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Technical Manager Concrete Products

Roadstone Limited

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Aggregate Standards

- EN 12620: - *Aggregates for concrete.*
- EN 13043: - *Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas.*
- EN 13139: -*Aggregates for mortar.*
- EN 13242: - *Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction.*
- EN 13383-1: -*Armourstone.*
- EN 13450: -*Aggregates for railway ballast.*

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Standard Recommendations
S.R.'s (Ireland's National Annex)

- **S.R. 16** Guidance on the use of I.S. EN 12620: Aggregates for Concrete

- **S.R. 18** Guidance on the use of I.S. EN 13139 – Aggregates for mortar

- **S.R. 21** Guidance on the use of I.S. EN 13242:2002 +A1:2007 – Aggregates for Unbound and Hydraulically bound materials for use in civil engineering work and road construction
  - I.S. 888 Code of Practice for the procurement and use of unbound granular fill hardcore material for use under concrete floors
  - I.S. 398-1 Reactive pyrite in sub-floor hardcore material – Part 1: Testing and categorization protocol– ***<u>**For reinstatement only**</u> ***

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Attestation of Conformity (AOC) System's.

- System 1+ Certification of product conformity, with audit testing.
- System 1 Certification of product conformity, without audit testing.
- **System 2+ Certification of Factory Production Control (FPC), with continuous surveillance.**
- System 2 Certification of Factory production control (FPC), without surveillance.
- System 3 Initial type testing.
- System 4 Manufacturer's tasks only. The tasks for the manufacturer and for the notified body are summarised in Figure 1.
- All AOC systems, including the least onerous (system 4), require the manufacturer to have a fully recorded Factory Production Control (FPC) system. The criteria for this should be included in the technical specification.

Notified Bodies & Tasks Certifiers /Auditors

- Product Conformity certification bodies; ·
- FPC certification bodies;
- Inspection bodies; and · Test
- Laboratories who are competent to carry out the attestation tasks described in the previous section.

Such bodies are first approved by their respective **Member States** to carry out certain designated tasks, and then notified to the **EU Commission and other EU Member States.**

Figure 1 Attestation of Conformity (AOC) tasks required under the CPD

Conformity Attestation (Commission numbering system)	1+	1	2+	2	3	4
Tasks for the Manufacturer						
• Factory production control	✗	✗	✗	✗	✗	✗
• Further testing of samples taken at the factory according to a prescribed test plan	✗	✗	✗			
• Initial type testing			✗	✗		✗
Tasks for the Notified Body						
• Initial type testing	✗	✗			✗	
• Certification of FPC	✗ ✗		✗ ✗			
• Surveillance of FPC	✗	✗	✗			
• Audit testing of samples	✗					
✗ = task required						

`What's Audited ?

Table A.1 — Recommended I.S. EN 12620:2002+A1:2008 values/categories for concreting aggregates for general use including readymix concrete products, concrete used in roads and other pavements, precast concrete products, including concrete masonry units and precast concrete paving

Properties	Type of Aggregate	Values/categories	Test method
Size	-	d/D to be specified by user/specifier and/or declared by the manufacturer. See Table 1 for guidance	I.S. EN 933-1
Grading	-	Grading category to be specified by user/specifier and/or declared by the manufacturer	
	Coarse aggregate	See Table 3 for guidance	I.S. EN 933-1
	Fine aggregate	See Table 4 for guidance	
	All-in aggregate	See Table 5 for guidance	
	Filler aggregate	See Table 6 for guidance	
Shape - Flakiness Index	Uncrushed gravel	FI_{50}	I.S. EN 933-3
	Other	FI_{35}	
Fines Content	Crushed rock coarse aggregate	f_4	I.S. EN 933-1
	Gravel coarse aggregate	$f_{1.5}$	
	Crushed rock fine aggregate	f_{16}	
	Crushed or partially crushed gravel fine aggregate	f_3	
	Natural sand fine aggregate	f_3	
	Crushed rock all-in aggregate	f_{11}	
	Gravel all-in aggregate	f_3	
Fines Quality (of fine aggregate or filler)	-	When the fines content is $\leq f_3$ the fines quality is considered non-harmful	I.S. EN 933-1 See Annex C of S.R. 16:2016
	-	When the fines content is $>f_3$ the suitability should be assessed by the Competent Person (Professional Geologist)	
Resistance to Fragmentation --Los-Angeles coefficient	-	LA_{40}	I.S. EN 1097-2
Particle density	-	Particle density to be declared by manufacturer	I.S. EN 1097-6
Resistance to Freeze/Thaw - Water absorption	-	WA_{24} to be declared by manufacturer	I.S. EN 1097-6
Resistance to Freeze/Thaw - Magnesium sulfate value	-	MS to be declared by manufacturer	I.S. EN 1367-2
Drying shrinkage	-	≤0.075%	I.S. EN 1367-4
Alkali-silica reactivity	-	Non-reactive as evaluated by the Competent Person (Professional Geologist)	IEI/ICS Report
Water-soluble chloride ion content	-	Water-soluble chloride ion content to be declared by manufacturer	I.S. EN 1744-1
Acid soluble sulfate content	-	$AS_{0.2}$	I.S. EN 1744-1
Total sulfur content	-	≤ 1 %	I.S. EN 1744-1
Petrographic assessment	-	See 3.5 and Annex C	See Annex C

NOTE 1 The properties and the associated values/categories detailed in Table A.1 apply to both natural aggregates and recycled concrete aggregates when used as a raw material in any concrete

NOTE 2 Table A.1 recommends that total sulfur is ≤ 1 %. However, aggregates that meet the ≤ 1 % recommendation may still be deemed unsuitable based on the assessment and opinion of the Competent Person (Professional Geologist).

Annex C
(informative)

Guidance on the Geological and petrographic assessment of the aggregate

C.1 Introduction

A geological and petrographic assessment of the raw material (i.e. the quarry deposit) and of the finished aggregate product for use in concrete and concrete products should be carried out at regular intervals.

This assessment includes:

a) the initial and ongoing assessment of the quarry deposit;

b) the initial type testing and ongoing conformity testing of the finished aggregate product;

c) factory production control of the aggregate production.

The approach and methodologies recommended to assess the raw material and the finished aggregate product both in the macro and micro scale are in C.2 to C.3.

C.2 Geological assessment of the raw material (i.e. the quarry deposit)

H.3.3 of I.S. EN 12620:2002+A1:2008 gives guidance for pre-production and periodic geological assessments of the raw material.

In the case of raw material used to produce concrete and concrete products this geological assessment should give particular attention to limit the presence of suspected problematic lithologies and or minerals which may be unsuitable for use in particular end uses, i.e. in concrete and concrete products.

C.3 Petrographic assessment of the finished aggregate product

A petrographic examination of the aggregate should be carried out in accordance with the procedure specified in I.S. EN 932-3 to determine the presence of potentially deleterious material.

The petrographic description should be carried out by a suitably qualified person.

The petrographic description should be assessed in conjunction with other test results by the Competent Person (Professional Geologist))

NOTE Ensure due account is taken of the variability of the rock and that separate petrographic assessments are carried out on representative sub-samples of any suspected problematic lithologies previously identified as part of the geological examination outlined in. I.S. EN 932-3.

C.3.1 Competent Person (Professional Geologist) Statement of compliance

The Competent Person (Professional Geologist) should provide a statement of compliance for the suitability of the material for the proposed end use. This statement should take into consideration the requirements of I.S. EN 12620:2002+A1:2008, the recommendations of this Annex and all necessary parameters including the Petrographer's report.

`What's Audited ?

Properties	Type of Aggregate	Values/categories	Test method
Acid soluble sulfate content	-	$AS_{0.2}$	I.S. EN 1744-1
Total sulfur content	-	≤ 1 %	I.S. EN 1744-1
Petrographic assessment	-	See 3.5 and Annex C	See Annex C
NOTE 1 The properties and the associated values/categories detailed in Table A.1 apply to both natural aggregates and recycled concrete aggregates when used as a raw material in any concrete NOTE 2 Table A.1 recommends that total sulfur is ≤ 1 %. However, aggregates that meet the ≤ 1 % recommendation may still be deemed unsuitable based on the assessment and opinion of the Competent Person (Professional Geologist).			

Geological and Petrographic assessment

GEOLOGY OF CLASSIS QUARRY

Classis Quarry extracts glaciofluvial sands and gravels sourced from Devonian sandstone formations. The Gyleen

The aggregates have been determined to be in compliance with the test requirements of the following relevant standards and are suitable for use in the following aggregate products which are produced at Classis.

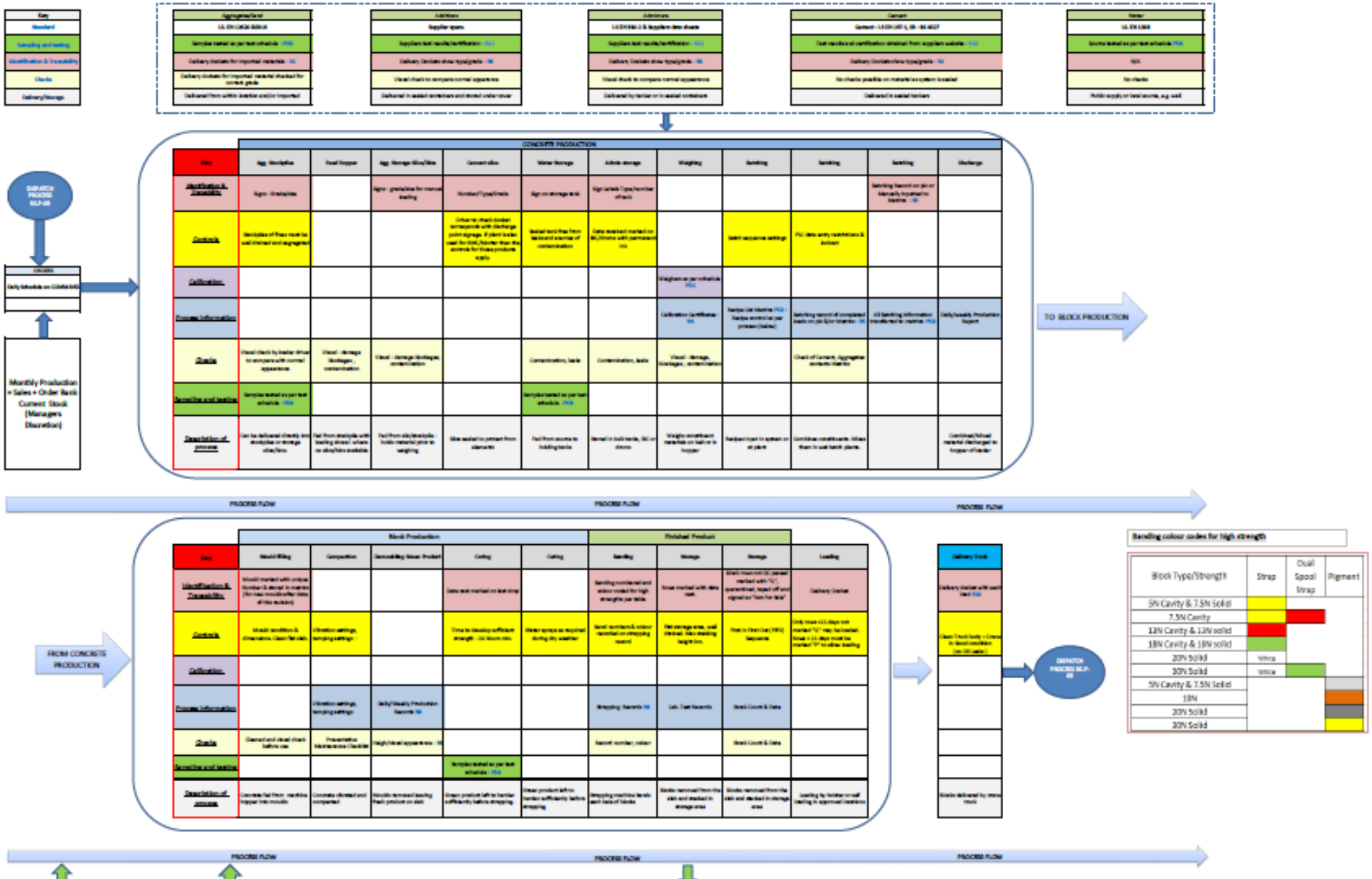
- TII Series 500, 600 and 800 unbound fill materials*
- SR21:2014 + A1: 2016 Annex E Guidance on the use of I.S. EN 13242 unbound fill materials
- S.R. 16 Guidance on the use of I.S. EN 12620:2002 Aggregates for concrete products
- S.R. 17 Guidance on the use of I.S. EN 13043:2002 Aggregates for bituminous bound aggregate products*
- S.R. 18: 2021 Guidance on the use of I.S. EN 13139:2002 – Aggregates for mortar

*Further testing may be required

The results of the above assessments and testing have been reviewed by a Professional Geologist qualifying as a Competent Person.

The results of the above assessments and testing have been reviewed by a Professional Geologist qualifying as a Competent Person with the production faces in the quarry inspected. Bulk samples of the production material were taken in accordance with I.S. EN932-1.

Factory Production Control (FPC)



Factory Production Control (FPC)

I.S. EN 12620 &SR16	Supplier specs.
Samples tested as per test schedule -PD3	Suppliers test results/certification - R11
Delivery dockets for imported materials - R1	Delivery Dockets show type/grade - R4
Delivery dockets for imported material checked for correct grade	Visual check to compare normal apperance
Delivered from within location and/or imported	Delivered in sealed containers and stored under cover

	CONCRET				
Key	**Agg. Stockpiles**	**Feed Hopper**	**Agg. Storage Silos/Bins**	**Cement silos**	**Wate**
Identification & Traceability	Signs - Grade/size		Signs - grade/size for manual loading	Number/Type/Grade	Sign on

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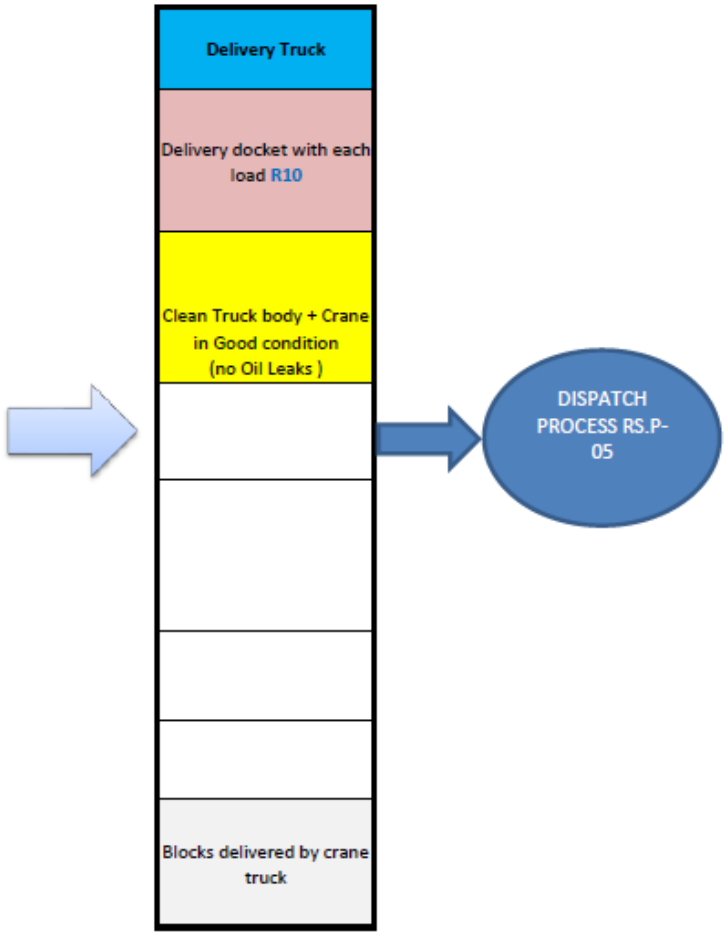
Factory Production Control (FPC)

		Finished Product			
Curing	Curing	Banding	Storage	Storage	Loading
Date cast marked on last drop		Banding numbered and colour coded for high strengths per table	Rows marked with date cast.	Block rows not QC passed marked with "Q", quarantined, taped off and signed as "Not For Sale"	Delivery Docket
Time to develop sufficient strength - 24 Hours min.	Water sprays as required during dry weather	Band numbers & colour recorded on strapping record	Flat storage area, well drained. Max stacking height 3m.	First In First Out (FIFO) Sequence	Only rows >21 days not marked "Q" may be loaded. Rows < 21 days must be marked "P" to allow loading
		Strapping Records R9	Lab. Test Records	Stock Count & Date	
		Record number, colour		Stock Count & Date	
Samples tested as per test schedule - PD3					
Green product left to harden sufficiently before strapping.	Green product left to harden sufficiently before strapping.	Strapping machine bands each bale of blocks	Blocks removed from the slab and stacked in storage area	Blocks removed from the slab and stacked in storage area	Loading by hoister or self loading in approved locations



Factory Production Control (FPC)

ASSOCIATED PROCEDURES	
TITLE	DOC REF
Calibration	RS.P-001
Product Testing	RS.P-007
Nonconforming Product	RS.P-012
Maintenance	RS.P-013
Transport Process	RS.F.080
Internal Audit	RS.P-09
Management Review	RS.P-010

PROCESS DOCUMENTS			
PROCESS REF	DESCRIPTION	DOC. REF	RESP.
PD1	Calibration Schedule	RS.F-01	Manager
PD2	Metrics	M: Drive - MaPS	Manager
PD3	Test Schedule	RS.LR.002	QC
PD4	Not assigned	N/A	N/A
PD5	Not assigned	N/A	N/A
PD6	Not assigned	N/A	N/A

Factory Production Control (FPC)

NSAI

CERTIFICATE OF CONFORMITY OF THE FACTORY PRODUCTION CONTROL

0050 - CPR - 1021 System 2+

In compliance with the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC, it has been stated that the construction product:

Aggregates for concrete in accordance with Annex ZA of the following:

I.S. EN 12620:2002+A1:2008

Placed on the market by:

Roadstone Ltd
t/a Joseph Hogans
Ballylin, Foynes
Co. Limerick
V94 NY54

and produced in the factory:

Roadstone Ltd
t/a Joseph Hogans
Ballylin, Foynes
Co. Limerick
V94 NY54

Is submitted by the manufacturer to the initial type-testing of the product and its factory production control and that the approved body – National Standards Authority of Ireland – has performed the initial inspection of the factory and of the factory production control and performs the continuous surveillance, assessment and approval of the factory production control.
This certificate attests that all provisions concerning the attestation of factory production control described in Annex ZA of the standards listed above were applied.

This certificate was first issued on 23 April 2020 and remains valid as long as the conditions laid down in the harmonised technical specification in reference or the manufacturing conditions in the factory or the FPC itself are not modified significantly.

Signed:

Kevin D. Mullaney – Director of Certification

File Number:	1.129.172
Approval Date:	23 April 2020
Last Amended Date:	13 December 2023
Expiry Date:	31 October 2024
Issued by:	NSAI, 1 Swift Square, Northwood Business Park, Santry, Dublin 9

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NSAI

CERTIFICATE OF CONFORMITY OF THE FACTORY PRODUCTION CONTROL

0050 - CPR - 1201 System 2+

In compliance with the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC, it has been stated that the construction product:

Aggregates for mortar in accordance with Annex ZA of the following:

I.S. EN 13139:2002

Placed on the market by:

Roadstone Ltd
Classis
Ovens
Co. Cork
P31 X003

and produced in the factory:

Roadstone Ltd
Classis
Ovens
Co. Cork
P31 X003

Is submitted by the manufacturer to the initial type-testing of the product and its factory production control and that the approved body – National Standards Authority of Ireland – has performed the initial inspection of the factory and of the factory production control and performs the continuous surveillance, assessment and approval of the factory production control.
This certificate attests that all provisions concerning the attestation of factory production control described in Annex ZA of the standards listed above were applied.

This certificate was first issued on 21 March 2023 and remains valid as long as the conditions laid down in the harmonised technical specification in reference or the manufacturing conditions in the factory or the FPC itself are not modified significantly.

Signed:

Kevin D. Mullaney – Director of Certification

File Number:	1.147.022
Approval Date:	21 March 2023
Last Amended Date:	12 October 2023
Expiry Date:	31 October 2024
Issued by:	NSAI, 1 Swift Square, Northwood Business Park, Santry, Dublin 9

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NSAI

CERTIFICATE OF CONFORMITY OF THE FACTORY PRODUCTION CONTROL

0050 - CPR - 0923 System 2+

In compliance with the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC, it has been stated that the construction product:

Aggregate concrete masonry units. in accordance with Annex ZA of the following:

I.S. EN 771-3:2011+A1:2015

Placed on the market by:

Roadstone Ltd
Classis
Ovens
Co. Cork
P31 X003

and produced in the factory:

Roadstone Ltd
Classis
Ovens
Co. Cork
P31 X003

Is submitted by the manufacturer to the initial type-testing of the product and its factory production control and that the approved body – National Standards Authority of Ireland – has performed the initial inspection of the factory and of the factory production control and performs the continuous surveillance, assessment and approval of the factory production control.
This certificate attests that all provisions concerning the attestation of factory production control described in Annex ZA of the standards listed above were applied.

This certificate was first issued on 30 June 2013 and remains valid as long as the conditions laid down in the harmonised technical specification in reference or the manufacturing conditions in the factory or the FPC itself are not modified significantly.

Signed:

Kevin D. Mullaney – Director of Certification

File Number:	1.116.031
Approval Date:	30 June 2013
Last Amended Date:	3 October 2023
Expiry Date:	31 October 2024
Issued by:	NSAI, 1 Swift Square, Northwood Business Park, Santry, Dublin 9

Cert 316 – Certificate of Conformity FPC INAB

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IS EN12620

S.R. 16 Guidance on the use of I.S. EN 12620: Aggregates for Concrete

Table A.1 — Recommended I.S. EN 12620:2002+A1:2008 values/categories for concreting aggregates for general use including readymix concrete products, concrete used in roads and other pavements, precast concrete products, including concrete masonry units and precast concrete paving

Properties	Type of Aggregate	Values/categories	Test method
Size	-	d/D to be specified by user/specifier and/or declared by the manufacturer. See Table 1 for guidance	I.S. EN 933-1
Grading	-	Grading category to be specified by user/specifier and/or declared by the manufacturer	
	Coarse aggregate	See Table 3 for guidance	I.S. EN 933-1
	Fine aggregate	See Table 4 for guidance	
	All-in aggregate	See Table 5 for guidance	
	Filler aggregate	See Table 6 for guidance	
Shape - Flakiness Index	Uncrushed gravel	FI_{50}	I.S. EN 933-3
	Other	FI_{35}	
Fines Content	Crushed rock coarse aggregate	f_4	I.S. EN 933-1
	Gravel coarse aggregate	$f_{1.5}$	
	Crushed rock fine aggregate	f_{16}	
	Crushed or partially crushed gravel fine aggregate	f_3	
	Natural sand fine aggregate	f_3	
	Crushed rock all-in aggregate	f_{11}	
	Gravel all-in aggregate	f_3	
Fines Quality (of fine aggregate or filler)	-	When the fines content is $\leq f_3$ the fines quality is considered non-harmful	I.S. EN 933-1 See Annex C of S.R. 16:2016
	-	When the fines content is $>f_3$ the suitability should be assessed by the Competent Person (Professional Geologist)	
Resistance to Fragmentation --Los-Angeles coefficient	-	LA_{40}	I.S. EN 1097-2
Particle density	-	Particle density to be declared by manufacturer	I.S. EN 1097-6
Resistance to Freeze/Thaw - Water absorption	-	WA_{24} to be declared by manufacturer	I.S. EN 1097-6
Resistance to Freeze/Thaw - Magnesium sulfate value	-	MS to be declared by manufacturer	I.S. EN 1367-2
Drying shrinkage	-	≤0.075%	I.S. EN 1367-4
Alkali-silica reactivity	-	Non-reactive as evaluated by the Competent Person (Professional Geologist)	IEI/ICS Report
Water-soluble chloride ion content	-	Water-soluble chloride ion content to be declared by manufacturer	I.S. EN 1744-1

Properties	Type of Aggregate	Values/categories	Test method
Acid soluble sulfate content	-	$AS_{0.2}$	I.S. EN 1744-1
Total sulfur content	-	≤ 1 %	I.S. EN 1744-1
Petrographic assessment	-	See 3.5 and Annex C	See Annex C

NOTE 1 The properties and the associated values/categories detailed in Table A.1 apply to both natural aggregates and recycled concrete aggregates when used as a raw material in any concrete

NOTE 2 Table A.1 recommends that total sulfur is ≤ 1 %. However, aggregates that meet the ≤ 1 % recommendation may still be deemed unsuitable based on the assessment and opinion of the Competent Person (Professional Geologist).

National Defined Parameters

Values/categories
$AS_{0.2}$
≤ 1 %
See 3.5 and Annex C

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S.R. 18 Guidance on the use of I.S. EN 13139 – Aggregates for mortar

Table A.1 — Recommended I.S. EN 13139:2002 values/categories and test/assessment frequencies for properties for aggregates to be used for masonry mortar, plastering/rendering and floor screeds

Property	Value/category			Test method	Minimum default frequency (See NOTE 3)
	Masonry Mortar	Plastering/rendering	Floor screeds		
Size /Grading	0/2	0/2	0/4, 0/8	I.S. EN 933-1	1 per week
Coarseness/fineness classification	CP, MP, FP	MP, FP	CP, MP		
Fines content Category (See NOTE 2)	2, 3, 4	2	1, 4		
Fines quality in fine aggregate	When the fines content is ≤ 3 %, the fines quality is considered non-harmful. When the fines content is > 3 %, the suitability should be assessed by the Competent Person (Professional Geologist) as per Clause 3.2.7.3.			See Clause 3.2.7	1 per year
Particle density and Water absorption	To be declared by the manufacturer for 0,063 – 4 mm size fraction extracted from sample.			I.S. EN 1097-6	1 per year
Shell content	When exceptionally required as in the case of marine sourced aggregates the shell content for aggregate fractions coarser than 4 mm should be ≤ 10 % by mass.			I.S. EN 933-7	1 per year
Chloride ion content	To be declared by the manufacturer.			I.S. EN 1744-1	1 per 2 years for non-marine aggregates 1 per week for marine aggregates
Acid -soluble sulfate content (*AS*)	$AS_{0,2}$			I.S. EN 1744-1	1 per 6 months
Total sulfur content (S)	S ≤ 1 % generally; S ≤ 0,1 % if pyrrhotite is present in the aggregate; and			I.S. EN 1744-1	1 per 6 months

S.R. 18:2021

Property	Value/category	Test method	Minimum default frequency (See NOTE 3)
	The aggregate should be further assessed by a Competent Person (Professional Geologist) and deemed suitable with regard to its total sulfur content (see NOTE 1).		
Constituents which alter the rate of setting and hardening of mortar	If the Competent Person (Professional Geologist) recommends that this test should be carried out: — Increase in stiffening ≤ 120 minutes; and — Decrease in compressive strength at 28 days ≤ 20 % .	I.S. EN 1744-1 Clause 15.3 (See also 3.4.3 of this S.R.)	When recommended by the Competent Person (Professional Geologist)
Alkali-silica reactivity (ASR)	ASR to be declared by the manufacturer as either non-deleterious or potentially deleterious based on assessment by the Competent Person (Professional Geologist).	IEI/ICS Report	Once and in case of doubt
Petrographic assessment of the finished aggregate product	The petrography of the aggregate to be declared by the manufacturer as suitable for use in making mortar based on assessment by the Competent Person (Professional Geologist).	See Annex B.3.1	1 per year

NOTE 1 This Table recommends that total sulfur is ≤ 1 %. However, aggregates that meet the ≤ 1 % recommendation may still be deemed unsuitable based on the assessment and opinion of the Competent Person (Professional Geologist).

NOTE 2 Category 4 fines content is for crushed rock fines.

NOTE 3 The test/assessment frequencies should be increased (more frequent testing) from the default frequencies outlined in Table A.1 if recommended by the Competent Person (Professional Geologist). The test assessment/frequencies may be decreased (less frequent testing) from those outlined in Table A.1 if recommended by the Competent Person (Professional Geologist) or where a very consistent value/category is regularly achieved for a particular property (see 3.6.4.1 of this S.R.).

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BS 1199 & 1200 Building sands from Natural sources

Table 1 — Sands for external renderings, internal cement and lime plastering

BS sieve	Percentage by mass passing BS sieves	
	Type A	Type B
mm	%	%
6.30	100	100
5.00	95 – 100	95 – 100
2.36	60 – 100	80 – 100
1.18	30 – 100	70 – 100
µm		
600	15 – 80	55 – 100
300	5 – 50	5 – 75
150	0 – 15	0 – 20
75	not greater than 5	not greater than 5

Table 1 — Sands for mortar for plain and reinforced brickwork, blockwalling and masonry

BS sieve	Percentage by mass passing BS sieves	
	Type S	Type G
mm		
6.30	100	100
5.00	98 – 100	98 – 100
2.36	90 – 100	90 – 100
1.18	70 – 100	70 – 100
µm		
600	40 – 100	40 – 100
300	5 – 70	20 – 90
150	0 – 15	0 – 25
75	0 – 5[a]	0 – 8[b]

[a] 0 – 10 % for crushed stone sands
[b] 0 – 12 % for crushed stone sands

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Table NA.3 — Acceptable Assumed Equivalent Mixes for Prescribed Masonry Mortars
(*Subclause* 3.2.2(1))

Compressive Strength Class[a]	Equivalent Prescribed Mortars (Proportion of Materials by Volume) *(see Note)*			Mortar Designation
	Cement:Lime:Sand with or without Air Entrainment	Masonry Cement:Sand	Cement:Sand with or without Air Entrainment	
M12	1:0 to ¼:3	Not suitable	Not suitable	(i)
M6	1:½:4 to 4½	1:2½ to 3½	1:3 to 4	(ii)
M4	1:1:5 to 6	1:4 to 5	1:5 to 6	(iii)
M2	1:2:8 to 9	1:5½ to 6½	1:7 to 8	(iv)

[a] The number following the M is the compressive strength for the class at 28 days in N/mm^2

NOTE When the sand portion is given as, for example, 5 to 6, the lower figure should be used with sands containing a higher proportion of fines whilst the higher figure should be used with sands containing a lower proportion of fines.

Table F.1 — Prescribed Mixes suitable for rendering

Mix Class	Mix proportions by volume based on damp sand				
	Cement:lime:sand[a]	Cement:ready-mixed lime:sand[a]		Cement:sand[a] (using plasticizer)	Masonry cement:sand[a]
		Ready-mixed lime:sand	Cement:ready-mixed material		
I	1 : ¼ : 3	1 : 12	1 : 3	—	—
II	1 : ½ : 4 to 4½	1 : 9	1 : 4 to 4½	1 : 3 to 4	1 : 2½ to 3½
III	1: 1 : 5 to 6	1 : 6	1 : 5 to 6	1 : 5 to 6	1 : 4 to 5
IV	1 : 2 : 8 to 9	1 : 4½	1 : 8 to 9	1 : 7 to 8	1 : 5½ to 6½
V	1 : 3 : 10 to 12	1 : 4	1 : 10 to 12	—	—

NOTE In special circumstances, e.g. where soluble salts in the background are likely to cause problems, mixes based on sulphate-resisting Portland cement should be employed.

[a] With fine or poorly graded sands, the lower volume of sand should be used.

S.R. 21 Guidance on the use of I.S. EN 13242:2002 +A1:2007 – Aggregates for Unbound and Hydraulically bound materials for use in civil engineering work and road construction

Annex E

Properties	Test Description	Test Method	Category/size			Minimum test frequency	
			T1 Struc	T2 Perm	T3 Blind	Initial Type Testing	Factory production control
Geometrical	Grading (crushed rock)	I.S. EN 933-1	0/31,5 [a] See Table E.2	4/40 Gc80/20 See Table 3	0/4 G_F80 See Table 4	Yes	1 per week
	Grading (gravel)	I.S. EN 933-1	0/40 [a] See Table E.2				
	Fines content	I.S. EN 933-1	f_7	No requirement	No requirement		
	% Crushed or broken particles (gravel only)	I.S. EN 933-5	$C_{50/10}$		No requirement	Yes	Monthly
Physical	Los Angeles coefficient	I.S. EN 1097-2	LA_{30}		No requirement	Yes	2 per year
Durability	Water Absorption	I.S. EN 1097-6 Clause 8	$WA_{24}2$		No requirement	Yes	2 per year
	Magnesium sulfate soundness	I.S. EN 1367-2	MS_{25}		No requirement	Yes	1 per year

S.R. 21 Guidance on the use of I.S. EN 13242:2002 +A1:2007 – Aggregates for Unbound and Hydraulically bound materials for use in civil engineering work and road construction

Annex E

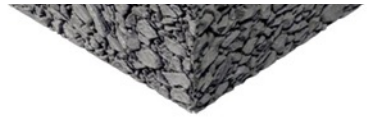
Chemical					
	Total sulfur	I.S. EN 1744-1	See E.2.4.4	Yes	Quarterly
Geological Classification	Geological examination	I.S. EN 932-3 and E.2.4.3	See E.2.4.3	Yes	Quarterly
	Petrographic assessment (Thin and polished sections)	See E.2.4.5	See E.2.4.5	Yes For total sulfur values between 0,1 % and 1 % See E.2.4.5	
NOTE 1 Test frequencies may be revised based on the advice of the Competent Person (Professional Geologist). NOTE 2 See 3.5.5 for guidance on frequency of sampling and testing. NOTE 3 Due account should be taken of the repeatability and reproducibility of the relevant test methods when declaring categories for properties.					
[a] See Clause 4, NOTE 4, EN 13242:2002+A1:2007					

Annex E

- **T.3 Blinding: 0/4mm**

8. Declared Performance

Characteristic	Declared Performance	Harmonised Technical Specification
Water Absorption	0.5%	I.S. EN 1097
Percentage crushed and broken	C100/0	I.S. EN 933-5
Resistance to fragmentation	LA_{20}	I.S. EN 1097-2
Resistance to freezing and thawing	MS_2	I.S. EN 1367-2
Sulphate Content (Acid Soluble)	AS <.2%	I.S. EN 1744-1
Total Sulfur	TS <1%	I.S. EN 1744-1
Mudrock Content	<10%	
Rock Type	Limestone	



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Rialtas na hÉireann
Government of Ireland

A Guide to the Marketing and Use of Aggregate Concrete Blocks to EN 771-3 in Ireland

for manufacturers, importers, distributors, specifiers, designers, builders, certifiers and end users

Version 1.0 April 2022

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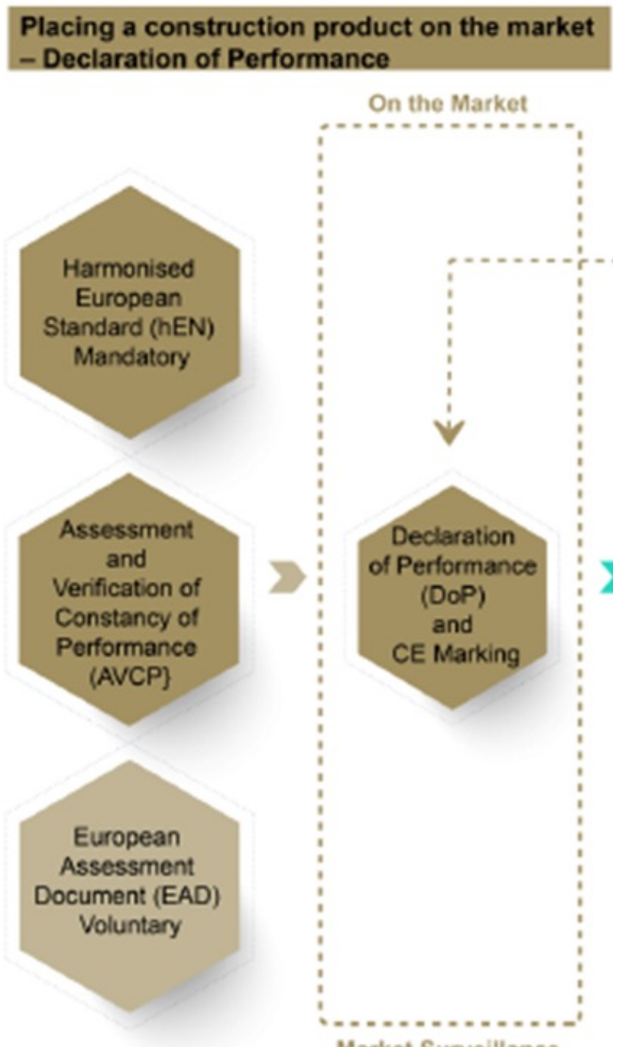
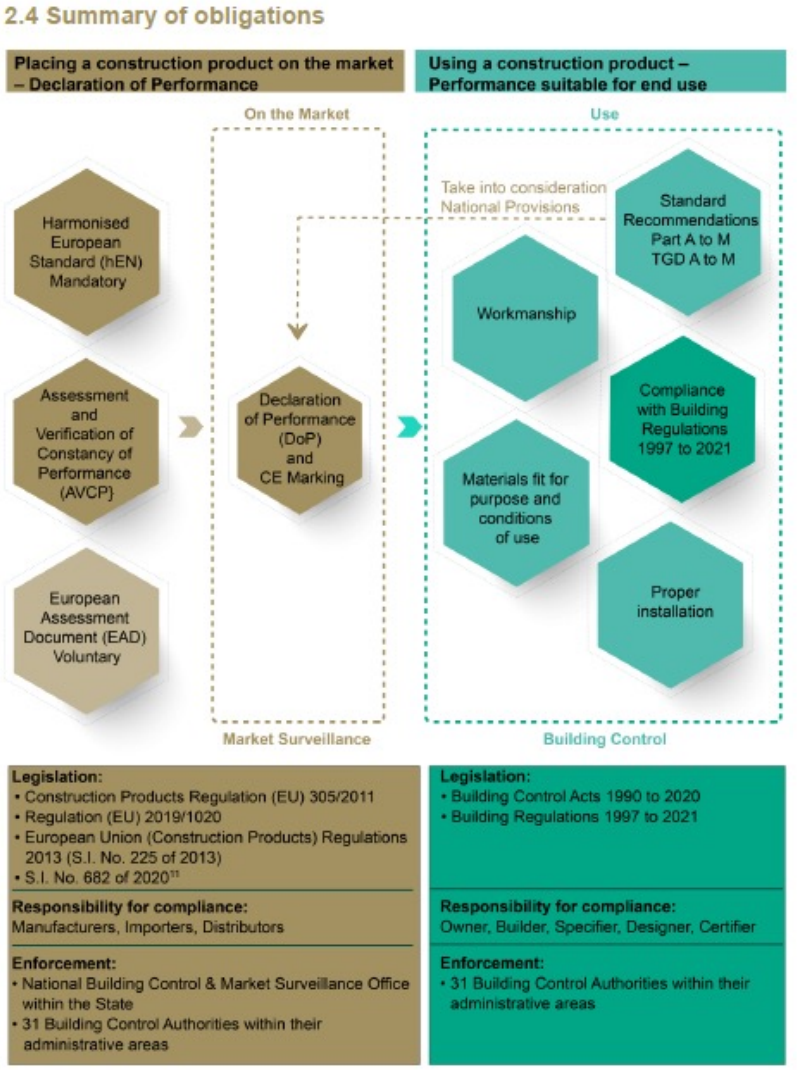
2.4 Summary of obligations





Responsibility for compliance:
Manufacturers, Importers, Distributors

Responsibility for compliance:
Owner, Builder, Specifier, Designer, Certifier

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DECLARATION OF PERFORMANCE No. 12345

1. **Unique identification code of the product type:** ABC – 7.5N Solid Block
2. **Intended Use:** Common masonry unit for use as external walls, or as internal walls, in load bearing or non-load bearing building and civil engineering applications.
3. **Manufacturer:** ABC Concrete Ltd., Address 1, Address 2, Ireland. Eircode: XXXX
4. **Authorised Representative:** Not Applicable
5. **System of AVCP:** AVCP System 2+
6. **Harmonised Standard** EN 771-3:2011+A1:2015
7. **Notified Body:** NB 99999
8. **Declared Performance:**

Essential Characteristic		Performance
Dimensions	Length	440 mm
	Width	100 mm
	Height	215 mm
	Tolerance Category	D1 (+3mm, -5mm)
Configuration	Shape and features	
	Grouping according to EN 1996-1-1	Group 1
Compressive Strength	Mean Compressive Strength	7.5 N/mm²
	Direction of load	Perpendicular to bed faces
	Unit Category	Category I
Dimensional Stability Moisture Movement		< 0.6 mm/m
Bond Strength	Shear Bond Strength	0.15 N/mm²
	Flexural Bond Strength	0.5 N/mm²
Reaction to Fire		A1
Water Absorption		≤20 g/m²s
Water Vapour Permeability		5/15μ (Tabulated value)
Direct Airborne Sound Insulation - Gross Density		>1900 kg/m³
Thermal Resistance		1.11 W/mK (λ10, dry)
Durability against freeze thaw		Suitable for use in: **Masonry Condition Situations A1 and A2** as outlined in Table 14 of S.R. 325:2013+A2:2018. (Work below or near external ground level) – MX2.1/2.2 • net density ≥ 1,500 kg/m³, • mean compressive strength ≥ 7.5 N/mm² • aggregate in accordance with I.S. EN 12620 and S.R. 16:2016 • Mortar Strength Class: M4 for A1 or M6 for A2
Dangerous Substances		NPD

The performance of the product identified above is in conformity with the declared performance/s. This declaration of performance is issued in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by: A.N. Other

At: Address 1, Address 2, Ireland, Eircode XXXX **on** 01 July 2013

Signature: *A.N. Other*

www.ABCConcreteDoP12345

- Insert DoP Reference No. e.g. 12345
- Insert unique identification code
- Insert intended use(s). See Section 5 for relevant terms and definitions.
- Insert Manufacturer's name and address
- N/A for EU based manufacturers
- This must be AVCP 2+ for Ireland
- Reference to harmonised EN
- Unique number of EN 771-3 Notified Body
- **As National Provisions exist, the manufacturer must:**
- Declare a performance value of each essential characteristic for the specific product to which the DoP relates.
- Declare a performance value of the essential characteristic for the specific product, taking into consideration the minimum performance value specified in national provisions, for certain applications.
- Annex C.2 of S.R. 325:2013+A2:2018
- Annex C.3 of S.R. 325:2013+A2:2018
- To be defined by the manufacturer
- Annex C.5 of S.R. 325:2013+A2:2018
- Annex C.4 and C.5 of S.R.325:2013+A2:2018, and Technical Guidance Document A (Structure)
- Annex C.4 of S.R. 325:2013+A2:2018
- Table 14 of S.R. 325:2013+A2:2018
- Annex C.6 of S.R. 325:2013+A2:2018 & Table NA.6 of NA:2010+A1:2014 to I.S. EN 1996-1-1:2005+A1:2012
- Table NA.5 of NA:2010+A1:2014 to I.S. EN 1996-1-1:2005+A1:2012
- Technical Guidance Document B - Fire Safety
- To be declared by the manufacturer. Section 5.5 of S.R. 325 provides guidance
- Technical Guidance Document E - Sound
- Technical Guidance Document L – Conservation of Fuel and Energy
- Table 14 of S.R 325:2013+A2:2018 outlines the range of masonry condition situations, for example:
  Masonry Condition Situation C1 and C2 (Unrendered external walls) – MX3.1/3.2
  - net density ≥ 1,500 kg/m³,
  - mean compressive strength ≥ 13N/mm²
  - aggregate in accordance with I.S. EN 12620 and S.R. 16:2016
  - Mortar Strength Class: M12 for C1 and C2
- No Performance Determined
- Insert as per Regulation (EU) No 574/2014
- Insert Name
- Insert address and date of issue
- Insert signature
- Link to online copy of DoP (if hosted online) See Delegated Regulation (EU) No 157/2014

	Tolerance Category	D1 (+3mm, -5mm)	Annex C.3 of S.R. 325:2013+A2:2018
Configuration	Shape and features		To be defined by the manufacturer
	Grouping according to EN 1996-1-1	Group 1	Annex C.5 of S.R. 325:2013+A2:2018
Compressive Strength	Mean Compressive Strength	7.5 N/mm^2	Annex C.4 and C.5 of S.R.325:2013+A2:2018, and Technical Guidance Document A (Structure)
	Direction of load	Perpendicular to bed faces	Annex C.4 of S.R. 325:2013+A2:2018
	Unit Category	Category I	Table 14 of S.R. 325:2013+A2:2018
Dimensional Stability Moisture Movement		< 0.6 mm/m	Annex C.6 of S.R. 325:2013+A2:2018 & Table NA.6 of NA:2010+A1:2014 to I.S. EN 1996-1-1:2005+A1:2012
Bond Strength	Shear Bond Strength	0.15 N/mm^2	Table NA.5 of NA:2010+A1:2014 to I.S. EN 1996-1-1:2005+A1:2012
	Flexural Bond Strength	0.5 N/mm^2	
Reaction to Fire		A1	Technical Guidance Document B - Fire Safety
Water Absorption		≤20 g/m^{2}s	To be declared by the manufacturer. Section 5.5 of S.R. 325 provides guidance
Water Vapour Permeability		5/15μ (Tabulated value)	

DECLARATION OF

No.B1 Category 1 Aggregate Concre

1. **Unique identification code of the product type:**

Code	Description
1230002	100mm Solid Standard S7.5
1230003	140mm Solid Standard S7.5
1230001	65mm Solid Standard S7.5
1230004	100mm Solid Standard S13
1230008	140mm Solid Standard S13
1230006	100mm Solid Standard S18
1230005	100mm Solid Standard S24

Table 1. Production details can be traced via dispatch docket & num

2. **Intended use** -as a common masonry unit and internal w engineering applications (see I.S. EN 771-3 2011 Aggregate accordance with Irish Building Regulations (including Techr EN 13914 - 1 & 2: 2016 (Design, Preparation and Applicatio 325:2013+A2:2018 (Recommendations for the design of m

3. **Name, registered trade name or registered trademark ar under Article 11(6)**

Roadstone Ltd.
Fortunestown
Dublin 24

4. **N/A**

6. **System of AVCP System 2+**

8. **Harmonised Standard:** I.S. EN 771-3 2011 + A1 2015 Agg

Notified certification body:
National Standards Authority of Ireland (NB 0050) performed the init production control and the continuous surveillance, assessment, and certificate of constancy of conformity of the factory production contr

SGS ICS – Serviços Internacionais de Certificação, Lda, Notified Body

Location	FPC Cert No.	Location
Belgard	1029 – CPR – GB23/00000360	Huntstown
Ballyknockane	0050-CPR-0141	Slane
Bunratty	0050-CPR-0135	Arklow
Classis	0050-CPR-923	Carrigtwohill
Killarney	0050-CPR-922	Castlebar
Joseph Hogan's	0050-CPR-346	Galway
Mallow	0050-CPR-137	

7. **Declared Performance**

Characteristic	Declared Performance
Dimensional Tolerance	D1 (+3mm, -5mm)
Configuration	Category 1 to EN 1996-1-1 Group 1  Normal Configuration Vertical
Gross Density	>1900kg/m³
Net Density	>1900kg/m³
Compressive Strength (Mean)	As shown in Table 1 above, in vertical orientation
Thermal Conductivity	1.01 - 1.19 W/mK (λ10, dry)
Durability (freeze/thaw)	Masonry Conditions/Situations in Table 14 (Durability of masonry in finished construction) of S.R. 325:2013+A2:2018 and used in accordance with Irish Building Regulations (including Technical Guidance Documents C & D), Eurocodes, I.S. EN 13914 - 1 & 2: 2016 and S.R. 325:2013+A2:2018 **Masonry Conditions/Situations A1 and A2 (Work below or near external ground level) and D (Rendered external walls (other than chimneys, copings, copings, parapets, sills)) – Classes** MX1.1/2.1/S.1: Category 1, Group 1: + net density> 1,500 kg/m³ + declared mean compressive strength > 7.5N/mm² or a declared normalised compressive strength of > 10.5 N/mm² + mortar strength class: M4 (A1 / MX1.1/2.1/A.1), M6 (A2 / MX2.2) **Masonry Conditions/Situations A3 (Work below or near external ground level) and C1 and C2 (Unrendered external walls (other than chimneys, copings, copings, parapets, sills)) – Class** MX3.2: Category 1, Group 1: + net density> 1,500 kg/m³ + declared mean compressive strength > 12N/mm² and a declared normalised compressive strength of> 18 N/mm² + mortar strength class: M12 All masonry units produced with aggregate in accordance with I.S. EN 12620 (Aggregates for concrete) and S.R. 16:2016 (Guidance on the use of I.S. EN 12620, Aggregates for concrete)

Water Absorption due to Capillary Action	≤25 g/(m²*s) 7.5N Not to be left unrendered in Exposed conditions. Refer to the clause Above. All strengths: not to be used as a DPM.	
Moisture Movement	< 0.6 mm/m	Mover
Water Vapour Permeability	5/15μ	
Reaction to Fire	Class A1	Based
Shear Bond Strength	0,15N/mm² (Tabulated)	
Dangerous Substances	None	Cement; with Re prohibit

*Reference to National Provisions / NDP = National Defined Parameter

The performance of the product identified above is in conformity with the declared performance. This decla accordance with Regulation (EU) No 305/2011, under the sole responsibility of Roadstone ltd.

Signed for and on behalf of the manufaoturer by: Alan Lowe, Senior Technical Manag

(Name and Function)

Belgard, 08/01/2024
(Place and Date of Issue)

Alan Lowe
(Signature)

This certificate is valid from 8th January 2024 and remains valid as long as the conditions laid specification in reference or the manufacturing conditions in the factory or the FPC itself are suspended or withdrawn by the notified factory production control certification body.

CE
13

Roadstone Ltd.
Fortunestown
Dublin 24

Certification Body NSAI 050 (Belgard SGS 1029)
RL DoP-B1

Location	FPC Cert No.	Location	FPC Cert No.	Location	FPC Cert No.
Belgard	1029 – CPR – GB23/00000360	Huntstown	0050-CPR-176	Castlemine	0050-CPR-0192
Ballyknockane	0050-CPR-0141	Slane	0050-CPR-164	Tullamore	0050-CPR-0185
Bunratty	0050-CPR-0135	Arklow	0050-CPR-163	Laghy	0050-CPR-0183
Classis	0050-CPR-923	Carrigtwohill	0050-CPR-423	Kilmacow	0050-CPR-0216
Killarney	0050-CPR-922	Castlebar	0050-CPR-157	Ryan's	0050-CPR-436
Joseph Hogan's	0050-CPR-346	Galway	0050-CPR-156	Goolg	0050-CPR-138
Mallow	0050-CPR-137				

EN 771-3:2011 + A1:2016 Category I, Group 1 Aggregate Concrete Masonry Unit - B1 Standard/Common Solid Block

Dimensions: Length (440mm), Width (65mm,100mm,140mm) Height (215mm)

Dimensional tolerances: Category: D1

Configuration: Group 1 unit to EN 1996-1-1 Vertical

Compressive strength: Mean Air-Dry Mortar Capped 7.5N/mm2, 13N/mm², 18N/mm², 24N/mm² (Refer to Docket)

Code	Description
1230002	100mm Solid Standard S7.5
1230003	140mm Solid Standard S7.5
1230001	65mm Solid Standard S7.5
1230004	100mm Solid Standard S13
1230008	140mm Solid Standard S13
1230006	100mm Solid Standard S18
1230005	100mm Solid Standard S24

Dimensional stability: Moisture Movement: 0.6 mm/m
Shear bond strength: Fixed value 0.15(N/mm²)
Flexural bond strength: NPD
Reaction to fire: Euroclass A1

Water absorption: ≤20g/m²s (7.5N, not to be left unrendered in Exposed conditions. Refer to the Durability Below. All strengths: not to be used as a DPM).
Water vapour diffusion coefficient: 5/15μ
Direct airborne sound insulation: Gross dry density >1900 kg/m³
Thermal conductivity: 1.01 - 1.19 W/mK (λ10, dry, unit, S1)
Durability against freeze-thaw: Masonry Conditions/Situations in Table 14 (Durability of masonry in finished construction) of S.R. 325:2013+A2:2018 and used in accordance with Irish Building Regulations (including Technical Guidance Documents C & D), Eurocodes, I.S. EN 13914 - 1 & 2: 2016 and S.R. 325:2013+A2:2018
Refer to DoP Table 8 Declared Performance

Dangerous substances: None

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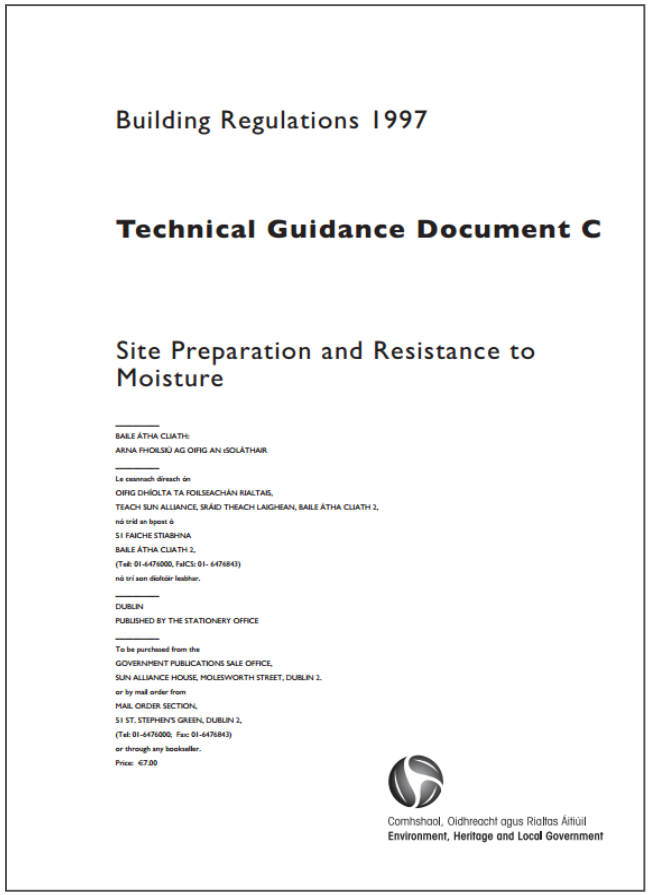
Water Absorption due to Capillary Action	≤25 g/(m²*s) 7.5N Not to be left unrendered in Exposed conditions. Refer to the clause Above. All strengths: not to be used as a DPM.	**I.S. EN 772 – 11**
Moisture Movement	< 0.6 mm/m	**I.S. EN 772-14** Movement joints required at 7 Meter centres as per clause 5.4.3.4 of SR 325 (or as specified by competent person) *Annex C.6 of S.R. 325:2013+A2:2018 & Table NA.6 of NA:2010+A1:2014 to I.S. EN 1996-1-1:2005+A1:2012 NDP
Water Vapour Permeability	5/15µ	**I.S. EN 1745 Annex A(Tabulated)**
Reaction to Fire	Class A1	**Based on Commission Decision 200/605 EC amending 96/603 EC** (Refer to I.S. EN 1996-1-2 National Annex Table NA. 3.1/3.2 & 3.3 for fire ratings of wall constructed with Class A1 Units) *Building Regulations Part B—Fire Safety*
Shear Bond Strength	0,15N/mm² (Tabulated)	**I.S. EN 998-2(Tabulated)** *Table NA.5 of NA:2010+A1:2014 to I.S. EN 1996-1-1:2005+A1:2012*
Dangerous Substances	None	Cement, Aggregate Water & Admixtures comply with Relevant EN's and National SR's which prohibit the use of Dangerous Substance

RENDERS AND PLASTERS

- **3.2.2 EXTERNAL WALLS, IN ADDITION TO MEETING THE REQUIREMENTS OF PAR. 3.2.1, SHOULD:**
  - (a) resist the penetration of rain or snow to the inside of the building, and
  - (b) not be damaged by rain or snow, and
  - (c) not carry rain or snow to any part of the building which would be damaged by it.



Building Regulations 1997

Technical Guidance Document C

Site Preparation and Resistance to Moisture

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Environment, Heritage and Local Government

RENDERS AND PLASTERS

- **RESISTANCE TO MOISTURE**

1.2 Where any material is likely to be adversely affected by condensation, by moisture from the ground or by airborne moisture such as rain or snow:

- (a) the construction should prevent the passage of moisture to the material, or

- (b) the material should be treated or otherwise protected from moisture.

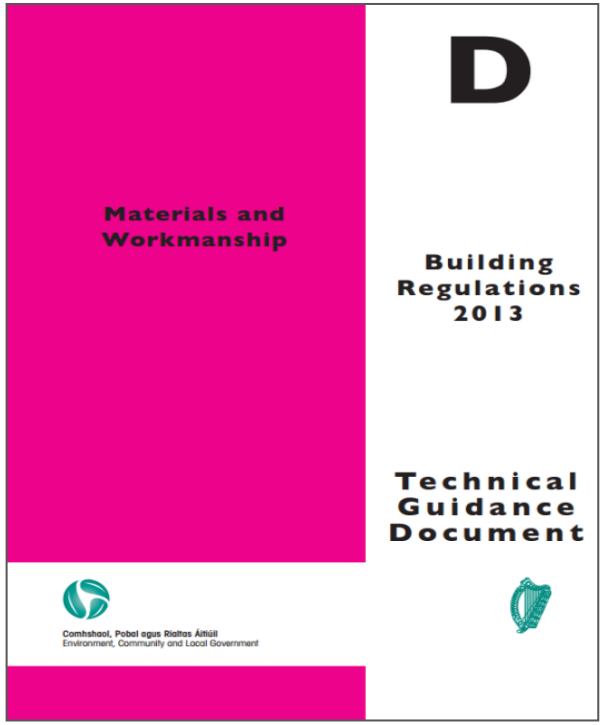


Table F.3 —Moderate and sheltered exposure: recommended rendering specifications

Background	Undercoat[a] (See 6.18.4)		Final coat (See 6.18.5)			
	Designation (see Table F.1)	Thickness	Finish	Thickness	Type	Classification/Mix proportions by volume[b] or designation (see Table F.1)
Strong to moderate	II	8 to 12	Thrown/ Applied	-	Roughcast	1 : 1 : 3 : 2
				7 to 10	Buttercoat for drydash	III
				-	Tyrolean	II
	III	8 to 12	Trowel applied	8 to 10	Wooden Float	IV
				10 (after scraping)	Scraped/ Patterned	
				8 to 10	Tooled	
	III	10 to 15		1 to 5		
Moderate to weak	III	8 to 12	Thrown	-	Roughcast	1 : 1 : 3 : 2
				7 to 10	Buttercoat for drydash	III
				-	Tyrolean	II
	IV	8 to 12	Trowel applied	8 to 10	Wooden Float	IV
				10 (after scraping)	Scraped/ Patterned	
				8 to 10	Tooled	
	III	10 to 15		1 to 5		
Weak (in sheltered positions only)	IV or V	8 to 12	Trowel applied	8 to 10	Wooden Float	V

NOTE The nominal overall thickness (excluding texture) is not normally less than 20 mm.

[a] for severe exposure, the use of two undercoats may be required

[b] Cement:Lime:Sand:Coarse aggregates

Table F.2 — Prescribed Mixes suitable for rendering

Background	First undercoat (see 6.18.4)		Second undercoat[a] (see 6.18.4)		Final coat (see 6.18.5 and Note 2)	
	/Designation (see Table F.1)	Thickness (mm)	/Designation (see Table F.1)	Thickness (mm)	Type	Mix proportions by volume[b] or designation (see Table F.1)
Strong to Moderate	II	8 to 12	II	6 to 10	Roughcast	1 : ½ : 3 : 1½
					Buttercoat for drydash Tyrolean	II
Metal lathing	I	3 to 6[c]	II	10 to 14	Roughcast	1 : ½ : 3 : 1½
					Buttercoat for drydash Tyrolean	II
Moderate to weak	III	8 to 12	III	6 to 10	Buttercoat for drydash Tyrolean	II/III

NOTE 1 The nominal overall thickness (excluding texture) is not normally less than 20 mm.

NOTE 2 For severe exposure, it is preferred that the finish coat be thrown, or rough textured.

NOTE 3 For full fill cavity applications refer to clause 5.3.3.2.9.

[a] For severe exposure, the use of two undercoats is preferred

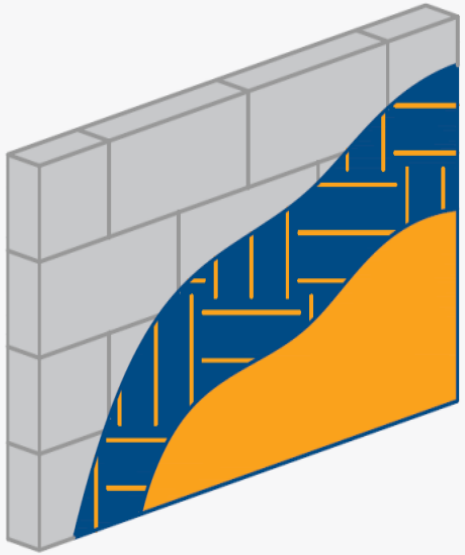
[b] Cement:lime:sand:coarse aggregate

[c] Render thickness given is from the outer face of the lath

RENDERS AND PLASTERS

MINIMUM RENDER THICKNESS

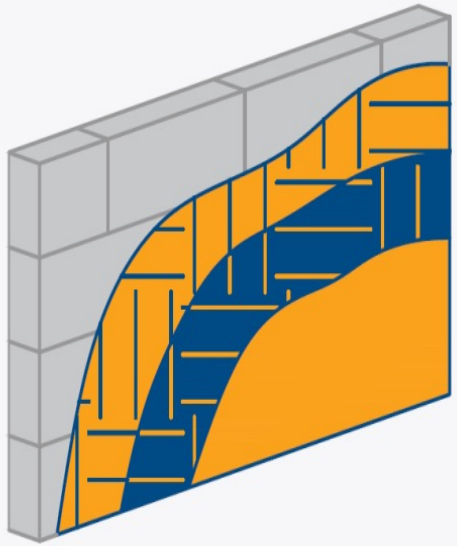
- 15mm for a two-coat system
- 20mm for a three-coat system



Scratch Coat

Finish Coat
e.g. Wet or Dry Dashing,
Nap (Sponge or Trowel)

2 Coat System
Moderate Exposure



Scratch Coat 1

Scratch Coat 2

Finish Coat (Rough)
e.g. Wet or Dry Dashing,
Tyrolean

3 Coat System
Severe & Very Severe Exposure

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RENDERS & PLASTERS I.S. EN 13914 -1

According to Met Éireann, Ireland witnesses an average of 8 named storms in a season.
23/24 Kathleen (11) Avearge > 80Km/h

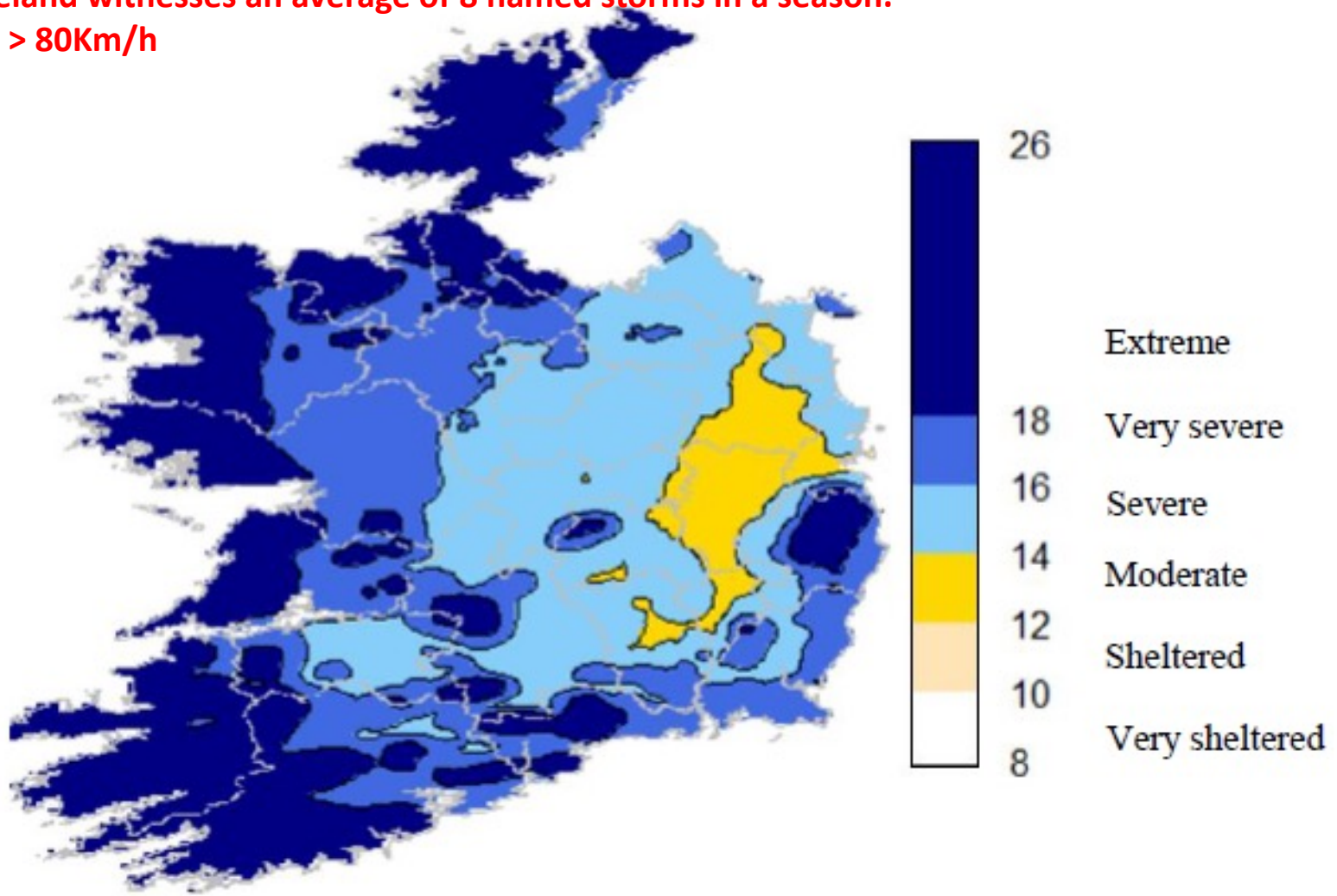

Figure 9: Map airfield index (m_A) for the period 1991 – 2020 for the Republic of Ireland. Suggested classes of exposures: very sheltered (<10), sheltered (10 – 12), moderate (12 – 14), severe (14 – 16), very severe (16 – 18) and extreme (18 – 26).

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SR325 AMENDMENT - MOVEMENT JOINTS

2018

"Where possible, to control the contraction in concrete masonry, it should be designed as a **series of panels separated by movement joints**. The degree of movement is dependent upon unit type and, as a rule, vertical joints not less than **10 mm** wide to accommodate horizontal movement should be provided at intervals not greater than **7m**. The ratio of length to height of the panels should generally not exceed **3:1**.

In **external walls containing openings**, movement joints may need to be provided at **more frequent** intervals or the masonry above and below the opening may need to be **reinforced** to restrain movement. Particular attention should be paid to long low horizontal panels of masonry, e.g. those under windows."

SR325 AMENDMENT - MOVEMENT JOINTS

Ghosting or Shadowing

- “Ghosting" – seeing the outline of underlying bricks or blocks through a coating of render, will almost certainly be the result of poorly applied render. The render will likely not be sufficiently thick, or one of the stages of application may have been missed or done badly.

Agrément certification - IAB

- Agrément certification is designed specifically for new building materials, products and processes that do not yet have a long history of use and for which published national standards do not yet exist.

- Read and understand what the cert is actually saying !!!!

Typical Spec.

60. CONCRETE BLOCKS

The concrete blocks shall be 13.5 N/mm2 compressive strength unless noted otherwise on drawings.

Methods of measuring dimensions and determining strength and drying shrinkage shall be in accordance with ASTM C596 - 18

The Contractor shall obtain from the supplier of the bricks or blocks, a certificate which shall state the number of the Irish or British Standard, the strength of the unit, the length, height and thickness of the unit, the type (solid, cellular, hollow or perforated). It shall also state that the manufacturer has made arrangements for his products to be sampled and tested at regular intervals in accordance with the relevant Irish or British Standard.

Prior to order, the contractor is to confirm from their masonry supplier that all materials are free of deleterious materials and that a representative sample of blocks have been tested for pyrite content by chemical analysis.

See section 50 above in this specification for testing limits for pyrites for all hardcore stone

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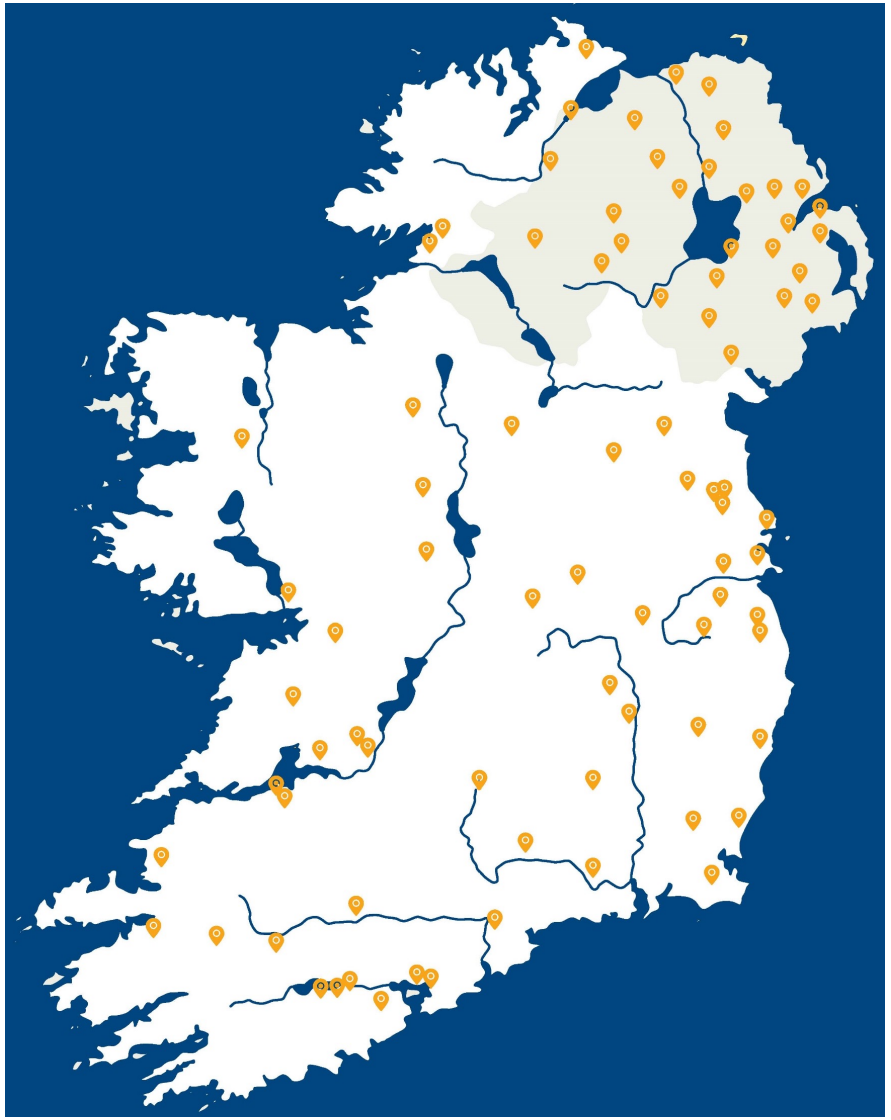
Ireland Materials - Locations



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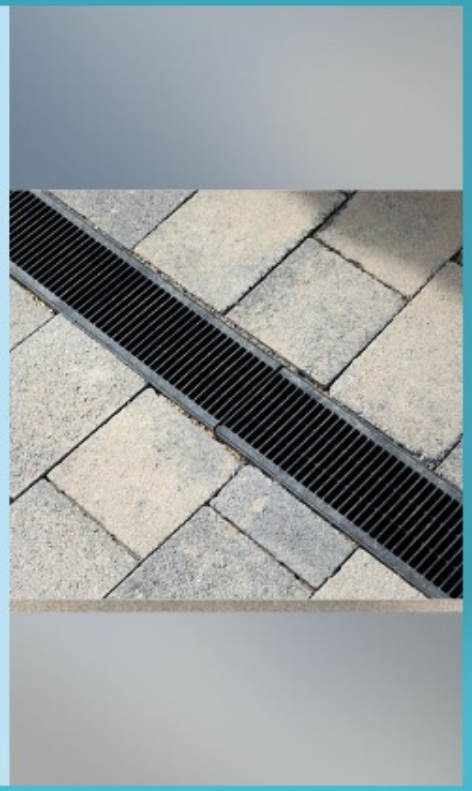

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