

6 December 2018

To Asphalt Specifiers

NATIONAL HARMONISATION OF TEST METHODS

AAPA members are committed to the continual improvement of the products delivered by our industry. As part of this drive, AAPA encourages stakeholders to coordinate their efforts and converge on a harmonised framework for the delivery of asphalt and sprayed seals in Australia.

A prerequisite for achieving this goal is ensuring that test results and performance properties can be meaningfully compared between jurisdictions and product specifications. For historical reasons, a range of test methods are in used in different parts of the country. Although the differences between procedures in test methods are modest, they do impact the test result and introduce uncertainty when comparing results between methods.

Clear direction for change is evident from the results of the AAPA 2017 National Proficiency Testing Round. Laboratories from all states and territories were part of this initiative. The proficiency testing round included various routine asphalt and aggregate tests. The results indicated that a single dominant national test method already exists for most tests.

A large majority of results (typically about 80%) were reported against a single test method, while the remainder was reported against a range of alternative test methods. The results for maximum density testing are provided in the table below as an example. For this test a total of 97 results were submitted, 75 of those tests (77%) were performed in accordance with AS/NZS2891.7.1, with a small number of tests performed using other test methods. A similar distribution in the use of test methods can be observed for most other tests. For further information click [here](#) to access the 2017 AAPA Proficiency Test report.

Method	Combined	AS/NZS 2891.7.1	AS 2891.7.3	MRWA WA 732.2	Q307A	TP435
No. data	97	75	13	3	4	2
Median	2.629	2.629	2.627	2.627	2.637	2.623

Analysis of the proficiency data shows that for some tests the median result differs significantly between test methods.

The uncertainty in comparing results between laboratories increases when we consider that some material properties take multiple consecutive tests to determine. At each of these steps a range of alternate test methods may be used. For instance, the determination of air voids in Marshall specimen would require the combination of Marshall compaction (4 possible test methods), Maximum density (5 possible methods) and bulk density by presaturation (5 possible methods). This divergence theoretically presents 100 possible combinations of test methods to determine a single property. Further steps in the test process (e.g. resilient modulus on Marshall specimens) would introduce further possible variation in test method use.

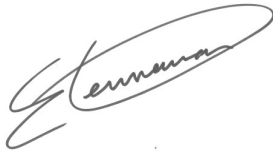
Through this letter AAPA proposes national harmonisation of a number of asphalt test methods. Harmonisation will allow stakeholders to focus their efforts on improving accuracy, precision and reproducibility of a single laboratory test method per material property across multiple jurisdictions. Test accuracy, precision and reproducibility are of critical importance from both a design and product acceptance point of view. Other benefits include:

- Increased confidence in test methods
- Increased ease of knowledge sharing and technology transfer between jurisdictions and fields of practice (e.g. airports & roads)
- Streamlined testing process, less duplication in test equipment
- Lower test accreditation burden and transferability of materials testers across jurisdictions
- Increased transparency of differences between specifications
- Facilitate gradual national harmonisation of asphalt delivery

Attachment A contains the list of proposed national methods for a number of material properties. The list is based on the outcomes of the 2017 National Proficiency Testing Round and is therefore limited to test properties that were included in this proficiency round. Proposals for harmonisation of other test methods will follow in the future. For each test property a single **national method** is proposed. The **prevalence** of this method, indicating the proportion of results submitted using this method in the proficiency testing round, is also shown in the table. For some tests, **alternative national methods** are also included. These methods should be used only if there is sound technical reason to do so, e.g. using the waxing procedure to determine the bulk density of asphalt samples with a high air void content. Finally, the table identifies test methods **to be replaced**. Asphalt specifiers are requested by industry to remove all references to these **to be replaced** methods and refer to the **national method** instead.

On behalf of our members I invite you to support this important initiative aimed at improving quality and consistency of asphalt products in Australia. Please don't hesitate to contact me with any questions or comments.

Sincerely,



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Attachment A: Proposed national method

Test property		Maximum density of asphalt
Proposed national method	national	AS/NZS 2891.7.1:2015 Methods of sampling and testing asphalt Determination of maximum density of asphalt - Water displacement method
Prevalence		77%
Alternative national methods	national	N/A
To be replaced		AS/NZS 2891.7.3:2014 METHODS OF SAMPLING AND TESTING ASPHALT DETERMINATION OF MAXIMUM DENSITY OF ASPHALT - METHYLATED SPIRITS DISPLACEMENT
		WA 732.2 MAXIMUM DENSITY OF ASPHALT - RICE METHOD
		Q307A Maximum density of asphalt - water displacement
		TP 435 Determination of the Maximum Density of Asphalt – Water Displacement Method
Test property		Marshall compaction and determination of stability and flow
Proposed national method	national	AS/NZS 2891.5:2015 Methods of sampling and testing asphalt Compaction of asphalt by Marshall method and determination of stability and flow - Marshall procedure
Prevalence		66%
Alternative national methods	national	N/A
To be replaced		AAAMT001 Determination of the Marshall Test Properties of Asphalt Mixes for Airports
		WA 731.1 STABILITY AND FLOW OF ASPHALT: MARSHALL METHOD
		Q305 Stability, flow and stiffness of asphalt - Marshall
Test property		Bulk Density of compacted asphalt
Proposed National standard test	National	AS/NZS 2891.9.2:2014 Methods of sampling and testing asphalt Determination of bulk density of compacted asphalt - Presaturation method
Prevalence		83%
National alternative methods	alternative	AS/NZS 2891.9.1:2014 Methods of sampling and testing asphalt Determination of bulk density of compacted asphalt - Waxing procedure
		AS/NZS 2891.9.3:2014 Methods of sampling and testing asphalt Determination of bulk density of compacted asphalt - Mensuration method
To be replaced		AAAMT001 Determination of the Marshall Test Properties of Asphalt Mixes for Airports
		WA 733.1 BULK DENSITY AND VOID CONTENT OF ASPHALT
		Q306B Compacted density of dense graded asphalt - presaturation
Test property		Gyratory compaction
Proposed National standard test	National	AS/NZS 2891.2.2:2014 Methods of sampling and testing asphalt Sample preparation - Compaction of asphalt test specimens using a gyratory compactor
Prevalence		93%
National alternative methods	alternative	N/A
To be replaced		TP248 Compaction of Asphalt Test Specimens Using a Gyrator Compactor
		T662 Compaction of asphalt test specimens (Using a gyratory compactor)
Test property		Aggregate density and water absorption
Proposed National standard test	National	AS 1141.5-2000 (R2016) Methods for sampling and testing aggregates Particle density and water absorption of fine aggregate
Prevalence		86%
National alternative methods	alternative	N/A
To be replaced		Q214A Particle density and water absorption of aggregate - fine fraction
Test property		Methylene blue adsorption value
Proposed National standard test	National	AS 1141.66-2012 Methods for sampling and testing aggregates Methylene blue adsorption value of fine aggregate and mineral fillers
Prevalence		85%

National alternative methods	N/A
To be replaced	T659 Methylene blue adsorption value of road construction material
Test property	Tensile strength ratio
Proposed National standard test	AGPT/T232
Prevalence	94%
National alternative methods	N/A
To be replaced	Q315 Sensitivity of asphalt to water
	T640 Assessment of Propensity for Stripping of Bituminous Mixes
Test property	Binder content and aggregate grading¹
Proposed national methods	AS/NZS 2891.3.1:2013 Methods of sampling and testing asphalt Binder content and aggregate grading - Reflux method, or AS/NZS 2891.3.3:2013 Methods of sampling and testing asphalt Binder content and aggregate grading - Pressure filter method
Prevalence	53% and 37% respectively
Alternative national methods	AGPT-T234-05 Asphalt binder content (Ignition Oven Method)
To be replaced	Q308A Binder content and aggregate grading of asphalt - reflux method
	WA 730.1 BITUMEN CONTENT AND PARTICLE SIZE DISTRIBUTION OF ASPHALT AND STABILISED SOIL: CENTRIFUGE METHOD
	TP 470 Binder Content – Pressure Filtration Method

Notes:

- 1) For this test, two national methods are proposed. Both these methods are widely used in routine testing and sufficient data should be available to improve both. There currently is an initiative underway to explore automated binder extraction by reflux method to eliminate operator exposure to solvents.