2024 CCIL Asphalt Correlation

BC MB NB NL NS PE SK Ignition Furnace (IG) Instructions

Review your shipping address shown in the portal and update it if there are any changes through the request for services. When you receive your samples, review the shipment before signing off with the shipper.

The following samples have been forwarded to your laboratory:
Material **A-IGCF-N** (5 samples)
Material **A-IGMF-I-N** and **B-IGMF-N** (2 pre-mixed samples)
Asphalt Cement **A-IGAC-N** (1 sample)

A) Ignition Furnace: Reference Procedure ASTM D6307 (latest revision)

1) While the furnace is at room temperature calibrate the furnace balance as described in the furnace manual provided by the manufacturer.
2) Set the combustion temperature to 540°C (deemed appropriate for this type of sample) or as indicated for Irradiation type furnace.
3) Set the start time (Auto Timer) so that the furnace is at the specified run temperature (see 2 above) for at least 60 minutes before starting the burn of the first sample of the day.
4) Set the furnace endpoint to 0.01% of the sample mass (D6307, latest revision)

B) Sample Preparation

Correction Factor **A-IGCF-N** Samples:

1) 5 sample bags containing approximately 1450g of mixed aggregates and 1 sample of asphalt cement are supplied.
2) Aggregates are to be dried prior to mixing.
3) A clean mixing bowl will be buttered by mixing a separate sample of HMA (not supplied). The bowl will be scraped clean of this buttering mix prior to mixing the 5 samples supplied.
4) Mixing temperature for the correction factor samples is 150°C.
5) Weigh and record the dried aggregate sample.
6) Based on this weight, add sufficient asphalt cement (supplied) to produce a mix containing **5.00%, A-IGAC-N** (**based on total mix**).

Note 1: For labs/jurisdictions that use Aggregate Mass as the basis for AC Content, 5.00% by total mix equates to 5.26% by Aggregate Mass.

7) Mix the sample as indicated in D-6926 (latest revision).
8) Transfer the mixed sample to a metal tray, spread it out, cover with metal foil and allow it to cool to ambient temperature.
9) The sample is now ready for testing.
10) 5 samples are provided. Calibration Factor shall be determined from 3 of the 5 samples according to D6307 (latest revision).

Pre-mixed **A-IGMF-N** and **B-IGMF-N** Samples:

1) Sample bags containing approximately 1500g of **A-IGMF-N** and **B-IGMF-N** are supplied and are ready for testing. Determination of moisture content is not required.

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C) Ignition Furnace Run:

1) Weigh the lid, sample tray, catch pan and retaining bracket on the laboratory balance (TABLE 1 – for **A-IGCF-N** (Correction Factor) samples and TABLE 3 – for **A-IGMF-N and B-IGMF-N** (HMA samples)
2) Preheat the sample to be tested to 110°C±5°C (i.e., sufficiently warm to handle). Do not heat for more than 1 hour.
3) Place catch pan under sample tray and spread sample evenly on the tray.
4) Place lid over sample tray and secure lid, tray and catch pan with the retaining bracket.
5) Weigh total assembly on the laboratory balance and record the mass to 0.1g (TABLE 1 for **A-IGCF-N** samples and TABLE 3 for **A-IGMF-N and B-IGMF-N** samples)
6) Calculate sample mass (C in both TABLE 1 and TABLE 3)
7) Enter the sample mass C in the furnace data system.
8) Place the assembly in the preheated furnace and close the door.
9) Heat the sample at the specified temperature (540°C) until the difference between consecutive mass loss measurements does not exceed requirements for 3, 1-minute intervals.
10) Record sample mass after ignition (from data tape) (TABLE 1 – F for **A-IGCF-N** samples and TABLE 3 – F for **A-IGMF-N and B-IGMF-N** samples).
11) Remove the assembly from the furnace and allow to cool to ambient temperature and weigh to the nearest 0.1g (TABLE 1 – E for **A-IGCF-N** samples and TABLE 3 – F for **A-IGMF-N and B-IGMF-N** samples).
12) Record required data from tapes in TABLES 1 and 3 for **A-IGCF-N** and **A-IGMF-N and B-IGMF-N** samples respectively.

NOTE 2: LABORATORIES SHOULD TAKE CAUTION REGARDING NEGATIVE CALIBRATION FACTORS. A LARGE NEGATIVE CALIBRATION FACTOR SUGGESTS THAT THE ASPHALT CEMENT HAS NOT BEEN COMPLETELY BURNED DURING THE IGNITION RUN.

D) Ignited Aggregate Gradation

1) Carefully transfer the total residue after ignition to a weighing pan and weigh to the nearest 0.1g.
2) NEW: Proceed with the washed sieve gradation as described in D5444 (latest version) and record the percentage of material finer than a 75 µm sieve.
3) Laboratories shall complete the attached work sheets (Tables 1-4) and submit copies of the output tapes from the ignition furnace runs.

Asphalt contents shall be expressed as mass percent of total mixture.

Note 3: For laboratories in BC: If your laboratory does not use the 16.0mm sieve, please do not enter zero in the online reporting form. Please cancel this sieve by clicking the box adjacent to the sieve in the reporting form. See below,

☐ Cancel Test?

Note 4: Please identify the method used (Method A or B) for the type of furnace by selecting from the dropdown feature on the Reporting Form.

An example of a completed report form is shown on Pages 3 and 4.

All test results shall be reported online and submitted by **2024 January 5, Friday**.

Remember: Your lab's worksheets must be submitted through the portal with your correlation report. Please combine all worksheets for each portal report into a single pdf prior to uploading. You are required to keep all original worksheet hard copies in a secure dedicated location such as a sealed envelope that is available to CCIL upon request. Do not courier/mail/fax/e-mail the worksheets to CCIL. **DO NOT** send reports and worksheets by fax.

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Canadian Council of Independent Laboratories

2020 Asphalt Reporting Form
Ignition Furnace

Ignition Furnace Report - Certification Program

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

Please specify

Super Technician

Ignition Furnace Report

Calibration Factor Samples

Test	Sample I	Sample II	Sample III
19.0	100	100	100
16.0	100	100	100
13.2	97.6	98.4	98.1
9.5	84.7	85.4	85.1
4.75	63.6	63.4	63.8
2.36	52.1	52.0	52.4
1.18	43.7	43.5	43.6
0.600	33.7	33.5	33.7
0.300	20.6	19.9	20.4
0.150	8.3	8.0	8.2
0.075	3.2	3.1	3.1
Calibration Factor	0.22	0.15	0.14

Sample #1 Used

AIGCF-25

Sample #2 Used

AIGCF-50

Sample #3 Used

AIGCF-75

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Bituminous Mix Samples

Test	Sample I-IGMF	Sample II-IGMF	
% A.C. (Corrected)	5.03	5.12	
Wash Passed 75um	3.31	3.19	
19.0	100.0	100	
16.0	100.0	100	☐ Cancel Test?
13.2	98.1	98.4	
9.5	85.1	85.4	
4.75	63.8	63.4	
2.36	52.4	52.0	
1.18	43.6	43.5	
0.600	33.7	33.5	
0.300	20.4	19.9	
0.150	8.2	8.0	
0.075	3.1	3.1	

Method Used

D6307 Method A (Oven with Internal Weighing System)

Comments

Average Calibration Factor: 0.17%

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TABLE 1: In-House Prepared Calibration Factor Samples

General Information						
Company Name						
Technician's Name			Date			
Specific Information						
		Calibration Factor Samples				
		Code No.	Code No.	Code No.	Code No.	Code No.
Laboratory Balance						
A	Mass of sample try, lid, catch pan, g					
B	Mass of sample tray, lid, catch pan, sample, g					
C = (B - A)	Initial Mass of Sample, g					
D	Mass of sample tray, lid, catch pan, sample after ignition, g					
E = (D - A)	Final mass of sample after ignition, g					
Furnace Balance						
F	Final mass of sample after ignition, g (data tape)					
G = (C - F)	Loss Furnace, g					
H = (G/C) x 100	Loss Furnace, %					
I	Loss Furnace Correction, %					
J = (H – I)	Total Loss Furnace, % (Apparent AC)					
K	Total AC added, %					
L = (J - K)	Calibration Factor, %					
Furnace Temperature Information						
Test temperature shown on controls, °C						
Initial temperature from data tape, °C						
Maximum temperature form data tape, °C						
Final temperature from data tape, °C						

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TABLE 2: Gradation of In-House Prepared Calibration Factor Samples (After Ignition)

		Calibration Factor Samples				
		Code No.	Code No.	Code No.	Code No.	Code No.
Laboratory Balance	Initial Mass, g					
	Final Mass, g					
Furnace Balance	Initial Mass, g					
	Final Mass, g					
AGGREGATE						
Dry mass before washing, g						
Dry mass after washing, g						
GRADATION	% Passing					
	16.0 mm					
	13.2 mm					
	9.5 mm					
	4.75 mm					
	2.36 mm					
	1.18 mm					
	600 µm					
	300 µm					
	150 µm					
	75 µm					

Laboratory Name: _____

Date Tested: _____

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TABLE 3: Test Results - Premixed HMA Samples

General Information						
Company Name						
Technician's Name			Date			
Specific Information						
		Prepared HMA Samples				
		Code No.	Code No.	Code No.	Code No.	Code No.
Laboratory Balance						
A	Mass of sample try, lid, catch pan, g					
B	Mass of sample tray, lid, catch pan, sample, g					
C = (B - A)	Initial Mass of Sample, g					
D	Mass of sample tray, lid, catch pan, sample after ignition, g					
E = (D - A)	Final mass of sample after ignition, g					
Furnace Balance						
F	Final mass of sample after ignition, g (data tape)					
G = (C - F)	Loss Furnace, g					
H = (G/C) x 100	Loss Furnace, %					
I	Loss Furnace Correction, %					
J = (H – I)	Total Loss Furnace, % (Apparent AC)					
CF*	Correction Factor, %					
L = (J – CF)	Asphalt Cement, %					
Furnace Temperature Information						
Test temperature shown on controls, °C						
Initial temperature from data tape, °C						
Maximum temperature form data tape, °C						
Final temperature from data tape, °C						

*** CF = Calibration factor as derived from the testing in TABLE 1**

Date Tested: _____

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TABLE 4: Gradation of Aggregates from Pre-mixed HMA Samples (After Ignition)

		Prepared HMA Samples				
		Code No.	Code No.	Code No.	Code No.	Code No.
Laboratory Balance	Initial Mass, g					
	Final Mass, g					
Furnace Balance	Initial Mass, g					
	Final Mass, g					
AGGREGATE						
Dry mass before washing, g						
Dry mass after washing, g						
Percentage of Material finer than a 75 µm sieve						
GRADATION	% Passing					
	16.0 mm					
	13.2 mm					
	9.5 mm					
	4.75 mm					
	2.36 mm					
	1.18 mm					
	600 µm					
	300 µm					
	150 µm					
	75 µm					

Laboratory Name: _____

Date Tested: _____