

## **SECTION FIFTEEN**

### **AGGREGATE FOR SPRAYED BITUMINOUS SURFACING**

#### **15.01 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 requirements relate to quality of rock, aggregate properties, and supply, delivery and stacking to template.

The classes and sizes of aggregate to be supplied shall be as specified in Schedule 1.

#### **15.02 DEFINITIONS**

##### **Aggregate**

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

##### **Unsound Rock**

Unsound Rock is that material, whether in the source or as spalls or as crushed particles, which:

- (a) is soft, friable, or composed of clay or weathered rock, has a Degradation Factor - Source Rock less than the minimum value for marginal rock specified in Clause 15.03; or
- (b) in the case of igneous source rock has a Degradation Factor - Source Rock less than the minimum value for marginal rock specified in Clause 15.03; or
- (c) in addition, in the case of the basic igneous rock, has a Secondary Mineral Content greater than the maximum value for marginal rock specified in Clause 15.03.

##### **Assigned Los Angeles Abrasion Loss**

The assigned Los Angeles Abrasion Loss is a hardness rating derive from Los Angeles Abrasion Loss test results and is assigned on the basis of past test data.

##### **Assigned Polished Stone Value**

The assigned polished stone value is a friction rating derived from polished stone value test results and is assigned on the basis of pest test data.

##### **Crushed Aggregate**

An aggregate produced by crushing and screening of quarry spalls into angular fragments.

#### **15.03 SOURCE ROCK**

Prior to the commencement of work, the Contractor shall confirm the source from which the material shall be obtained.

Source rock will be considered sound or marginal in accordance with the provisions of Table 15.031.

**Table 15.031**

Rock Type	Test Value					
	Sound Rock			Marginal Rock		
	Degradation Factor Source Rock (min)	Secondary Mineral Content % (max)	Texas Ball Mill Value (max)	Degradation Factor Source Rock (range)	Secondary Mineral Content % (range)	Texas Ball Mill Value (range)
<b>BASIC IGNEOUS</b>						
Basaltic Rocks (includes Basalt, Dolerite, Limburgite)	50	25	---	30-49	26.30	---

The hardness of the source rock shall be measured by a Los Angeles Abrasion Loss test on the product and shall comply with the test values shown in Table 15.032

**Table 15.032**

Rock Type	Assigned Los Angeles Abrasion Loss (max)		
	Class A	Class B	Class C
<b>BASIC IGNEOUS</b>			
Basaltic Rocks (includes Basalt, Dolerite, Limburgite)	20	25	30

Class A aggregate shall be produced from a source having an assigned Polished Stone Value not less than 48.

If any time the Contractor proposes to obtain material from a source other than the confirmed source the Superintendent shall be notified in sufficient time to allow such additional investigation as may be required.

The Superintendent's approval shall be obtained prior to changing the source of material.

If the Contractor proposes to use a source rock type other than those listed in Tables 15.031 and 15.032 the Superintendent will determine whether the rock type is acceptable and will set appropriate test values.

Source rock which does not comply with specified requirements but from which aggregate of proven satisfactory performance have been produced may be accepted for use subject to the written approval of the Superintendent.

**15.04 PRECOATING OF AGGREGATE**

Aggregate shall be precoated with cutback bitumen precoating material at the stacksite immediately prior to sealing works being carried out.

The precoating material shall have a viscosity in the range of 0.003 to 0.020 Pa.s at 60°C and contain a bitumen residue of between 25% and 40% by mass and 1% by volume of adhesion agent at normal concentration. The type of adhesion agent used shall be subject to approval by the Superintendent.

Aggregate shall be precoated such that each particle is uniformly coated to the satisfaction of the Superintendent.

The use of alternative precoating materials will be considered. Specific proposals shall be submitted to the Superintendent for approval prior to use.

#### **15.05 TESTING AND ACCEPTANCE OF AGGREGATE**

##### (a) General Requirements

- (i) Crushed aggregate shall consist of clean, hard, durable, angular fragments of igneous, rock and shall be free from clay, organic matter and elongated particles.

##### (b) Testing of aggregate

Prior to delivery aggregate shall be tested for compliance with the requirements of Clause 15.05 (a) to (f).

Unless otherwise specified, testing of aggregate shall be based on lot testing. Three samples shall be taken essentially at random from each lot prior to delivery to stack sites. A lot shall consist of not more than 200 m<sup>3</sup> of aggregate of the same class and size, and which is uniform in appearance and has been produced under essentially uniform conditions. Each lot shall be assigned a unique identification number. The samples shall be taken not more than 30 days prior to delivery of material in the lot and tested for compliance with the specified requirements in accordance with both the individual test results and the mean of the individual test results for each lot. Any aggregate which appears not to comply with the specification shall be excluded from the lot before sampling commences and where necessary shall be tested separately. The Superintendent may agree to lot sizes up to 500 m<sup>3</sup> for sources of consistent material based on a history of satisfactory test results.

##### (c) Unsound and Marginal Rock

The percentage by mass of unsound and marginal rock in that fraction of a sample retained on a 4.75mm AS sieve shall not exceed the values specified in Table 15.051. Where daily production of the same class of aggregate exceeds 200m<sup>3</sup> per day, the test for unsound stone may be reduced to one per day rather than one per lot.

**Table 15.051**

<b>Class of Aggregate</b>	<b>Total of Marginal and Unsound Rock (max % by mass)</b>		<b>Unsound Rock (max % by mass)</b>
	<b>Individual Test</b>	<b>Mean of Lot</b>	<b>Individual Test</b>
A	12	10	5
B	18	15	7
C	24	20	10

(d) Flakiness Index

- (i) For all sources with an assigned Los Angeles Abrasion Loss value of 25 or less, the flakiness index of aggregate shall not exceed the values specified in Table 15.052.

**Table 15.052**

<b>Class of Aggregate</b>	<b>Flakiness Index (max % by mass)</b>	
	<b>Individual Test</b>	<b>Mean of Lot</b>
A	30	25
B	35	30
C	40	35

- (ii) For all sources with an assigned Los Angeles Abrasion Loss value of more than 25 the flakiness index of aggregate shall not exceed the values in Table 15.053.

**Table 15.053**

<b>Class of Aggregate</b>	<b>Flakiness Index (max % by mass)</b>	
	<b>Individual Test</b>	<b>Mean of Lot</b>
B	25	20
C	30	25

Aggregate which does not comply with Tables 15.052 and 15.053 but has a proven satisfactory performance may be accepted for use subject to written approval by the Superintendent.

(e) Grading

The grading by mass of one sized aggregate shall conform to the relevant requirements of Tables 15.054, 15.055 and 15.056.

**Table 15.054 - Specified Size**

Size	Passing AS Sieve	Retained AS Sieve	Min % (by mass)	
			Individual Test	Mean of Lot
20	19.0	13.2	60	65
14	13.2	9.50	55	60
10	9.50	6.70	60	65
7	6.70	3.35	60	65
5	4.75	2.36	55	60

**Table 15.055 - Tolerance on Oversize**

Size	Passing AS Sieve	Min % (by mass)	Retained AS Sieve	Max % (by mass)	
		Individual Test		Individual Test	Mean of Lot
20	26.5	100	19.00	20	15
14	19.0	100	13.20	20	15
10	13.2	100	9.50	20	15
7	9.5	100	6.70	20	15
5	6.7	100	4.75	20	15

**Table 15.056 - Tolerance on Undersize**

Size	Passing AS Sieve	Max % (by mass)		Passing AS Sieve	Max % (by mass)	
		Individual Test	Mean of Lot		Individual Test	Mean of Lot
20	9.50	10	7	2.36	2.0	1.0
14	6.70	10	7	2.36	2.0	1.0
10	4.75	15	10	2.36	3.0	2.0
7	2.36	15	10	0.600	3.0	2.0
5	1.70	15	10	0.600	3.0	2.0

(f) Acceptance of Aggregate

- (i) If all of the individual test results and, where appropriate, the mean of the individual results for each lot comply with the relevant requirements of Table 15.051 to Table 15.056 the aggregate represented by the lot will be accepted.
- (ii) If any of the individual test results do not comply with the relevant requirements of this Clause the aggregate in the lot will be rejected.

**15.06 AVERAGE LEAST DIMENSION**

For Size 10 aggregate and larger the Contractor shall determine the average least dimension of aggregate in each lot and shall give the Superintendent written notification of the values prior to delivery.

### **15.07 DELIVERY**

Delivery shall be made to stack sites as specified. The Contractor shall give the Superintendent written notification of the lot identification number for each stack. Where aggregate from more than one lot is delivered to the same stack site, separate stacks shall be made for aggregate from each lot.

### **15.08 STACKS**

Stacks shall be so placed that they do not unduly reduce sight distance at locations such as intersections and curves. Stacks shall not be placed under or immediately adjacent to electric power lines or under trees or structures where the overhead clearance is less than 6m. Stacks shall be placed clear of the road formation, drains, gateways and side tracks and the toes of the stacks shall be not less than 1m from any obstructions which could impede the operation of mechanical loading equipment.