

Conundrum Holdings Pty Ltd Product Specification

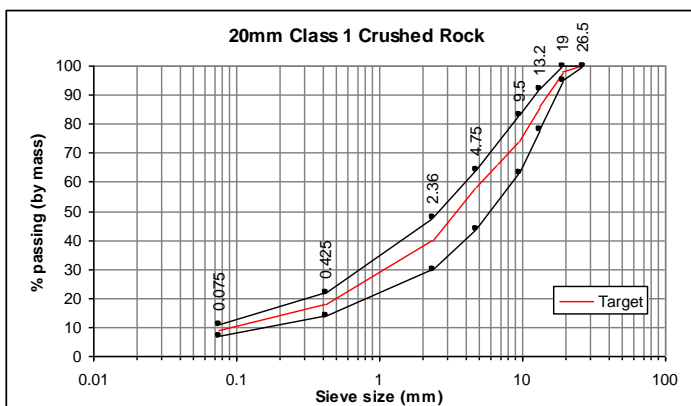
Northern Quarries 20mm Class 1 Crushed Rock

PRODUCT CODE: 070-000-t
073-001-t

SOURCE ROCK TYPE: Basalt

Product Grading AS1289.3.6.1

Sieve Size AS (mm)	Limits of Grading		Target Grading (% Passing)
	% Passing	% Retained	
26.5	100	0	100
19.0	95 – 100	0 – 5	98
13.2	78 – 92	7 – 18	86
9.50	63 – 83	10 – 16	74
6.7	-	-	66
4.75	44 – 64	14 – 24	58
2.36	30 – 48	10 – 20	40
0.425	14 – 22	14 – 28	18
0.075	7 – 11	6 – 13	9



Tests Carried Out For Product Quality Control Purposes

Sampling Method: AS1141.3.1

Test	Method	Frequency	Requirements	Reference
Unit Mass Density	AS1141.4	1 per 3 Years	N/A - For reference purposes only	N/A
Maximum Dry Density / Optimum Moisture Content	AS1289.5.2	1 per Year	N/A - For reference purposes only	N/A
Plastic Index (PI)	AS1289.3.3.1	1 per 2,500t	2-6	VicRoads 812
Liquid Limit (as part of PI test)	AS1289.3.1.1	1 per 2,500t	≤30%	VicRoads 812
Flakiness Index (FI)	RC302.11	1 per 10,000t	≤35%	VicRoads 812
Permeability (Perm)	AS1289.6.7.1	1 per Year	≤5 x 10 ⁻⁸ m/sec	VicRoads 812
Unsound stone count by visual assessment	RC372.01	1 per 500t	Unsound ≤5% Marginal + Unsound ≤10%	VicRoads 812
Moisture Content (MC) – Dry Product	AS1289.2.1.6 (Hotplate method)	1 per 500t	≤4%	VicRoads 812
MC – Wet Mixed (WM) or Cement Treated (CT) Product	AS1289.2.1.6 (Hotplate method)	1 per production day then 1 per 500t	-1.0% to +0.5% of MC nominated by customer	VicRoads 812
Cement Content – CT Product	AS5101.3.3	1 per production day then 1 per 250t ¹	±0.3% of specified cement content	VicRoads 815
Unconfined Compression Strength (UCS) – CT Product	AS5101.4 & AS5104.4	On request ²	As per customer requirements	VicRoads 815
Particle size distribution (Grading)	AS1289.3.6.1	1 per 500t	See table and graph above	VicRoads 812

¹ Cement content tests will not be carried out for orders less than 100 tonnes unless specified by the customer

² Charges may apply

Relevant Tests Carried Out On Source Rock

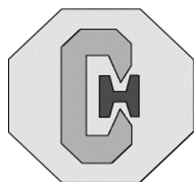
Test	Method	Frequency	Requirements	Reference
Los Angeles (LA) Value	AS1141.23	VicRoads Issue	≤30	VicRoads 801
Preparation of Reference Specimens	AS1141.30 Appendix A	VicRoads Issue	See below for sound and marginal classifications	VicRoads 801
Accelerated Soundness by Reflux	AS1141.29	VicRoads Issue	Sound ≥94% Marginal 90-93%	VicRoads 801
Secondary Mineral Content	AS1141.26	VicRoads Issue	Sound ≤25% Marginal 26-30%	VicRoads 801

Date issued: TBC
Issue number: 10
Authorised by: David Kerr
Date printed: 4 Jul 2022

Previous issue date: 19 Jun 2020

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Date of first issue: 13 May 2002
Max review interval: 5 years
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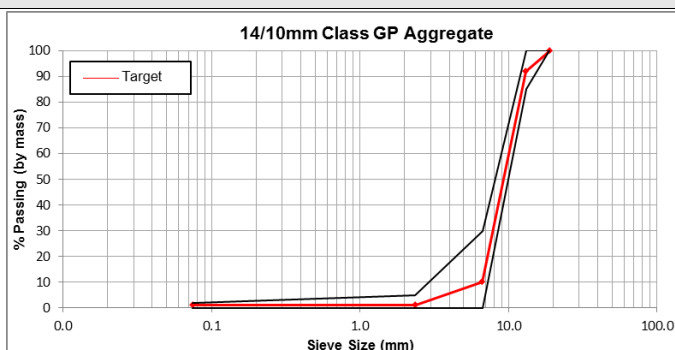
Northern Quarries 14/10mm Class GP Aggregate

PRODUCT CODE: 073-005-t **SOURCE ROCK TYPE:** Basalt

Product Grading

AS1141.11.1 (washed)

Sieve Size AS (mm)	Limits of Grading % Passing	Limits of Deviation %	Target Grading (% Passing)
19.0	100	-	100
13.2	85 – 100	±10	92
6.70	0 – 30	±15	10
2.36	0 – 5	-	1
0.075	0 – 2	-	1



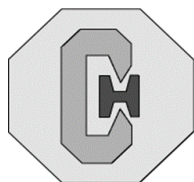
Tests Carried Out For Product Quality Control Purposes

Sampling Method: AS1141.3.1

Test	Method	Frequency	Requirements	Reference
Unit Mass Density	AS1141.4	1 per 3 Years	N/A – For reference purposes only	N/A
Particle Density (Coarse Agg)	AS1141.6	1 per 3 Years	$\geq 2.1\text{t/m}^3$, $< 3.2\text{t/m}^3$	AS2758.1.7.1
Particle Shape by Proportional Calliper	AS1141.14	1 per Year	$\leq 10\%$ using 3:1 ratio	AS2758.1.8.3
Flakiness Index (FI)	AS1141.15	1 per 9,600t	$\leq 35\%$	AS2758.1.8.3
Unsound stone count by visual assessment	AS1141.30	1 per 4,800t	Unsound $\leq 5\%$ Marginal + Unsound $\leq 10\%$	AS2758.1.9.3.4
Particle size distribution (Grading)	AS1141.11.1 (washed)	1 per 2,400t	See table above	AS2758.1.8.1.2

Relevant Tests Carried Out On Source Rock

Test	Method	Frequency	Requirements	Reference
Los Angeles (LA) Value	AS1141.23	VicRoads Issue	≤ 30	AS2758.1.9.3.3
Preparation of Reference Specimens	AS1141.30 Appendix A	VicRoads Issue	See below for sound and marginal classifications	VicRoads 801
Accelerated Soundness by Reflux	AS1141.29	VicRoads Issue	Sound $\geq 94\%$ Marginal 90-93%	VicRoads 801
Secondary Mineral Content	AS1141.26	VicRoads Issue	Sound $\leq 25\%$ Marginal 26-30%	VicRoads 801



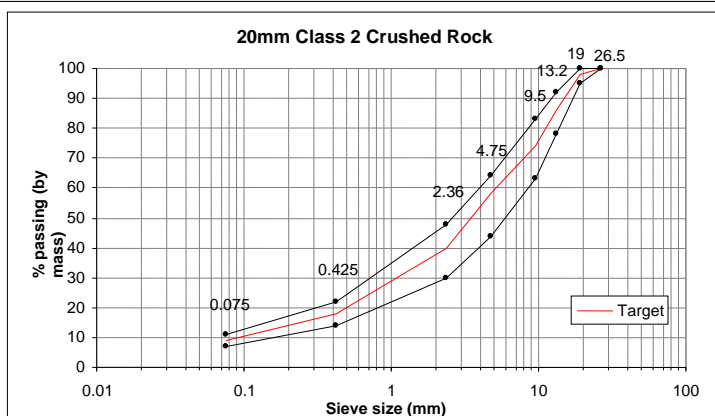
Conundrum Holdings Pty Ltd Product Specification

Northern Quarries 20mm Class 2 Crushed Rock

PRODUCT CODE: 070-010-t **SOURCE ROCK TYPE:** Basalt
073-011-t

Product Grading AS1289.3.6.1

Sieve Size AS (mm)	Limits of Grading		Target Grading (% Passing)
	% Passing	% Retained	
26.5	100	0	100
19.0	95 – 100	0 – 5	98
13.2	78 – 92	7 – 18	86
9.50	63 – 83	10 – 16	74
6.7	-	-	66
4.75	44 – 64	14 – 24	58
2.36	30 – 48	10 – 20	40
0.425	14 – 22	14 – 28	18
0.075	7 – 11	6 – 13	9



Tests Carried Out For Product Quality Control Purposes

Sampling Method: AS1141.3.1

Test	Method	Frequency	Requirements	Reference
Unit Mass Density	AS1141.4	1 per 3 Years	N/A - For reference purposes only	N/A
Maximum Dry Density / Optimum Moisture Content	AS1289.5.2	1 per Year	N/A - For reference purposes only	N/A
Plastic Index (PI)	AS1289.3.3.1	1 per 5,000t	0-6	VicRoads 812
Liquid Limit (as part of PI test)	AS1289.3.1.1	1 per 5,000t	≤30%	VicRoads 812
Flakiness Index (FI)	RC302.11	1 per Month	≤35%	VicRoads 812
Unsound stone count by visual assessment	RC372.01	1 per 500t	Unsound ≤7% Marginal + Unsound ≤10%	VicRoads 812
Moisture Content (MC) – Dry Product	AS1289.2.1.6 (Hotplate method)	1 per 500t	≤4%	VicRoads 812
MC – Wet Mixed (WM) or Cement Treated (CT) Product	AS1289.2.1.6 (Hotplate method)	1 per production day then 1 per 500t	-1.0% to +0.5% of MC nominated by customer	VicRoads 812
Cement Content – CT Product	AS5101.3.3	1 per production day then 1 per 250t ¹	±0.3% of specified cement content	VicRoads 815
Unconfined Compression Strength (UCS) – CT Product	AS5101.4 & AS5104.4	On request ²	As per customer requirements	VicRoads 815
Particle size distribution (Grading)	AS1289.3.6.1	1 per 500t	See table and graph above	VicRoads 812

¹ Cement content tests will not be carried out for orders less than 100 tonnes unless specified by the customer

² Charges may apply

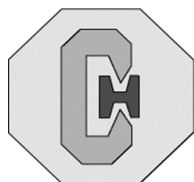
Relevant Tests Carried Out On Source Rock

Test	Method	Frequency	Requirements	Reference
Los Angeles (LA) Value	AS1141.23	VicRoads Issue	≤30	VicRoads 801
Preparation of Reference Specimens	AS1141.30 Appendix A	VicRoads Issue	See below for sound and marginal classifications	VicRoads 801
Accelerated Soundness by Reflux	AS1141.29	VicRoads Issue	Sound ≥94% Marginal 90-93%	VicRoads 801
Secondary Mineral Content	AS1141.26	VicRoads Issue	Sound ≤25% Marginal 26-30%	VicRoads 801

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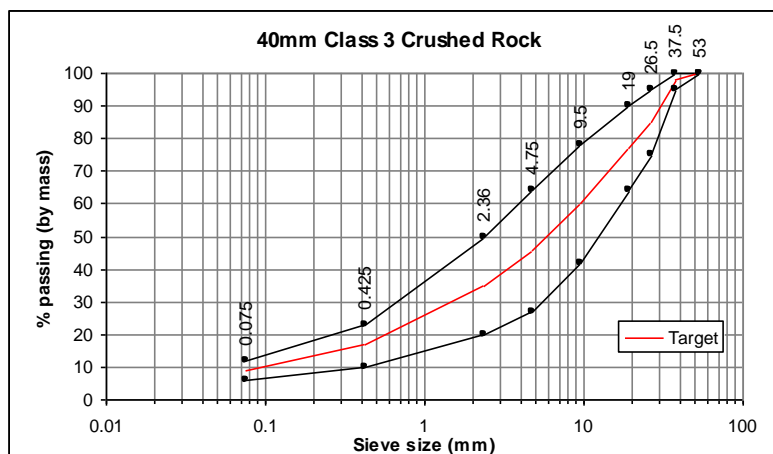
Conundrum Holdings Pty Ltd Product Specification

Northern Quarries 40mm Class 3 Crushed Rock

PRODUCT CODE: 073-019-t **SOURCE ROCK TYPE:** Basalt

Product Grading AS1289.3.6.1

Sieve Size AS (mm)	Limits of Grading (% Passing)	Target Grading (% Passing)
53.0	100	100
37.5	95 – 100	98
26.5	75 – 95	85
19.0	64 – 90	77
9.50	42 – 78	60
4.75	27 – 64	46
2.36	20 – 50	35
0.425	10 – 23	17
0.075	6 – 12	9



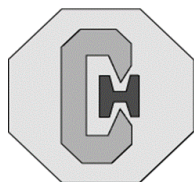
Tests Carried Out For Product Quality Control Purposes

Sampling Method: AS1141.3.1

Test	Method	Frequency	Requirements	Reference
Unit Mass Density	AS1141.4	1 per 3 Years	N/A - For reference purposes only	N/A
Maximum Dry Density / Optimum Moisture Content	AS1289.5.2	1 per 3 Years	N/A - For reference purposes only	N/A
Plastic Index (PI)	AS1289.3.3.1	As per customer requirements	0-10	VicRoads 812
Liquid Limit (as part of PI test)	AS1289.3.3.1	As per customer requirements	≤35%	VicRoads 812
Unsound stone count by visual assessment	RC372.01	As per customer requirements	Unsound ≤10% Marginal + Unsound ≤20%	VicRoads 812
Moisture Content (MC) – Dry Product	AS1289.2.1.6 (Hotplate method)	As per customer requirements	≤4%	VicRoads 812
Particle size distribution (Grading)	AS1289.3.6.1	1 per Year	See table and graph above	VicRoads 812

Relevant Tests Carried Out On Source Rock

Test	Method	Frequency	Requirements	Reference
Los Angeles (LA) Value	AS1141.23	VicRoads Issue	≤35	VicRoads 801
Preparation of Reference Specimens	AS1141.30 Appendix A	VicRoads Issue	See below for sound and marginal classifications	VicRoads 801
Accelerated Soundness by Reflux	AS1141.29	VicRoads Issue	Sound ≥94% Marginal 90-93%	VicRoads 801
Secondary Mineral Content	AS1141.26	VicRoads Issue	Sound ≤25% Marginal 26-30%	VicRoads 801



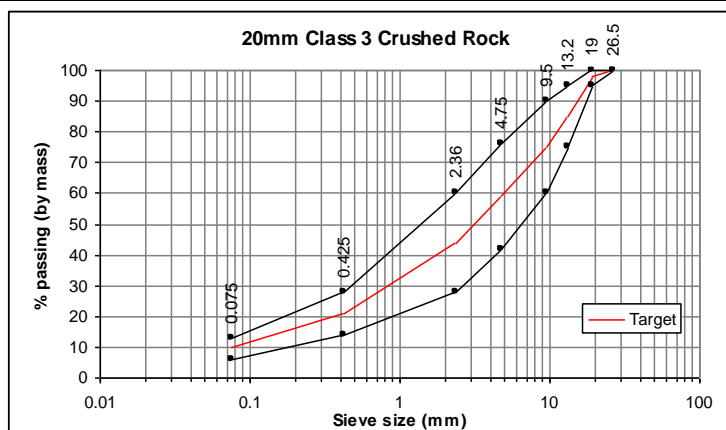
Conundrum Holdings Pty Ltd Product Specification

Northern Quarries 20mm Class 3 Crushed Rock

PRODUCT CODE: 070-020-t **SOURCE ROCK TYPE:** Basalt
073-021-t

Product Grading AS1289.3.6.1

Sieve Size AS (mm)	Limits of Grading (% Passing)	Target Grading (% Passing)
26.5	100	100
19.0	95 – 100	98
13.2	75 – 95	85
9.50	60 – 90	75
4.75	42 – 76	59
2.36	28 – 60	44
0.425	14 – 28	21
0.075	6 – 13	10



Tests Carried Out For Product Quality Control Purposes

Sampling Method: AS1141.3.1

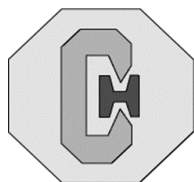
Test	Method	Frequency	Requirements	Reference
Unit Mass Density	AS1141.4	1 per 3 Years	N/A - For reference purposes only	N/A
Maximum Dry Density / Optimum Moisture Content	AS1289.5.2	1 per Year	N/A - For reference purposes only	N/A
Plastic Index (PI)	AS1289.3.3.1	1 per 5,000t	0-10	VicRoads 812
Liquid Limit (as part of PI test)	AS1289.3.1.1	1 per 5,000t	≤35%	VicRoads 812
Permeability (Perm)	AS1289.6.7.1	On request ¹	As per customer requirements	VicRoads 812
Unsound stone count by visual assessment	RC372.01	1 per 500t	Unsound ≤10% Marginal + Unsound ≤20%	VicRoads 812
Moisture Content (MC) – Dry Product	AS1289.2.1.6 (Hotplate method)	1 per 500t	≤4%	VicRoads 812
MC – Wet Mixed (WM) or Cement Treated (CT) Product	AS1289.2.1.6 (Hotplate method)	1 per production day then 1 per 500t	-1.0% to +0.5% of MC nominated by customer	VicRoads 812
Cement Content – CT Product	AS5101.3.3	1 per production day then 1 per 250t ²	±0.3% of specified cement content	VicRoads 815
Unconfined Compression Strength (UCS) – CT Product	AS5101.4 & AS5104.4	On request ¹	As per customer requirements	VicRoads 815
Particle size distribution (Grading)	AS1289.3.6.1	1 per 500t	See table and graph above	VicRoads 812

¹ Charges may apply

² Cement content tests will not be carried out for orders less than 100 tonnes unless specified by the customer

Relevant Tests Carried Out On Source Rock

Test	Method	Frequency	Requirements	Reference
Los Angeles (LA) Value	AS1141.23	VicRoads Issue	≤35	VicRoads 801
Preparation of Reference Specimens	AS1141.30 Appendix A	VicRoads Issue	See below for sound and marginal classifications	VicRoads 801
Accelerated Soundness by Reflux	AS1141.29	VicRoads Issue	Sound ≥94% Marginal 90-93%	VicRoads 801
Secondary Mineral Content	AS1141.26	VicRoads Issue	Sound ≤25% Marginal 26-30%	VicRoads 801



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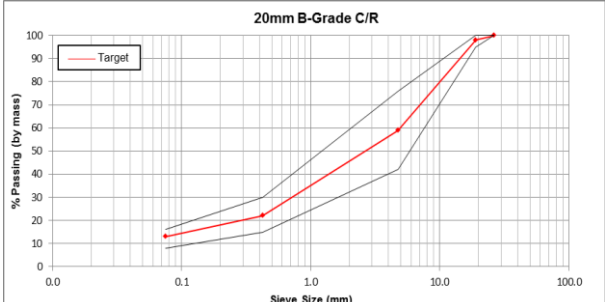
Northern Quarries 20mm B Grade Crushed Rock

PRODUCT CODE: 074-030

SOURCE ROCK TYPE: Basalt

Product Grading

AS1289.3.6.1

Sieve Size AS (mm)	Limits of Grading (% Passing)	Target Grading (% Passing)	
26.5	100	100	
19.0	95 – 100	98	
4.75	42 – 76	59	
0.425	15 – 30	22	
0.075	8 – 16	13	

Tests Carried Out For Product Quality Control Purposes

Sampling Method: AS1141.3.1

Test	Method	Frequency	Requirements	Reference
Unit Mass Density	AS1141.4	On initial introduction of product	N/A - For reference purposes only	N/A
Maximum Dry Density / Optimum Moisture Content	AS1289.5.2	1 per 3 Years	N/A - For reference purposes only	N/A
Plastic Index (PI)	AS1289.3.3.1	1 per Year	N/A - For reference purposes only	N/A
Liquid Limit (as part of PI test)	AS1289.3.3.1	1 per Year	N/A - For reference purposes only	N/A
Particle size distribution (Grading)	AS1289.3.6.1	1 per 3 months	See table and graph above	Conundrum historical data

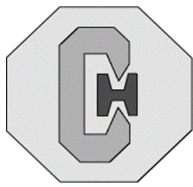
Relevant Tests Carried Out On Source Rock

Test	Method	Frequency	Requirements	Reference
Nil	N/A	N/A	N/A	N/A

Date issued: TBC
Issue number: 4
Authorised by: David Kerr
Date printed: 4 Jul 2022

Previous issue date: 6 Jan 2016

Date of first issue: 9 May 2002
Max review interval: 5 years
Manual index location: 19.i
Form: 2030.07



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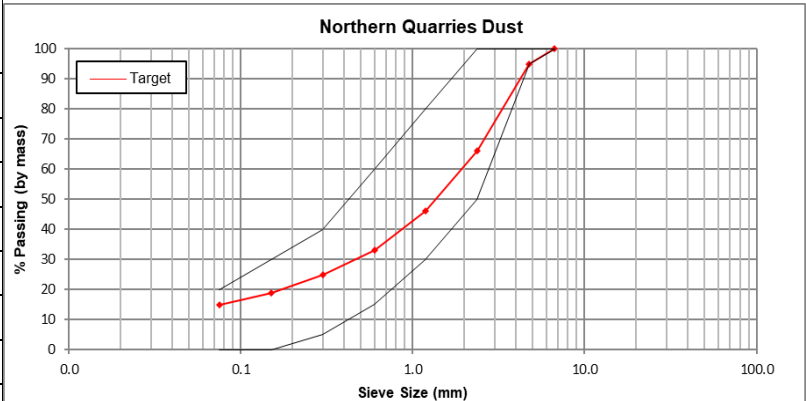
Northern Quarries Dust

PRODUCT CODE: 074-044

SOURCE ROCK TYPE: Basalt

Product Grading AS1289.3.6.1

Sieve Size AS (mm)	Limits of Grading (% Passing)	Target Grading (% Passing)
6.70	100	100
4.75	95 – 100	95
2.36	50 – 100	66
1.18	30 – 80	46
0.600	15 – 60	33
0.300	5 – 40	25
0.150	0 – 30	19
0.075	0 – 20	15



Tests Carried Out For Product Quality Control Purposes

Sampling Method: AS1141.3.1

Test	Method	Frequency	Requirements	Reference
Unit Mass Density	AS1141.4	On initial introduction of product	N/A - For reference purposes only	N/A
Maximum Dry Density / Optimum Moisture Content	AS1289.5.2	1 per 12 Months	N/A - For reference purposes only	N/A
Plastic Index (PI)	AS1289.3.3.1	1 per 3 Years	N/A - For reference purposes only	N/A
Liquid Limit (as part of PI test)	AS1289.3.3.1	1 per 3 Years	N/A - For reference purposes only	N/A
Particle size distribution (Grading)	AS1289.3.6.1	6 Months	See table and graph below	Conundrum historical data

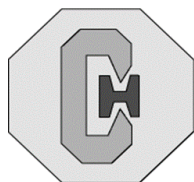
Relevant Tests Carried Out On Source Rock

Test	Method	Frequency	Requirements	Reference
Nil	N/A	N/A	N/A	N/A

Date issued: TBC
Issue number: 5
Authorised by: David Kerr
Date printed: 6 Jul 2022

Previous issue date: 25 Feb 2021

Date of first issue: 9 May 2002
Max review interval: 5 years
Manual index location: 19.i
Form: 2044.07



Conundrum Holdings Pty Ltd Product Specification

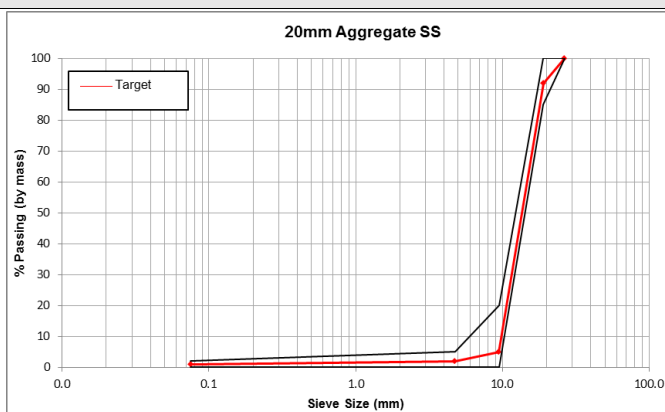
Northern Quarries 20mm Class SS Aggregate

PRODUCT CODE: 073-045-t **SOURCE ROCK TYPE:** Basalt

Product Grading

AS1141.11 (washed)

Sieve Size AS (mm)	Limits of Grading (% Passing)	Limits of Deviation %	Target Grading (% Passing)
26.5	100	-	100
19.0	85 – 100	±10	92
9.50	0 – 20	±10	5
4.75	0 – 5	-	2
0.075	0 – 2	-	1



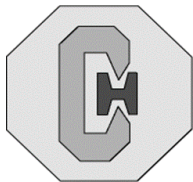
Tests Carried Out For Product Quality Control Purposes

Sampling Method: AS1141.3.1

Test	Method	Frequency	Requirements	Reference
Unit Mass Density	AS1141.4	1 per 3 Years	N/A – For reference purposes only	N/A
Particle Density (Coarse Agg)	AS1141.6	1 per 3 Years	$\geq 2.1\text{t/m}^3$, $< 3.2\text{t/m}^3$	AS2758.1.7.1
Particle Shape by Proportional Calliper	AS1141.14	1 per year	$\leq 10\%$ using 3:1 ratio	AS2758.1.8.3
Flakiness Index (FI)	AS1141.15	1 per 9,600t	$\leq 35\%$	AS2758.1.8.3
Unsound stone count by visual assessment	AS1141.30	1 per 4,800t	Unsound $\leq 5\%$ Marginal + Unsound $\leq 10\%$	AS2758.1.9.3.4
Particle size distribution (Grading)	AS1141.11 (washed)	1 per 2,400t	See table above	AS2758.1.8.1.2

Relevant Tests Carried Out On Source Rock

Test	Method	Frequency	Requirements	Reference
Los Angeles (LA) Value	AS1141.23	VicRoads Issue	≤ 30	AS2758.1.9.3.3
Preparation of Reference Specimens	AS1141.30 Appendix A	VicRoads Issue	See below for sound and marginal classifications	VicRoads 801
Accelerated Soundness by Reflux	AS1141.29	VicRoads Issue	Sound $\geq 94\%$ Marginal 90-93%	VicRoads 801
Secondary Mineral Content	AS1141.26	VicRoads Issue	Sound $\leq 25\%$ Marginal 26-30%	VicRoads 801



Conundrum Holdings Pty Ltd Product Specification

Northern Quarries 7mm Commercial Aggregate

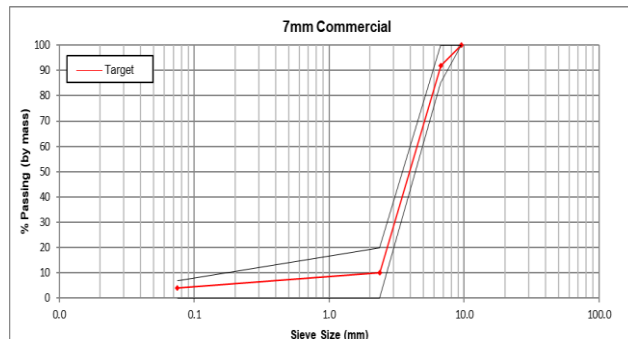
PRODUCT CODE: 073-016-t

SOURCE ROCK TYPE: Basalt

Product Grading

AS1141.11.1 (washed)

Sieve Size AS (mm)	Limits of Grading % Passing	Limits of Deviation %	Target Grading (% Passing)
9.50	100	-	100
6.70	85 – 100	±10	92
4.75	-	±10	50
2.36	0 – 20	±10	10
0.075	0 – 7	-	3



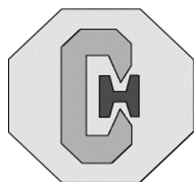
Tests Carried Out For Product Quality Control Purposes

Sampling Method: AS1141.3.1

Test	Method	Frequency	Requirements	Reference
Unit Mass Density	AS1141.4	On initial introduction of product	N/A – For reference purposes only	N/A
Unsound stone count by visual assessment	AS1141.30	1 per Year	Unsound ≤5% Marginal + Unsound ≤10%	AS2758.1.9.3.4
Particle size distribution (Grading)	AS1141.11.1 (washed)	1 per Year	See table above	AS2758.1.8.1.2

Relevant Tests Carried Out On Source Rock

Test	Method	Frequency	Requirements	Reference
Los Angeles (LA) Value	AS1141.23	VicRoads Issue	≤30	AS2758.1.9.3.3
Preparation of Reference Specimens	AS1141.30 Appendix A	VicRoads Issue	See below for sound and marginal classifications	VicRoads 801
Accelerated Soundness by Reflux	AS1141.29	VicRoads Issue	Sound ≥94% Marginal 90-93%	VicRoads 801
Secondary Mineral Content	AS1141.26	VicRoads Issue	Sound ≤25% Marginal 26-30%	VicRoads 801



Conundrum Holdings Pty Ltd Product Specification

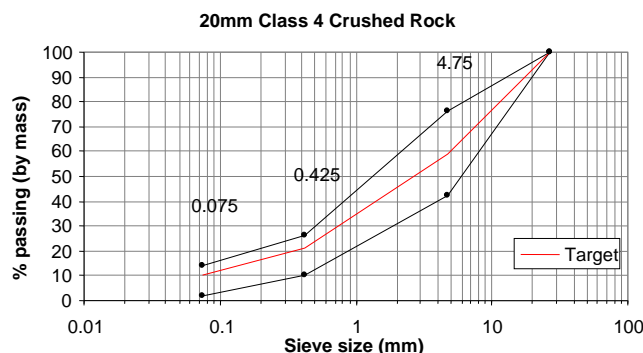
Northern Quarries 20mm Class 4 Crushed Rock

PRODUCT CODE: 074-107-t SOURCE ROCK TYPE: Basalt

Product Grading

AS1289.3.6.1

Sieve Size AS (mm)	Limits of Grading (% Passing)	Target Grading (%Passing)
26.5	100	100
4.75	42 – 76	59
0.425	10 – 28	21
0.075	2 – 14	10



Tests Carried Out For Product Quality Control Purposes

Sampling Method: AS1141.3.1

Test	Method	Frequency	Requirements	Reference
Unit Mass Density	AS1141.4	1 per 3 Years	N/A - For reference purposes only	N/A
Maximum Dry Density / Optimum Moisture Content	AS1289.5.2	1 per Year	N/A - For reference purposes only	N/A
Plastic Index (PI)	AS1289.3.3.1	1 per 5,000t	0-20	VicRoads 812
Liquid Limit (as part of PI test)	AS1289.3.1.1	1 per 5,000t	≤40%	VicRoads 812
California Bearing Ratio	AS 1289.6.1.1 RC 500.20	1 per 6 months	≥20	VicRoads 812
Permeability (Perm)	AS1289.6.7.1	On request ¹	As per customer requirements	VicRoads 812
Moisture Content (MC) – Dry Product	AS1289.2.1.6 (Hotplate method)	1 per 500t	≤4%	VicRoads 812
Particle size distribution (Grading)	AS1289.3.6.1	1 per 500t	See table and graph above	VicRoads 812

¹Charges may apply

Relevant Tests Carried Out On Source Rock

Test	Method	Frequency	Requirements	Reference
Los Angeles (LA) Value	AS1141.23	VicRoads Issue	≤35	VicRoads 801
Preparation of Reference Specimens	AS1141.30 Appendix A	VicRoads Issue	See below for sound and marginal classifications	VicRoads 801
Accelerated Soundness by Reflux	AS1141.29	VicRoads Issue	Sound ≥94% Marginal 90-93%	VicRoads 801
Secondary Mineral Content	AS1141.26	VicRoads Issue	Sound ≤25% Marginal 26-30%	VicRoads 801

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