Code of Practice Registration of Bituminous Mix Designs

RC 500.01
July 2023
Version 15.0

1 Scope

This Code of Practice describes the process to be undertaken when registering bituminous mix designs to comply with the following Department of Transport and Planning (DTP) Standard Sections for Roadworks and Bridgeworks:

- Section 404 Stone Mastic Asphalt
- Section 405 Regulation Gap Graded Asphalt
- Section 407 Dense Graded Asphalt
- Section 417 Open Graded Asphalt
- Section 418 High Modulus Asphalt (EME2)
- Section 421 High Binder Crumb Rubber Asphalt
- Section 422 Light Traffic Crumb Rubber Asphalt
- Section 427 Bituminous Slurry Surfacing.

Any reference made to 'VicRoads' or 'Department of Transport' are taken to mean Department of Transport and Planning.

All mixes shall be designed in accordance with the appropriate test methods listed in DTP Code of Practice RC 500.16 *Selection of Test Methods for Testing of Materials and Work* and any referenced Standard Sections and Test Methods, and Australian Standard test methods. The order of precedence of DTP documents for mix designs are:

- Standard Sections
- Codes of Practice
- Test Methods.

Registration under this Code of Practice does not attest to the production, delivery, placement or compaction of the mix and does not guarantee the handling properties or performance of the mix.

All mixes shall be produced in compliance with Section 407.

The various types of bituminous mixes are listed in Table 1.

2 Bituminous Mix Description

Stone Mastic Asphalt (SMA)

A gap-graded wearing course mix with a high proportion of coarse aggregate, which interlocks to form a skeletal structure to resist permanent deformation and provide a textured surface. It has a high polymer modified binder (PMB) content which also combines with the fines and filler in the mix to form a mastic.

Regulation Gap Graded Asphalt (RGGA)

An asphalt course of varying thickness applied to a pavement surface to adjust its shape preparatory to overlaying with another asphalt course or a sprayed seal.

Dense Graded Asphalt (DGA)

A mixture of coarse aggregate, fine aggregate, filler and bitumen, produced and placed using a hot or warm mix process and compacted to a dense state as a pavement layer or wearing course.

DGA Types L, N, H, HP, V and VP mixes are primarily used for wearing and regulation courses. Type S series mixes and EME2 (Enrobés à Module Elevé) are primarily used as structural mixes for intermediate and base courses.

Warm Mix Asphalt (WMA)

An asphalt which contains an additive, or uses a manufacturing process, that allows the asphalt mix to be produced and placed at temperatures at least 20°C lower than Hot Mix Asphalt.

Open Graded Asphalt (OGA)

A bituminous wearing course mix using aggregate containing only small amounts of fine material and providing a high percentage of air voids. Principally used on freeways for its noise and water spray reducing properties.

High Binder Crumb Rubber Asphalt (HBCRA)

A dense graded asphalt mix which contains crumb rubber and a high binder content to improve flexural and elastic recovery properties and to delay reflective cracking.

Light Traffic Crumb Rubber Asphalt (LTCRA)

A dense graded asphalt mix which has crumb rubber incorporated into the mix, for use on light trafficked roads.

Microsurfacing

A bituminous slurry surfacing that contains polymer modified emulsion binder, that is capable of being spread in layers of variable thickness for rut-filling and correction courses and for wearing course applications.

Table 1 - Types of Bituminous Mixes

Mix Designation	Description
Stone Mastic Asphalt	
SMAN	A Size 7 or 10 mm asphalt wearing course with PMB for use in heavily trafficked pavements
SMAH	A Size 7 or 10 mm asphalt wearing course with a heavily modified PMB for use in heavily trafficked intersections and pavements
Regulation Gap Graded Asphalt	
RGG	A Size 7 mm or smaller asphalt regulating course
Dense Graded Asphalt	
L	A light duty Size 7 or 10 mm asphalt wearing course with low air voids and higher binder content for use in very lightly trafficked pavements
N	A light to medium duty Size 7, 10 or 14 mm asphalt wearing course or regulating course for use in light to moderately trafficked pavements
H	A heavy duty Size 7, 10 or 14 mm asphalt wearing course or regulating course typically used in mid-block applications on moderate to heavily trafficked pavements
V	A heavy duty Size 10 or 14 mm asphalt wearing course for moderate to heavily trafficked intersections
HP	A very heavy duty high performance Size 10 or 14 mm asphalt wearing course incorporating a PMB typically used for use in mid-block applications where a high resistance to deformation and flexural cracking is required
VP	A very heavy duty high performance Size 14 mm asphalt wearing course incorporating a PMB for very heavily trafficked intersections where a high resistance to deformation and flexural cracking is required
SI	A Size 20 mm structural asphalt for intermediate course in heavy duty pavements or base course in medium duty pavements

SF	A fatigue resistant Size 20 mm structural base course asphalt for heavy duty asphalt pavements with a total asphalt thickness (excluding Open Graded Asphalt) of at least 175 mm
SP	A heavy to very heavy duty high performance Size 20 mm structural asphalt intermediate course incorporating a PMB for high resistance to deformation and flexural cracking
SS	A very stiff Size 20 mm structural intermediate course asphalt used to increase pavement deformation resistance and increase mix stiffness for very large scale heavy duty asphalt pavements.
EME2	A high modulus structural intermediate or base course asphalt with a high resistance to deformation
Open Graded Asphalt	
OGA	A Size 10 mm non-structural asphalt wearing course with high air voids and PMB binder for use in high speed environments such as freeways/highways
Crumb Rubber Asphalt	
HBCRA	A specialised Size 10 mm or 14 mm asphalt wearing course or Size 20 mm structural base course with a high binder content and crumb rubber incorporated into the mix for use in heavily trafficked pavements
LTCRA	A Size 7 mm, 10 mm or 14 mm asphalt wearing course with crumb rubber incorporated into the mix for use in light trafficked pavements
Microsurfacing	
	A Size 4,5,7 or 10 mm mix for use as a regulating course or wearing course

3 Mix Design

3.1 Stone Mastic Asphalt

Mix designs shall comply with the requirements of Section 404.

3.2 Regulation Gap Graded Asphalt

Mix designs shall comply with the requirements of Section 405.

3.3 Dense Graded Asphalt

For any given suite of dense graded mixes for any asphalt plant, excluding EME2, one of the following mix design methods shall be used:

- The Austroads Mix Design Method as described in DTP Test Methods RC 201.12 *Design of Asphalt Mixes (Gyratory Compaction Method)* and RC 201.13 *Performance Properties of Asphalt Mixes*; or
- The Marshall Mix Design Method as described in DTP Test Method RC 201.01 *Design of Asphalt Mixes (Marshall Method)*.

DGA mix designs shall comply with the requirements of Section 407.

EME2 mix designs shall comply with the requirements of Section 418.

3.4 Open Graded Asphalt

Mix designs shall comply with the requirements of Section 417.

3.5 High Binder Crumb Rubber Asphalt

Mix designs shall comply with the requirements of Section 421.

3.6 Light Traffic Crumb Rubber Asphalt

Mix designs shall comply with the requirements of Section 422.

3.7 Microsurfacing

Mix designs shall comply with the requirements of Section 427.

4 Mix Registration

4.1 Registration Procedure

Applications to register a bituminous mix shall be submitted by the supplier to ARRB (labs@arrb.com.au) at least two months prior to the proposed date for the commencement of supply of the mix and shall be accompanied by the information listed in Clause 5.

Mixes shall be current at the time of supply of the mix to a project.

The supplier shall nominate a mix identification number for each mix and this number shall be used to identify the mix for all future communications and for job records.

The mix identification number for mixes designed by the Austroads method shall include the suffix “(A)” and mixes designed by the Marshall method shall include the suffix “(M)”.

In addition to the above, the mix identification number for Warm Mix Asphalt (WMA) shall include the suffix “(W)”.

The supplier will be advised in writing of the result of the application to register a mix.

All mix designs registered with DTP are issued a registration status, being either:

- GENERAL

  Complies with the requirements of this Code of Practice, or

- CONDITIONAL

  Mixes which do not comply with one or more aspects of the requirements of this Code of Practice but which are considered appropriate for use subject to conditions attached to the registration.

The registration of a mix design will remain current for a period of three (3) years subject to there being no changes to the source or grading of aggregate components, source of filler components, or the grade/class of binder.

Registered mixes that have passed their registration date are deemed to have expired, with their details being retained for record purposes.

4.2 Registration Review

If a registered mix has unsatisfactory handling or field performance, the supplier may request DTP to de-register the mix. Alternatively, DTP may de-register the mix pending a review and immediately advise the supplier of the action taken.

In addition, failure to demonstrate that mix production is consistently in accordance with the specification requirements may result in DTP applying conditions to the mix registration or de-registering the mix.

5 Information Required for Mix Registration

5.1 Dense Graded Asphalt

(a) Information Required

The following information shall be submitted for each new mix design:

(i) Grading test results for each component

(ii) Proportion of each component in the mix

(iii) Grading of the mix

(iv) Graphs of mix properties vs Bitumen Content for: Bulk Density, Max Density, Voids in Mineral Aggregate, Air Voids, and Binder Film Index

(v) Unsound and marginal rock content of the coarse aggregate

(vi) Flakiness Index of each separate coarse aggregate fraction of 10 mm and above

(vii) Degradation Factor and Plasticity Index for the crusher fines and manufactured sand components

(viii) Sand Equivalent Value of washed sand and Plasticity Index of unwashed sand, as applicable

(ix) Class of binder and certificate of compliance

(x) Source of added filler and certificate of compliance for added filler

(xi) The Dry Compacted Voids of total combined filler

(xii) Test information as shown in Table 2. For EME2 refer to Section 418

(xiii) Recycled Asphalt Pavement (RAP) – refer to Clause 5.1(d)

(xiv) Name, source, nominated proportions and material properties of any additives.

All test results shall be current at the time of submission of the mix design and shall not be greater than 12 months old.

All components of the asphalt mix shall comply with Section 407 or 418 as appropriate.

Table 2 - Test Information to be Submitted for each Mix for Registration

Volumetric Tests	Bituminous Mix Size and Types	
	Austroads Mixes	Marshall Mixes
Air Voids at Design Binder Content	All mixes Clause 6.1(b)(i)	All mixes Clause 6.1(b)(ii)
Voids in the Mineral Aggregate	All mixes Clause 6.1(b)(i)	All mixes Clause 6.1(b)(ii)
Bulk Density	All mixes	All mixes
Maximum Density (voids free density)	All mixes	All mixes
Minimum Binder Content Clause 6.1(a)(iii)	All mixes	All mixes
Binder Film Index Clause 6.1(a)(iv)	All mixes	All mixes
Performance Tests	Austroads Mixes	Marshall Mixes
Indirect Tensile Modulus Clause 6.1(c)(i)	All mixes except Type L and N and size 7 mm mixes	All mixes except Type L and N and size 7 mm mixes
Moisture Sensitivity Clause 6.1(c)(ii)	All mixes except size 7 mm mixes, Type SF mixes and Type L mixes	All mixes except size 7 mm mixes, Type SF mixes and Type L mixes

Wheel Tracking Depth Clause 6.1(c)(iii)	All mixes except size 7 mm mixes, Type L, N (incorporating C320 binder or RAP greater than 10%) and SF mixes	All mixes except size 7 mm mixes, Type L, N (incorporating C320 binder or RAP greater than 10%) and SF mixes
Resistance to Fatigue Clause 6.1(c)(iv)	Not applicable at this time pending further investigation	Not applicable at this time pending further investigation

(b) Binder used in Production

For asphalt types with no RAP or those containing RAP in accordance with RAP Level 1 (refer Table 4), the class of binder for each asphalt type shall be as shown in Table 3.

Table 3 - Class of Binder

Asphalt Type	Binder Class
L	C170
N	C170 (1) or C320 (2)
H, V, SI and SF	C320
HP, VP and SP	A10E
SS	C600
EME2	15/25 penetration grade 10/20 penetration grade

Notes for Table 3:

1. *For mixes containing C170, up to 25% RAP may be used.*
2. *For mixes containing C320, up to 10% RAP may be used.*

(c) Additional Information Required for Mixes Using WMA Technology or Other Additives

Only WMA technologies or other additives previously approved by DTP shall be permitted.

The following information is required for mixes using WMA technology or that contain other additives:

(i) The WMA technology or additive describing the process of manufacture of the asphalt

(ii) Evidence that the WMA technology or additive has been approved by DTP

(iii) Name, source, nominated proportions and material properties of the WMA technology or additive

(iv) Where foaming is used as a WMA technology, the target rate for water addition and the acceptable variation for production.

Where the Supplier meets the requirements of Clause 5.1(c)(i) to (iv) inclusive and Clause 6.1, Warm Mix Dense Graded Asphalt mixes containing unmodified binder or Dense Graded Asphalt mixes containing approved additives will be registered as 'GENERAL'. The same WMA technology or additive can also be extended to other asphalt mixes except for mixes incorporating PMB, unless previously approved.

Where the Supplier cannot meet the requirement in Clause 5.1(c)(ii), DTP may permit the use of WMA technology or other additives including their use in mixes containing PMB subject to the following:

(v) Providing a detailed description of the WMA technology or additive that includes a full identification of the WMA technology or additive including type, dosage percentage and tolerances, method of inclusion into the asphalt mix, safety data sheet, quality control testing etc; and

(vi) Undertaking testing or validation of the mix(es) as determined by DTP.

Subject to meeting the requirements of Clause 5.1(c)(v) and (vi) and Clauses 6.1 and 6.2, DTP may register the mix as 'GENERAL' or 'CONDITIONAL'. The WMA technology or additive may also be extended to other asphalt mixes as deemed appropriate by DTP.

(d) Additional Information Required for Mixes Containing RAP

The following information is required for all asphalt mixes incorporating either Level 1 or Level 2 RAP (refer Table 4):

- RAP nominal size and percentage of RAP used;
- Sieve analysis after extraction of binder;
- Binder content of RAP; and
- RAP Management Plan and Inspection and Test Plan that meets the requirements of Section 407 Clause 407.13.

In addition, for RAP Level 2 mixes, the following information is required:

- Virgin binder, RAP binder and binder blend viscosities.

For RAP Level 2 mixes the blend of virgin and RAP binder shall be designed to have a viscosity at 60 °C that falls within the viscosity range in Section 407, Table 407.132 for the binder specified in the nominated mix type. The components of the binder blend shall be determined according to AGPT/T193 *Design of Bituminous Binder Blends to a Specified Viscosity Value*.

To achieve the targeted binder blend viscosity in the asphalt mix, a virgin binder class one grade lower than that specified in Table 3 may be used.

The viscosity of the virgin binder class used in the binder blend calculation may be determined using either AGPT/T192 *Characterisation of the Viscosity of Reclaimed Asphalt Pavement (RAP) Binder Using the Dynamic Shear Rheometer (DSR)* or AS 2341.2 *Determination of Dynamic Viscosity by Vacuum Capillary Viscometer*. RAP binder characterisation and binder blend viscosity adjustments must be designed in accordance with Section 407 Clause 407.13(e).

Table 4 - Permitted RAP Content (% by mass)

Asphalt Type	RAP Level 1	RAP Level 2
L	Up to 25	-
N	Up to 10 (1) Up to 25 (2)	-
H	Up to 15	16 to 20
SI	Up to 15	16 to 30
SS	Up to 15	16 to 30
V	Up to 15	-
SF	Up to 15	16 to 40

Notes for Table 4:

1. *For Type N mixes using C320 binder.*
2. *For Type N mixes using C170 binder.*

(e) Use of Recycled Plastic

DTP may permit the use of recycled plastic in DGA (excluding mixes containing PMB) subject to additional testing, trials or validation of the trial mix performance being undertaken as required. Where DTP considers the mix as suitable for use the mix will be registered as 'GENERAL' or 'CONDITIONAL' as assessed by DTP.

Recycled plastic must be sourced from waste plastic generated in Australia and processed by an accredited supplier holding a license or exemption for the recovery of resources from waste issued by the relevant state authority.

5.2 Information Required for Other Bituminous Mix Registrations

Stone Mastic Asphalt
Refer to Section 404. In addition, for any mix containing aggregates of coarse or medium grained acid igneous rocks (e.g. granite, adamellite, granodiorite, quartz porphyry) shall contain not less than 1% hydrated lime filler.

Regulation Gap Graded Asphalt
Refer to Section 405

Open Graded Asphalt
Refer to Section 417

High Modulus Asphalt (EME2)
Refer to Section 418

High Binder Crumb Rubber Asphalt
Refer to Section 421

Light Traffic Crumb Rubber Asphalt
Refer to Section 422

Microsurfacing
Refer to Section 427

6 Test Properties Required for Bituminous Mixes

6.1 Dense Graded Asphalt

(a) Material Test Properties

(i) Grading of Aggregates

The proportions of aggregate and binder in the mix and the grading of aggregates including any added filler after mixing but before compaction, shall lie within the limits specified in Table 5 for each size of asphalt unless otherwise approved by DTP.

Table 5 - Grading Limits for Aggregates (including any filler)						
Sieve Size AS (mm)	Percentage Passing (by mass)					
	Type N, V, VP, H Series and S Series				Type L	
	Size 7 Mix	Size 10 Mix	Size 14 Mix	Size 20 Mix	Size 7 Mix	Size 10 Mix
37.5						
26.5				100		
19.0			100	90 – 100		
13.2		100	85 - 100	75 - 88		100
9.5	100	90 – 100	70 - 84	61 - 75	100	90 – 100
6.70	80 - 100	70 – 86	59 - 73	49 - 64	80 – 100	70 – 90
4.75	70 - 88	58 – 73	48 - 65	41 - 55	70 – 90	58 – 76
2.36	46 - 65	38 – 55	32 - 48	27 - 41	45 – 65	40 – 58
1.18	31 - 51	25 – 44	22 - 37	18 - 33	34 – 55	27 – 48
0.600	20 – 40	16 – 34	14 - 28	12 - 25	22 – 45	17 – 38
0.300	13 – 29	10 – 24	10 - 22	8 - 19	14 – 33	11 – 26
0.150	8 - 17	6 – 16	6 - 14	5 - 13	8 – 18	7 – 18
0.075	5 - 8	4 – 7	4 - 7	3 - 6	5 – 8	4 – 7

(ii) RAP - General Requirements

RAP must comply with the requirements of Section 407.

The incorporation of RAP in the design of asphalt mix VP, HP, SP, HBCRA and EME2 is not permitted.

(iii) Minimum Design Binder Content

The binder content shall comply with the requirements of Table 6.

Table 6 - Minimum Binder Content for Mix Designs (% by mass)				
	Size 7 mm	Size 10 mm	Size 14 mm	Size 20 mm
Binder	5.0	4.5	4.5	4.0

(iv) Binder Film Index

The binder film index shall comply with the requirements of Table 7.

Table 7 - Binder Film Index	
Asphalt Type	Minimum Binder Film Index (micron)
N, H, VP, SI, SS	8.0
V	7.5
L, HP & SP	8.5
SF	9.5

(v) Added Filler

Wearing Course

Wearing course asphalt shall contain a minimum of 1% added filler. Added filler shall comply with the requirements of Section 407. It may consist of hydrated lime, cement kiln dust, ground limestone, ground granulated blast furnace slag, Portland Cement or fly ash produced from the combustion of black coal but excludes crusher dust and plant recycled fines.

Acid Igneous Rocks

Any asphalt containing aggregates of coarse or medium grained acid igneous rocks (e.g. granite, adamellite, granodiorite, quartz porphyry) shall contain not less than 1% hydrated lime filler.

(b) Volumetric Test Properties

(i) Austroads Mix Design Method

The laboratory compaction level and design air voids for all mixes shall comply with those specified in Table 8, using the same binder type used in production as the base binder.

Table 8 - Compaction Cycles and Air Voids for the Mixes Designed by the Austroads Method

Asphalt Type	Gyratory Cycles to Achieve Design Aim for Air Voids (No.)	Design Air Voids [1] (%)	Minimum Air Voids at 250 Gyratory Cycles [2] (%)
L	50	4.0	Not Applicable
N	80	4.0	To be reported
H	120	4.0	To be reported
V	120	5.0	To be reported
HP	120	3.0	To be reported
VP	120	4.0	To be reported
SI, SS	120	4.0	To be reported
SP	120	3.0	To be reported
SF	80	2.0	Not Applicable

Notes for Table 8:

1. *The design air voids values may be adjusted to account for rounding of the binder content to the nearest 0.1%.*
2. *Also applies to mix types designed by the Marshall Method*

The minimum Voids in the Mineral Aggregate (VMA) shall not be less than the limits specified in Table 9 and the Binder Film Index shall not be less than the limits specified in Table 7. The binder content for Type HP shall be derived from the air voids versus binder content plot for the three trial binder contents used to design the Type H mix at 120 gyratory compaction cycles.

Type SS shall be produced by direct substitution of the same mass of C600 binder for the C320 binder in the Type SI mix.

(ii) Marshall Mix Design Method

The test properties for Types L, N, V, VP, H, HP and S Series mixes shall comply with Tables 7 and 9.

For Type H and SI mixes, the same binder type used in production shall be used in the base mixes for compliance with Table 9. The binder content of all other mixes may be derived from these mixes if they are the same in every respect other than binder class and content. All derived mixes must pass all other relevant volumetric test requirements for the mix using the production binder.

Type SF shall be derived from a Type SI asphalt mix with a design binder content of 1% by mass of total mix higher than the Type SI mix. Volumetric properties for the Type SF mix shall be derived for the specified increase in binder content.

Types HP and SP shall have a design binder content of 0.3% by mass of total mix higher than the Type H and Type SI mixes, respectively. Volumetric properties for Types HP and SP shall be derived from the complying volumetrics Type H and SI mixes respectively, for the specified increase in binder content. The binder film index of Type HP and SP mixes shall comply with Table 7.

Type SS shall be produced by direct substitution of the same mass C600 binder for C320 binder in Type SI.

Table 9 - Air Voids and Voids in Mineral Aggregate for Mix Types Designed by the Marshall Method

Mix Size (mm)	Air Voids Range (%)						Minimum Voids in Mineral Aggregate (%) (1)						
	L	N & H	V	VP	SI	SS	L	N	H	V	VP	SI	SS
7	3.8 – 4.2	4.9 – 5.3	-	-	-	-	15	15	16	-	-	-	-
10	3.8 – 4.2	4.9 – 5.3	5.9 – 6.3	-	-	-	15	15	16	16	-	-	-
14	-	4.9 – 5.3	5.9 – 6.3	4.9 – 5.3	-	-	-	15	15	15	15	-	-
20	-	-	-	-	4.9 – 5.3	4.9 – 5.3	-	-	-	-	-	14	14

Notes for Table 9:

1. *Also applies to mix types designed by the Austroads Mix Design Method*

(c) Performance Test Properties

(i) Indirect Tensile Modulus Test Properties

The mean indirect tensile modulus of test specimens for each asphalt type listed in Table 10 shall be within the corresponding specified range.

Table 10 - Mean Indirect Tensile Modulus Limits [1] (Gyratory Compaction)			
Asphalt Type	Nominal Size (mm)	Mean Indirect Tensile Modulus at 25°C (MPa)	
		Minimum	Maximum
H	10	2500	5500
H	14	3000	6000
V	10 & 14	2500	5500
VP	14	1000	- [2]
HP	10 & 14	1000	2500
SP	20	1000	2500
SI	20	3500	7000
SS	20	3500	7000
SF	20	3000	7000

Notes for Table 10:

1. *Modulus test limits apply to gyratory compacted specimens compacted to 5% air voids within a tolerance of ± 0.5% air voids.*
2. *Value to be added in future revision.*

(ii) Moisture Sensitivity

The Wet Tensile Strength and the Tensile Strength Ratio shall comply with the requirements of Table 11.

Table 11 - Wet Tensile Strength and Tensile Strength Ratio [1]		
Asphalt Size &Type	Minimum Wet Tensile Strength (kPa)	Minimum Wet to Dry Tensile Strength Ratio %
10N, 10H, 10V, 14N, 14H, 14V	850	80
20SI, 20SS	650	80
10HP,14HP, 14VP, 20SP	To be reported	80

Note on Table 11:

1. *Test specimens shall be prepared using gyratory compaction to 8% air voids ± 1% air voids.*

(iii) Resistance to Deformation

The maximum Tracking Depth tested under the AGPT/T231 *Deformation Resistance of Asphalt Mixtures By The Wheel Tracking Test* shall not exceed the values for asphalt mixes specified in Table 12.

Table 12 - Wheel Tracking Depth[1]	
Asphalt Size and Type	Maximum Tracking Depth at 60°C (mm)
14V, 14HP, 14VP, 20SP	4.0
10HP, 20SI, 20SS	5.0
10V, 14N, 14H	7.0
10H & 10N	8.0

Notes for Table 12:

1. *Wheel track test specimens shall be compacted to 5% air voids ± 1% air voids.*

(iv) Resistance to Fatigue under Flexural Bending

Fatigue testing requirements will be included in a future revision based on the outcomes of further investigations.

6.2 Test Properties required for other Bituminous Mixes

Mix designs for other bituminous mixes shall comply with the following as appropriate:

- **Stone Mastic Asphalt**
  Refer to Section 404
- **Regulation Gap Graded Asphalt**
  Refer to Section 405
- **Open Graded Asphalt**
  Refer to Section 417
- **High Modulus Asphalt (EME2)**
  Refer to Section 418
- **High Binder Crumb Rubber Asphalt**
  Refer to Section 421
- **Light Traffic Crumb Rubber Asphalt**
  Refer to Section 422
- **Microsurfacing**
  Refer to Section 427

Document Information

Criteria	Details
Document Title	Code of Practice 500.01 Registration of Bituminous Mix Designs
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Contact	StandardManagementRD@roads.vic.gov.au

Document History

Version	Date	Description
9.0	April 2016	Various clauses. Incorporation of EME2 references
10.0	December 2018	Various clauses: Format and structural changes. Registration of other bituminous mixes included (UTA and Lean Mix Asphalt removed) Added 14VP and Size 7 mm SMA Table 1: Expanded definitions to bituminous mixes. VP and Size 7 mm SMA added. EME2 reclassified as DGA. Table 2: Removed 10 gyratory cycles, stability and flow. Revised testing requirements for various mixes. Table 3: Multigrade M500 replaces M1000. Added 15/25 penetration grade for EME2. Table 4: Particle loss required for Type SI. Particle loss removed for Type SF. Table 5: Removed aggregate proportion. Removed upper limit of bitumen content. Volumetric testing of the base mix will use production binder. VMA tolerance removed. Table 8: Removed 10 gyratory cycles. Added Types V & VP. Table 9: Removal of stability and flow. VMA reduced by 1% to account for the removal of the tolerance in 6.1 (b). Table 11: Moisture sensitivity testing extended to additional mixes Table 12: Revised wheel tracking limits for mixes. Removal of fatigue testing requirements pending further investigation. Table of acceptable warm mix technologies removed.
11.0	November 2019	Inclusion of reference to Standard Section 422 – Light Traffic Crumb Rubber Asphalt Various editorial changes, including table numbers and associated notes and order of precedence documents Table 4: Removed fatigue testing requirement for conditional RAP Type N & H mixes Table 12: Maximum tracking depth values revised to one decimal place.
12.0	April 2021	Update to reflect change to RAP requirements for asphalt mixes, as specified in Section 407 (April 2021). Removal of multigrade binder, update to various definitions
13.0	July 2021	Update to Level 1 RAP content for Type N asphalt. Minor editorial changes and updates to Type H, V and VP asphalt definitions
14.0	December 2021	Table 4 - Update to RAP content for Type V
15.0	July 2023	Editorial changes throughout. Clause 2: Revised mix descriptions to better align with those provided in the Austroads Glossary of Terms. Table 1: Removal of Size 14 Type SI Table 4: Allowing up to 15% RAP (Level 1) in Type V asphalt Modified Clause 5.1(c): Inclusion of text relating to the assessment of new WMA technology or additive. New Clause 5.1(e): Provision for use of recycled plastic

Interpretation

In this document, except where the context otherwise requires—

- The word “must” is to be understood as denoting a requirement which is mandatory.
- The word “should” is to be understood as denoting a requirement which is not mandatory but recommended.
- The word “includes” in any form is not a word of limitation. Mentioning anything after "includes" or similar expressions (including "for example") does not limit what else may be included.
- A reference to a section, clause, schedule or appendix is a reference to a clause of or schedule or appendix of this document.

Nomenclature

Where any of the following symbols are used within this document, the textual description provided to the right is its intended meaning:

ⓘ This symbol intends the accompanying text to be read as INFORMATION. Common information accompanying this symbol includes RATIONALE and GUIDANCE for the associated requirement.

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