endurcrete

New Environmental friendly and Durable conCrete, integrating industrial by-products and hybrid systems, for civil, industrial and offshore applications

WP7 - Life cycle assessment and economic evaluation, standardization and health and safety aspects
WT 7.2 Standardization

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 760639.

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About EnDurCrete H2020 project

- H2020 project
- Started 1. 1. 2018
- Duration 42 months (+ Covid 19 extension)
- Project coordinator: Heidelberg Cement
- + 15 partners
- The goal: to develop a new cost-effective **sustainable** reinforced **concrete** for long lasting and added value applications, based on the integration of novel **low-clinker cement** including high-value industrial by-products,… ensuring enhanced durability of sustainable concrete structures with high mechanical properties, self-healing and self-monitoring capacities.

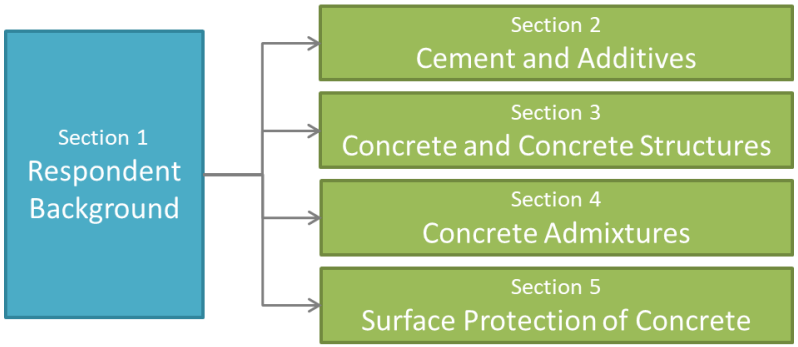
WT7.2 Objectives

- The aim of this task was to **identify the barriers** of existing technical specifications **for the implementation of developed materials** and technical solutions in everyday civil and building engineering practice.
- **Materials included**
  - 2 cements: CEM II/C-M (S-LL) and CEM VI (S-V)
  - 1 multifunctional coating
  - 1 admixture, i.e. corrosion inhibitor

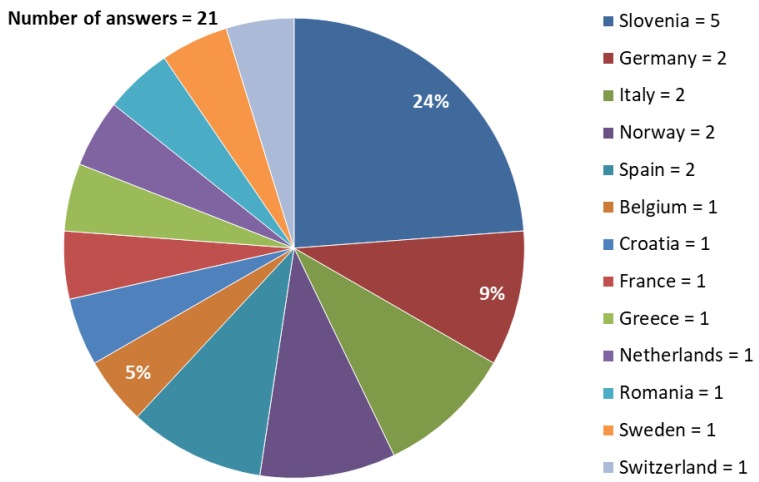
7.2. Standardization – approach

- Review of technical documents (European standards, including the harmonized ones, national implementation of the standards and other regulatory documents and guidelines) has been carried out : the existing standards - 15 documents were examined and
- Online survey 21 responses of stakeholders to detailed online survey from 13 countries collected
- Recommendations are summarized in deliverable **D7.4 Recommendations for updates of current European standards and national technical requirements**
- Contribution of CEN TC 104 members was appreciated

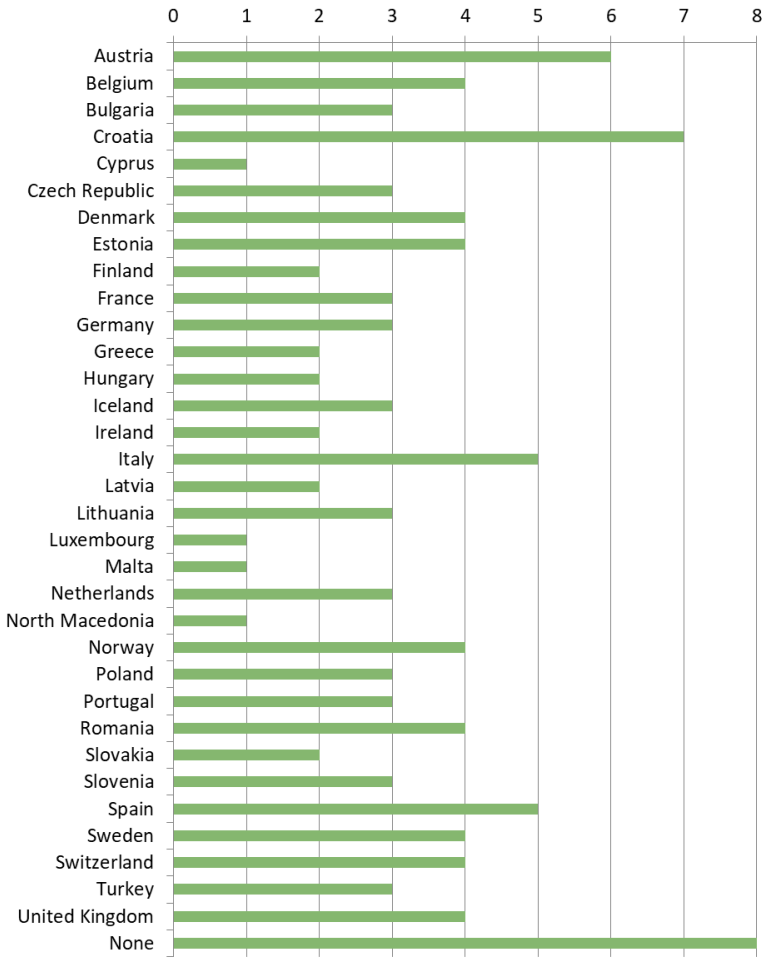
Online survey



Structure of the online Survey



Primary country of business operations



Secondary country of business operations

Conclusions

- The application of cement, as the component of concrete impacting structural stability and durability of concrete structures, is **subjected to national regulations** to a much higher degree than admixtures and coatings;
- Realizing the need for standardisation of new low clinker content cement types, **pragmatic** alternative **solutions** have to be found (e.g non-harmonized EN, national standards, European Technical Assessments (ETA) etc.).
- Furthermore, according on the current state of discussion, there is the risk that harmonized product standards following a new revised CPR do **not satisfy** anymore the demand on **technical specifications** which are needed for practical work and application of the products.

Conclusions

- In terms of cement and its use in concrete, the majority of EU countries have put in place the **implementation rules**.
- These rules in several cases add to the explanation of exposure classes and either enforce or recommend the use of **certain** cement **types** for a given **exposure class**.
- Even if national implementation rules make provisions for novel materials to be used under the equivalent performance approach, this option is **rarely used** in practice.

Conclusions

- No barriers for putting the EnDurCrete **multifunctional coating** on the market, can be done based on hEN 1504-2,
- no barriers for applications were registered.

- No technical specification found for **corrosion inhibitors** (EN 934-x, Admixtures for concrete)
- Barriers for application in national codes, i.e. 5 types of admixtures in Spanish EHE-08 Code on Structural Concrete'. Gobierno de España, Ministerio de Transportes, Movilidad y Agenda Urbana

TYPE OF ADMIXTURE	MAIN FUNCTION
Water reducers/plastifiers	To reduce the water content of a concrete without modifying its workability or increase workability without modifying the water content.
High-range water reducers/ superplastifiers	To significantly reduce the water content of a concrete without modifying its workability or significantly increase workability without modifying the water content.
Accelerators and retarders	To modify a concrete's setting time.
Air-entraining agents	To produce a controlled volume of fine air bubbles which are uniformly distributed in the concrete in order to improve frost resistance.
Multi-functional	To modify more than one of the main functions defined above.

D7.4 Recommendations

- Once the new version of EN 197-1 (currently prEN 197-1) is implemented, CEN TC 104 should **revise EN 206**;
- New version of EN 206 should include information on which **cement** types are suitable any given **exposure class**
- Information related to the performance of novel materials should be made available to the members of TCs and to practicing engineers. This can be done through workshops, publications and conferences. However, information should be double-checked before implementation recommendations are issued and care should be taken to eliminate pressure from circles with commercial interests.
- Deliverable D7.4 is available on http://www.endurcrete.eu/documents/deliverables

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Thank you for your attention.

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