CETANZ
Civil Engineering Testing Association of New Zealand

TECHNICAL REPORT ON

BINDER CONTENT OF ASPHALTIC CONCRETE TEST PROFICIENCY 2019

CETANZ Technical Report	TR 11
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Report Date – First Issue	4 April, 2019
Report Revision Date	-
Revision Number	1
Associated Test Method(s)	ASTM D272/ADL 4.02-15a/ASTM D6307/similar approved method

BINDER CONTENT OF ASPHALTIC CONCRETE TEST PROFICIENCY 2019

1. Introduction

In 2019, CETANZ organised and ran an inter-laboratory proficiency scheme on the Binder Content of Asphaltic Concrete, designed to achieve the following outcomes:

1. Provide results that should enable participants to improve their performance.
2. Provide information relevant for calculation of uncertainty.
3. Identify problems with, or between, laboratories.
4. Understand the differences (if any) between test methods.

The following Laboratories participated in the scheme:

Higgins Contractors Napier
Higgins Contractors Auckland
WSP Opus Hamilton
City Care Laboratory CHCH
WSP Opus Lower Hutt
WSP Opus Auckland
Road Science Tauranga
WSP Opus CHCH
Road Science CHCH
Higgins Contractors Palmerston North
Fulton Hogan Ltd -Waikato
Fulton Hogan Ltd Wellington
Fulton Hogan Canterbury
Fulton Hogan Nelson
Isaac Construction Ltd

To ensure anonymity of results each laboratory was assigned a unique identifier by Keith Towl of IANZ.

2. Sample Preparation and Instruction

A bulk sample of NZTA DG7 production mix was sampled from a Christchurch Asphalt Plant and split down into smaller test samples. Each Laboratory was sent one test sample of between 1 – 2 kg each.

Each Laboratory was instructed to carry out testing by approved method from those below:

1. ASTM D272
2. ADL 4.02/15a
3. ASTM D6307
4. Similar approved method

Each Laboratory was invited to have one competent technician take part. Completed results were to be retuned identifying the Laboratory Number.

Laboratories could request more than one test sample, however only one sample from a competent technician was to be used for inter-laboratory analysis.

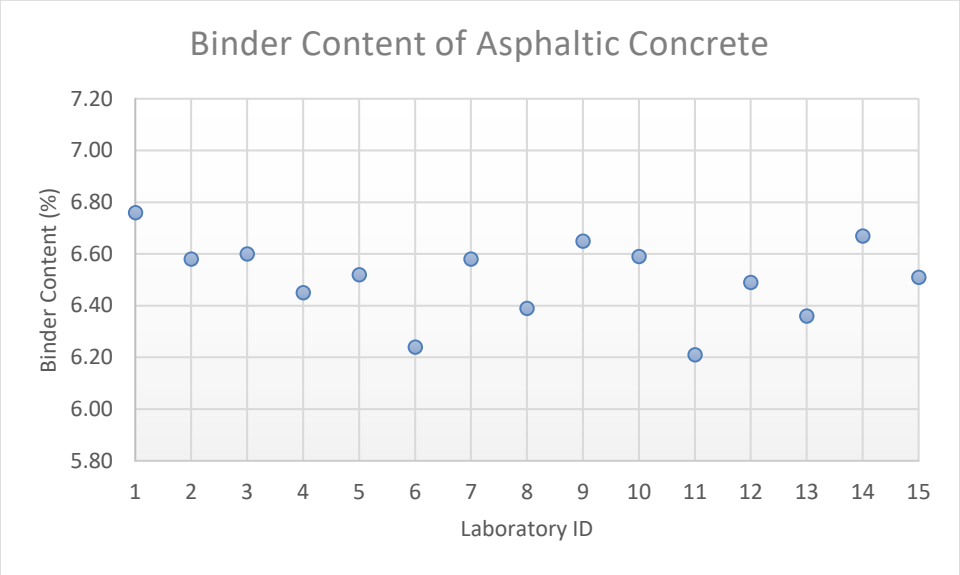
3. Results

Laboratory ID	Operator	Binder Content	Z Score	Method	Uncertainty	Results for Uncertainty	CETANZ Tool
1	A	6.76	1.6	In-house	±0.26	20	Yes
2	A	6.58	0.5	in-house	±0.5	20	Yes
3	A	6.60	0.6	ASTM D2172			
4	A	6.45	-0.4	ADL 4.02/15A	±0.13	20	Yes
5	C	6.52	0.1	ASTM D2172-17 Method A	±0.34	4	Yes
6	A	6.24	-1.7	ASTM D2172-17 Method A			No
7	A	6.58	0.5	ADL 4.02/15A	±0.098	4	Yes
8	A	6.39	-0.8	ASTM D2172-17	0.1	5	Yes
9	B	6.65	0.9	ASTM D2172-17 Method A	±0.35	20	Yes
10	A	6.59	0.5	BSEN 12697-1:2000	±0.29	16	Yes
11	A	6.21	-1.9	in-house	±0.18	20	Yes
12	A	6.49	-0.1	ADL 4.02/15A	±0.067	20	Yes
13	A	6.36	-0.9	ADL 4.02/15A			No
14	A	6.67	1.1	in-house	±0.20	4	Yes
15	A	6.51	0.0	ADL 4.02/15A: 1990			

Note: Uncertainty is at 95% confidence

Mean	6.51
Median	6.52
Minimum	6.21
Maximum	6.76
1 Standard Deviation	0.15
2 Standard Deviations	0.30

Results Continued:



4. Analysis

For the purpose of analysis, results have been tabulated and put in graph format. Each participant will need to undertake their own analysis on the data provided to gauge their own performance.

5. Conclusions

The results indicate the possibility of a slight variance between test methods, however more analysis is required. All laboratories were within two standard deviations of the mean, showing there is consistency among the industry for the binder content of asphaltic concrete test method. Most laboratories are using the CETANZ Uncertainty of Measure tool.

6. Further action

Advise stakeholders of proficiency data and arrange for more in-depth analysis and publication of results.

7. Referenced Documents

ASTM D272
ADL 4.02/15a
ASTM D6307

8. Disclaimer

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