

Table H.1 — Minimum test frequencies for general properties

Property		Clause	Notes/ references	Test method	Minimum test frequency
1	Grading	4.3.1 4.3.6		EN 933-1 EN 933-10	1 per week
2	Shape of coarse aggregate	4.4	Test frequency applies to crushed aggregates. Test frequency for uncrushed gravel depends on the source and may be reduced	EN 933-3 EN 933-4	1 per month
3	Fines content	4.6		EN 933-1	1 per week
4	Fines quality	4.6	Only when required in accordance with the conditions specified in annex D.	EN 933-8 EN 933-9	1 per week
5	Particle density and water absorption	5.5		EN 1097-6	1 per year

Table H.2 — Minimum test frequencies for properties specific to end use

Property		Clause	Notes/ references	Test method	Minimum test frequency
1	Resistance to fragmentation	5.2	For high strength concrete	EN 1097-2	2 per year

Table H.3 — Minimum test frequencies for properties appropriate to aggregates from particular sources *

Property		Clause	Notes/ references	Test method	Minimum test frequency
9	Constituents of coarse recycled aggregates	5.8	Coarse recycled aggregates only	prEN 933-11	1 per month
10	Particle density and water absorption	5.5	Coarse recycled aggregates only	EN 1097-6	1 per month

Aggregates for concrete BS EN 12620:2002+A1:2008

4. Geometrical requirements

4.2 Aggregate size

All aggregates shall be described in terms of aggregate sizes using the designations d/D except for aggregates added as fillers which shall be specified as filler aggregate and shall comply with the grading requirements specified in 4.3. Aggregate sizes shall be specified using a pair of sieve sizes selected from the basic set, or the basic set plus set 1, or the basic set plus set 2 in Table 1. A combination of sizes from set 1 and set 2 is not permissible. Aggregate sizes shall have D/d not less than 1,4.

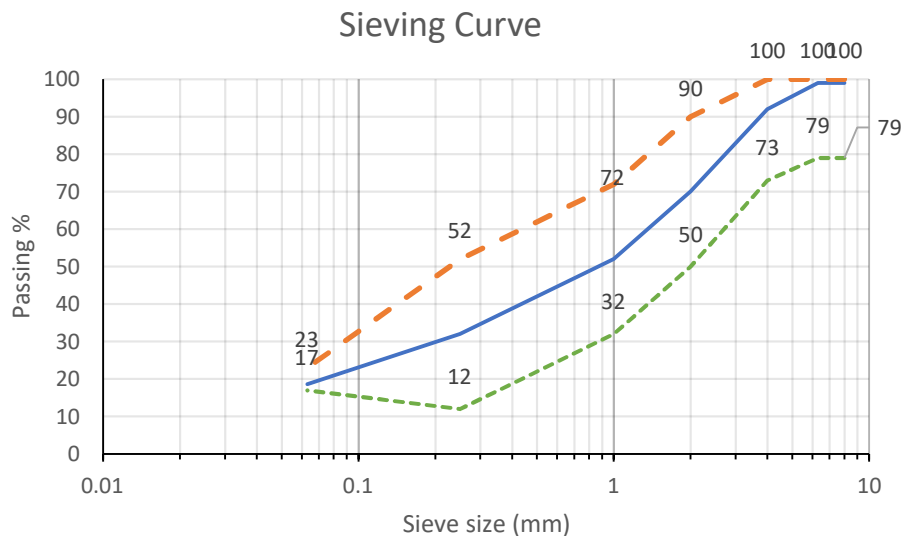
Table 1 — Sieve sizes for specifying aggregate sizes

Basic set mm	Basic set plus set 1 mm	Basic set plus set 2 mm
0	0	0
1	1	1
2	2	2
4	4	4
—	5,6 (5)	—
—	—	6,3 (6)
8	8	8
—	—	10
—	11,2 (11)	—
—	—	12,5 (12)
—	—	14
16	16	16
—	—	20
—	22,4 (22)	—
31,5 (32)	31,5 (32)	31,5 (32)
—	—	40
—	45	—
63	63	63

NOTE Rounded sizes shown in parentheses can be used as simplified descriptions of aggregate sizes.

Sieve size (mm)	Passing %	Upper limit %	Lower Limit %
8	99	100	79
6.3	99	100	79
4	92	100	73
2	70	90	50
1	52	72	32
0.25	32	52	12
0.063	18.6	23	17

D	4
d	0
$D/d \geq 1.4$	63.49 comply
Particle size fraction	4 / 0



Coarse aggregate	Designation given to the larger aggregate sizes with D greater than or equal to 4 mm and d greater than or equal to 2 mm.	not
Fine aggregate	Designation given to the smaller aggregate sizes with D less than or equal to 4 mm NOTE Fine aggregate can be produced from natural disintegration of rock or gravel and/or by the crushing of rock or gravel or processing of manufactured aggregate.	yes
Natural graded 0/8 mm aggregate	Designation given to natural aggregate of glacial and/or fluvial origin with D less than or equal to 8 mm NOTE This aggregate can also be produced by blending processed aggregate.	not
All-in aggregate	Aggregate consisting of a mixture of coarse and fine aggregates NOTE It can be produced without separating into coarse and fine fractions or it may be produced by combining coarse and fine aggregate.	not

Table 2 — General grading requirements

Aggregate	Size	Percentage passing by mass					Category G _T
		2 D	1,4 D ^{a & b}	D ^c	d ^b	d/2 ^{a & b}	
Coarse	D/d ≤ 2 or D ≤ 11,2 mm	100 100	98 to 100 98 to 100	85 to 99 80 to 99	0 to 20 0 to 20	0 to 5 0 to 5	G _C 85/20 G _C 80/20
	D/d > 2 and D > 11,2 mm	100	98 to 100	90 to 99	0 to 15	0 to 5	G _C 90/15
Fine	D ≤ 4 mm and d = 0	100	95 to 100	85 to 99	—	—	G _F 85
Natural graded 0/8	D = 8 mm and d = 0	100	98 to 100	90 to 99	—	—	G _{NG} 90
All-in	D ≤ 45 mm and d = 0	100	98 to 100	90 to 99	—	—	G _A 90 G _A 85
		100	98 to 100	85 to 99	—	—	

^a Where the sieves calculated are not exact sieve numbers in the ISO 565:1990 R 20 series then the next nearest sieve size shall be adopted.
^b For gap graded concrete or other special uses additional requirements may be specified.
^c The percentage passing D may be greater than 99 % by mass but in such cases the producer shall document and declare the typical grading including the sieves D, d, d/2 and sieves in the basic set plus set 1 or basic set plus set 2 intermediate between d and D. Sieves with a ratio less than 1,4 times the next lower sieve may be excluded.
^d Other aggregate product standards have different requirements for categories.

Table 3 — Overall limits and tolerances for coarse aggregate grading at mid-size sieves

D/d	Mid-size sieve mm	Overall limits and tolerances at mid-size sieves (percentage passing by mass)		Category G _T
		Overall limits	Tolerances on producer's declared typical grading	
< 4	D/1,4	25 to 70	± 15	G _T 15
≥ 4	D/2	25 to 70	± 17,5	G _T 17,5

Where the mid-size sieve calculated as above is not an exact sieve size in the ISO 565:1990/R20 series then the nearest sieve in the series shall be used.
 NOTE Overall limits and tolerances for the most common product sizes are illustrated in annex A.

For graded coarse aggregates where:

- a) D > 11,2 mm and D/d > 2; or
- b) D ≤ 11,2 mm and D/d > 4,

Table 4 — Tolerances on producer's declared typical grading for general use fine aggregates

Sieve size mm	Tolerances in percentages passing by mass		
	0/4	0/2	0/1
4	± 5 ^a	—	—
2	—	± 5 ^a	—
1	± 20	± 20	± 5 ^a
0,250	± 20	± 25	± 25
0,063 ^b	± 3	± 5	± 5

^a Tolerances of ± 5 are further limited by the requirements for the percentage passing D in Table 2.
^b In addition to the tolerances stated the maximum value of the fines content for the category selected from Table 11 applies for the percentage passing the 0,063 mm sieve.

Table 5 — Tolerances on producer's declared typical grading for natural graded 0/8 mm aggregate

Sieve size mm	Tolerances Percentages passing by mass
8	± 5
2	± 10
1	± 10
0,250	± 10
0,125	± 3
0,063	± 2

Table 6 — Grading requirements for all-in aggregates

Aggregate size mm		Overall limits of the sieves indicated below (Percentage passing by mass)	
Basic set plus set 1	Basic set plus set 2	40 ± 20	70 ± 20
		For the sieve mm	
-	0/6,3	1	4
0/8	0/8	1	4
-	0/10	1	4
0/11,2 (11)	-	2	5,6 (5)
-	0/12,5 (12)	2	6,3 (6)
-	0/14	2	8
0/16	0/16	2	8
-	0/20	2	10
0/22,4 (22)	-	2	11,2 (11)
0/31,5 (32)	0/31,5 (32)	4	16
-	0/40	4	20
0/45	-	4	22,4 (22)

NOTE Figures in parentheses can be used to provide simplified descriptions of aggregate sizes.

4.4 Shape of coarse aggregate

When required the shape of coarse aggregates shall be determined in terms of the flakiness index, as specified in EN 933-3. The flakiness index shall be the reference test for the determination of the shape of coarse aggregates. The flakiness index shall be declared in accordance with the relevant category specified in Table 8 according to the particular application or end use

Flakiness Index	
Flakiness Index FI	NPD

Table 8 — Categories for maximum values of flakiness index

Flakiness Index	Category <i>FI</i>
≤ 15	<i>FI</i> ₁₅
≤ 20	<i>FI</i> ₂₀
≤ 35	<i>FI</i> ₃₅
≤ 50	<i>FI</i> ₅₀
> 50	<i>FI</i> _{Declared}
No requirement	<i>FI</i> _{NR}

Where required, the shape index determined in accordance with EN 933-4, shall be declared in accordance with the relevant category specified in Table 9 according to the particular application or end use

Shape Index	
Shape Index SI	NPD

Table 9 — Categories for maximum values of shape index

Shape Index	Category <i>SI</i>
≤ 15	<i>SI</i> ₁₅
≤ 20	<i>SI</i> ₂₀
≤ 40	<i>SI</i> ₄₀
≤ 55	<i>SI</i> ₅₅
> 55	<i>SI</i> _{Declared}
No requirement	<i>SI</i> _{NR}

4.6 Fines content

The fines content, determined in accordance with EN 933-1, shall be declared in accordance with the relevant category specified in Table 11.

Fines content %	18.2
0,063 mm sieve- Percentage passing by mass %	18.6
Coarse aggregate	
Natural graded 0/8	
All-in aggregate	
Fine aggregate	22
Category	f22

Table 11 — Categories for maximum values of fines content

Aggregate	0,063 mm sieve Percentage passing by mass	Category <i>f</i>
Coarse aggregate	≤ 1,5	<i>f</i> _{1,5}
	≤ 4	<i>f</i> ₄
	> 4	<i>f</i> _{Declared}
	No requirement	<i>f</i> _{NR}
Natural graded 0/8 mm aggregate	≤ 3	<i>f</i> ₃
	≤ 10	<i>f</i> ₁₀
	≤ 16	<i>f</i> ₁₆
	> 16	<i>f</i> _{Declared}
	No requirement	<i>f</i> _{NR}
All-in aggregate	≤ 3	<i>f</i> ₃
	≤ 11	<i>f</i> ₁₁
	> 11	<i>f</i> _{Declared}
	No requirement	<i>f</i> _{NR}
Fine aggregate	≤ 3	<i>f</i> ₃
	≤ 10	<i>f</i> ₁₀
	≤ 16	<i>f</i> ₁₆
	≤ 22	<i>f</i> ₂₂
	> 22	<i>f</i> _{Declared}
	No requirement	<i>f</i> _{NR}

Fineness modulus	2.4
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5. Physical requirements

5.2 Resistance to fragmentation of coarse aggregate

When required the resistance to fragmentation shall be determined in terms of the Los Angeles coefficient, as specified in EN 1097-2:1998, clause 5. The Los Angeles test method shall be the reference test for the determination of resistance to fragmentation. The Los Angeles coefficient shall be declared in accordance with the relevant category specified in Table 12 according to the particular application or end use.

LA	
Category	NPD

Table 12 — Categories for maximum values of Los Angeles coefficients

Los Angeles coefficient	Category <i>LA</i>
≤ 15	<i>LA</i> ₁₅
≤ 20	<i>LA</i> ₂₀
≤ 25	<i>LA</i> ₂₅
≤ 30	<i>LA</i> ₃₀
≤ 35	<i>LA</i> ₃₅
≤ 40	<i>LA</i> ₄₀
≤ 50	<i>LA</i> ₅₀
> 50	<i>LA</i> _{Declared}
No requirement	<i>LA</i> _{NR}

5.5 Particle density and water absorption

When required the particle density and water absorption shall be determined in accordance with EN 1097-6 and the results declared on request stating the means of determination and the calculations used

Apparent particle density Mg/m ³	2.59
Oven dry particle density Mg/m ³	2.12
Saturated surface-dried particle Mg/m ³	2.3
Water adsorption (WA ₂₄) (%)	8.6%

5.8 Classification of the constituents of coarse recycled aggregates

The proportions of constituent materials in coarse recycled aggregate shall be determined in accordance with prEN 933-11 and shall be declared in accordance with the relevant categories specified in Table 20.

where, according to prEN 933-11:

Content percentage by mass	0.0%
Category	Ra1-

Constituent	Description
Rc	Concrete, concrete products, mortar Concrete masonry units
Ru	Unbound aggregate, natural stone Hydraulically bound aggregate
Rb	Clay masonry units (i.e. bricks and tiles) Calcium silicate masonry units Aerated non-floating concrete
Ra	Bituminous materials
FL	Floating material in volume
X	Other: Cohesive (i.e. clay and soil) Miscellaneous: metals (ferrous and non-ferrous), non-floating wood, plastic and rubber Gypsum plaster
Rg	Glass

Table 20 — Categories for constituents of coarse recycled aggregates

Ra	≤ 1	Ra ₁₋
	≤ 5	Ra ₅₋
	≤ 10	Ra ₁₀₋

BS 812-112-1990

Methods for determination of aggregate impact value (AIV)

This Part of BS 812 describes methods for the determination of the aggregate impact value (AIV) which gives a relative measure of the resistance of an aggregate to sudden shock or impact.

Test specimens in a dry condition

M1: Mass of aggregate used with precision of 0.1 g.

M2: Weight of fractions that pass through the 2.36 sieve

M3: Weight of fractions retained on the 2.36 sieve

Aggregate impact value	NPD
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