

## SECTION 801 - MATERIAL SOURCES FOR THE PRODUCTION OF CRUSHED ROCK AND AGGREGATES

~~##This section cross-references Sections 175, 811, 818 and 820.~~

~~If any of the above sections are relevant, they 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.~~

~~A number of standard sections are listed in Table 801.033 - if relevant those sections should also be included in the specification:~~

### 801.01 DESCRIPTION

This section covers the durability, hardness and, where applicable, the polished stone value requirements of sources (including recycled materials) used for the production of crushed rock and aggregates. ~~The requirements for pyroclastic rocks (scoria) are covered in Section 818.~~ The requirements for gravel, sand and soft or ripped rock are covered in Section 811.

Any additional source requirements relevant to specific applications are covered in the applicable Codes of Practice and/or Standard Sections.

### 801.02 DEFINITIONS

#### Assigned Los Angeles Value

The assigned Los Angeles Value (LAV) is a hardness rating derived from tests undertaken by VicRoads, which is assigned annually to each source.

#### Assigned Polished Stone Value

The Assigned Polished Stone Value (PSV) is a friction rating derived from PSV tests undertaken by VicRoads, which is assigned annually to each source.

#### Electric Arc Furnace (EAF) Slag Aggregate

The processed slag by-product from the production steel using an electric arc furnace. Once cooled, the slag by-product is crushed, graded and suitably conditioned (by weathering to reduce free lime content) to produce a non expansive aggregate.

#### Glass Fines

Glass fines are recycled glass cullet crushed to a cubic shape and passing the 4.75 mm AS sieve.

#### Material Source

The raw materials which are used or proposed to be used in the production of crushed rock or aggregate.

#### Material Type

A material from a particular source and which is distinguishable on the basis of colour, texture, hardness, the degree of weathering and test properties.

#### Quarry Rock

An insitu rock mass located in an operating quarry or a part of a quarry.

#### Rock Type

Rock is classified as igneous, metamorphic or sedimentary on the basis of the classification scheme detailed in VicRoads Code of Practice for Source Investigations (RC500.00) as listed in Section 175.

**Recycled Materials**

Materials utilised in the manufacture of crushed rock or aggregates which are obtained from a location other than a quarry, or within a construction site, including Newer Basalt Surface Spalls (NBSS). These materials are usually processed by an on-site portable plant, but may also be taken to a nearby quarry or recycling plant for processing.

Recycled materials which may be used in the manufacture of crushed rock and aggregates are principally crushed concrete, Electric Arc Furnace (EAF) slag, reclaimed asphalt pavement (RAP), glass and brick (supplementary material only), or other materials as approved by VicRoads.

**Reclaimed Asphalt Pavement (RAP)**

Reclaimed asphalt pavement is asphalt removed from an existing asphalt pavement, and re-processed by crushing and/or screening for recycling into new asphalt or other approved products.

**Rock Durability Classification**

Classification of a material type as sound rock, marginal rock or unsound rock in terms of the durability requirements of Clause 801.03.

**Unsound Rock and Foreign Materials**

Unsound rock and foreign materials are those components, whether in the source or as spalls or as crushed particles or as contaminants, which:

- (a) are denoted as "foreign materials" in Table 9 of VicRoads Code of Practice 500.02;
- (b) are soft, friable, or composed of clay or weathered rock, or which contains matter which degrades when alternately wetted and dried; or
- (c) in the case of igneous (except basic igneous) and metamorphic rock, has a Degradation Factor - Source Rock less than the minimum value for marginal rock specified in Table 801.032; or
- (d) in the case of basic igneous rock, has a Secondary Mineral Content greater than the maximum value or an Accelerated Soundness Index value less than the minimum value for marginal rock specified in Table 801.032; or
- (e) in the case of sedimentary rock, has a Ball Mill value greater than the maximum value for marginal rock specified in Table 801.032.

**801.03 SOURCE**

- (a) General

Prior to the commencement of work, the Contractor shall nominate the material source from which the crushed rock and aggregate will be obtained.

Crushed rock and aggregates shall only be produced from ~~an accredited~~ a source accredited by VicRoads with a current assigned LAV hardness and, where appropriate, an assigned PSV value.

VicRoads accreditation will include investigation ~~investigate~~ and classification ~~classify~~ of the source rock ~~sources~~ in accordance with VicRoads Code of Practice for Source Investigations (RC500.00) as listed in Section 175.

**~~The Superintendent's~~Council's approval shall be obtained prior to changing the source of material. If at any time the Contractor proposes to obtain material from a source other than the confirmed accredited source, ~~the Superintendent~~ Council shall be notified in sufficient time so that investigations, as may be required, can be carried out before approval is considered.**

If the Contractor proposes to use a source other than those listed in Tables 801.031 and 801.032, VicRoads will determine whether the source is acceptable and will set applicable test values.

(b) Durability

Rock sources shall be classified as sound or marginal in accordance with the provisions of Tables 801.031 and 801.032. Material which falls outside these limits shall be classified as unsound.

(c) Hardness

The hardness of any source shall be measured by a Los Angeles Abrasion test on the product and the assigned Los Angeles Value shall comply with the test values shown for the different product applications in Table 801.033.

(d) Friction Rating

When applicable, the Polished Stone Value of the source shall be measured by a Polished Stone Value test (RC374.01) on the product and the assigned Polished Stone Value shall comply with the test value shown for the different surfacing applications in Table 801.034.

**Sources which do not comply with the specified durability and hardness requirements for crushed rock and aggregates, but have proven satisfactory performance may be accepted for use subject to the written approval of the Superintendent Council.**

**Table 801.031 Durability Requirements for Sound Rock**

Rock Type	Test Value			
	Degradation Factor Source Rock (min)	Secondary Mineral Content (%) (max)	Accelerated Soundness Index (min)	Ball Mill Value (max)
<b>ACID IGNEOUS</b>				
Granitic Rocks	50	-	-	-
Other Acid Igneous	45	-	-	-
<b>INTERMEDIATE IGNEOUS</b>				
Trachyte	50	-	-	-
Other Intermediate Igneous	45	-	-	-
<b>BASIC IGNEOUS</b>	-	25	94	-
<b>METAMORPHIC</b>				
Hornfels	40	-	-	-
Other metamorphic	45	-	-	-
<b>SEDIMENTARY</b>				
Argillaceous Sediments	-	-	-	30
Arenaceous Sediments	-	-	-	45

Table 801.032 Durability Requirements for Marginal Rock

Rock Type	Test Value			
	Degradation Factor Source Rock (min)	Secondary Mineral Content (%) (max)	Accelerated Soundness Index (min)	Ball Mill Value (max)
<b>ACID IGNEOUS</b>				
Granitic Rocks	35-49	-	-	-
Other Acid Igneous	35-44	-	-	-
<b>INTERMEDIATE IGNEOUS</b>				
Trachyte	30-49	-	-	-
Other Intermediate Igneous	35-44	-	-	-
<b>BASIC IGNEOUS</b>	-	26-30	90-93	-
<b>METAMORPHIC</b>				
Hornfels	20-39	-	-	-
Other metamorphic	30-44	-	-	-
<b>SEDIMENTARY</b>				
Argillaceous Sediments	-	-	-	31-40
Arenaceous Sediments	-	-	-	46-55

\*\*\* Table 801.033 Los Angeles Value (LAV) for Product Applications

Source Type	Rock Type	Los Angeles Value (max)									
		Standard Specification Sections									
		404 405 407 408 410 417 421 427	501 520 610 619 701	702 703 713	423 715 802	812		815	831		
				Base	Subbase	Subbase	Class A	Class B	Class C		
Quarry Rock	<b>ACID IGNEOUS</b>										
	Granitic Rocks	30	35	40	35	35	40	40	25	35	40
	Other Acid Igneous	25	35	35	30	30	35	35	20	25	30
	<b>INTERMEDIATE IGNEOUS</b>	25	35	35	30	30	35	35	20	25	30
	<b>BASIC IGNEOUS</b>	25	35	35	30	30	35	35	20	25	30
	<b>METAMORPHIC</b>	25	35	35	30	30	35	35	20	25	30
	<b>SEDIMENTARY</b>										
	Argillaceous Sediments	(a)	(b)	35	25	(a)	25	25	(a)	25	30
	Arenaceous Sediments	(b)	(b)	35	25	(b)	35	35	(a)	25	30
	River Gravel Pebble	(a)	35	35	(a)	(a)	35	35	(a)	30	35
	Calcrete	(a)	(a)	(a)	(a)	(a)	35	35	(a)	30	30
<b>PYROCLASTIC</b>											
Scoria	(a)	(a)	35	(a)	Refer Section 818		(a)	(b)	(b)	35	
Recycled Material Sources	Newer Basalt Surface Spalls (NBSS)	(b)	25	35	(b)	(b)	35	35	(a)	(b)	30
	Crushed Concrete	(a)	(b)	(a)	(a)	35	40	40	(a)	(a)	(a)
	EAF Slag	25	(b)	25	25	30	35	35	20	25	30
	Glass Fines	35	(b)	35	(a)	(d)	(d)	(d)	(a)	(a)	(a)
	Reclaimed Asphalt Pavement (RAP) Note (e)	25	(a)	(a)	25	(d)	35	(a)	(a)	(a)	(a)
<b>Notes:</b> (a) Not permitted for this use (b) Not permitted for use unless otherwise accredited by VicRoads (c) 'Non Quarry' Granite or Sedimentary rock shall comply with LAV values listed under quarry source rock (d) Only permitted as a supplementary materials in these applications (e) RAP is not permitted use in VicRoads Standard Sections 404, 410, 417 and 427 applications											

**Table 801.034 Polished Stone Values (PSV) for Surfacing Applications**

Specification Section	Application	Polished Stone Value (min)
407 Hot Mix Asphalt	Type H, HG and HP wearing course Type V wearing course	48 54
404 Stone Mastic Asphalt	Type H wearing course	48
405 Regulation Gap Graded Asphalt	Type H wearing course	48
408 Sprayed Seal Treatments	Class A	48
410 Ultra Thin Asphalt	Type H wearing course	48
417 Open Graded Asphalt	Type H wearing course	48
421 Bitumen Crumb Rubber Asphalt	Type H wearing course	48
427 Bituminous Slurry Surfacing	Where specified in Clause 427.24 or wearing course where traffic volume per lane exceeds 2000 vpd	48
831 Aggregate for Sprayed Bituminous Surfacing	Class A	48

**801.04 MINIMUM TESTING REQUIREMENTS**

As a part of the formal VicRoads accreditation of a quarry or recycling facility, VicRoads will carry out all inspections, investigations and testing of sources and source rock material types in accordance with VicRoads Code of Practice for Source Investigations (RC500.00) as specified in Section 175.

~~VicRoads will provide source type, durability classifications, hardness values, friction ratings and reference specimen sets, where applicable, for the assessment of Coarse Aggregate Quality by Visual Assessment as listed in Section 175.~~