

YEAR 2020 CCIL CORRELATION

MIX COMPLIANCE (Alberta and Yukon)

SAMPLES

Two bulk samples, one identified as Material **A-MC-X** and the other as Material **B-MC-X**, have been provided. Each of these samples shall be tested individually, i.e. do not combine them.

TESTING

On receipt, each sample shall be warmed and a representative portion obtained by quartering or using a riffle splitter. Two replicates of this representative portion shall then be tested as per ASTM D2041 "Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures".

Sufficient material from each sample shall then be heated to the appropriate temperature to prepare three briquettes. The briquette specimens shall be prepared for each sample as per Laboratory test method ASTM D6926 "Preparation of Bituminous Specimens Using Marshall Apparatus".

Trough, moulds and hammers shall be preheated to $135 \pm 5^{\circ}\text{C}$.

For **A-MC-X**, use a briquette mass 1250 ± 25 g and the compaction temperature of 144°C

For **B-MC-X**, use a briquette mass 1235 ± 25 g and the compaction temperature of 138°C

Note 1: With the manual hammer, the following should be noted: (a) Manual compaction of briquettes shall be carried out using **75 blows per side**; (b) the timing of blows for the 75 blows should be 60 blows per minute (plus or minus 5 blows); (c) the hammer should be allowed to rebound between successive blows.

For mechanical hammers, each lab shall determine and use its own equivalency to this compaction effort.

Thereafter the specimens shall be tested for:

1. Bulk relative density, D2726, "Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures"
2. Marshall stability and flow, D6927, "Marshall Stability and Flow of Bituminous Mixtures"

Note 2: Stability must be reported in Newtons and Flow in 0.25mm units.

Note 3 (New this year) Please identify the method used for the determination of flow by selecting from the dropdown feature on the Reporting Form.

3. Air voids, D3203 "Percent Air Voids in Compacted Dense and Open Bituminous Pavement Mixtures"
4. Voids in mineral aggregate, AI-MS2, basis total mix, "Determination of V.M.A. in Compacted Bituminous Mixtures"

Note 4: For calculation of the V.M.A. use the values for aggregate bulk relative densities and asphalt cement provided on Page 3. An example of a completed work sheet is shown on page 4. A

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hard copy of this sheet must be submitted with the laboratory work sheets. The VMA values shall be reported in the designated spaces on the Mix Compliance Report form.

Note 5: Type B Partial Mix Compliance laboratories are only required to report the BRD and VMA in the online reporting form. If your lab is not equipped for the Maximum Theoretical Density (MTD) and Stability and Flow testing, please ensure that you are using the correct form for reporting your test results.

All test results shall be reported and submitted online by **January 3 2020**. Examples of completed reporting forms for Type B Full Mix Compliance and Type B Partial Mix Compliance laboratories are shown on pages 5 and 6 respectively.

Hard copies of the report forms and work sheets must be submitted by **January 3 2020** by mail or courier to:

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DO NOT send reports and worksheets by fax.

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MIX COMPLIANCE - % VMA WORK SHEET (EXAMPLE)

LABORATORY No. : 175 LABORATORY NAME Apex Construction

MATERIAL A

| | | |
|-----------------------|------|-----------|
| Coarse Aggregate | (CA) | 45.2% |
| Fine Aggregate #1 | (FA) | 54.8% |
| BRD Coarse Aggregate | (CA) | BRD 2.697 |
| BRD Fine Aggregate #1 | (FA) | BRD 2.659 |

Compacted Mix BRD (Db) SAMPLE A-MC-14

(1) 2.372
(2) 2.369
(3) 2.374

% AC 5.27 (by mass of total mix)

Combined Aggregate BRD (Gb): 2.673

% VMA = (1) 15.9 (2) 16.1 (3) 15.9

Mix Compliance Report - Certification Program

- ▶ CCIL Confidential Lab # CCIL 999
- ▶ Lab Name: Demo Lab
- ▶ Tested by:
 - Lab Technician
 - Supervisor / Manager
 - Not listed

Please specify

Super Technician

Mix Compliance Report

| Test | A-MC-(N)(i) | A-MC-(N)(ii) | A-MC-(N)(iii) | - Avg | B-MC-(N)(i) | B-MC-(N)(ii) | B-MC-(N)(iii) | - Avg |
|---------------------|-------------|--------------|---------------|-------|-------------|--------------|---------------|-------|
| BRD - LS-262/D2726 | 2.376 | 2.380 | 2.379 | 2.378 | 2.421 | 2.430 | 2.426 | 2.426 |
| MRD - LS-264/D2041 | 2.485 | 2.484 | | 2.484 | 2.501 | 2.504 | | 2.503 |
| % Voids | | | | 4.3 | | | | 3.1 |
| % VMA | 15.6 | 15.8 | 15.7 | 15.7 | 14.2 | 14.4 | 14.3 | 14.3 |
| Stability (N) | 10864 | 11625 | 11425 | 11305 | 9424 | 9821 | 9655 | 9633 |
| Flow (0.25mm units) | 10.4 | 10.2 | 10.3 | 10.3 | 9.6 | 10.2 | 9.9 | 9.9 |

Flow Measurement

Automated Method

Comments

Mix Compliance Report - Certification Program

- ▶ CCIL Confidential Lab # CCIL 999
- ▶ Lab Name: Demo Lab
- ▶ Tested by:
 - Lab Technician
 - Supervisor / Manager
 - Not listed

Please specify

Super Technician

Mix Compliance Report

| Test | A-MC-(N)(i) | A-MC-(N)(ii) | A-MC-(N)(iii) | - Avg | B-MC-(N)(i) | B-MC-(N)(ii) | B-MC-(N)(iii) | - Avg |
|---------------------|-------------|--------------|---------------|-------|-------------|--------------|---------------|-------|
| BRD - D2726 | 2.376 | 2.380 | 2.378 | 2.378 | 2.421 | 2.430 | 2.426 | 2.426 |
| MRD - D2041 | | | | | | | | |
| % Voids | | | | -- | | | | -- |
| % VMA | 15.6 | 15.8 | 15.7 | 15.7 | 14.2 | 14.4 | 14.3 | 14.3 |
| Stability (N) | | | | | | | | |
| Flow (0.25mm units) | | | | | | | | |

Flow Measurement

Comments