

I.S.888: 2016 - CODE OF PRACTICE FOR THE PROCUREMENT AND USE OF UNBOUND GRANULAR FILL HARDCORE MATERIAL FOR USE UNDER CONCRETE FLOORS

Introduction

I.S. 888:2016 is the Code of Practice for the Procurement and Use of Unbound Granular Fill Hardcore Material for use under Concrete Floors which has been developed by the Aggregates Panel of the National Standards Authority of Ireland (NSAI).

This standard outlines requirements for the procurement, haulage, delivery and receipt, storage and handling, placing, traceability and record management of S.R. 21 Annex E material (hardcore) for use under concrete floors and footpaths (and within 500mm of each side of such concrete). The objective of I.S. 888:2016 is to ensure the complete traceability of hardcore from the original manufacturer to its place of final end use where it is incorporated into the works.

S.R. 21 – Annex E

Standard Recommendation 21:2014 + A1:2016 (S.R. 21) is the Irish national guidance on the harmonised standard, I.S. EN 13242:2002+A1:2007, which is the standard outlining the properties of aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction. S.R. 21 was produced by the Aggregates Panel of the NSAI. Annex E to S.R. 21 is guidance for the specification and production of aggregates used as hardcore under concrete slabs and footpaths, and specifies four different materials for use in combination for that purpose.

Building Regulations

Under the National Building Regulations Technical Guidance Document (TGD) C – Site Preparation and Resistance to Moisture, hardcore for use under concrete floors and footpaths must comply with S.R. 21 Annex E. An upcoming review of TGD C is expected to reference the most recent version of S.R. 21 and the placing details specified in this new standard I.S. 888:2016.

Ordering Hardcore

I.S. 888 requires that the builder must ensure that all hardcore for use under concrete floors and footpaths is ordered in accordance with the project specification, I.S. EN 13242 S.R. 21 Annex E. The intended end use of the hardcore for use under concrete floors and footpaths in accordance with S.R. 21 Annex E must be communicated to the supplier in writing.



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Receipt and Traceability of Hardcore On Site

The builder's procurement arrangements for hardcore must ensure traceability from the point of collection or delivery to the location within the works where the material is incorporated.

Delivery Docket

The builder must ensure that each delivery of hardcore material to the site is accompanied by the original manufacturer's delivery docket and that all original delivery dockets are retained and available for inspection. The date on the delivery docket should correspond to the date of receipt on site. The delivery docket must be inspected by the builder prior to unloading to ensure that it includes at least the following information:

- Designation:
 - Source and manufacturer
 - Type of aggregate
 - Aggregate size
- Date of dispatch
- Serial number of the ticket
- Reference to I.S. EN 13242
- A statement of compliance as appropriate:
 - "SR21 Annex E – T0 STRUC";
 - "SR21 Annex E – T1 STRUC";
 - "SR21 Annex E – T2 PERM";
 - "SR21 Annex E – T3 BLIND".

Hardcore Inspection

The hardcore should be visually inspected by the builder before and/or during placing and compaction. Where required by the project specification, samples for testing should be taken on site. If as a result of visual or sample testing the product is not deemed to be compliant with S.R. 21 Annex E, agreed appropriate action should be taken including alerting the manufacturer and placing the material in quarantine and marking the material as non-conforming on site.

Traceability on Site

Prior to the commencement of placing of the hardcore under concrete floors or footpaths, the builder must develop a method statement detailing the following:

- The sources and manufacturers of all S.R. 21 Annex E hardcore to be incorporated into the works;
- The arrangement for managing and documenting individual stockpiles to ensure that only material from a single source is stored in any one stockpile;
- The arrangements for recording the precise location on site where the material from each source is incorporated;
- The appointment of a designated person for ensuring that the builder's method statement is implemented on site; this is the requirement of the main builder, irrespective of whether the placing of the hardcore is sub-contracted or not.

Prior to the placing of the S.R. 21 Annex E hardcore, the builder must also make available, where requested, documentation in respect of each proposed source of hardcore which:

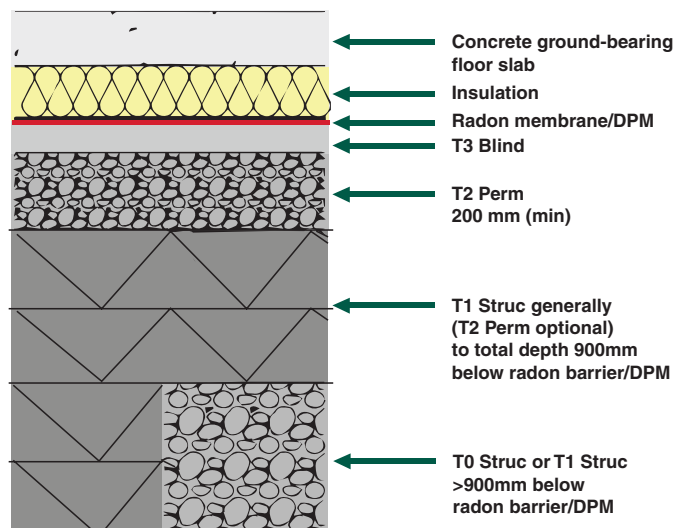
- identifies the manufacturer;
- provides full details of testing and certification of the hardcore for compliance with S.R. 21 Annex E, including a statement of compliance from a professional geologist that the material is suitable for use as hardcore under concrete floors and footpaths.

The builder must ensure that the method statement is fully implemented at all stages of the works.

Placing of Unbound Granular Fill

Name	Description
T3 Blind	Used in all cases to blind off the top layer of the hardcore and so is used immediately below the radon barrier/ DPM, to mitigate the risk of puncture. The layer must be a maximum thickness of 50mm.
T2 Perm	Gas permeable material and must be used beneath the blinding layer and wherever a radon sump is present. The layer must not be less than 200mm in depth. For residential loading, 'T2 Perm' may be used as the sole fill material up to a maximum depth of 900mm or 'T1 Struc' may be used beneath it.
T1 Struc	Can be used beneath blinding layer where a gas permeable layer (T2 Perm) is not required or can be used under 200mm of 'T2 Perm', to any depth.
T0 Struc	May be used up to a level not closer than 900mm below the radon barrier/ DPM. Thereafter 'T1 Struc' and/or 'T2 Perm' is used to make up the 900mm to radon barrier/ DPM.

Residential Detail (Radon Sump present)



Summary of Supply Chain Responsibilities

*Scenario 1 – Builder orders directly from the Manufacturer;
Manufacturer supplies Builder directly*

Builder Responsibilities	Manufacturer Responsibilities
Order the material correctly; i.e. I.S. EN 13242 and S.R. 21 Annex E, and communicate clearly the intended end use in writing. i.e. “Unbound Granular Fill (Hardcore) for use under Concrete Floors and Footpaths – T0 Struc, T1 Struc, T2 Perm or T3 Blind” as appropriate.	Provide CE marking on the commercial documentation.
Request Declaration of Performance (hardcopy or electronic).	Provide Declaration of Performance and include statement of intended end use “Unbound Granular Fill (Hardcore) for use under Concrete Floors and Footpaths”.
Review the Declaration of Performance to ensure information provided is in accordance with project specification.	Provide a delivery docket for each load with the required information (see above).
Review the delivery docket for each load to ensure it includes the required information from the manufacturer (see above).	Retain the delivery docket in hard or soft copy for a minimum of 10 years.
Retain the delivery docket for each load for a minimum of 6 years (or in accordance with the contract, whichever is the greater).	
Make available the CE marking, Declaration of Performance and original delivery dockets for inspection.	

*Scenario 2: Builder orders directly from intermediary;
Manufacturer supplies intermediary who supplies Builder;*

Builder Responsibilities	Intermediary Responsibilities	Manufacturer Responsibilities
Order the material correctly from the intermediary; i.e. I.S. EN 13242 and S.R. 21 Annex E, and communicate clearly the intended end use in writing. i.e. “Unbound Granular Fill (Hardcore) for use under Concrete Floors and Footpaths – T0 Struc, T1 Struc, T2 Perm or T3 Blind” as appropriate.	Provide builder with details of manufacturers and sources of S.R. 21 Annex E hardcore for his approval.	Provide CE marking on the commercial documentation to the intermediary.
Request intermediary to furnish him/her with details of manufacturers and sources of hardcore for pre-approval.	Order the material correctly from one of the builders pre-approved sources; i.e. I.S. EN 13242 and S.R. 21 Annex E.	Provide Declaration of Performance and include statement of intended end use “Unbound Granular Fill (Hardcore) for use under Concrete Floors and Footpaths”.
Request and retain the original delivery docket from the manufacturer for each load.	Communicate clearly to the manufacturer the intended end use i.e. “Unbound Granular Fill (Hardcore) for use under Concrete Floors and Footpaths – T0 Struc, T1 Struc, T2 Perm or T3 Blind” as appropriate and request compliance with S.R. 21 – Annex E.	Provide a delivery docket for each load with the required information (see above).
Request original manufacturer’s DoP from intermediary (hard copy or electronic) for material supplied from each source.	Ensure storage and transport conditions do not jeopardize hard core conformity with DoP.	Retain the delivery docket in hard or soft copy for a minimum of 10 years.

Builder Responsibilities	Intermediary Responsibilities	Manufacturer Responsibilities
Review the Declaration of Performance to ensure information provided is in accordance with project specification.	Provide Builder with: <ul style="list-style-type: none"> • Manufacturer's original delivery docket for each load • CE Marking and commercial documentation • Declaration of Performance. 	
Retain the delivery docket for each load for a minimum of 6 years (or in accordance with the contract, whichever is the greater).	Retain delivery docket for 10 years.	
Make available the CE marking, Declaration of Performance and original delivery dockets for inspection.		

General

It is imperative for all parties that material is pre-approved regardless of the supply chain chosen, and that evidence of traceability is sought by the builder where an intermediary is used.

In the case where there is an intermediary involved who is disclosing (and relying on) the original manufacturer for product certification and CE marking, the intermediary takes on the role of distributor, notwithstanding contractual responsibilities formed.

It should be noted that where an intermediary does not disclose the name of the original manufacturer, then the intermediary becomes the 'de facto' supplier and is wholly responsible for product compliance and for CE marking of the products supplied. It is not clear how such a scenario complies with I.S 888:2016 with regard to identification to the manufacturer.

Disclaimer: This document is for general guidance only. Readers are advised to consult the relevant standards, regulations and/or standard recommendations and obtain appropriate professional advice where necessary.



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