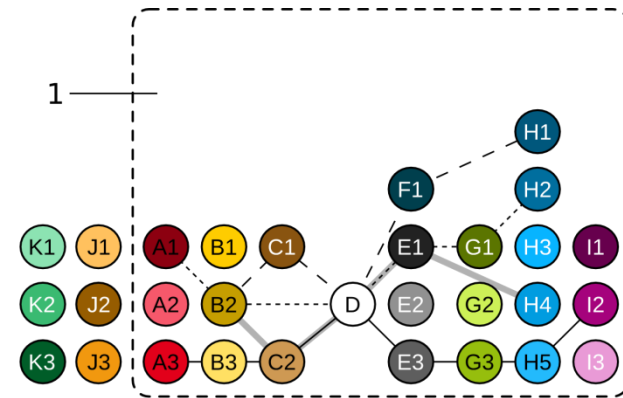
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## Design ETIC system

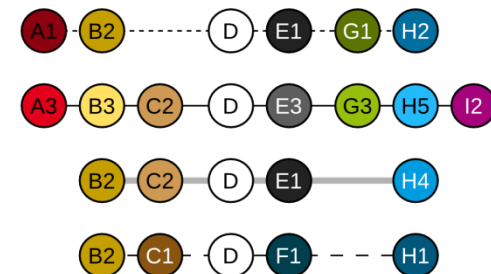


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- A adhesives
- B thermal insulation products of the same material
- C mechanical fixing devices
- D base coat
- E glass fibre meshes as reinforcement
- F metal meshes as reinforcement
- G key coats
- H finishing coats
- I decorative coats
- J ancillary materials
- K other construction materials



- 1 design ETICS
- 2 construction works
- 3 assembled kit with ancillary materials
- 4 assembled kit
- 5 reinforced base coat
- 6 rendering system
- 7 finishing layer



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## Adding of a new product to the system



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### 2K-Epoxy-Resin:

Example: one resin, three hardeners → 4 products → + 1 new hardener → 5 products

└→ 3 different kits

└→ 4 different kits

### Design ETICS:

Example: 3, 3, 2, 1, 2, 2, 10, 3 → 26 products → + 1 new reinforcement → 27 products

└→ 2160 different kits  
at maximum

└→ 3240 different kits  
at maximum



### **worst case definition**

configuration of specified system components for test purposes that leads to the most discriminating class or level of a certain characteristic which leads to results valid for a group of configurations with assumed equal or better performance

Which components shall be in the test specimen(s)?

Which products shall be in the test specimen(s)

Which kits are covered by a test result?

Every characteristic of a kit shall be considered by its own.

2K-Epoxy-Resin:

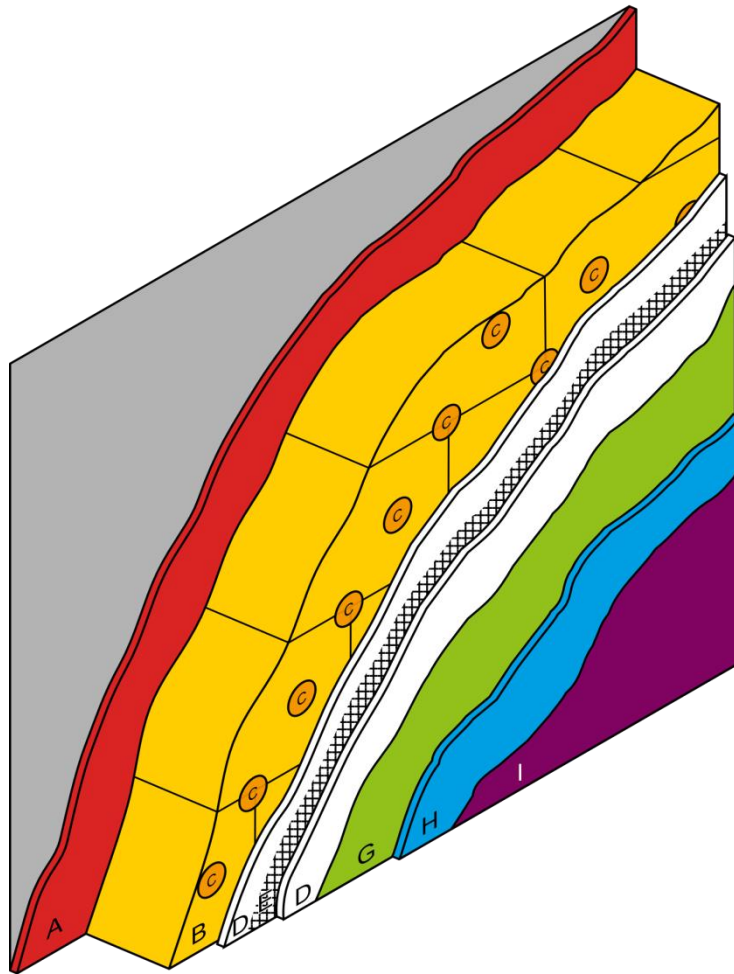
Example: one resin, three hardeners → 4 products → + 1 new hardener → 5 products

### **worst case rule for tensile adhesive strength**

Choose the hardener with the lowest content of reactive groups.

The test result is valid for the used resin and the used hardener and for hardeners with the same or higher content of reactive groups

One or no test  
→ of the kit  
necessary



- a) adhesive
- b) thermal insulation product
- c) anchors
- d) base coat
- e) reinforcement (mesh)
- g) key coat
- h) finishing coat
- i) decorative coat

Three cases possible for different characteristics:

- A whole kit shall be considered
- A part of a kit shall be considered
- One component shall be considered

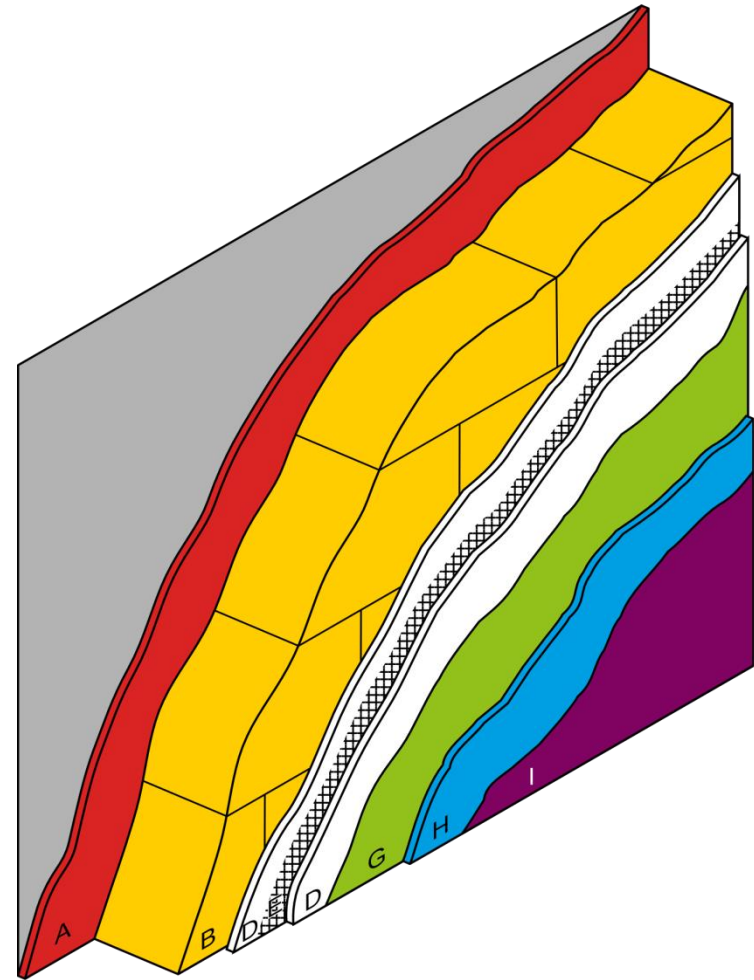
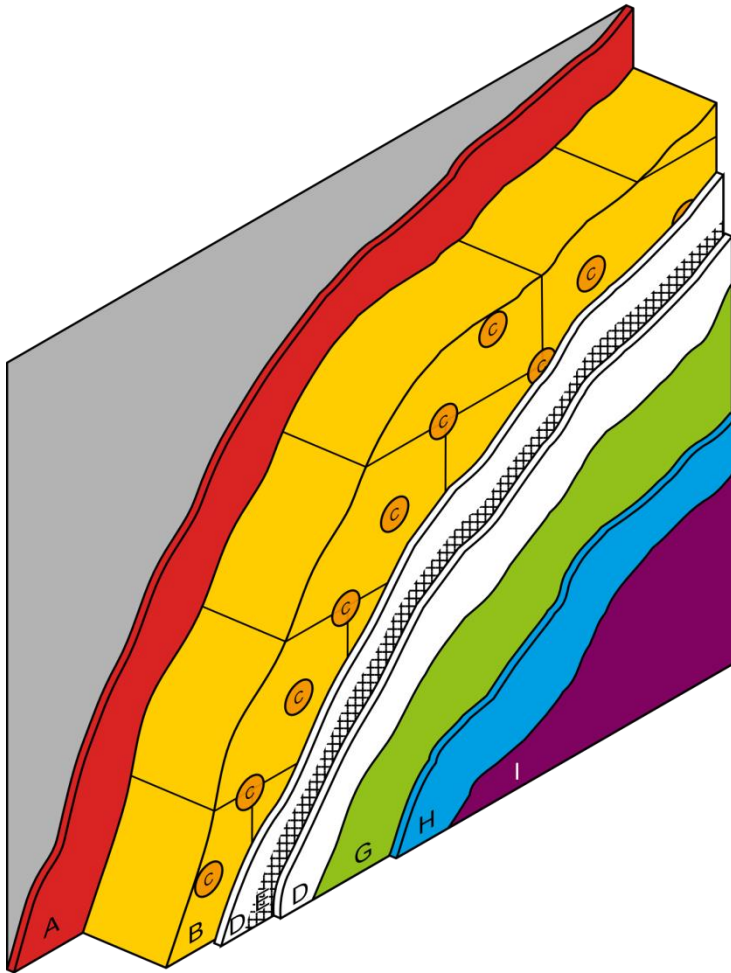
Every case leads to one or more kinds of test specimen(s)

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Worst case tested with a whole kit: Water tightness



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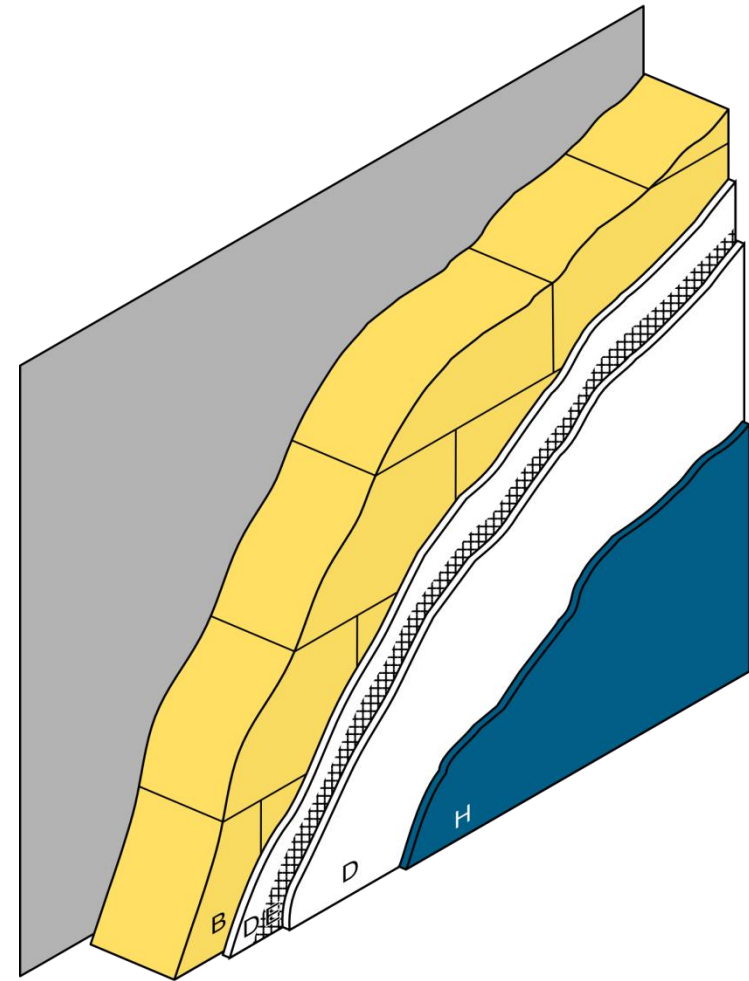
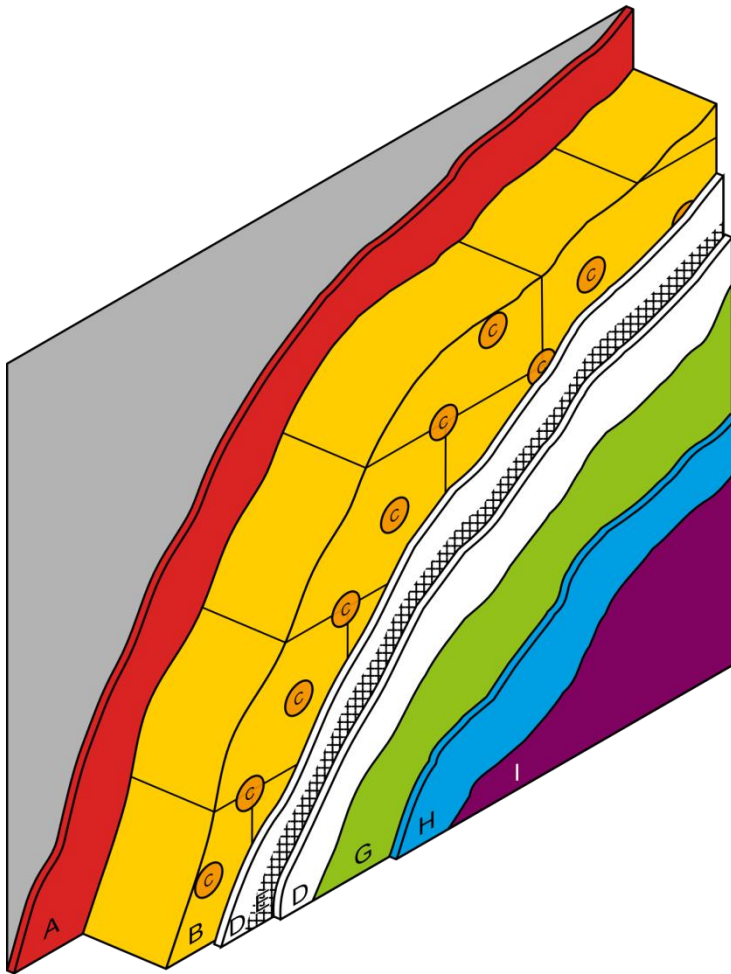


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Worst case tested with a part of a kit: Impact resistance



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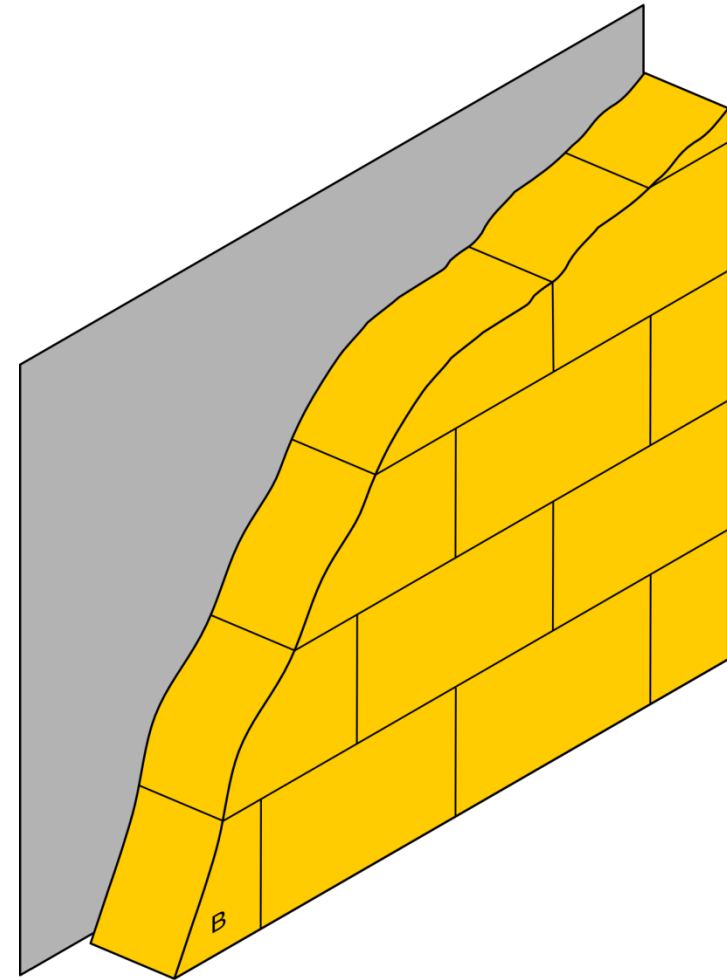
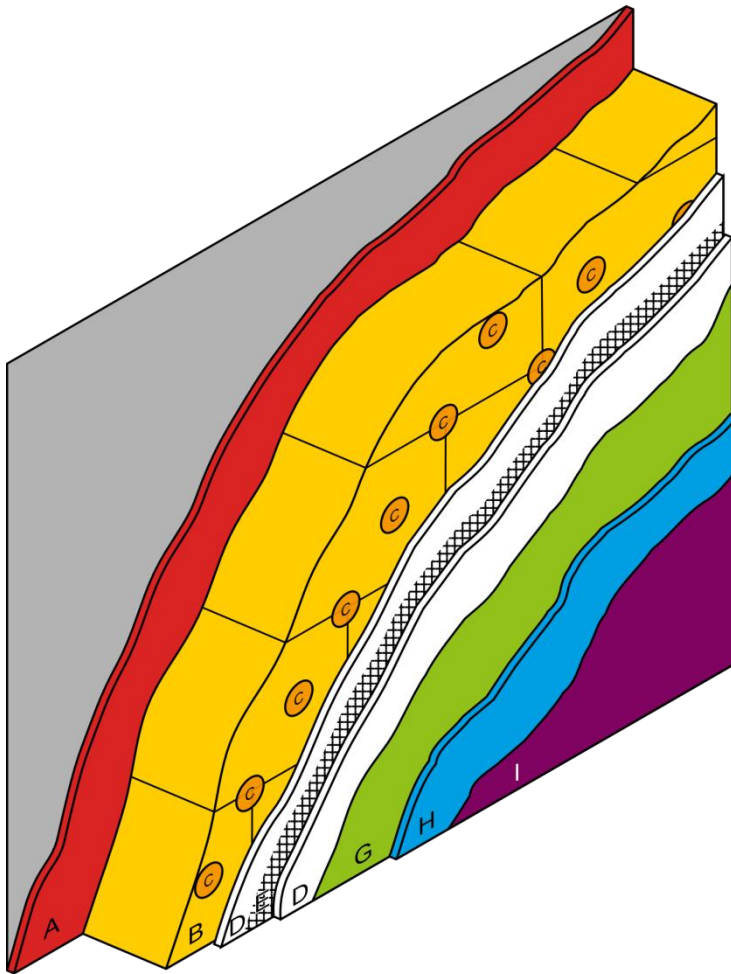


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Worst case tested with one component: Thermal resistance



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### Standardization of a design system needs worst case rules

- Comprehensive
- Precise
- Distinct
- Thorough



# Thank you for your attention