
SECTION 831 - AGGREGATE FOR SPRAYED BITUMINOUS SURFACING

##This section cross-references Sections 175, 408 and 801 and these sections should be included in the specification. If any of the above sections are not included in the specification, all references to those sections should be struck out, ensuring that the remaining text is still coherent:

831.01 DESCRIPTION

This section covers the requirements for Classes A, B and C aggregate produced by crushing and screening for use in sprayed bituminous surfacing.

The classes and sizes of aggregate to be supplied and stacksite requirements are specified in Section 408.

831.02 DEFINITIONS

Aggregate

Aggregate consists of substantially one-sized mineral particles used as a cover material applied to a thin membrane of bituminous material.

Assigned Los Angeles Value

The assigned Los Angeles Value (LAV) is a hardness rating derived from Los Angeles Value test results, which is assigned annually to each source by VicRoads as per Code of Practice for Source Rock Investigations as listed in Section 175.

Assigned Polished Stone Value

The assigned Polished Stone Value (PSV) is a friction rating derived from Polished Stone Value test results which is assigned annually to each source (where applicable) by VicRoads as per Code of Practice for Source Rock Investigations as listed in Section 175.

Average Least Dimension

The Average Least Dimension (ALD) is the average height of the aggregate particles when they are spread as a single layer with their least dimension vertical.

Crushed Aggregate

An aggregate produced by crushing and screening of rock spalls or other material approved by the Superintendent which has fully (or 100%) crushed faces.

Partly Crushed Aggregate

An aggregate produced by washing, crushing and screening of a suitable material (e.g. coarse gravel), which may not have fully crushed faces.

831.03 SOURCE ROCK

Source rock used for the production of aggregates shall comply with the requirements specified in Section 801 and shall be obtained from a VicRoads accredited source, with a current assigned LAV and where required a current assigned PSV.

Synthetic or blended aggregates from different sources shall only be used with the approval of the Superintendent.

831.04 AGGREGATE REQUIREMENTS AND TESTING

Sampling and testing of aggregates shall be undertaken in accordance with VicRoads Codes of Practice 500.16 and 500.09.

(a) General Requirements

- (i) Crushed aggregate shall consist of clean, hard, durable, angular fragments of rock and shall be free from clay and organic matter. Granitic rocks, river gravel, and calcrete and other sedimentary rocks shall not be used for the production of Class A sealing aggregate.
- (ii) Partly crushed aggregate shall be produced by crushing clean, hard, durable particles of gravel and shall be free from clay and organic matter. The aggregate shall have a minimum of 75% by mass of aggregate particles having two or more faces produced by crushing. Partly crushed aggregate shall only be used for the production of Class B and C sealing aggregate.

(b) Sampling of Aggregate

The sampling of aggregate for specified testing shall be based on lots. A lot shall consist of not more than 350 tonnes of aggregate of the same class and size. The lot shall be uniform in appearance and be produced from the same source and under the same conditions.

The Department of State Growth may agree to increased lot sizes up to 700 tonnes, where the supplier demonstrates that the source rock is of consistent quality and there is a history of satisfactory test results and performance.

Each lot of aggregate shall be assigned a unique identification number and/or unique stockpile location. Lots shall be stockpiled separately to ensure aggregate testing is fully traceable.

A representative sample shall be taken at random from each lot and tested for compliance with the requirements specified in Clauses 831.04(d), (e) and (f) not more than 90 days prior to delivery.

(c) Testing of Aggregate

HP The results of all testing as required by this section shall be provided to the Superintendent prior to delivery.

(d) Unsound and Marginal Rock

Unsound and marginal rock in that fraction of a sample retained on a 4.75 mm AS sieve shall not exceed the values specified in Table 831.041. Notwithstanding the requirements of Clause 831.04(b) regarding lot size, where daily production of the same source and class of aggregate exceeds 350 tonnes per day, the lot testing for unsound and marginal stone can be reduced to one lot per day.

Table 831.041 Marginal and Unsound Rock Content Limits

Class of Aggregate	Total of Marginal and Unsound Rock (max % by mass)	Unsound Rock (max % by mass)
	Individual Test	Individual Test
A	10	3
B	18	5
C	24	10

(e) Flakiness Index

Flakiness Index tests shall be undertaken on aggregate sizes of 10 mm or above.

- (i) For all source rock (except granitic sources) with an assigned Los Angeles Value of 25 or less, the Flakiness Index of aggregate shall not exceed the values specified in Table 831.042.

Table 831.042 Flakiness Index Requirements (LAV ≤25)

Class of Aggregate	Flakiness Index (max % by mass)
	Individual Test
A	25
B	30
C	40

- (ii) For all source rock with an assigned Los Angeles Value of more than 25 and for all granitic sources the Flakiness Index of aggregate shall not exceed the values in Table 831.043.

Table 831.043 Flakiness Index Requirements (LAV >25)

Class of Aggregate	Flakiness Index (max % by mass)
	Individual Test
B	25
C	30

(f) Grading

The grading by mass of one sized aggregate shall conform to the relevant requirements of Tables 831.044 and 831.045.

Table 831.044 Grading Envelopes and Minimum ALD Requirements for Class A and B Aggregate

Sieve Size (mm)	Percentage Passing AS Sieve (by mass)				
	Nominal Size of Aggregate				
	20 mm	14 mm	10 mm	7 mm	5 mm
26.5	100				
19.0	85-100	100			
13.2	0-35	85-100	100		
9.50	0-5	0-30	85-100	100	
6.70	0-2	0-5	0-40	85-100	100
4.75			0-5	0-35	85-100
2.36				0-5	0-35
0.075	0-1.0	0-1.0	0-1.0	0-1.0	0-1.0
Minimum ALD	10.0	7.0	5.0	3.5	

Table 831.045 Grading Envelopes and ALD Requirements for Class C Aggregate

Sieve Size (mm)	Percentage Passing AS Sieve (by mass)				
	Nominal Size of Aggregate				
	20 mm	14 mm	10 mm	7 mm	5 mm
26.5	100				
19.0	85-100	100			
13.2	0-35	85-100	100		
9.50	0-7	0-40	85-100	100	
6.70		0-7	0-40	85-100	100
4.75			0-10	0-55	85-100
2.36	0-1.0	0-1.0	0-2.0	0-10	0-40
0.075	0-1.0	0-1.0	0-1.0	0-1.0	0-1.0
ALD	To be reported				

(g) Average Least Dimension

For 7 mm aggregate and larger, testing of ALD values is required for each lot of aggregate supplied under the Contract in accordance with the relevant ALD test methods contained in Section 175 (refer Codes of Practice 500.09 and 500.16) and based on lot requirements as specified in Clause 831.04(b).

831.05 ACCEPTANCE OF AGGREGATE

If all of the specified test results comply with the relevant requirements of Clauses 831.04(d), (e) and (f) the aggregate represented by the lot will be accepted.

If any of the individual test results do not comply with the relevant requirements of this clause the lot will be rejected.

Aggregate which does not meet the above acceptance criteria shall not be supplied or delivered.

831.06 PRECOATING OF AGGREGATE

Aggregate shall be precoated with suitable precoating material and each particle shall be uniformly coated to the satisfaction of the Superintendent.

Only aggregates which have been tested and meet the requirements of Clause 831.05 to the Superintendent's satisfaction shall be precoated.

Precoating of aggregate for primer sealing shall be at the discretion of the Contractor.

A typical precoating material shall have a viscosity in the range 0.003 to 0.020 Pa.s at 60°C and contain a bitumen residue of between 25% and 40% by mass and an adhesion agent of 1% by volume at normal concentration.

The use of alternative precoating materials will be considered. Specific proposals shall be submitted to the Superintendent for review not less than 10 business days prior to use.

831.07 DELIVERY

Aggregate shall not be delivered directly from stockpiled lots at the quarry to the stacksites unless the aggregate has been tested and meets the acceptance of all test requirements to the satisfaction of the Superintendent.

Where delivery of aggregate is made to stacksites at or near the site of the sealing works, delivery shall be made to separate identifiable stacks for each lot of aggregate tested. Once delivery is commenced the Contractor shall continue to promptly complete the delivery of the entire lot.

SUPERSEDED