AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

ANALYSIS PARAMETERS:

Number of data points	: 10
Testing boundary límite	: 1.00 kPa G*/sen δ
Temperature offset desplazamiento	: 0 °C Virgen
Target temperature	: Automatic
Show parameter settings	: On
Show result table	: On
Show PG suggestion sugerencia/indicación	: Off
Suppress temp. detection warning	: Off
Fill with blank lines	: Off

TEST PARAMETERS:

File name	: C:\Users\usuario\Desktop\Tesis Aceites\20150702 AC20 ORI (
Data series	: Original Verification_150702 1301 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 02/07/2015
Time of test	: 13:01:46
Operator	: JSN
Sample	: PGXX-XX_64 °C
Remark observación	: AC20 ORI 64C
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj17d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap intervalo	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145.2	64.0	10.0	12.00	1.25	82.4
2	147.1	64.0	10.0	12.00	1.25	82.4
3	149.1	64.0	10.0	12.00	1.25	82.4
4	151.0	64.0	10.0	12.00	1.25	82.4
5	153.0	64.0	10.0	12.00	1.25	82.4
6	154.9	64.0	10.0	12.00	1.25	82.4
7	156.9	64.0	10.0	12.00	1.25	82.4
8	158.8	64.0	10.0	12.00	1.25	82.4
9	160.8	64.0	10.0	12.00	1.25	82.4
10	162.7	64.0	10.0	12.00	1.25	82.4

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude deformación	: 12.00 %
Mean stress amplitude esfuerzo	: 0.150 kPa
Mean phase angle	: 82.4 °
Mean complex modulus |G*|	: 1.25 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1.26 kPa
Standard deviation	: 0.000625 kPa
Median	: 1.26 kPa
Confidence Interval (95%)	: 1.26 ... 1.27 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

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This sample is found to P A S S at 64.0 °C

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

ANALYSIS PARAMETERS:

Number of data points	: 10
Testing boundary	: 2.20 kPa G*/Sin δ
Temperature offset	: 0 °C
Target temperature	: Automatic Virgen
Show parameter settings	: On
Show result table	: On
Show PG suggestion	: On
Suppress temp. detection warning	: Off
Fill with blank lines	: Off

TEST PARAMETERS:

File name	: C:\Users\usuario\Desktop\Tesis Aceites\20150702 AC20 RTFO
Data series	: RTFO Verification_150702 1334 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 02/07/2015
Time of test	: 13:34:08
Operator	: JSN
Sample	: PGXX-XX
Remark	: AC20 RTFO 64
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj17d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146.7	64.0	10.0	10.00	3.66	75.1
2	148.7	64.0	10.0	10.00	3.66	75.1
3	150.6	64.0	10.0	10.00	3.65	75.1
4	152.6	64.0	10.0	10.00	3.65	75.1
5	154.5	64.0	10.0	10.00	3.65	75.1
6	156.5	64.0	10.0	10.00	3.65	75.1
7	158.4	64.0	10.0	10.00	3.65	75.1
8	160.4	64.0	10.0	10.00	3.65	75.1
9	162.3	64.0	10.0	10.00	3.65	75.1
10	164.3	64.0	10.0	10.00	3.65	75.1

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.365 kPa
Mean phase angle	: 75.1 °
Mean complex modulus |G*|	: 3.65 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 3.78 kPa
Standard deviation	: 0.00108 kPa
Median	: 3.78 kPa
Confidence Interval (95%)	: 3.78 ... 3.78 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

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This sample is found to P A S S at 64.0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 64.

Set start temperature of subsequent PAV test to 22 °C.

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AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

ANALYSIS PARAMETERS:

Number of data points	: 10
Testing boundary	: 5000 kPa G*SinδG*Sinδ
Temperature offset	: 0 °C Virgen
Target temperature	: Automatic
Show parameter settings	: On
Show result table	: On
Show PG suggestion	: On
Suppress temp. detection warning	: Off
Fill with blank lines	: Off

TEST PARAMETERS:

File name	: C:\Users\usuario\Desktop\Tesis Aceites\20150702 AC20 PAV 2
Data series	: PAV Verification 150702 1414 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 02/07/2015
Time of test	: 14:14:47
Operator	: JSN
Sample	: PGXX-XX_25 °C
Remark	: AC20 PAV 25
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj17d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146.8	25.0	10.0	1.00	2880	41.5
2	148.7	25.0	10.0	1.00	2870	41.5
3	150.7	25.0	10.0	1.00	2870	41.5
4	152.6	25.0	10.0	1.00	2870	41.5
5	154.6	25.0	10.0	1.00	2870	41.5
6	156.5	25.0	10.0	1.00	2870	41.5
7	158.4	25.0	10.0	1.00	2870	41.5
8	160.4	25.0	10.0	1.00	2870	41.5
9	162.3	25.0	10.0	1.00	2870	41.5
10	164.3	25.0	10.0	1.00	2870	41.5

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 28.719 kPa
Mean phase angle	: 41.5 °
Mean complex modulus |G*|	: 2870 kPa
Mean temperature lower plate	: 25.0 °C
Mean temperature sample	: 25.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 1900 kPa
Standard deviation	: 1.04 kPa
Median	: 1900 kPa
Confidence Interval (95%)	: 1900 ... 1900 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 25.0 °C

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	:	C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis mezc
Data series	:	Grading: ORIGINAL Tesis 1% 1
Used measuring points	:	I 2, P 11 ... I 2, P 20
Date of test	:	18/11/2015
Time of test	:	15:16:24
Operator	:	CMF
Sample	:	muestra 1%
Remark	:	
Measuring device	:	MCR301 SN80526902; FW3.55; Slot2; Adj156d
Temperature control unit	:	TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	:	PP25/PE-SN17059
Diameter	:	25,03 mm
Gap	:	1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,5	64,0	10,0	12,00	16,8	61,8
2	148,5	64,0	10,0	12,00	16,8	61,8
3	150,4	64,0	10,0	12,00	16,8	61,8
4	152,3	64,0	10,0	12,00	16,8	61,8
5	154,3	64,0	10,0	12,00	16,8	61,8
6	156,2	64,0	10,0	12,00	16,7	61,8
7	158,2	64,0	10,0	12,00	16,7	61,8
8	160,1	64,0	10,0	12,00	16,7	61,8
9	162,1	64,0	10,0	12,00	16,7	61,8
10	164,0	64,0	10,0	12,00	16,7	61,8

TEST RESULTS:

Mean frequency	:	10,0 rad/s = 1,59 Hz
Mean strain amplitude	:	12,00 %
Mean stress amplitude	:	2,011 kPa
Mean phase angle	:	61,8 °
Mean complex modulus |G*|	:	16,8 kPa
Mean temperature lower plate	:	64,0 °C
Mean temperature sample	:	64,0 °C

EVALUATION RESULTS:

Number of data points	:	10
|G*|/sin(delta)	:	19,0 kPa
Standard deviation	:	0,0220 kPa
Median	:	19,0 kPa
Confidence Interval (95%)	:	19,0 ... 19,0 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

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This sample is found to P A S S at 64,0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 64.
Set start temperature of subsequent RTFO test to 64 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	:	C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis mezcl
Data series	:	Grading: ORIGINAL Tesis 1% 2
Used measuring points	:	I 2, P 11 ... I 2, P 20
Date of test	:	18/11/2015
Time of test	:	15:41:07
Operator	:	CMF
Sample	:	muestra 1%
Remark	:	
Measuring device	:	MCR301 SN80526902; FW3.55; Slot2; Adj156d
Temperature control unit	:	TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	:	PP25/PE-SN17059
Diameter	:	25,03 mm
Gap	:	1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	70,0	10,0	12,00	8,82	65,0
2	148,7	70,0	10,0	12,00	8,82	65,0
3	150,7	70,0	10,0	12,00	8,82	65,0
4	152,6	70,0	10,0	12,00	8,82	65,0
5	154,6	70,0	10,0	12,00	8,82	65,0
6	156,5	70,0	10,0	12,00	8,82	65,0
7	158,5	70,0	10,0	12,00	8,82	65,0
8	160,4	70,0	10,0	12,00	8,82	65,0
9	162,4	70,0	10,0	12,00	8,82	65,0
10	164,3	70,0	10,0	12,00	8,81	65,0

TEST RESULTS:

Mean frequency	:	10,0 rad/s = 1,59 Hz
Mean strain amplitude	:	12,00 %
Mean stress amplitude	:	1,058 kPa
Mean phase angle	:	65,0 °
Mean complex modulus |G*|	:	8,82 kPa
Mean temperature lower plate	:	70,0 °C
Mean temperature sample	:	70,0 °C

EVALUATION RESULTS:

Number of data points	:	10
|G*|/sin(delta)	:	9,73 kPa
Standard deviation	:	0,00336 kPa
Median	:	9,73 kPa
Confidence Interval (95%)	:	9,73 ... 9,73 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

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This sample is found to P A S S at 70,0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 70.
Set start temperature of subsequent RTFO test to 70 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis mezc
Data series	: Grading: ORIGINAL Tesis 1% 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 18/11/2015
Time of test	: 16:11:52
Operator	: CMF
Sample	: muestra 1%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj156d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	82,0	10,0	12,00	2,34	72,6
2	148,7	82,0	10,0	12,00	2,34	72,6
3	150,7	82,0	10,0	12,00	2,34	72,6
4	152,6	82,0	10,0	12,00	2,34	72,6
5	154,6	82,0	10,0	12,00	2,34	72,6
6	156,5	82,0	10,0	12,00	2,34	72,6
7	158,5	82,0	10,0	12,00	2,34	72,6
8	160,4	82,0	10,0	12,00	2,34	72,6
9	162,4	82,0	10,0	12,00	2,34	72,6
10	164,3	82,0	10,0	12,00	2,34	72,6

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,281 kPa
Mean phase angle	: 72,6 °
Mean complex modulus |G*|	: 2,34 kPa
Mean temperature lower plate	: 82,0 °C
Mean temperature sample	: 82,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 2,46 kPa
Standard deviation	: 0,000270 kPa
Median	: 2,46 kPa
Confidence Interval (95%)	: 2,46 ... 2,46 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

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This sample is found to P A S S at 82,0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 82.
Set start temperature of subsequent RTFO test to 82 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis mezc
Data series	: Grading: ORIGINAL Tesis 1% 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 18/11/2015
Time of test	: 16:27:27
Operator	: CMF
Sample	: muestra 1%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj156d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145,4	88,0	10,0	12,00	1,21	76,2
2	147,4	88,0	10,0	12,00	1,21	76,2
3	149,3	88,0	10,0	12,00	1,21	76,2
4	151,3	88,0	10,0	12,00	1,21	76,2
5	153,2	88,0	10,0	12,00	1,21	76,2
6	155,2	88,0	10,0	12,00	1,21	76,2
7	157,1	88,0	10,0	12,00	1,21	76,2
8	159,1	88,0	10,0	12,00	1,21	76,2
9	161,0	88,0	10,0	12,00	1,21	76,2
10	163,0	88,0	10,0	12,00	1,21	76,2

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,146 kPa
Mean phase angle	: 76,2 °
Mean complex modulus |G*|	: 1,21 kPa
Mean temperature lower plate	: 88,0 °C
Mean temperature sample	: 88,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1,25 kPa
Standard deviation	: 0,000160 kPa
Median	: 1,25 kPa
Confidence Interval (95%)	: 1,25 ... 1,25 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

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This sample is found to P A S S at 88,0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 88.
Set start temperature of subsequent RTFO test to 88 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis mezc
Data series	: Grading: ORIGINAL Tesis 1% 6
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 18/11/2015
Time of test	: 16:43:00
Operator	: CMF
Sample	: muestra 1%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj156d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145,4	94,0	10,0	12,00	0,630	79,3
2	147,4	94,0	10,0	12,00	0,630	79,3
3	149,3	94,0	10,0	12,00	0,630	79,3
4	151,3	94,0	10,0	12,00	0,630	79,3
5	153,2	94,0	10,0	12,00	0,630	79,3
6	155,2	94,0	10,0	12,00	0,630	79,3
7	157,1	94,0	10,0	12,00	0,630	79,3
8	159,1	94,0	10,0	12,00	0,630	79,3
9	161,0	94,0	10,0	12,00	0,630	79,3
10	163,0	94,0	10,0	12,00	0,630	79,3

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,076 kPa
Mean phase angle	: 79,3 °
Mean complex modulus |G*|	: 0,630 kPa
Mean temperature lower plate	: 94,0 °C
Mean temperature sample	: 94,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 0,641 kPa
Standard deviation	: 0,0000648 kPa
Median	: 0,641 kPa
Confidence Interval (95%)	: 0,641 ... 0,641 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

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This sample is found to F A I L at 94,0 °C

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The test temperature is not according to AASHTO T315!

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Pass/Fail Temperature 90,0 °C

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis mezc
Data series	: Tesis 2% 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/11/2015
Time of test	: 14:40:14
Operator	: Cmf
Sample	: 2%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj157d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,5	64,0	10,0	12,00	14,9	62,2
2	148,4	64,0	10,0	12,00	14,9	62,2
3	150,4	64,0	10,0	12,00	14,8	62,2
4	152,3	64,0	10,0	12,00	14,8	62,2
5	154,3	64,0	10,0	12,00	14,8	62,2
6	156,2	64,0	10,0	12,00	14,8	62,2
7	158,2	64,0	10,0	12,00	14,8	62,2
8	160,1	64,0	10,0	12,00	14,8	62,2
9	162,1	64,0	10,0	12,00	14,8	62,2
10	164,0	64,0	10,0	12,00	14,8	62,2

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 1,781 kPa
Mean phase angle	: 62,2 °
Mean complex modulus |G*|	: 14,8 kPa
Mean temperature lower plate	: 64,0 °C
Mean temperature sample	: 64,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 16,8 kPa
Standard deviation	: 0,0195 kPa
Median	: 16,8 kPa
Confidence Interval (95%)	: 16,8 ... 16,8 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

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This sample is found to P A S S at 64,0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 64.
Set start temperature of subsequent RTFO test to 64 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis mezc
Data series	: Tesis 2% 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/11/2015
Time of test	: 15:02:11
Operator	: Cmf
Sample	: 2%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj157d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	70,0	10,0	12,00	7,80	65,4
2	148,7	70,0	10,0	12,00	7,80	65,4
3	150,7	70,0	10,0	12,00	7,80	65,4
4	152,6	70,0	10,0	12,00	7,79	65,4
5	154,6	70,0	10,0	12,00	7,79	65,4
6	156,5	70,0	10,0	12,00	7,79	65,4
7	158,4	70,0	10,0	12,00	7,79	65,4
8	160,4	70,0	10,0	12,00	7,79	65,4
9	162,3	70,0	10,0	12,00	7,79	65,4
10	164,3	70,0	10,0	12,00	7,79	65,4

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,935 kPa
Mean phase angle	: 65,4 °
Mean complex modulus |G*|	: 7,79 kPa
Mean temperature lower plate	: 70,0 °C
Mean temperature sample	: 70,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 8,57 kPa
Standard deviation	: 0,00328 kPa
Median	: 8,57 kPa
Confidence Interval (95%)	: 8,57 ... 8,57 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 70,0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 70.
Set start temperature of subsequent RTFO test to 70 °C.

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis mezcl
Data series	: Tesis 2% 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/11/2015
Time of test	: 15:17:23
Operator	: Cmf
Sample	: 2%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj157d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	76,0	10,0	12,00	4,02	69,2
2	148,7	76,0	10,0	12,00	4,02	69,2
3	150,7	76,0	10,0	12,00	4,02	69,2
4	152,6	76,0	10,0	12,00	4,02	69,2
5	154,6	76,0	10,0	12,00	4,02	69,2
6	156,5	76,0	10,0	12,00	4,02	69,2
7	158,4	76,0	10,0	12,00	4,02	69,2
8	160,4	76,0	10,0	12,00	4,02	69,2
9	162,3	76,0	10,0	12,00	4,02	69,2
10	164,3	76,0	10,0	12,00	4,02	69,2

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,482 kPa
Mean phase angle	: 69,2 °
Mean complex modulus |G*|	: 4,02 kPa
Mean temperature lower plate	: 76,0 °C
Mean temperature sample	: 76,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 4,30 kPa
Standard deviation	: 0,000433 kPa
Median	: 4,30 kPa
Confidence Interval (95%)	: 4,30 ... 4,30 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 76,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 76.
Set start temperature of subsequent RTFO test to 76 °C.

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis mezc
Data series	: Tesis 2% 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/11/2015
Time of test	: 15:32:47
Operator	: Cmf
Sample	: 2% \
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj157d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	82,0	10,0	12,00	2,08	73,0
2	148,7	82,0	10,0	12,00	2,08	73,0
3	150,7	82,0	10,0	12,00	2,08	73,0
4	152,6	82,0	10,0	12,00	2,08	73,0
5	154,5	82,0	10,0	12,00	2,08	73,0
6	156,5	82,0	10,0	12,00	2,08	73,0
7	158,4	82,0	10,0	12,00	2,08	73,0
8	160,4	82,0	10,0	12,00	2,08	73,0
9	162,3	82,0	10,0	12,00	2,08	73,0
10	164,3	82,0	10,0	12,00	2,08	73,0

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,249 kPa
Mean phase angle	: 73,0 °
Mean complex modulus |G*|	: 2,08 kPa
Mean temperature lower plate	: 82,0 °C
Mean temperature sample	: 82,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 2,17 kPa
Standard deviation	: 0,000213 kPa
Median	: 2,17 kPa
Confidence Interval (95%)	: 2,17 ... 2,17 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 82,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 82.
Set start temperature of subsequent RTFO test to 82 °C.

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis mezc
Data series	: Tesis 2% 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/11/2015
Time of test	: 15:48:35
Operator	: Cmf
Sample	: 2%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj157d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145,4	88,0	10,0	12,00	1,08	76,5
2	147,4	88,0	10,0	12,00	1,08	76,5
3	149,3	88,0	10,0	12,00	1,08	76,5
4	151,3	88,0	10,0	12,00	1,08	76,5
5	153,2	88,0	10,0	12,00	1,08	76,5
6	155,2	88,0	10,0	12,00	1,08	76,5
7	157,1	88,0	10,0	12,00	1,08	76,5
8	159,1	88,0	10,0	12,00	1,08	76,5
9	161,0	88,0	10,0	12,00	1,08	76,5
10	163,0	88,0	10,0	12,00	1,08	76,5

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,129 kPa
Mean phase angle	: 76,5 °
Mean complex modulus |G*|	: 1,08 kPa
Mean temperature lower plate	: 88,0 °C
Mean temperature sample	: 88,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1,11 kPa
Standard deviation	: 0,000147 kPa
Median	: 1,11 kPa
Confidence Interval (95%)	: 1,11 ... 1,11 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 88,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 88.
Set start temperature of subsequent RTFO test to 88 °C.

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis mezc
Data series	: Tesis 2% 6
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/11/2015
Time of test	: 16:04:02
Operator	: Cmf
Sample	: 2%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj157d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145,4	94,0	10,0	12,00	0,561	79,6
2	147,4	94,0	10,0	12,00	0,561	79,6
3	149,3	94,0	10,0	12,00	0,561	79,6
4	151,3	94,0	10,0	12,00	0,561	79,6
5	153,2	94,0	10,0	12,00	0,561	79,6
6	155,2	94,0	10,0	12,00	0,561	79,6
7	157,1	94,0	10,0	12,00	0,561	79,6
8	159,1	94,0	10,0	12,00	0,561	79,6
9	161,0	94,0	10,0	12,00	0,561	79,6
10	163,0	94,0	10,0	12,00	0,561	79,6

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,067 kPa
Mean phase angle	: 79,6 °
Mean complex modulus |G*|	: 0,561 kPa
Mean temperature lower plate	: 94,0 °C
Mean temperature sample	: 94,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 0,570 kPa
Standard deviation	: 0,0000828 kPa
Median	: 0,570 kPa
Confidence Interval (95%)	: 0,570 ... 0,570 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to F A I L at 94,0 °C

==========

The test temperature is not according to AASHTO T315!

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Pass/Fail Temperature 88,9 °C

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 1%rtf
Data series	: Tesis 1%rtfo 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/11/2015
Time of test	: 12:28:11
Operator	: CMF
Sample	: Tesis 1%rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj157d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	82,0	10,0	10,00	5,06	65,4
2	195,4	82,0	10,0	10,00	5,06	65,4
3	201,3	82,0	10,0	10,00	5,06	65,4
4	207,1	82,0	10,0	10,00	5,06	65,4
5	213,0	82,0	10,0	10,00	5,07	65,4
6	218,8	82,0	10,0	10,00	5,07	65,4
7	224,7	82,0	10,0	10,00	5,07	65,4
8	230,5	82,0	10,0	10,00	5,07	65,4
9	236,3	82,0	10,0	10,00	5,07	65,4
10	242,2	82,0	10,0	10,00	5,07	65,4

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,507 kPa
Mean phase angle	: 65,4 °
Mean complex modulus |G*|	: 5,07 kPa
Mean temperature lower plate	: 82,0 °C
Mean temperature sample	: 82,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 5,57 kPa
Standard deviation	: 0,00308 kPa
Median	: 5,57 kPa
Confidence Interval (95%)	: 5,57 ... 5,57 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

==========

This sample is found to P A S S at 82,0 °C

==========

If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 82.

Set start temperature of subsequent PAV test to 34 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 1%rtf
Data series	: Tesis 1%rtfo 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/11/2015
Time of test	: 12:45:04
Operator	: CMF
Sample	: Tesis 1%rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj157d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	88,0	10,0	10,00	2,71	69,2
2	195,4	88,0	10,0	10,00	2,71	69,2
3	201,3	88,0	10,0	10,00	2,71	69,2
4	207,1	88,0	10,0	10,00	2,71	69,2
5	213,0	88,0	10,0	10,00	2,71	69,2
6	218,8	88,0	10,0	10,00	2,71	69,2
7	224,7	88,0	10,0	10,00	2,71	69,2
8	230,5	88,0	10,0	10,00	2,71	69,2
9	236,3	88,0	10,0	10,00	2,71	69,2
10	242,2	88,0	10,0	10,00	2,71	69,2

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,271 kPa
Mean phase angle	: 69,2 °
Mean complex modulus |G*|	: 2,71 kPa
Mean temperature lower plate	: 88,0 °C
Mean temperature sample	: 88,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 2,90 kPa
Standard deviation	: 0,00169 kPa
Median	: 2,90 kPa
Confidence Interval (95%)	: 2,90 ... 2,90 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

==========

This sample is found to P A S S at 88,0 °C

==========

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 1%rtf
Data series	: Tesis 1%rtfo 6
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/11/2015
Time of test	: 13:02:06
Operator	: CMF
Sample	: Tesis 1%rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj157d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188,3	94,0	10,0	10,00	1,44	73,0
2	194,1	94,0	10,0	10,00	1,44	73,0
3	200,0	94,0	10,0	10,00	1,44	73,0
4	205,8	94,0	10,0	10,00	1,44	73,0
5	211,6	94,0	10,0	10,00	1,44	73,0
6	217,5	94,0	10,0	10,00	1,44	73,0
7	223,3	94,0	10,0	10,00	1,44	73,0
8	229,2	94,0	10,0	10,00	1,44	73,0
9	235,0	94,0	10,0	10,00	1,44	73,0
10	240,9	94,0	10,0	10,00	1,44	73,0

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,144 kPa
Mean phase angle	: 73,0 °
Mean complex modulus |G*|	: 1,44 kPa
Mean temperature lower plate	: 94,0 °C
Mean temperature sample	: 94,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1,51 kPa
Standard deviation	: 0,000772 kPa
Median	: 1,51 kPa
Confidence Interval (95%)	: 1,51 ... 1,51 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

==========

This sample is found to F A I L at 94,0 °C

==========

The test temperature is not according to AASHTO T315!

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Pass/Fail Temperature 90,5 °C

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 2%rtf
Data series	: Tesis 2%rtfo 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/11/2015
Time of test	: 14:55:56
Operator	: CMF
Sample	: Tesis 2%rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj158d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,5	64,0	10,0	10,00	29,0	55,7
2	195,4	64,0	10,0	10,00	29,0	55,7
3	201,2	64,0	10,0	10,00	29,0	55,7
4	207,1	64,0	10,0	10,00	29,0	55,7
5	212,9	64,0	10,0	10,00	29,0	55,7
6	218,7	64,0	10,0	10,00	28,9	55,7
7	224,6	64,0	10,0	10,00	28,9	55,7
8	230,4	64,0	10,0	10,00	28,9	55,7
9	236,3	64,0	10,0	10,00	28,9	55,7
10	242,1	64,0	10,0	10,00	28,9	55,7

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 2,896 kPa
Mean phase angle	: 55,7 °
Mean complex modulus |G*|	: 29,0 kPa
Mean temperature lower plate	: 64,0 °C
Mean temperature sample	: 64,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 35,1 kPa
Standard deviation	: 0,0446 kPa
Median	: 35,1 kPa
Confidence Interval (95%)	: 35,0 ... 35,1 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

==========

This sample is found to P A S S at 64,0 °C

==========

If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 64.
Set start temperature of subsequent PAV test to 22 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 2%rt
Data series	: Tesis 2%rtfo 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/11/2015
Time of test	: 15:12:31
Operator	: CMF
Sample	: Tesis 2%rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj158d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,5	70,0	10,0	10,00	16,2	58,2
2	195,4	70,0	10,0	10,00	16,2	58,2
3	201,2	70,0	10,0	10,00	16,2	58,2
4	207,1	70,0	10,0	10,00	16,2	58,2
5	212,9	70,0	10,0	10,00	16,2	58,2
6	218,7	70,0	10,0	10,00	16,2	58,2
7	224,6	70,0	10,0	10,00	16,2	58,3
8	230,4	70,0	10,0	10,00	16,2	58,2
9	236,3	70,0	10,0	10,00	16,2	58,3
10	242,1	70,0	10,0	10,00	16,2	58,3

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 1,617 kPa
Mean phase angle	: 58,2 °
Mean complex modulus |G*|	: 16,2 kPa
Mean temperature lower plate	: 70,0 °C
Mean temperature sample	: 70,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 19,0 kPa
Standard deviation	: 0,00690 kPa
Median	: 19,0 kPa
Confidence Interval (95%)	: 19,0 ... 19,0 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

==========

This sample is found to P A S S at 70,0 °C

==========

If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 70.

Set start temperature of subsequent PAV test to 28 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 2%rtf
Data series	: Tesis 2%rtfo 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/11/2015
Time of test	: 15:29:02
Operator	: CMF
Sample	: Tesis 2%rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj158d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	76,0	10,0	10,00	8,85	61,5
2	195,4	76,0	10,0	10,00	8,85	61,5
3	201,3	76,0	10,0	10,00	8,85	61,5
4	207,1	76,0	10,0	10,00	8,85	61,5
5	212,9	76,0	10,0	10,00	8,85	61,5
6	218,8	76,0	10,0	10,00	8,86	61,5
7	224,6	76,0	10,0	10,00	8,86	61,5
8	230,5	76,0	10,0	10,00	8,86	61,5
9	236,3	76,0	10,0	10,00	8,86	61,5
10	242,1	76,0	10,0	10,00	8,86	61,5

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,885 kPa
Mean phase angle	: 61,5 °
Mean complex modulus |G*|	: 8,85 kPa
Mean temperature lower plate	: 76,0 °C
Mean temperature sample	: 76,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 10,1 kPa
Standard deviation	: 0,00290 kPa
Median	: 10,1 kPa
Confidence Interval (95%)	: 10,1 ... 10,1 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

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This sample is found to P A S S at 76,0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 76.
Set start temperature of subsequent PAV test to 31 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 2%rt
Data series	: Tesis 2%rtfo 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/11/2015
Time of test	: 16:02:37
Operator	: CMF
Sample	: Tesis 2%rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj158d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	88,0	10,0	10,00	2,55	69,0
2	195,4	88,0	10,0	10,00	2,55	69,0
3	201,3	88,0	10,0	10,00	2,55	69,0
4	207,1	88,0	10,0	10,00	2,55	69,0
5	212,9	88,0	10,0	10,00	2,55	69,0
6	218,8	88,0	10,0	10,00	2,55	69,0
7	224,6	88,0	10,0	10,00	2,55	69,0
8	230,5	88,0	10,0	10,00	2,55	69,0
9	236,3	88,0	10,0	10,00	2,55	69,0
10	242,1	88,0	10,0	10,00	2,55	69,0

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,255 kPa
Mean phase angle	: 69,0 °
Mean complex modulus |G*|	: 2,55 kPa
Mean temperature lower plate	: 88,0 °C
Mean temperature sample	: 88,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 2,73 kPa
Standard deviation	: 0,00163 kPa
Median	: 2,73 kPa
Confidence Interval (95%)	: 2,73 ... 2,74 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

This sample is found to P A S S at 88,0 °C

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 2%rtf
Data series	: Tesis 2%rtfo 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/11/2015
Time of test	: 15:45:50
Operator	: CMF
Sample	: Tesis 2%rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj158d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	82,0	10,0	10,00	4,77	65,1
2	195,4	82,0	10,0	10,00	4,77	65,1
3	201,3	82,0	10,0	10,00	4,77	65,1
4	207,1	82,0	10,0	10,00	4,77	65,1
5	212,9	82,0	10,0	10,00	4,77	65,1
6	218,8	82,0	10,0	10,00	4,77	65,1
7	224,6	82,0	10,0	10,00	4,77	65,1
8	230,5	82,0	10,0	10,00	4,77	65,1
9	236,3	82,0	10,0	10,00	4,78	65,1
10	242,1	82,0	10,0	10,00	4,78	65,1

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,477 kPa
Mean phase angle	: 65,1 °
Mean complex modulus |G*|	: 4,77 kPa
Mean temperature lower plate	: 82,0 °C
Mean temperature sample	: 82,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 5,26 kPa
Standard deviation	: 0,00188 kPa
Median	: 5,26 kPa
Confidence Interval (95%)	: 5,26 ... 5,26 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

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This sample is found to P A S S at 82,0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 82.
Set start temperature of subsequent PAV test to 34 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 2%rtf
Data series	: Tesis 2%rtfo 6
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/11/2015
Time of test	: 16:19:28
Operator	: CMF
Sample	: Tesis 2%rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj158d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188,2	94,0	10,0	10,00	1,35	72,9
2	194,1	94,0	10,0	10,00	1,35	72,9
3	199,9	94,0	10,0	10,00	1,35	72,9
4	205,8	94,0	10,0	10,00	1,35	72,9
5	211,6	94,0	10,0	10,00	1,35	72,9
6	217,5	94,0	10,0	10,00	1,36	72,9
7	223,3	94,0	10,0	10,00	1,36	72,9
8	229,1	94,0	10,0	10,00	1,36	72,8
9	235,0	94,0	10,0	10,00	1,36	72,8
10	240,8	94,0	10,0	10,00	1,36	72,8

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,135 kPa
Mean phase angle	: 72,9 °
Mean complex modulus |G*|	: 1,35 kPa
Mean temperature lower plate	: 94,0 °C
Mean temperature sample	: 94,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1,42 kPa
Standard deviation	: 0,000463 kPa
Median	: 1,42 kPa
Confidence Interval (95%)	: 1,42 ... 1,42 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

This sample is found to F A I L at 94,0 °C

The test temperature is not according to AASHTO T315!

Pass/Fail Temperature 90,0 °C

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	:	C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 3.5%
Data series	:	Tesis 3.5% rtfo 3
Used measuring points	:	I 2, P 11 ... I 2, P 20
Date of test	:	23/11/2015
Time of test	:	12:34:58
Operator	:	cmf
Sample	:	Tesis 3.5% rtfo
Remark	:	
Measuring device	:	MCR301 SN80526902; FW3.55; Slot2; Adj160d
Temperature control unit	:	TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	:	PP25/PE-SN17059
Diameter	:	25,03 mm
Gap	:	1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	76,0	10,0	10,00	6,55	62,9
2	195,4	76,0	10,0	10,00	6,54	62,9
3	201,3	76,0	10,0	10,00	6,54	62,9
4	207,1	76,0	10,0	10,00	6,55	62,9
5	212,9	76,0	10,0	10,00	6,55	62,9
6	218,8	76,0	10,0	10,00	6,55	62,9
7	224,6	76,0	10,0	10,00	6,55	62,9
8	230,5	76,0	10,0	10,00	6,55	62,9
9	236,3	76,0	10,0	10,00	6,55	62,9
10	242,1	76,0	10,0	10,00	6,55	62,9

TEST RESULTS:

Mean frequency	:	10,0 rad/s = 1,59 Hz
Mean strain amplitude	:	10,00 %
Mean stress amplitude	:	0,655 kPa
Mean phase angle	:	62,9 °
Mean complex modulus |G*|	:	6,55 kPa
Mean temperature lower plate	:	76,0 °C
Mean temperature sample	:	76,0 °C

EVALUATION RESULTS:

Number of data points	:	10
|G*|/sin(delta)	:	7,35 kPa
Standard deviation	:	0,00306 kPa
Median	:	7,35 kPa
Confidence Interval (95%)	:	7,35 ... 7,35 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	:	|G*|/sin(delta) >= 2,20 kPa

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This sample is found to P A S S at 76,0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 76.
Set start temperature of subsequent PAV test to 31 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 3.5%
Data series	: Tesis 3.5% rtfo 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/11/2015
Time of test	: 12:51:38
Operator	: cmf
Sample	: Tesis 3.5% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj160d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	82,0	10,0	10,00	3,53	66,6
2	195,4	82,0	10,0	10,00	3,53	66,6
3	201,3	82,0	10,0	10,00	3,53	66,6
4	207,1	82,0	10,0	10,00	3,53	66,6
5	212,9	82,0	10,0	10,00	3,53	66,6
6	218,8	82,0	10,0	10,00	3,53	66,6
7	224,6	82,0	10,0	10,00	3,53	66,6
8	230,5	82,0	10,0	10,00	3,53	66,6
9	236,3	82,0	10,0	10,00	3,53	66,6
10	242,1	82,0	10,0	10,00	3,54	66,6

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,353 kPa
Mean phase angle	: 66,6 °
Mean complex modulus |G*|	: 3,53 kPa
Mean temperature lower plate	: 82,0 °C
Mean temperature sample	: 82,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 3,85 kPa
Standard deviation	: 0,00267 kPa
Median	: 3,85 kPa
Confidence Interval (95%)	: 3,85 ... 3,85 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

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This sample is found to P A S S at 82,0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 82.
Set start temperature of subsequent PAV test to 34 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 3.5%
Data series	: Tesis 3.5% rtfo 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/11/2015
Time of test	: 13:08:26
Operator	: cmf
Sample	: Tesis 3.5% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj160d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188,3	88,0	10,0	10,00	1,89	70,5
2	194,1	88,0	10,0	10,00	1,90	70,5
3	199,9	88,0	10,0	10,00	1,90	70,5
4	205,8	88,0	10,0	10,00	1,90	70,5
5	211,6	88,0	10,0	10,00	1,90	70,5
6	217,5	88,0	10,0	10,00	1,90	70,5
7	223,3	88,0	10,0	10,00	1,90	70,5
8	229,1	88,0	10,0	10,00	1,90	70,5
9	235,0	88,0	10,0	10,00	1,90	70,5
10	240,8	88,0	10,0	10,00	1,90	70,5

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,190 kPa
Mean phase angle	: 70,5 °
Mean complex modulus |G*|	: 1,90 kPa
Mean temperature lower plate	: 88,0 °C
Mean temperature sample	: 88,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 2,01 kPa
Standard deviation	: 0,00142 kPa
Median	: 2,01 kPa
Confidence Interval (95%)	: 2,01 ... 2,01 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

This sample is found to F A I L at 88,0 °C

Pass/Fail Temperature 87,2 °C

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 5% rt
Data series	: Tesis 5% rtfo 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/11/2015
Time of test	: 14:32:36
Operator	: cmf
Sample	: Tesis 5% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj161d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	64,0	10,0	10,00	18,5	57,5
2	195,4	64,0	10,0	10,00	18,5	57,5
3	201,3	64,0	10,0	10,00	18,5	57,5
4	207,1	64,0	10,0	10,00	18,5	57,5
5	212,9	64,0	10,0	10,00	18,5	57,5
6	218,8	64,0	10,0	10,00	18,5	57,5
7	224,6	64,0	10,0	10,00	18,5	57,5
8	230,5	64,0	10,0	10,00	18,5	57,5
9	236,3	64,0	10,0	10,00	18,5	57,5
10	242,2	64,0	10,0	10,00	18,5	57,5

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 1,847 kPa
Mean phase angle	: 57,5 °
Mean complex modulus |G*|	: 18,5 kPa
Mean temperature lower plate	: 64,0 °C
Mean temperature sample	: 64,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 21,9 kPa
Standard deviation	: 0,0103 kPa
Median	: 21,9 kPa
Confidence Interval (95%)	: 21,9 ... 21,9 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

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This sample is found to P A S S at 64,0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 64.

Set start temperature of subsequent PAV test to 22 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 5% rt
Data series	: Tesis 5% rtfo 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/11/2015
Time of test	: 14:48:59
Operator	: cmf
Sample	: Tesis 5% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj161d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	70,0	10,0	10,00	10,2	60,4
2	195,5	70,0	10,0	10,00	10,2	60,4
3	201,3	70,0	10,0	10,00	10,2	60,4
4	207,1	70,0	10,0	10,00	10,2	60,4
5	213,0	70,0	10,0	10,00	10,2	60,4
6	218,8	70,0	10,0	10,00	10,2	60,4
7	224,7	70,0	10,0	10,00	10,2	60,4
8	230,5	70,0	10,0	10,00	10,2	60,4
9	236,4	70,0	10,0	10,00	10,2	60,4
10	242,2	70,0	10,0	10,00	10,2	60,4

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 1,017 kPa
Mean phase angle	: 60,4 °
Mean complex modulus |G*|	: 10,2 kPa
Mean temperature lower plate	: 70,0 °C
Mean temperature sample	: 70,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 11,7 kPa
Standard deviation	: 0,00193 kPa
Median	: 11,7 kPa
Confidence Interval (95%)	: 11,7 ... 11,7 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

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This sample is found to P A S S at 70,0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 70.
Set start temperature of subsequent PAV test to 28 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 5% rt
Data series	: Tesis 5% rtfo 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/11/2015
Time of test	: 15:05:25
Operator	: cmf
Sample	: Tesis 5% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj161d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	76,0	10,0	10,00	5,49	63,9
2	195,5	76,0	10,0	10,00	5,49	63,9
3	201,3	76,0	10,0	10,00	5,49	63,9
4	207,1	76,0	10,0	10,00	5,49	63,9
5	213,0	76,0	10,0	10,00	5,49	63,9
6	218,8	76,0	10,0	10,00	5,50	63,9
7	224,7	76,0	10,0	10,00	5,50	63,9
8	230,5	76,0	10,0	10,00	5,50	63,9
9	236,4	76,0	10,0	10,00	5,50	63,9
10	242,2	76,0	10,0	10,00	5,50	63,9

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,549 kPa
Mean phase angle	: 63,9 °
Mean complex modulus |G*|	: 5,49 kPa
Mean temperature lower plate	: 76,0 °C
Mean temperature sample	: 76,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 6,12 kPa
Standard deviation	: 0,00249 kPa
Median	: 6,12 kPa
Confidence Interval (95%)	: 6,12 ... 6,12 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

==========

This sample is found to P A S S at 76,0 °C

==========

If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 76.
Set start temperature of subsequent PAV test to 31 °C.

==========

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	:	C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 5% rt
Data series	:	Tesis 5% rtfo 4
Used measuring points	:	I 2, P 11 ... I 2, P 20
Date of test	:	23/11/2015
Time of test	:	15:22:05
Operator	:	cmf
Sample	:	Tesis 5% rtfo
Remark	:	
Measuring device	:	MCR301 SN80526902; FW3.55; Slot2; Adj161d
Temperature control unit	:	TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	:	PP25/PE-SN17059
Diameter	:	25,03 mm
Gap	:	1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	82,0	10,0	10,00	2,92	67,7
2	195,5	82,0	10,0	10,00	2,92	67,7
3	201,3	82,0	10,0	10,00	2,92	67,7
4	207,1	82,0	10,0	10,00	2,92	67,7
5	213,0	82,0	10,0	10,00	2,92	67,7
6	218,8	82,0	10,0	10,00	2,92	67,7
7	224,7	82,0	10,0	10,00	2,92	67,7
8	230,5	82,0	10,0	10,00	2,93	67,7
9	236,4	82,0	10,0	10,00	2,93	67,7
10	242,2	82,0	10,0	10,00	2,93	67,7

TEST RESULTS:

Mean frequency	:	10,0 rad/s = 1,59 Hz
Mean strain amplitude	:	10,00 %
Mean stress amplitude	:	0,292 kPa
Mean phase angle	:	67,7 °
Mean complex modulus |G*|	:	2,92 kPa
Mean temperature lower plate	:	82,0 °C
Mean temperature sample	:	82,0 °C

EVALUATION RESULTS:

Number of data points	:	10
|G*|/sin(delta)	:	3,16 kPa
Standard deviation	:	0,00209 kPa
Median	:	3,16 kPa
Confidence Interval (95%)	:	3,16 ... 3,16 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	:	|G*|/sin(delta) >= 2,20 kPa

==========

This sample is found to P A S S at 82,0 °C

==========

If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 82.

Set start temperature of subsequent PAV test to 34 °C.

==========

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 5% rt
Data series	: Tesis 5% rtfo 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/11/2015
Time of test	: 15:38:51
Operator	: cmf
Sample	: Tesis 5% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj161d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188,3	88,0	10,0	10,00	1,55	71,6
2	194,1	88,0	10,0	10,00	1,55	71,6
3	200,0	88,0	10,0	10,00	1,55	71,6
4	205,8	88,0	10,0	10,00	1,55	71,6
5	211,7	88,0	10,0	10,00	1,55	71,6
6	217,5	88,0	10,0	10,00	1,55	71,6
7	223,3	88,0	10,0	10,00	1,55	71,6
8	229,2	88,0	10,0	10,00	1,55	71,6
9	235,0	88,0	10,0	10,00	1,55	71,6
10	240,9	88,0	10,0	10,00	1,55	71,6

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,155 kPa
Mean phase angle	: 71,6 °
Mean complex modulus |G*|	: 1,55 kPa
Mean temperature lower plate	: 88,0 °C
Mean temperature sample	: 88,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1,63 kPa
Standard deviation	: 0,000742 kPa
Median	: 1,63 kPa
Confidence Interval (95%)	: 1,63 ... 1,63 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

This sample is found to F A I L at 88,0 °C

Pass/Fail Temperature 85,3 °C

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 7% rt
Data series	: Tesis 7% rtfo 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 10:49:22
Operator	: CMF
Sample	: Tesis 7% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj161d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,3	64,0	10,0	10,00	15,6	57,9
2	195,2	64,0	10,0	10,00	15,6	57,9
3	201,0	64,0	10,0	10,00	15,6	57,9
4	206,8	64,0	10,0	10,00	15,6	57,9
5	212,7	64,0	10,0	10,00	15,6	57,9
6	218,5	64,0	10,0	10,00	15,6	57,9
7	224,4	64,0	10,0	10,00	15,6	57,9
8	230,2	64,0	10,0	10,00	15,6	57,9
9	236,0	64,0	10,0	10,00	15,6	57,9
10	241,9	64,0	10,0	10,00	15,6	57,9

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 1,556 kPa
Mean phase angle	: 57,9 °
Mean complex modulus |G*|	: 15,6 kPa
Mean temperature lower plate	: 64,0 °C
Mean temperature sample	: 64,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 18,4 kPa
Standard deviation	: 0,00649 kPa
Median	: 18,4 kPa
Confidence Interval (95%)	: 18,4 ... 18,4 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

==========

This sample is found to P A S S at 64,0 °C

==========

If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 64.

Set start temperature of subsequent PAV test to 22 °C.

==========

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 7% rt
Data series	: Tesis 7% rtfo 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 11:05:48
Operator	: CMF
Sample	: Tesis 7% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj161d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	70,0	10,0	10,00	8,55	60,8
2	195,4	70,0	10,0	10,00	8,55	60,8
3	201,3	70,0	10,0	10,00	8,55	60,8
4	207,1	70,0	10,0	10,00	8,55	60,8
5	212,9	70,0	10,0	10,00	8,55	60,8
6	218,8	70,0	10,0	10,00	8,55	60,8
7	224,6	70,0	10,0	10,00	8,55	60,8
8	230,5	70,0	10,0	10,00	8,55	60,8
9	236,3	70,0	10,0	10,00	8,55	60,8
10	242,1	70,0	10,0	10,00	8,55	60,8

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,855 kPa
Mean phase angle	: 60,8 °
Mean complex modulus |G*|	: 8,55 kPa
Mean temperature lower plate	: 70,0 °C
Mean temperature sample	: 70,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 9,79 kPa
Standard deviation	: 0,00232 kPa
Median	: 9,79 kPa
Confidence Interval (95%)	: 9,79 ... 9,79 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

==========

This sample is found to P A S S at 70,0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 70.

Set start temperature of subsequent PAV test to 28 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 7% rt
Data series	: Tesis 7% rtfo 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 11:22:16
Operator	: CMF
Sample	: Tesis 7% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj161d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	76,0	10,0	10,00	4,60	64,4
2	195,4	76,0	10,0	10,00	4,60	64,4
3	201,3	76,0	10,0	10,00	4,60	64,4
4	207,1	76,0	10,0	10,00	4,60	64,4
5	212,9	76,0	10,0	10,00	4,61	64,4
6	218,8	76,0	10,0	10,00	4,61	64,4
7	224,6	76,0	10,0	10,00	4,61	64,4
8	230,5	76,0	10,0	10,00	4,61	64,4
9	236,3	76,0	10,0	10,00	4,61	64,4
10	242,1	76,0	10,0	10,00	4,61	64,4

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,461 kPa
Mean phase angle	: 64,4 °
Mean complex modulus |G*|	: 4,61 kPa
Mean temperature lower plate	: 76,0 °C
Mean temperature sample	: 76,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 5,11 kPa
Standard deviation	: 0,00269 kPa
Median	: 5,11 kPa
Confidence Interval (95%)	: 5,10 ... 5,11 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

==========

This sample is found to P A S S at 76,0 °C

==========

If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 76.

Set start temperature of subsequent PAV test to 31 °C.

==========

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 7% rt
Data series	: Tesis 7% rtfo 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 11:38:59
Operator	: CMF
Sample	: Tesis 7% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj161d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189,6	82,0	10,0	10,00	2,44	68,3
2	195,4	82,0	10,0	10,00	2,44	68,3
3	201,3	82,0	10,0	10,00	2,44	68,3
4	207,1	82,0	10,0	10,00	2,44	68,3
5	212,9	82,0	10,0	10,00	2,44	68,3
6	218,8	82,0	10,0	10,00	2,44	68,3
7	224,6	82,0	10,0	10,00	2,45	68,3
8	230,5	82,0	10,0	10,00	2,45	68,3
9	236,3	82,0	10,0	10,00	2,45	68,3
10	242,1	82,0	10,0	10,00	2,45	68,3

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,244 kPa
Mean phase angle	: 68,3 °
Mean complex modulus |G*|	: 2,44 kPa
Mean temperature lower plate	: 82,0 °C
Mean temperature sample	: 82,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 2,63 kPa
Standard deviation	: 0,00167 kPa
Median	: 2,63 kPa
Confidence Interval (95%)	: 2,63 ... 2,63 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

==========

This sample is found to P A S S at 82,0 °C

==========

If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 82.
Set start temperature of subsequent PAV test to 34 °C.

==========

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 7% rt
Data series	: Tesis 7% rtfo 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 11:55:45
Operator	: CMF
Sample	: Tesis 7% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj161d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188,3	88,0	10,0	10,00	1,29	72,2
2	194,1	88,0	10,0	10,00	1,29	72,2
3	199,9	88,0	10,0	10,00	1,29	72,2
4	205,8	88,0	10,0	10,00	1,29	72,2
5	211,6	88,0	10,0	10,00	1,29	72,2
6	217,5	88,0	10,0	10,00	1,29	72,2
7	223,3	88,0	10,0	10,00	1,29	72,2
8	229,1	88,0	10,0	10,00	1,29	72,2
9	235,0	88,0	10,0	10,00	1,29	72,2
10	240,8	88,0	10,0	10,00	1,29	72,2

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 10,00 %
Mean stress amplitude	: 0,129 kPa
Mean phase angle	: 72,2 °
Mean complex modulus |G*|	: 1,29 kPa
Mean temperature lower plate	: 88,0 °C
Mean temperature sample	: 88,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1,35 kPa
Standard deviation	: 0,000755 kPa
Median	: 1,35 kPa
Confidence Interval (95%)	: 1,35 ... 1,35 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2,20 kPa

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This sample is found to F A I L at 88,0 °C

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Pass/Fail Temperature 83,6 °C

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	:	C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 3.5%
Data series	:	Tesis 3.5% orgnl 1
Used measuring points	:	I 2, P 11 ... I 2, P 20
Date of test	:	24/11/2015
Time of test	:	12:44:47
Operator	:	cmf
Sample	:	Tesis 3.5% orgnl
Remark	:	
Measuring device	:	MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	:	TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	:	PP25/PE-SN17059
Diameter	:	25,03 mm
Gap	:	1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	64,0	10,0	11,99	12,4	62,7
2	148,7	64,0	10,0	12,01	12,4	62,7
3	150,7	64,0	10,0	12,00	12,4	62,7
4	152,6	64,0	10,0	12,01	12,4	62,7
5	154,6	64,0	10,0	12,00	12,3	62,7
6	156,5	64,0	10,0	12,00	12,3	62,8
7	158,5	64,0	10,0	12,01	12,3	62,8
8	160,4	64,0	10,0	12,00	12,3	62,8
9	162,4	64,0	10,0	12,00	12,3	62,8
10	164,3	64,0	10,0	12,00	12,3	62,8

TEST RESULTS:

Mean frequency	:	10,0 rad/s = 1,59 Hz
Mean strain amplitude	:	12,00 %
Mean stress amplitude	:	1,482 kPa
Mean phase angle	:	62,8 °
Mean complex modulus |G*|	:	12,3 kPa
Mean temperature lower plate	:	64,0 °C
Mean temperature sample	:	64,0 °C

EVALUATION RESULTS:

Number of data points	:	10
|G*|/sin(delta)	:	13,9 kPa
Standard deviation	:	0,0135 kPa
Median	:	13,9 kPa
Confidence Interval (95%)	:	13,9 ... 13,9 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 64,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 64.
Set start temperature of subsequent RTFO test to 64 °C.

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 3.5%
Data series	: Tesis 3.5% orgnl 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 13:00:28
Operator	: cmf
Sample	: Tesis 3.5% orgnl
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	70,0	10,0	12,00	6,45	66,1
2	148,7	70,0	10,0	12,00	6,45	66,1
3	150,7	70,0	10,0	12,00	6,45	66,1
4	152,6	70,0	10,0	12,00	6,45	66,1
5	154,6	70,0	10,0	12,00	6,44	66,1
6	156,5	70,0	10,0	12,00	6,44	66,1
7	158,5	70,0	10,0	12,01	6,44	66,1
8	160,4	70,0	10,0	11,99	6,44	66,1
9	162,4	70,0	10,0	12,01	6,44	66,1
10	164,3	70,0	10,0	11,99	6,44	66,1

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,773 kPa
Mean phase angle	: 66,1 °
Mean complex modulus |G*|	: 6,45 kPa
Mean temperature lower plate	: 70,0 °C
Mean temperature sample	: 70,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 7,05 kPa
Standard deviation	: 0,00232 kPa
Median	: 7,05 kPa
Confidence Interval (95%)	: 7,05 ... 7,05 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 70,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 70.
Set start temperature of subsequent RTFO test to 70 °C.

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 3.5%
Data series	: Tesis 3.5% orgnl 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 13:15:38
Operator	: cmf
Sample	: Tesis 3.5% orgnl
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	76,0	10,0	12,00	3,34	69,9
2	148,7	76,0	10,0	12,00	3,34	69,9
3	150,7	76,0	10,0	12,00	3,34	69,9
4	152,6	76,0	10,0	12,00	3,34	69,9
5	154,6	76,0	10,0	12,00	3,34	69,9
6	156,5	76,0	10,0	12,00	3,34	69,9
7	158,5	76,0	10,0	12,00	3,34	69,9
8	160,4	76,0	10,0	12,00	3,34	69,9
9	162,4	76,0	10,0	12,01	3,34	69,9
10	164,3	76,0	10,0	11,99	3,34	69,9

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,401 kPa
Mean phase angle	: 69,9 °
Mean complex modulus |G*|	: 3,34 kPa
Mean temperature lower plate	: 76,0 °C
Mean temperature sample	: 76,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 3,56 kPa
Standard deviation	: 0,000376 kPa
Median	: 3,56 kPa
Confidence Interval (95%)	: 3,56 ... 3,56 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 76,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 76.
Set start temperature of subsequent RTFO test to 76 °C.

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 3.5%
Data series	: Tesis 3.5% orgnl 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 13:30:59
Operator	: cmf
Sample	: Tesis 3.5% orgnl
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145,4	82,0	10,0	12,00	1,73	73,6
2	147,4	82,0	10,0	12,00	1,73	73,6
3	149,3	82,0	10,0	12,00	1,73	73,6
4	151,3	82,0	10,0	12,00	1,73	73,6
5	153,2	82,0	10,0	12,00	1,73	73,6
6	155,2	82,0	10,0	12,00	1,73	73,6
7	157,1	82,0	10,0	12,00	1,73	73,6
8	159,1	82,0	10,0	12,00	1,73	73,6
9	161,0	82,0	10,0	12,00	1,73	73,6
10	163,0	82,0	10,0	12,00	1,73	73,6

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,207 kPa
Mean phase angle	: 73,6 °
Mean complex modulus |G*|	: 1,73 kPa
Mean temperature lower plate	: 82,0 °C
Mean temperature sample	: 82,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1,80 kPa
Standard deviation	: 0,000226 kPa
Median	: 1,80 kPa
Confidence Interval (95%)	: 1,80 ... 1,80 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 82,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 82.
Set start temperature of subsequent RTFO test to 82 °C.

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 3.5%
Data series	: Tesis 3.5% orgnl 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 13:46:28
Operator	: cmf
Sample	: Tesis 3.5% orgnl
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145,4	88,0	10,0	12,00	0,893	77,1
2	147,4	88,0	10,0	12,00	0,893	77,1
3	149,3	88,0	10,0	12,00	0,893	77,1
4	151,3	88,0	10,0	12,00	0,893	77,1
5	153,2	88,0	10,0	12,00	0,893	77,1
6	155,2	88,0	10,0	12,00	0,893	77,1
7	157,1	88,0	10,0	12,00	0,893	77,1
8	159,1	88,0	10,0	12,00	0,893	77,1
9	161,0	88,0	10,0	12,00	0,893	77,1
10	163,0	88,0	10,0	12,00	0,893	77,1

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,107 kPa
Mean phase angle	: 77,1 °
Mean complex modulus |G*|	: 0,893 kPa
Mean temperature lower plate	: 88,0 °C
Mean temperature sample	: 88,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 0,916 kPa
Standard deviation	: 0,000138 kPa
Median	: 0,916 kPa
Confidence Interval (95%)	: 0,916 ... 0,916 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to F A I L at 88,0 °C

==========

==========

Pass/Fail Temperature 87,2 °C

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 5% o
Data series	: Tesis 5% orgnl 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 14:49:27
Operator	: cmf
Sample	: Tesis 5% orgnl
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	70,0	10,0	12,01	5,02	67,5
2	148,7	70,0	10,0	11,99	5,02	67,5
3	150,7	70,0	10,0	12,01	5,02	67,5
4	152,6	70,0	10,0	12,00	5,02	67,5
5	154,6	70,0	10,0	12,00	5,02	67,5
6	156,5	70,0	10,0	12,00	5,02	67,5
7	158,5	70,0	10,0	12,00	5,02	67,5
8	160,4	70,0	10,0	12,00	5,01	67,5
9	162,4	70,0	10,0	12,00	5,02	67,5
10	164,3	70,0	10,0	12,00	5,02	67,5

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,602 kPa
Mean phase angle	: 67,5 °
Mean complex modulus |G*|	: 5,02 kPa
Mean temperature lower plate	: 70,0 °C
Mean temperature sample	: 70,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 5,43 kPa
Standard deviation	: 0,00122 kPa
Median	: 5,43 kPa
Confidence Interval (95%)	: 5,43 ... 5,43 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 70,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 70.
Set start temperature of subsequent RTFO test to 70 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 5% o
Data series	: Tesis 5% orgnl 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 15:04:37
Operator	: cmf
Sample	: Tesis 5% orgnl
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	76,0	10,0	12,00	2,58	71,3
2	148,7	76,0	10,0	11,99	2,58	71,3
3	150,7	76,0	10,0	12,00	2,58	71,3
4	152,6	76,0	10,0	12,00	2,58	71,3
5	154,6	76,0	10,0	12,00	2,58	71,3
6	156,5	76,0	10,0	12,00	2,58	71,3
7	158,5	76,0	10,0	12,00	2,58	71,3
8	160,4	76,0	10,0	12,00	2,58	71,2
9	162,4	76,0	10,0	11,99	2,58	71,3
10	164,3	76,0	10,0	12,01	2,58	71,3

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,310 kPa
Mean phase angle	: 71,3 °
Mean complex modulus |G*|	: 2,58 kPa
Mean temperature lower plate	: 76,0 °C
Mean temperature sample	: 76,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 2,73 kPa
Standard deviation	: 0,000309 kPa
Median	: 2,73 kPa
Confidence Interval (95%)	: 2,73 ... 2,73 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 76,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 76.
Set start temperature of subsequent RTFO test to 76 °C.

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 5% o
Data series	: Tesis 5% orgnl 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 15:20:01
Operator	: cmf
Sample	: Tesis 5% orgnl
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145,4	82,0	10,0	12,00	1,33	74,9
2	147,4	82,0	10,0	12,00	1,33	74,9
3	149,3	82,0	10,0	12,00	1,33	74,9
4	151,3	82,0	10,0	12,00	1,33	75,0
5	153,2	82,0	10,0	12,00	1,33	74,9
6	155,2	82,0	10,0	12,00	1,33	74,9
7	157,1	82,0	10,0	12,00	1,33	74,9
8	159,1	82,0	10,0	12,00	1,33	75,0
9	161,0	82,0	10,0	12,01	1,33	74,9
10	163,0	82,0	10,0	11,99	1,33	74,9

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,159 kPa
Mean phase angle	: 74,9 °
Mean complex modulus |G*|	: 1,33 kPa
Mean temperature lower plate	: 82,0 °C
Mean temperature sample	: 82,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1,38 kPa
Standard deviation	: 0,000126 kPa
Median	: 1,38 kPa
Confidence Interval (95%)	: 1,38 ... 1,38 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 82,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 82.
Set start temperature of subsequent RTFO test to 82 °C.

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 5% o
Data series	: Tesis 5% orgnl 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 24/11/2015
Time of test	: 15:35:22
Operator	: cmf
Sample	: Tesis 5% orgnl
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145,4	88,0	10,0	12,00	0,686	78,3
2	147,4	88,0	10,0	12,00	0,686	78,3
3	149,3	88,0	10,0	12,00	0,686	78,3
4	151,3	88,0	10,0	12,00	0,686	78,3
5	153,2	88,0	10,0	12,00	0,686	78,3
6	155,2	88,0	10,0	12,00	0,686	78,3
7	157,1	88,0	10,0	12,00	0,686	78,3
8	159,1	88,0	10,0	12,00	0,686	78,3
9	161,0	88,0	10,0	12,00	0,686	78,3
10	163,0	88,0	10,0	12,00	0,686	78,3

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,082 kPa
Mean phase angle	: 78,3 °
Mean complex modulus |G*|	: 0,686 kPa
Mean temperature lower plate	: 88,0 °C
Mean temperature sample	: 88,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 0,701 kPa
Standard deviation	: 0,0000695 kPa
Median	: 0,701 kPa
Confidence Interval (95%)	: 0,701 ... 0,701 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

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This sample is found to F A I L at 88,0 °C

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Pass/Fail Temperature 84,8 °C

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 7% o
Data series	: Tesis 7% orignl. 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 25/11/2015
Time of test	: 11:15:30
Operator	: Jh.M
Sample	: Tesis 7% orignl.
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,5	64,0	10,0	12,00	8,07	64,1
2	148,5	64,0	10,0	12,00	8,07	64,1
3	150,4	64,0	10,0	12,01	8,06	64,1
4	152,3	64,0	10,0	11,99	8,06	64,1
5	154,3	64,0	10,0	12,01	8,06	64,1
6	156,2	64,0	10,0	12,00	8,06	64,1
7	158,2	64,0	10,0	12,00	8,06	64,1
8	160,1	64,0	10,0	12,01	8,06	64,1
9	162,1	64,0	10,0	12,00	8,05	64,1
10	164,0	64,0	10,0	12,00	8,05	64,1

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,967 kPa
Mean phase angle	: 64,1 °
Mean complex modulus |G*|	: 8,06 kPa
Mean temperature lower plate	: 64,0 °C
Mean temperature sample	: 64,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 8,96 kPa
Standard deviation	: 0,00665 kPa
Median	: 8,96 kPa
Confidence Interval (95%)	: 8,96 ... 8,97 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 64,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 64.
Set start temperature of subsequent RTFO test to 64 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 7% o
Data series	: Tesis 7% orignl. 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 25/11/2015
Time of test	: 11:36:20
Operator	: Jh.M
Sample	: Tesis\7% orignl.
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	70,0	10,0	11,99	4,18	67,6
2	148,7	70,0	10,0	12,01	4,17	67,6
3	150,6	70,0	10,0	11,99	4,18	67,6
4	152,6	70,0	10,0	12,00	4,17	67,6
5	154,5	70,0	10,0	12,00	4,17	67,6
6	156,5	70,0	10,0	12,00	4,17	67,6
7	158,4	70,0	10,0	12,00	4,17	67,6
8	160,4	70,0	10,0	12,00	4,17	67,6
9	162,3	70,0	10,0	12,00	4,17	67,6
10	164,3	70,0	10,0	12,01	4,17	67,6

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,501 kPa
Mean phase angle	: 67,6 °
Mean complex modulus |G*|	: 4,17 kPa
Mean temperature lower plate	: 70,0 °C
Mean temperature sample	: 70,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 4,51 kPa
Standard deviation	: 0,00129 kPa
Median	: 4,51 kPa
Confidence Interval (95%)	: 4,51 ... 4,52 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 70,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 70.
Set start temperature of subsequent RTFO test to 70 °C.

==========

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 7% o
Data series	: Tesis 7% orignl. 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 25/11/2015
Time of test	: 11:51:32
Operator	: Jh.M
Sample	: Tesis 7% orignl.
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146,8	76,0	10,0	12,00	2,13	71,5
2	148,7	76,0	10,0	12,01	2,13	71,5
3	150,6	76,0	10,0	11,99	2,13	71,5
4	152,6	76,0	10,0	12,01	2,13	71,5
5	154,5	76,0	10,0	11,99	2,13	71,5
6	156,5	76,0	10,0	12,00	2,13	71,5
7	158,4	76,0	10,0	12,00	2,13	71,5
8	160,4	76,0	10,0	12,00	2,13	71,5
9	162,3	76,0	10,0	12,00	2,13	71,5
10	164,3	76,0	10,0	12,00	2,13	71,5

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,256 kPa
Mean phase angle	: 71,5 °
Mean complex modulus |G*|	: 2,13 kPa
Mean temperature lower plate	: 76,0 °C
Mean temperature sample	: 76,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 2,25 kPa
Standard deviation	: 0,000318 kPa
Median	: 2,25 kPa
Confidence Interval (95%)	: 2,25 ... 2,25 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

==========

This sample is found to P A S S at 76,0 °C

==========

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 76.
Set start temperature of subsequent RTFO test to 76 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 7% o
Data series	: Tesis 7% orignl. 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 25/11/2015
Time of test	: 12:06:51
Operator	: Jh.M
Sample	: Tesis 7% orignl.
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145,4	82,0	10,0	12,00	1,09	75,2
2	147,4	82,0	10,0	11,99	1,09	75,2
3	149,3	82,0	10,0	12,01	1,09	75,2
4	151,3	82,0	10,0	11,99	1,09	75,2
5	153,2	82,0	10,0	12,00	1,09	75,2
6	155,2	82,0	10,0	12,00	1,09	75,2
7	157,1	82,0	10,0	12,00	1,09	75,2
8	159,1	82,0	10,0	12,00	1,09	75,2
9	161,0	82,0	10,0	12,00	1,09	75,2
10	163,0	82,0	10,0	12,00	1,09	75,2

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,131 kPa
Mean phase angle	: 75,2 °
Mean complex modulus |G*|	: 1,09 kPa
Mean temperature lower plate	: 82,0 °C
Mean temperature sample	: 82,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1,13 kPa
Standard deviation	: 0,000204 kPa
Median	: 1,13 kPa
Confidence Interval (95%)	: 1,13 ... 1,13 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

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This sample is found to P A S S at 82,0 °C

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f this is the highest tested Original Binder temperature which
asses, the starting performance grade for RTFO test is 82.
et start temperature of subsequent RTFO test to 82 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\Tesis 7% o
Data series	: Tesis 7% orignl. 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 25/11/2015
Time of test	: 12:22:15
Operator	: Jh.M
Sample	: Tesis 7% orignl.
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj162d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25,03 mm
Gap	: 1,000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145,4	88,0	10,0	12,00	0,565	78,6
2	147,4	88,0	10,0	12,00	0,565	78,6
3	149,3	88,0	10,0	12,00	0,565	78,6
4	151,3	88,0	10,0	12,00	0,565	78,6
5	153,2	88,0	10,0	12,00	0,565	78,6
6	155,2	88,0	10,0	12,00	0,565	78,6
7	157,1	88,0	10,0	12,00	0,565	78,6
8	159,1	88,0	10,0	12,00	0,565	78,6
9	161,0	88,0	10,0	12,00	0,565	78,6
10	163,0	88,0	10,0	12,00	0,565	78,6

TEST RESULTS:

Mean frequency	: 10,0 rad/s = 1,59 Hz
Mean strain amplitude	: 12,00 %
Mean stress amplitude	: 0,068 kPa
Mean phase angle	: 78,6 °
Mean complex modulus |G*|	: 0,565 kPa
Mean temperature lower plate	: 88,0 °C
Mean temperature sample	: 88,0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 0,576 kPa
Standard deviation	: 0,000109 kPa
Median	: 0,576 kPa
Confidence Interval (95%)	: 0,576 ... 0,576 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1,00 kPa

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This sample is found to F A I L at 88,0 °C

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Pass/Fail Temperature 83,1 °C

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AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\PAV 7%.orx
Data series	: PAV 7% 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 27/09/2016
Time of test	: 16:55:12
Operator	: JH.M
Sample	: PAV 7%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj470d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	19.0	10.0	1.00	12800	28.4
2	256.7	19.0	10.0	1.00	12800	28.4
3	262.5	19.0	10.0	1.00	12700	28.4
4	268.4	19.0	10.0	1.00	12700	28.4
5	274.2	19.0	10.0	1.00	12700	28.4
6	280.1	19.0	10.0	1.00	12700	28.5
7	285.9	19.0	10.0	1.00	12700	28.5
8	291.7	19.0	10.0	1.00	12700	28.5
9	297.6	19.0	10.0	1.00	12700	28.5
10	303.4	19.0	10.0	1.00	12700	28.5

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 127.354 kPa
Mean phase angle	: 28.4 °
Mean complex modulus |G*|	: 12700 kPa
Mean temperature lower plate	: 19.0 °C
Mean temperature sample	: 19.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 6060 kPa
Standard deviation	: 1.12 kPa
Median	: 6060 kPa
Confidence Interval (95%)	: 6060 ... 6070 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

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This sample is found to F A I L at 19.0 °C

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Pass/Fail Temperature 21.2 °C

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AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\PAV 7%.orx
Data series	: PAV 7% 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 27/09/2016
Time of test	: 16:39:35
Operator	: JH.M
Sample	: PAV 7%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj470d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	22.0	10.0	1.00	9420	29.6
2	256.7	22.0	10.0	1.00	9410	29.6
3	262.5	22.0	10.0	1.00	9410	29.6
4	268.4	22.0	10.0	1.00	9400	29.6
5	274.2	22.0	10.0	1.00	9400	29.6
6	280.1	22.0	10.0	1.00	9400	29.6
7	285.9	22.0	10.0	1.00	9390	29.6
8	291.7	22.0	10.0	1.00	9390	29.7
9	297.6	22.0	10.0	1.00	9390	29.7
10	303.4	22.0	10.0	1.00	9380	29.7

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 94.008 kPa
Mean phase angle	: 29.6 °
Mean complex modulus |G*|	: 9400 kPa
Mean temperature lower plate	: 22.0 °C
Mean temperature sample	: 22.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 4650 kPa
Standard deviation	: 1.16 kPa
Median	: 4650 kPa
Confidence Interval (95%)	: 4650 ... 4650 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 22.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\PAV 7%.orx
Data series	: PAV 7% 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 27/09/2016
Time of test	: 16:23:09
Operator	: JH.M
Sample	: PAV 7%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj470d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	25.0	10.0	1.00	6840	30.9
2	256.7	25.0	10.0	1.00	6840	30.9
3	262.5	25.0	10.0	1.00	6840	30.9
4	268.4	25.0	10.0	1.00	6830	30.9
5	274.2	25.0	10.0	1.00	6830	30.9
6	280.1	25.0	10.0	1.00	6830	30.9
7	285.9	25.0	10.0	1.00	6820	31.0
8	291.7	25.0	10.0	1.00	6820	31.0
9	297.6	25.0	10.0	1.00	6820	31.0
10	303.4	25.0	10.0	1.00	6820	31.0

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 68.310 kPa
Mean phase angle	: 30.9 °
Mean complex modulus |G*|	: 6830 kPa
Mean temperature lower plate	: 25.0 °C
Mean temperature sample	: 25.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 3510 kPa
Standard deviation	: 1.17 kPa
Median	: 3510 kPa
Confidence Interval (95%)	: 3510 ... 3510 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 25.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865.orx
Data series	: 3865 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 07/10/2016
Time of test	: 12:56:11
Operator	: cmf
Sample	: 3.5%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj479d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	19.0	10.0	1.00	7680	29.4
2	256.7	19.0	10.0	1.00	7670	29.4
3	262.5	19.0	10.0	1.00	7670	29.4
4	268.4	19.0	10.0	1.00	7670	29.4
5	274.2	19.0	10.0	1.00	7660	29.4
6	280.1	19.0	10.0	1.00	7660	29.4
7	285.9	19.0	10.0	1.00	7660	29.4
8	291.7	19.0	10.0	1.00	7660	29.5
9	297.6	19.0	10.0	1.00	7650	29.5
10	303.4	19.0	10.0	1.00	7650	29.5

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 76.649 kPa
Mean phase angle	: 29.4 °
Mean complex modulus |G*|	: 7660 kPa
Mean temperature lower plate	: 19.0 °C
Mean temperature sample	: 19.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 3770 kPa
Standard deviation	: 1.03 kPa
Median	: 3770 kPa
Confidence Interval (95%)	: 3760 ... 3770 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 19.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865.orx
Data series	: 3865 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 07/10/2016
Time of test	: 13:11:47
Operator	: cmf
Sample	: 3.5%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj479d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	16.0	10.0	1.00	10400	28.2
2	256.7	16.0	10.0	1.00	10400	28.2
3	262.5	16.0	10.0	1.00	10400	28.2
4	268.4	16.0	10.0	1.00	10400	28.2
5	274.2	16.0	10.0	1.00	10400	28.2
6	280.1	16.0	10.0	1.00	10400	28.3
7	285.9	16.0	10.0	1.00	10400	28.3
8	291.7	16.0	10.0	1.00	10400	28.3
9	297.6	16.0	10.0	1.00	10300	28.3
10	303.4	16.0	10.0	1.00	10300	28.3

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 103.604 kPa
Mean phase angle	: 28.3 °
Mean complex modulus |G*|	: 10400 kPa
Mean temperature lower plate	: 16.0 °C
Mean temperature sample	: 16.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 4900 kPa
Standard deviation	: 0.930 kPa
Median	: 4900 kPa
Confidence Interval (95%)	: 4900 ... 4900 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

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This sample is found to P A S S at 16.0 °C

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AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865.orx
Data series	: 3865 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 07/10/2016
Time of test	: 13:27:27
Operator	: cmf
Sample	: 3.5%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj479d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	13.0	10.0	1.00	13900	27.1
2	256.7	13.0	10.0	1.00	13900	27.1
3	262.5	13.0	10.0	1.00	13900	27.1
4	268.4	13.0	10.0	1.00	13900	27.1
5	274.2	13.0	10.0	1.00	13900	27.1
6	280.0	13.0	10.0	1.00	13900	27.1
7	285.9	13.0	10.0	1.00	13900	27.1
8	291.7	13.0	10.0	1.00	13900	27.2
9	297.6	13.0	10.0	1.00	13900	27.2
10	303.4	13.0	10.0	1.00	13900	27.2

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 139.084 kPa
Mean phase angle	: 27.1 °
Mean complex modulus |G*|	: 13900 kPa
Mean temperature lower plate	: 13.0 °C
Mean temperature sample	: 13.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 6340 kPa
Standard deviation	: 0.875 kPa
Median	: 6340 kPa
Confidence Interval (95%)	: 6340 ... 6340 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

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This sample is found to F A I L at 13.0 °C

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Pass/Fail Temperature 15.8 °C

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AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865.orx
Data series	: 3865 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 07/10/2016
Time of test	: 12:39:53
Operator	: cmf
Sample	: 3.5%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj479d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	22.0	10.0	1.00	5600	30.7
2	256.7	22.0	10.0	1.00	5600	30.7
3	262.5	22.0	10.0	1.00	5600	30.7
4	268.4	22.0	10.0	1.00	5600	30.7
5	274.2	22.0	10.0	1.00	5590	30.7
6	280.1	22.0	10.0	1.00	5590	30.7
7	285.9	22.0	10.0	1.00	5590	30.7
8	291.7	22.0	10.0	1.00	5590	30.7
9	297.6	22.0	10.0	1.00	5590	30.7
10	303.4	22.0	10.0	1.00	5580	30.7

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 55.932 kPa
Mean phase angle	: 30.7 °
Mean complex modulus |G*|	: 5590 kPa
Mean temperature lower plate	: 22.0 °C
Mean temperature sample	: 22.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 2860 kPa
Standard deviation	: 0.866 kPa
Median	: 2860 kPa
Confidence Interval (95%)	: 2860 ... 2860 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

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This sample is found to P A S S at 22.0 °C

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AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865.orx
Data series	: 3865 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 07/10/2016
Time of test	: 12:23:24
Operator	: cmf
Sample	: 3.5%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj479d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	249.3	25.0	10.0	1.00	4020	32.1
2	255.2	25.0	10.0	1.00	4020	32.1
3	261.0	25.0	10.0	1.00	4020	32.1
4	266.8	25.0	10.0	1.00	4020	32.1
5	272.7	25.0	10.0	1.00	4010	32.1
6	278.5	25.0	10.0	1.00	4010	32.1
7	284.4	25.0	10.0	1.00	4010	32.2
8	290.2	25.0	10.0	1.00	4010	32.2
9	296.0	25.0	10.0	1.00	4010	32.2
10	301.9	25.0	10.0	1.00	4010	32.2

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 40.150 kPa
Mean phase angle	: 32.1 °
Mean complex modulus |G*|	: 4010 kPa
Mean temperature lower plate	: 25.0 °C
Mean temperature sample	: 25.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*| ·sin(delta)	: 2140 kPa
Standard deviation	: 0.503 kPa
Median	: 2140 kPa
Confidence Interval (95%)	: 2140 ... 2140 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*| ·sin(delta) <= 5000 kPa

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This sample is found to P A S S at 25.0 °C

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\orig 30% 2.
Data series	: 3865 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 18/10/2016
Time of test	: 13:06:37
Operator	: cmf
Sample	: 30% 2
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj491d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145.2	64.0	10.0	12.00	0.964	69.1
2	147.1	64.0	10.0	12.00	0.964	69.1
3	149.1	64.0	10.0	12.00	0.964	69.1
4	151.0	64.0	10.0	12.00	0.964	69.1
5	153.0	64.0	10.0	12.00	0.964	69.1
6	154.9	64.0	10.0	12.00	0.964	69.1
7	156.9	64.0	10.0	12.00	0.964	69.1
8	158.8	64.0	10.0	12.00	0.964	69.1
9	160.8	64.0	10.0	12.00	0.964	69.1
10	162.7	64.0	10.0	12.00	0.964	69.1

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 0.116 kPa
Mean phase angle	: 69.1 °
Mean complex modulus |G*|	: 0.964 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1.03 kPa
Standard deviation	: 0.000109 kPa
Median	: 1.03 kPa
Confidence Interval (95%)	: 1.03 ... 1.03 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

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This sample is found to P A S S at 64.0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 64.
Set start temperature of subsequent RTFO test to 64 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\orig 30% 2.
Data series	: 3865 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 18/10/2016
Time of test	: 13:21:49
Operator	: cmf
Sample	: 30% 2
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj491d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145.4	70.0	10.0	12.00	0.502	72.7
2	147.4	70.0	10.0	12.00	0.502	72.7
3	149.3	70.0	10.0	12.00	0.502	72.7
4	151.3	70.0	10.0	12.00	0.502	72.7
5	153.2	70.0	10.0	12.00	0.502	72.7
6	155.2	70.0	10.0	12.00	0.502	72.7
7	157.1	70.0	10.0	12.00	0.502	72.7
8	159.1	70.0	10.0	12.00	0.503	72.7
9	161.0	70.0	10.0	12.00	0.502	72.7
10	163.0	70.0	10.0	12.00	0.503	72.7

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 0.060 kPa
Mean phase angle	: 72.7 °
Mean complex modulus |G*|	: 0.502 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 0.526 kPa
Standard deviation	: 0.000101 kPa
Median	: 0.526 kPa
Confidence Interval (95%)	: 0.526 ... 0.526 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

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This sample is found to F A I L at 70.0 °C

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Pass/Fail Temperature 64.3 °C

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Workbook Information

Name:	C:\Users\usuario\Documents\Anton Paar\Rheoplus\orig 30%3.orx
Number of Data Series:	2 of 10
List of Data Series:	3865 1
	3865 2

Data Series Information

Name:	3865 1
Sample:	30% 3
Operator:	cmf
Number of Intervals:	1 / 2
Application:	RHEOPLUS/32 V3.62 21004242-33025
Device:	MCR301 SN80526902; FW3.55; Slot2; Adj493d
Measuring Date/Time:	20/10/2016; 14:59
Measuring System:	PP25/PE-SN17059; [d=1 mm]
Accessories:	TU1=P-PTD200+H-PTD120-SN80517412-80520108

Meas. Pts.	Temp. [°C]	freq. [rad/s]	Stress [Pa]	Strain [%]	|G*| [kPa]	delta [°]	|G*|/sin(delta) [kPa]	Torque [mNm]	Status []
11	63.997	10.000	114.047	12.001	0.95	69.3	1.02	0.351	
12	64.000	10.000	114.024	12.000	0.95	69.3	1.02	0.351	
13	63.993	10.000	114.021	12.001	0.95	69.3	1.02	0.351	
14	63.998	10.000	114.012	12.000	0.95	69.3	1.02	0.351	
15	63.997	10.000	114.014	12.000	0.95	69.3	1.02	0.351	
16	63.997	10.000	114.013	12.000	0.95	69.3	1.02	0.351	
17	64.000	10.000	114.008	12.000	0.95	69.3	1.02	0.351	
18	64.000	10.000	113.995	12.000	0.95	69.3	1.02	0.351	
19	63.997	10.000	114.000	12.000	0.95	69.3	1.02	0.351	
20	63.995	10.000	114.001	12.000	0.95	69.3	1.02	0.351	

Data Series Information

Name:	3865 2
Sample:	30% 3
Operator:	cmf
Number of Intervals:	1 / 2
Application:	RHEOPLUS/32 V3.62 21004242-33025
Device:	MCR301 SN80526902; FW3.55; Slot2; Adj493d
Measuring Date/Time:	20/10/2016; 15:14
Measuring System:	PP25/PE-SN17059; [d=1 mm]
Accessories:	TU1=P-PTD200+H-PTD120-SN80517412-80520108

Meas. Pts.	Temp. [°C]	freq. [rad/s]	Stress [Pa]	Strain [%]	|G*| [kPa]	delta [°]	|G*|/sin(delta) [kPa]	Torque [mNm]	Status []
11	69.999	10.000	57.301	12.000	0.477	72.8	0.5	0.176	
12	69.996	10.000	57.301	11.999	0.478	72.8	0.5	0.176	
13	69.998	10.000	57.311	12.000	0.478	72.8	0.5	0.176	
14	70.000	10.000	57.312	12.000	0.478	72.8	0.5	0.176	
15	69.997	10.000	57.312	12.000	0.478	72.8	0.5	0.176	
16	69.999	10.000	57.314	12.000	0.478	72.8	0.5	0.176	
17	69.997	10.000	57.317	12.000	0.478	72.8	0.5	0.176	
18	69.997	10.000	57.320	12.000	0.478	72.8	0.5	0.176	
19	69.999	10.000	57.321	12.000	0.478	72.8	0.5	0.176	
20	69.998	10.000	57.326	12.000	0.478	72.8	0.5	0.176	

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\orig 30%3.c
Data series	: 3865 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/10/2016
Time of test	: 15:14:45
Operator	: cmf
Sample	: 30% 3
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj493d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145.4	70.0	10.0	12.00	0.477	72.8
2	147.4	70.0	10.0	12.00	0.478	72.8
3	149.3	70.0	10.0	12.00	0.478	72.8
4	151.3	70.0	10.0	12.00	0.478	72.8
5	153.2	70.0	10.0	12.00	0.478	72.8
6	155.2	70.0	10.0	12.00	0.478	72.8
7	157.1	70.0	10.0	12.00	0.478	72.8
8	159.1	70.0	10.0	12.00	0.478	72.8
9	161.0	70.0	10.0	12.00	0.478	72.8
10	163.0	70.0	10.0	12.00	0.478	72.8

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 0.057 kPa
Mean phase angle	: 72.8 °
Mean complex modulus |G*|	: 0.478 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 0.500 kPa
Standard deviation	: 0.0000880 kPa
Median	: 0.500 kPa
Confidence Interval (95%)	: 0.500 ... 0.500 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

This sample is found to F A I L at 70.0 °C

Pass/Fail Temperature 64.1 °C

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30 % origi
Data series	: 3% Original 3 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 29/09/2016
Time of test	: 16:27:54
Operator	: JH.M
Sample	: 3% Original 3 30 %
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj472d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145.4	58.0	10.0	12.00	1.78	64.9
2	147.4	58.0	10.0	12.00	1.78	64.9
3	149.3	58.0	10.0	12.00	1.78	64.9
4	151.3	58.0	10.0	12.00	1.78	64.9
5	153.2	58.0	10.0	12.00	1.78	65.0
6	155.2	58.0	10.0	12.00	1.78	65.0
7	157.1	58.0	10.0	12.00	1.78	65.0
8	159.1	58.0	10.0	12.00	1.78	65.0
9	161.0	58.0	10.0	12.00	1.78	65.0
10	163.0	58.0	10.0	12.00	1.78	65.0

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 0.214 kPa
Mean phase angle	: 65.0 °
Mean complex modulus |G*|	: 1.78 kPa
Mean temperature lower plate	: 58.0 °C
Mean temperature sample	: 58.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1.97 kPa
Standard deviation	: 0.00195 kPa
Median	: 1.97 kPa
Confidence Interval (95%)	: 1.97 ... 1.97 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

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This sample is found to P A S S at 58.0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 58.
Set start temperature of subsequent RTFO test to 58 °C.

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Pass/Fail Temperature 63.1 °C

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30% orig.OI
Data series	: 3865 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 29/09/2016
Time of test	: 12:14:37
Operator	: cmf
Sample	: 30% orgl
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj471d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145.4	58.0	10.0	12.00	1.92	63.7
2	147.4	58.0	10.0	12.00	1.92	63.7
3	149.3	58.0	10.0	12.00	1.92	63.7
4	151.3	58.0	10.0	12.00	1.91	63.7
5	153.2	58.0	10.0	12.00	1.91	63.7
6	155.2	58.0	10.0	12.00	1.91	63.7
7	157.1	58.0	10.0	12.00	1.91	63.7
8	159.1	58.0	10.0	12.00	1.91	63.7
9	161.0	58.0	10.0	12.00	1.91	63.7
10	163.0	58.0	10.0	12.00	1.91	63.7

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 0.230 kPa
Mean phase angle	: 63.7 °
Mean complex modulus |G*|	: 1.91 kPa
Mean temperature lower plate	: 58.0 °C
Mean temperature sample	: 58.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 2.13 kPa
Standard deviation	: 0.00232 kPa
Median	: 2.13 kPa
Confidence Interval (95%)	: 2.13 ... 2.14 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

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This sample is found to P A S S at 58.0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 58.
Set start temperature of subsequent RTFO test to 58 °C.

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Pass/Fail Temperature 63.7 °C

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30% orgl 2.
Data series	: 3865 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 29/09/2016
Time of test	: 15:29:35
Operator	: cmf
Sample	: 30% orgl 2
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj472d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145.4	70.0	10.0	12.00	0.585	71.9
2	147.4	70.0	10.0	12.00	0.585	71.9
3	149.3	70.0	10.0	12.00	0.585	71.9
4	151.3	70.0	10.0	12.00	0.586	71.9
5	153.2	70.0	10.0	12.00	0.585	71.9
6	155.2	70.0	10.0	12.00	0.586	71.9
7	157.1	70.0	10.0	12.00	0.586	71.9
8	159.1	70.0	10.0	12.00	0.586	71.9
9	161.0	70.0	10.0	12.00	0.586	71.9
10	163.0	70.0	10.0	12.00	0.586	71.9

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 0.070 kPa
Mean phase angle	: 71.9 °
Mean complex modulus |G*|	: 0.586 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 0.616 kPa
Standard deviation	: 0.000145 kPa
Median	: 0.616 kPa
Confidence Interval (95%)	: 0.616 ... 0.616 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

This sample is found to F A I L at 70.0 °C

Pass/Fail Temperature 65.8 °C

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30% orgl 2.
Data series	: 3865 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 29/09/2016
Time of test	: 15:13:37
Operator	: cmf
Sample	: 30% orgl 2
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj472d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145.2	64.0	10.0	12.00	1.14	68.2
2	147.1	64.0	10.0	12.00	1.14	68.2
3	149.1	64.0	10.0	12.00	1.14	68.2
4	151.0	64.0	10.0	12.00	1.14	68.2
5	153.0	64.0	10.0	12.00	1.14	68.2
6	154.9	64.0	10.0	12.00	1.14	68.2
7	156.9	64.0	10.0	12.00	1.14	68.2
8	158.8	64.0	10.0	12.00	1.14	68.2
9	160.8	64.0	10.0	12.00	1.14	68.2
10	162.7	64.0	10.0	12.00	1.14	68.2

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 0.137 kPa
Mean phase angle	: 68.2 °
Mean complex modulus |G*|	: 1.14 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1.23 kPa
Standard deviation	: 0.000309 kPa
Median	: 1.23 kPa
Confidence Interval (95%)	: 1.23 ... 1.23 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

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This sample is found to P A S S at 64.0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 64.
Set start temperature of subsequent RTFO test to 64 °C.

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30%

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30% orig.OI
Data series	: 3865 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 29/09/2016
Time of test	: 11:58:30
Operator	: cmf
Sample	: 30% orgl
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj471d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145.4	64.0	10.0	12.00	0.903	69.1
2	147.4	64.0	10.0	12.00	0.903	69.1
3	149.3	64.0	10.0	12.00	0.903	69.1
4	151.3	64.0	10.0	12.00	0.903	69.1
5	153.2	64.0	10.0	12.00	0.903	69.1
6	155.2	64.0	10.0	12.00	0.903	69.1
7	157.1	64.0	10.0	12.00	0.903	69.1
8	159.1	64.0	10.0	12.00	0.903	69.1
9	161.0	64.0	10.0	12.00	0.903	69.1
10	163.0	64.0	10.0	12.00	0.903	69.1

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 0.108 kPa
Mean phase angle	: 69.1 °
Mean complex modulus |G*|	: 0.903 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 0.966 kPa
Standard deviation	: 0.0000586 kPa
Median	: 0.966 kPa
Confidence Interval (95%)	: 0.966 ... 0.966 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

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This sample is found to F A I L at 64.0 °C

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30%

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30% rtfo.o
Data series	: 3865 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 29/09/2016
Time of test	: 10:24:27
Operator	: cmf
Sample	: 30% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj471d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188.0	64.0	10.0	10.00	2.70	60.8
2	193.9	64.0	10.0	10.00	2.70	60.8
3	199.7	64.0	10.0	10.00	2.70	60.8
4	205.6	64.0	10.0	10.00	2.70	60.8
5	211.4	64.0	10.0	10.00	2.70	60.8
6	217.2	64.0	10.0	10.00	2.70	60.8
7	223.1	64.0	10.0	10.00	2.70	60.8
8	228.9	64.0	10.0	10.00	2.70	60.8
9	234.8	64.0	10.0	10.00	2.70	60.8
10	240.6	64.0	10.0	10.00	2.70	60.7

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.270 kPa
Mean phase angle	: 60.8 °
Mean complex modulus |G*|	: 2.70 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 3.10 kPa
Standard deviation	: 0.00194 kPa
Median	: 3.10 kPa
Confidence Interval (95%)	: 3.10 ... 3.10 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

This sample is found to P A S S at 64.0 °C

If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 64.
Set start temperature of subsequent PAV test to 22 °C.

30%.

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30% rtfo.o
Data series	: 3865 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 29/09/2016
Time of test	: 10:42:31
Operator	: cmf
Sample	: 30% rtfo
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj471d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188.3	70.0	10.0	10.00	1.47	64.3
2	194.1	70.0	10.0	10.00	1.47	64.3
3	200.0	70.0	10.0	10.00	1.47	64.3
4	205.8	70.0	10.0	10.00	1.47	64.3
5	211.7	70.0	10.0	10.00	1.47	64.3
6	217.5	70.0	10.0	10.00	1.47	64.3
7	223.3	70.0	10.0	10.00	1.47	64.2
8	229.2	70.0	10.0	10.00	1.47	64.2
9	235.0	70.0	10.0	10.00	1.47	64.2
10	240.9	70.0	10.0	10.00	1.47	64.2

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.147 kPa
Mean phase angle	: 64.3 °
Mean complex modulus |G*|	: 1.47 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1.63 kPa
Standard deviation	: 0.00163 kPa
Median	: 1.63 kPa
Confidence Interval (95%)	: 1.63 ... 1.63 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

This sample is found to F A I L at 70.0 °C

Pass/Fail Temperature 67.2 °C

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30% rtfo 3.
Data series	: 3865 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/10/2016
Time of test	: 15:40:09
Operator	: cmf
Sample	: 30% 3
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj492d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188.3	70.0	10.0	10.00	1.65	62.3
2	194.1	70.0	10.0	10.00	1.65	62.3
3	200.0	70.0	10.0	10.00	1.65	62.3
4	205.8	70.0	10.0	10.00	1.65	62.3
5	211.6	70.0	10.0	10.00	1.65	62.3
6	217.5	70.0	10.0	10.00	1.66	62.3
7	223.3	70.0	10.0	10.00	1.66	62.3
8	229.2	70.0	10.0	10.00	1.66	62.3
9	235.0	70.0	10.0	10.00	1.66	62.3
10	240.9	70.0	10.0	10.00	1.66	62.3

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.166 kPa
Mean phase angle	: 62.3 °
Mean complex modulus |G*|	: 1.66 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1.87 kPa
Standard deviation	: 0.000898 kPa
Median	: 1.87 kPa
Confidence Interval (95%)	: 1.87 ... 1.87 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

This sample is found to F A I L at 70.0 °C

Pass/Fail Temperature 68.4 °C

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30% rtfo 3.
Data series	: 3865 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/10/2016
Time of test	: 15:14:20
Operator	: cmf
Sample	: 30% 3
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj492d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188.0	64.0	10.0	10.00	2.97	59.2
2	193.9	64.0	10.0	10.00	2.97	59.2
3	199.7	64.0	10.0	10.00	2.97	59.2
4	205.5	64.0	10.0	10.00	2.97	59.2
5	211.4	64.0	10.0	10.00	2.97	59.2
6	217.2	64.0	10.0	10.00	2.97	59.2
7	223.1	64.0	10.0	10.00	2.97	59.2
8	228.9	64.0	10.0	10.00	2.97	59.2
9	234.8	64.0	10.0	10.00	2.97	59.2
10	240.6	64.0	10.0	10.00	2.97	59.2

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.297 kPa
Mean phase angle	: 59.2 °
Mean complex modulus |G*|	: 2.97 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 3.46 kPa
Standard deviation	: 0.00150 kPa
Median	: 3.46 kPa
Confidence Interval (95%)	: 3.46 ... 3.46 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

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This sample is found to P A S S at 64.0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 64.
Set start temperature of subsequent PAV test to 22 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30% rtfo 2.
Data series	: 3865 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 18/10/2016
Time of test	: 15:03:47
Operator	: cmf
Sample	: 30% 2
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj491d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189.6	64.0	10.0	10.00	2.83	59.6
2	195.4	64.0	10.0	10.00	2.83	59.6
3	201.3	64.0	10.0	10.00	2.83	59.6
4	207.1	64.0	10.0	10.00	2.83	59.6
5	213.0	64.0	10.0	10.00	2.83	59.5
6	218.8	64.0	10.0	10.00	2.83	59.5
7	224.7	64.0	10.0	10.00	2.83	59.5
8	230.5	64.0	10.0	10.00	2.83	59.5
9	236.3	64.0	10.0	10.00	2.83	59.5
10	242.2	64.0	10.0	10.00	2.84	59.5

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.283 kPa
Mean phase angle	: 59.5 °
Mean complex modulus |G*|	: 2.83 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 3.29 kPa
Standard deviation	: 0.00298 kPa
Median	: 3.29 kPa
Confidence Interval (95%)	: 3.28 ... 3.29 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

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This sample is found to P A S S at 64.0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 64.
Set start temperature of subsequent PAV test to 22 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30% rtfo 2.
Data series	: 3865 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 18/10/2016
Time of test	: 15:20:22
Operator	: cmf
Sample	: 30% 2
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj491d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188.3	70.0	10.0	10.00	1.56	62.8
2	194.1	70.0	10.0	10.00	1.56	62.8
3	200.0	70.0	10.0	10.00	1.56	62.8
4	205.8	70.0	10.0	10.00	1.56	62.8
5	211.7	70.0	10.0	10.00	1.56	62.8
6	217.5	70.0	10.0	10.00	1.56	62.8
7	223.3	70.0	10.0	10.00	1.56	62.8
8	229.2	70.0	10.0	10.00	1.56	62.8
9	235.0	70.0	10.0	10.00	1.56	62.8
10	240.9	70.0	10.0	10.00	1.56	62.8

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.156 kPa
Mean phase angle	: 62.8 °
Mean complex modulus |G*|	: 1.56 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1.76 kPa
Standard deviation	: 0.00156 kPa
Median	: 1.76 kPa
Confidence Interval (95%)	: 1.75 ... 1.76 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

This sample is found to F A I L at 70.0 °C

Pass/Fail Temperature 67.8 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30 %pav.or
Data series	: 3865 6
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 07/10/2016
Time of test	: 16:17:02
Operator	: cmf
Sample	: 30%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj479d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	249.6	10.0	10.0	1.00	1930	25.9
2	255.5	10.0	10.0	1.00	1920	25.9
3	261.3	10.0	10.0	1.00	1920	25.9
4	267.1	10.0	10.0	1.00	1920	25.9
5	273.0	10.0	10.0	1.00	1920	26.0
6	278.8	10.0	10.0	1.00	1920	26.0
7	284.7	10.0	10.0	1.00	1920	26.0
8	290.5	10.0	10.0	1.00	1920	26.0
9	296.4	10.0	10.0	1.00	1910	26.0
10	302.2	10.0	10.0	1.00	1910	26.0

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 19.197 kPa
Mean phase angle	: 26.0 °
Mean complex modulus |G*|	: 1920 kPa
Mean temperature lower plate	: 10.0 °C
Mean temperature sample	: 10.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 840 kPa
Standard deviation	: 0.565 kPa
Median	: 840 kPa
Confidence Interval (95%)	: 840 ... 841 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 10.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30 %pav.or
Data series	: 3865 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 07/10/2016
Time of test	: 16:01:12
Operator	: cmf
Sample	: 30%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj479d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	249.6	13.0	10.0	1.00	1470	26.7
2	255.4	13.0	10.0	1.00	1470	26.7
3	261.3	13.0	10.0	1.00	1470	26.8
4	267.1	13.0	10.0	1.00	1470	26.8
5	273.0	13.0	10.0	1.00	1470	26.8
6	278.8	13.0	10.0	1.00	1470	26.8
7	284.7	13.0	10.0	1.00	1470	26.8
8	290.5	13.0	10.0	1.00	1460	26.8
9	296.4	13.0	10.0	1.00	1460	26.8
10	302.2	13.0	10.0	1.00	1460	26.8

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 14.671 kPa
Mean phase angle	: 26.8 °
Mean complex modulus |G*|	: 1470 kPa
Mean temperature lower plate	: 13.0 °C
Mean temperature sample	: 13.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 661 kPa
Standard deviation	: 0.439 kPa
Median	: 661 kPa
Confidence Interval (95%)	: 661 ... 661 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 13.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30 %pav.or
Data series	: 3865 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 07/10/2016
Time of test	: 15:45:31
Operator	: cmf
Sample	: 30%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj479d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	249.6	16.0	10.0	1.00	1120	27.6
2	255.5	16.0	10.0	1.00	1120	27.6
3	261.3	16.0	10.0	1.00	1120	27.6
4	267.1	16.0	10.0	1.00	1120	27.6
5	273.0	16.0	10.0	1.00	1120	27.7
6	278.8	16.0	10.0	1.00	1110	27.7
7	284.7	16.0	10.0	1.00	1110	27.7
8	290.5	16.0	10.0	1.00	1110	27.7
9	296.4	16.0	10.0	1.00	1110	27.7
10	302.2	16.0	10.0	1.00	1110	27.7

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 11.152 kPa
Mean phase angle	: 27.7 °
Mean complex modulus |G*|	: 1110 kPa
Mean temperature lower plate	: 16.0 °C
Mean temperature sample	: 16.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 518 kPa
Standard deviation	: 0.365 kPa
Median	: 517 kPa
Confidence Interval (95%)	: 517 ... 518 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 16.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30 %pav.or
Data series	: 3865 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 07/10/2016
Time of test	: 15:29:55
Operator	: cmf
Sample	: 30%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj479d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	249.6	19.0	10.0	1.00	844	28.5
2	255.5	19.0	10.0	1.00	843	28.5
3	261.3	19.0	10.0	1.00	843	28.6
4	267.1	19.0	10.0	1.00	842	28.6
5	273.0	19.0	10.0	1.00	842	28.6
6	278.8	19.0	10.0	1.00	841	28.6
7	284.7	19.0	10.0	1.00	840	28.6
8	290.5	19.0	10.0	1.00	840	28.6
9	296.4	19.0	10.0	1.00	840	28.6
10	302.2	19.0	10.0	1.00	839	28.6

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 8.415 kPa
Mean phase angle	: 28.6 °
Mean complex modulus |G*|	: 841 kPa
Mean temperature lower plate	: 19.0 °C
Mean temperature sample	: 19.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 402 kPa
Standard deviation	: 0.301 kPa
Median	: 402 kPa
Confidence Interval (95%)	: 402 ... 403 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 19.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30 %pav.or
Data series	: 3865 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 07/10/2016
Time of test	: 15:13:39
Operator	: cmf
Sample	: 30%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj479d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	249.6	22.0	10.0	1.00	629	29.5
2	255.5	22.0	10.0	1.00	628	29.6
3	261.3	22.0	10.0	1.00	628	29.6
4	267.1	22.0	10.0	1.00	627	29.6
5	273.0	22.0	10.0	1.00	627	29.6
6	278.8	22.0	10.0	1.00	627	29.6
7	284.7	22.0	10.0	1.00	626	29.6
8	290.5	22.0	10.0	1.00	626	29.6
9	296.4	22.0	10.0	1.00	626	29.6
10	302.2	22.0	10.0	1.00	625	29.6

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 6.270 kPa
Mean phase angle	: 29.6 °
Mean complex modulus |G*|	: 627 kPa
Mean temperature lower plate	: 22.0 °C
Mean temperature sample	: 22.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 310 kPa
Standard deviation	: 0.252 kPa
Median	: 310 kPa
Confidence Interval (95%)	: 309 ... 310 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 22.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30 %pav.or
Data series	: 3865 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 07/10/2016
Time of test	: 14:44:57
Operator	: cmf
Sample	: 30%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj479d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	249.6	25.0	10.0	1.00	451	31.0
2	255.5	25.0	10.0	1.00	451	31.0
3	261.3	25.0	10.0	1.00	451	31.0
4	267.1	25.0	10.0	1.00	451	31.1
5	273.0	25.0	10.0	1.00	451	31.1
6	278.8	25.0	10.0	1.00	450	31.1
7	284.7	25.0	10.0	1.00	450	31.1
8	290.5	25.0	10.0	1.00	450	31.1
9	296.4	25.0	10.0	1.00	450	31.1
10	302.2	25.0	10.0	1.00	450	31.1

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 4.505 kPa
Mean phase angle	: 31.1 °
Mean complex modulus |G*|	: 450 kPa
Mean temperature lower plate	: 25.0 °C
Mean temperature sample	: 25.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 232 kPa
Standard deviation	: 0.103 kPa
Median	: 232 kPa
Confidence Interval (95%)	: 232 ... 233 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 25.0 °C

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865 OR RTI
Data series	: 3865 OR RTFO 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 16/09/2016
Time of test	: 10:55:36
Operator	: JM
Sample	: 3865 OR RTFO
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj458d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189.3	64.0	10.0	10.00	3.40	75.4
2	195.2	64.0	10.0	10.00	3.40	75.4
3	201.0	64.0	10.0	10.00	3.40	75.4
4	206.8	64.0	10.0	10.00	3.40	75.4
5	212.7	64.0	10.0	10.00	3.39	75.4
6	218.5	64.0	10.0	10.00	3.39	75.4
7	224.4	64.0	10.0	10.00	3.39	75.4
8	230.2	64.0	10.0	10.00	3.39	75.4
9	236.0	64.0	10.0	10.00	3.39	75.4
10	241.9	64.0	10.0	10.00	3.39	75.4

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.339 kPa
Mean phase angle	: 75.4 °
Mean complex modulus |G*|	: 3.39 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 3.51 kPa
Standard deviation	: 0.00169 kPa
Median	: 3.51 kPa
Confidence Interval (95%)	: 3.51 ... 3.51 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

This sample is found to P A S S at 64.0 °C

If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 64.
Set start temperature of subsequent PAV test to 22 °C.

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865 OR RTI
Data series	: 3865 OR RTFO 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 16/09/2016
Time of test	: 11:12:15
Operator	: JM
Sample	: 3865 OR RTFO
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj458d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188.2	70.0	10.0	10.00	1.65	78.6
2	194.1	70.0	10.0	10.00	1.65	78.6
3	199.9	70.0	10.0	10.00	1.65	78.6
4	205.8	70.0	10.0	10.00	1.65	78.6
5	211.6	70.0	10.0	10.00	1.65	78.6
6	217.5	70.0	10.0	10.00	1.65	78.6
7	223.3	70.0	10.0	10.00	1.65	78.6
8	229.1	70.0	10.0	10.00	1.65	78.6
9	235.0	70.0	10.0	10.00	1.65	78.6
10	240.8	70.0	10.0	10.00	1.65	78.6

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.165 kPa
Mean phase angle	: 78.6 °
Mean complex modulus |G*|	: 1.65 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1.68 kPa
Standard deviation	: 0.000210 kPa
Median	: 1.68 kPa
Confidence Interval (95%)	: 1.68 ... 1.68 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

This sample is found to F A I L at 70.0 °C

Pass/Fail Temperature 67.8 °C

Virgen

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865 OR RTI
Data series	: 3865 OR RTFO 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 16/09/2016
Time of test	: 11:12:15
Operator	: JM
Sample	: 3865 OR RTFO Virgen
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj458d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188.2	70.0	10.0	10.00	1.65	78.6
2	194.1	70.0	10.0	10.00	1.65	78.6
3	199.9	70.0	10.0	10.00	1.65	78.6
4	205.8	70.0	10.0	10.00	1.65	78.6
5	211.6	70.0	10.0	10.00	1.65	78.6
6	217.5	70.0	10.0	10.00	1.65	78.6
7	223.3	70.0	10.0	10.00	1.65	78.6
8	229.1	70.0	10.0	10.00	1.65	78.6
9	235.0	70.0	10.0	10.00	1.65	78.6
10	240.8	70.0	10.0	10.00	1.65	78.6

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.165 kPa
Mean phase angle	: 78.6 °
Mean complex modulus |G*|	: 1.65 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1.68 kPa
Standard deviation	: 0.000210 kPa
Median	: 1.68 kPa ✓
Confidence Interval (95%)	: 1.68 ... 1.68 kPa ✓
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

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This sample is found to F A I L at 70.0 °C ✓

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Pass/Fail Temperature 67.8 °C ✓

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Virgen

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3864 OR OR
Data series	: 3864 OR OR PAV 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/09/2016
Time of test	: 15:11:17
Operator	: CMF Virg Orij PAV
Sample	: 3864 OR OR PAV
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj462d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	249.3	25.0	10.0	1.00	2280	40.9
2	255.2	25.0	10.0	1.00	2280	40.9
3	261.0	25.0	10.0	1.00	2280	41.0
4	266.9	25.0	10.0	1.00	2280	41.0
5	272.7	25.0	10.0	1.00	2280	41.0
6	278.5	25.0	10.0	1.00	2280	41.0
7	284.4	25.0	10.0	1.00	2280	41.0
8	290.2	25.0	10.0	1.00	2280	41.0
9	296.1	25.0	10.0	1.00	2280	41.0
10	301.9	25.0	10.0	1.00	2280	41.0

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 22.819 kPa
Mean phase angle	: 41.0 °
Mean complex modulus |G*|	: 2280 kPa
Mean temperature lower plate	: 25.0 °C
Mean temperature sample	: 25.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 1500 kPa
Standard deviation	: 0.338 kPa
Median	: 1500 kPa
Confidence Interval (95%)	: 1500 ... 1500 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 25.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3864 OR OR
Data series	: 3864 OR OR PAV 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/09/2016
Time of test	: 15:43:46
Operator	: CMF
Sample	: 3864 OR OR PAV
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj462d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	19.0	10.0	1.00	5050	37.1
2	256.7	19.0	10.0	1.00	5050	37.1
3	262.6	19.0	10.0	1.00	5050	37.1
4	268.4	19.0	10.0	1.00	5040	37.1
5	274.2	19.0	10.0	1.00	5040	37.1
6	280.1	19.0	10.0	1.00	5040	37.1
7	285.9	19.0	10.0	1.00	5040	37.1
8	291.7	19.0	10.0	1.00	5040	37.2
9	297.6	19.0	10.0	1.00	5030	37.2
10	303.4	19.0	10.0	1.00	5030	37.2

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 50.419 kPa
Mean phase angle	: 37.1 °
Mean complex modulus |G*|	: 5040 kPa
Mean temperature lower plate	: 19.0 °C
Mean temperature sample	: 19.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 3040 kPa
Standard deviation	: 1.73 kPa
Median	: 3040 kPa
Confidence Interval (95%)	: 3040 ... 3040 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 19.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3864 OR OR
Data series	: 3864 OR OR PAV 4
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/09/2016
Time of test	: 15:59:29
Operator	: CMF
Sample	: 3864 OR OR PAV
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj462d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	16.0	10.0	1.00	7320	35.3
2	256.7	16.0	10.0	1.00	7320	35.3
3	262.5	16.0	10.0	1.00	7310	35.4
4	268.4	16.0	10.0	1.00	7310	35.4
5	274.2	16.0	10.0	1.00	7310	35.4
6	280.1	16.0	10.0	1.00	7300	35.4
7	285.9	16.0	10.0	1.00	7300	35.4
8	291.7	16.0	10.0	1.00	7300	35.4
9	297.6	16.0	10.0	1.00	7290	35.4
10	303.4	16.0	10.0	1.00	7290	35.4

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 73.069 kPa
Mean phase angle	: 35.4 °
Mean complex modulus |G*|	: 7310 kPa
Mean temperature lower plate	: 16.0 °C
Mean temperature sample	: 16.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 4230 kPa
Standard deviation	: 1.86 kPa
Median	: 4230 kPa
Confidence Interval (95%)	: 4230 ... 4230 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 16.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3864 OR OR
Data series	: 3864 OR OR PAV 5
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 19/09/2016
Time of test	: 16:15:16
Operator	: CMF
Sample	: 3864 OR OR PAV
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj462d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	13.0	10.0	1.00	10400	33.8
2	256.7	13.0	10.0	1.00	10400	33.8
3	262.5	13.0	10.0	1.00	10400	33.8
4	268.4	13.0	10.0	1.00	10400	33.8
5	274.2	13.0	10.0	1.00	10400	33.9
6	280.1	13.0	10.0	1.00	10400	33.9
7	285.9	13.0	10.0	1.00	10400	33.9
8	291.7	13.0	10.0	1.00	10400	33.9
9	297.6	13.0	10.0	1.00	10400	33.9
10	303.4	13.0	10.0	1.00	10400	33.9

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 103.878 kPa
Mean phase angle	: 33.9 °
Mean complex modulus |G*|	: 10400 kPa
Mean temperature lower plate	: 13.0 °C
Mean temperature sample	: 13.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 5790 kPa
Standard deviation	: 1.56 kPa
Median	: 5780 kPa
Confidence Interval (95%)	: 5780 ... 5790 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to F A I L at 13.0 °C

Pass/Fail Temperature 14.4 °C

Virgen Chova

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865 OR OR.
Data series	: 3865 OR OR 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/09/2016
Time of test	: 15:25:53
Operator	: CMF Virgen
Sample	: 3865 OR OR
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj463d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145.2	64.0	10.0	12.00	1.29	82.4
2	147.1	64.0	10.0	12.00	1.29	82.4
3	149.1	64.0	10.0	12.00	1.29	82.4
4	151.0	64.0	10.0	12.00	1.29	82.4
5	153.0	64.0	10.0	12.00	1.29	82.4
6	154.9	64.0	10.0	12.00	1.29	82.4
7	156.9	64.0	10.0	12.00	1.29	82.4
8	158.8	64.0	10.0	12.00	1.29	82.4
9	160.8	64.0	10.0	12.00	1.29	82.4
10	162.7	64.0	10.0	12.00	1.29	82.4

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 0.154 kPa
Mean phase angle	: 82.4 °
Mean complex modulus |G*|	: 1.29 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1.30 kPa
Standard deviation	: 0.000542 kPa
Median	: 1.30 kPa
Confidence Interval (95%)	: 1.30 ... 1.30 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

This sample is found to P A S S at 64.0 °C

If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 64.
Set start temperature of subsequent RTFO test to 64 °C.

Virgen

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865 OR OR.
Data series	: 3865 OR OR 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 20/09/2016
Time of test	: 15:45:15
Operator	: CMF
Sample	: 3865 OR OR Virgen
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj463d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	145.4	70.0	10.0	12.00	0.618	84.5
2	147.4	70.0	10.0	12.00	0.618	84.5
3	149.3	70.0	10.0	12.00	0.618	84.5
4	151.3	70.0	10.0	12.00	0.618	84.5
5	153.2	70.0	10.0	12.00	0.618	84.5
6	155.2	70.0	10.0	12.00	0.618	84.5
7	157.1	70.0	10.0	12.00	0.618	84.5
8	159.1	70.0	10.0	12.00	0.618	84.5
9	161.0	70.0	10.0	12.00	0.618	84.5
10	163.0	70.0	10.0	12.00	0.618	84.5

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 0.074 kPa
Mean phase angle	: 84.5 °
Mean complex modulus |G*|	: 0.618 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 0.621 kPa
Standard deviation	: 0.000104 kPa
Median	: 0.621 kPa
Confidence Interval (95%)	: 0.621 ... 0.621 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

This sample is found to F A I L at 70.0 °C

Pass/Fail Temperature 66.1 °C

AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\0%.orx
Data series	: 3865 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 05/10/2016
Time of test	: 10:49:04
Operator	: CMF
Sample	: 0% original
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj477d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146.5	64.0	10.0	12.00	19.5	61.1
2	148.4	64.0	10.0	12.01	19.5	61.1
3	150.4	64.0	10.0	12.00	19.5	61.1
4	152.3	64.0	10.0	12.00	19.5	61.1
5	154.3	64.0	10.0	12.01	19.5	61.1
6	156.2	64.0	10.0	11.99	19.5	61.1
7	158.2	64.0	10.0	12.01	19.5	61.1
8	160.1	64.0	10.0	12.00	19.5	61.1
9	162.1	64.0	10.0	12.01	19.5	61.1
10	164.0	64.0	10.0	12.00	19.5	61.1

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 2.340 kPa
Mean phase angle	: 61.1 °
Mean complex modulus |G*|	: 19.5 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 22.3 kPa
Standard deviation	: 0.0333 kPa
Median	: 22.3 kPa
Confidence Interval (95%)	: 22.2 ... 22.3 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

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This sample is found to P A S S at 64.0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 64.
Set start temperature of subsequent RTFO test to 64 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\ORIGINAL 0%
Data series	: ORIGINAL 0% 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 27/09/2016
Time of test	: 15:18:57
Operator	: JH.M
Sample	: ORIGINAL 0%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj470d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146.5	64.0	10.0	12.00	18.9	61.7
2	148.4	64.0	10.0	12.00	18.9	61.7
3	150.4	64.0	10.0	12.00	18.9	61.7
4	152.3	64.0	10.0	12.00	18.8	61.7
5	154.3	64.0	10.0	12.00	18.8	61:7
6	156.2	64.0	10.0	12.00	18.8	61.7
7	158.2	64.0	10.0	12.00	18.8	61.7
8	160.1	64.0	10.0	12.00	18.8	61.7
9	162.1	64.0	10.0	12.00	18.8	61.7
10	164.0	64.0	10.0	12.00	18.8	61.7

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 2.261 kPa
Mean phase angle	: 61.7 °
Mean complex modulus |G*|	: 18.8 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 21.4 kPa
Standard deviation	: 0.0267 kPa
Median	: 21.4 kPa
Confidence Interval (95%)	: 21.4 ... 21.4 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

==========

This sample is found to P A S S at 64.0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 64.
Set start temperature of subsequent RTFO test to 64 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\ORIGINAL 0%
Data series	: ORIGINAL 0% 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 27/09/2016
Time of test	: 15:39:28
Operator	: JH.M
Sample	: ORIGINAL 0%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj470d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146.8	70.0	10.0	12.00	9.80	65.0
2	148.7	70.0	10.0	12.00	9.79	65.0
3	150.7	70.0	10.0	12.00	9.79	65.0
4	152.6	70.0	10.0	12.00	9.79	65.0
5	154.5	70.0	10.0	12.00	9.79	65.0
6	156.5	70.0	10.0	12.00	9.79	65.0
7	158.4	70.0	10.0	12.00	9.79	65.0
8	160.4	70.0	10.0	12.00	9.79	65.0
9	162.3	70.0	10.0	12.00	9.79	65.0
10	164.3	70.0	10.0	12.00	9.79	65.0

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 1.175 kPa
Mean phase angle	: 65.0 °
Mean complex modulus |G*|	: 9.79 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 10.8 kPa
Standard deviation	: 0.00405 kPa
Median	: 10.8 kPa
Confidence Interval (95%)	: 10.8 ... 10.8 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

==========

This sample is found to P A S S at 70.0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 70.
Set start temperature of subsequent RTFO test to 70 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\0%.orx
Data series	: 3865 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 05/10/2016
Time of test	: 11:10:17
Operator	: CMF
Sample	: 0% original
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj477d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146.7	70.0	10.0	11.99	10.3	64.1
2	148.7	70.0	10.0	12.01	10.3	64.2
3	150.6	70.0	10.0	11.99	10.3	64.2
4	152.6	70.0	10.0	12.01	10.3	64.2
5	154.5	70.0	10.0	12.00	10.3	64.2
6	156.5	70.0	10.0	12.00	10.2	64.2
7	158.4	70.0	10.0	12.00	10.2	64.2
8	160.4	70.0	10.0	12.01	10.2	64.2
9	162.3	70.0	10.0	11.99	10.2	64.2
10	164.3	70.0	10.0	12.01	10.2	64.2

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 1.230 kPa
Mean phase angle	: 64.2 °
Mean complex modulus |G*|	: 10.3 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 11.4 kPa
Standard deviation	: 0.00726 kPa
Median	: 11.4 kPa
Confidence Interval (95%)	: 11.4 ... 11.4 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

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This sample is found to P A S S at 70.0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 70.
Set start temperature of subsequent RTFO test to 70 °C.

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AASHTO T315 Original Binder RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\0%.orx
Data series	: 3865 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 05/10/2016
Time of test	: 11:25:49
Operator	: CMF
Sample	: 0% original
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj477d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	146.7	76.0	10.0	12.00	5.34	67.7
2	148.7	76.0	10.0	12.00	5.34	67.7
3	150.6	76.0	10.0	12.00	5.34	67.7
4	152.6	76.0	10.0	12.00	5.34	67.7
5	154.5	76.0	10.0	12.00	5.34	67.7
6	156.5	76.0	10.0	12.00	5.34	67.7
7	158.4	76.0	10.0	12.00	5.34	67.7
8	160.4	76.0	10.0	12.00	5.34	67.7
9	162.3	76.0	10.0	12.00	5.34	67.7
10	164.3	76.0	10.0	12.01	5.34	67.7

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 12.00 %
Mean stress amplitude	: 0.641 kPa
Mean phase angle	: 67.7 °
Mean complex modulus |G*|	: 5.34 kPa
Mean temperature lower plate	: 76.0 °C
Mean temperature sample	: 76.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 5.77 kPa
Standard deviation	: 0.000567 kPa
Median	: 5.77 kPa
Confidence Interval (95%)	: 5.77 ... 5.77 kPa

AASHTO T315 ORIG. BINDER PERF. CRIT.: |G*|/sin(delta) >= 1.00 kPa

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This sample is found to P A S S at 76.0 °C

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If this is the highest tested Original Binder temperature which passes, the starting performance grade for RTFO test is 76.
Set start temperature of subsequent RTFO test to 76 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\rtfo %.orx
Data series	: Grading: RTFO RESIDUE 160923 1016 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/09/2016
Time of test	: 10:16:48
Operator	: cmf
Sample	: rtfo 0%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj465d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189.3	64.0	10.0	10.00	37.3	55.0
2	195.2	64.0	10.0	10.00	37.3	55.0
3	201.0	64.0	10.0	10.00	37.2	55.0
4	206.8	64.0	10.0	10.00	37.2	55.1
5	212.7	64.0	10.0	10.00	37.2	55.1
6	218.5	64.0	10.0	10.00	37.2	55.1
7	224.4	64.0	10.0	10.00	37.2	55.1
8	230.2	64.0	10.0	10.00	37.2	55.1
9	236.0	64.0	10.0	10.00	37.2	55.1
10	241.9	64.0	10.0	10.00	37.2	55.1

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 3.722 kPa
Mean phase angle	: 55.1 °
Mean complex modulus |G*|	: 37.2 kPa
Mean temperature lower plate	: 64.0 °C
Mean temperature sample	: 64.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 45.4 kPa
Standard deviation	: 0.0641 kPa
Median	: 45.4 kPa
Confidence Interval (95%)	: 45.3 ... 45.4 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

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This sample is found to P A S S at 64.0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 64.
Set start temperature of subsequent PAV test to 22 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\rtfo %.orx
Data series	: Grading: RTFO RESIDUE 160923 1033 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/09/2016
Time of test	: 10:33:27
Operator	: cmf
Sample	: rtfo 0%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj465d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189.6	70.0	10.0	10.00	20.9	57.3
2	195.4	70.0	10.0	10.00	20.9	57.4
3	201.3	70.0	10.0	10.00	20.9	57.4
4	207.1	70.0	10.0	10.00	20.9	57.4
5	212.9	70.0	10.0	10.00	20.9	57.4
6	218.8	70.0	10.0	10.00	20.9	57.4
7	224.6	70.0	10.0	10.00	20.9	57.4
8	230.5	70.0	10.0	10.00	20.9	57.4
9	236.3	70.0	10.0	10.00	20.9	57.4
10	242.1	70.0	10.0	10.00	20.9	57.4

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 2.091 kPa
Mean phase angle	: 57.4 °
Mean complex modulus |G*|	: 20.9 kPa
Mean temperature lower plate	: 70.0 °C
Mean temperature sample	: 70.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 24.8 kPa
Standard deviation	: 0.0132 kPa
Median	: 24.8 kPa
Confidence Interval (95%)	: 24.8 ... 24.8 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

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This sample is found to P A S S at 70.0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 70.
Set start temperature of subsequent PAV test to 28 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\rtfo %.orx
Data series	: Grading: RTFO RESIDUE 160923 1050 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/09/2016
Time of test	: 10:50:23
Operator	: cmf
Sample	: rtfo 0%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj465d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189.6	76.0	10.0	10.00	11.5	60.4
2	195.4	76.0	10.0	10.00	11.5	60.4
3	201.3	76.0	10.0	10.00	11.5	60.4
4	207.1	76.0	10.0	10.00	11.5	60.4
5	213.0	76.0	10.0	10.00	11.5	60.4
6	218.8	76.0	10.0	10.00	11.5	60.4
7	224.7	76.0	10.0	10.00	11.5	60.4
8	230.5	76.0	10.0	10.00	11.5	60.4
9	236.3	76.0	10.0	10.00	11.5	60.4
10	242.2	76.0	10.0	10.00	11.5	60.4

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 1.154 kPa
Mean phase angle	: 60.4 °
Mean complex modulus |G*|	: 11.5 kPa
Mean temperature lower plate	: 76.0 °C
Mean temperature sample	: 76.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 13.3 kPa
Standard deviation	: 0.00133 kPa
Median	: 13.3 kPa
Confidence Interval (95%)	: 13.3 ... 13.3 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

This sample is found to P A S S at 76.0 °C

If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 76.
Set start temperature of subsequent PAV test to 31 °C.

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\rtfo %.orx
Data series	: Grading: RTFO RESIDUE 160923 1107 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/09/2016
Time of test	: 11:07:11
Operator	: cmf
Sample	: rtfo 0%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj465d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189.6	82.0	10.0	10.00	6.27	63.9
2	195.4	82.0	10.0	10.00	6.27	63.8
3	201.3	82.0	10.0	10.00	6.27	63.8
4	207.1	82.0	10.0	10.00	6.27	63.8
5	213.0	82.0	10.0	10.00	6.27	63.8
6	218.8	82.0	10.0	10.00	6.28	63.8
7	224.7	82.0	10.0	10.00	6.28	63.8
8	230.5	82.0	10.0	10.00	6.28	63.8
9	236.3	82.0	10.0	10.00	6.28	63.8
10	242.2	82.0	10.0	10.00	6.28	63.8

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.627 kPa
Mean phase angle	: 63.8 °
Mean complex modulus |G*|	: 6.28 kPa
Mean temperature lower plate	: 82.0 °C
Mean temperature sample	: 82.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 6.99 kPa
Standard deviation	: 0.00251 kPa
Median	: 6.99 kPa
Confidence Interval (95%)	: 6.99 ... 6.99 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

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This sample is found to P A S S at 82.0 °C

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If this is the highest tested RTFO temperature which passes, the resulting upper performance grade value is 82.
Set start temperature of subsequent PAV test to 34 °C.

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AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\rtfo %.orx
Data series	: Grading: RTFO RESIDUE 160923 1123 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/09/2016
Time of test	: 11:23:58
Operator	: cmf
Sample	: rtfo 0%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj465d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	189.6	88.0	10.0	10.00	3.39	67.6
2	195.4	88.0	10.0	10.00	3.39	67.6
3	201.3	88.0	10.0	10.00	3.39	67.6
4	207.1	88.0	10.0	10.00	3.39	67.6
5	213.0	88.0	10.0	10.00	3.39	67.6
6	218.8	88.0	10.0	10.00	3.39	67.6
7	224.7	88.0	10.0	10.00	3.39	67.6
8	230.5	88.0	10.0	10.00	3.39	67.6
9	236.3	88.0	10.0	10.00	3.39	67.6
10	242.2	88.0	10.0	10.00	3.39	67.6

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.339 kPa
Mean phase angle	: 67.6 °
Mean complex modulus |G*|	: 3.39 kPa
Mean temperature lower plate	: 88.0 °C
Mean temperature sample	: 88.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 3.67 kPa
Standard deviation	: 0.00164 kPa
Median	: 3.67 kPa
Confidence Interval (95%)	: 3.66 ... 3.67 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

This sample is found to P A S S at 88.0 °C

AASHTO T315 RTFO RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\rtfo %.orx
Data series	: Grading: RTFO RESIDUE 160923 1144 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 23/09/2016
Time of test	: 11:44:32
Operator	: cmf
Sample	: rtfo 0%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot2; Adj465d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP25/PE-SN17059
Diameter	: 25.03 mm
Gap	: 1.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	188.3	94.0	10.0	10.00	1.82	71.4
2	194.1	94.0	10.0	10.00	1.82	71.4
3	200.0	94.0	10.0	10.00	1.83	71.4
4	205.8	94.0	10.0	10.00	1.83	71.4
5	211.7	94.0	10.0	10.00	1.83	71.4
6	217.5	94.0	10.0	10.00	1.83	71.3
7	223.3	94.0	10.0	10.00	1.83	71.3
8	229.2	94.0	10.0	10.00	1.83	71.3
9	235.0	94.0	10.0	10.00	1.83	71.3
10	240.9	94.0	10.0	10.00	1.83	71.3

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 10.00 %
Mean stress amplitude	: 0.183 kPa
Mean phase angle	: 71.3 °
Mean complex modulus |G*|	: 1.83 kPa
Mean temperature lower plate	: 94.0 °C
Mean temperature sample	: 94.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|/sin(delta)	: 1.93 kPa
Standard deviation	: 0.000710 kPa
Median	: 1.93 kPa
Confidence Interval (95%)	: 1.93 ... 1.93 kPa
AASHTO T315 RTFO PERFORMANCE CRIT.	: |G*|/sin(delta) >= 2.20 kPa

==========

This sample is found to F A I L at 94.0 °C

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The test temperature is not according to AASHTO T315!

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Pass/Fail Temperature 92.8 °C

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AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\0%.orx
Data series	: 3865 1
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 05/10/2016
Time of test	: 15:27:54
Operator	: CMF
Sample	: 0%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj478d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	25.0	10.0	1.00	6200	31.5
2	256.7	25.0	10.0	1.00	6190	31.5
3	262.6	25.0	10.0	1.00	6190	31.5
4	268.4	25.0	10.0	1.00	6180	31.5
5	274.3	25.0	10.0	1.00	6180	31.5
6	280.1	25.0	10.0	1.00	6180	31.6
7	285.9	25.0	10.0	1.00	6170	31.6
8	291.8	25.0	10.0	1.00	6170	31.6
9	297.6	25.0	10.0	1.00	6170	31.6
10	303.5	25.0	10.0	1.00	6170	31.6

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 61.810 kPa
Mean phase angle	: 31.5 °
Mean complex modulus |G*|	: 6180 kPa
Mean temperature lower plate	: 25.0 °C
Mean temperature sample	: 25.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 3230 kPa
Standard deviation	: 1.00 kPa
Median	: 3230 kPa
Confidence Interval (95%)	: 3230 ... 3230 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

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This sample is found to P A S S at 25.0 °C

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AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\0%.orx
Data series	: 3865 2
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 05/10/2016
Time of test	: 15:44:31
Operator	: CMF
Sample	: 0%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj478d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	22.0	10.0	1.00	8560	30.2
2	256.7	22.0	10.0	1.00	8550	30.2
3	262.6	22.0	10.0	1.00	8550	30.2
4	268.4	22.0	10.0	1.00	8540	30.2
5	274.3	22.0	10.0	1.00	8540	30.2
6	280.1	22.0	10.0	1.00	8530	30.3
7	285.9	22.0	10.0	1.00	8530	30.3
8	291.8	22.0	10.0	1.00	8530	30.3
9	297.6	22.0	10.0	1.00	8520	30.3
10	303.5	22.0	10.0	1.00	8520	30.3

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 85.379 kPa
Mean phase angle	: 30.2 °
Mean complex modulus |G*|	: 8540 kPa
Mean temperature lower plate	: 22.0 °C
Mean temperature sample	: 22.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 4300 kPa
Standard deviation	: 1.10 kPa
Median	: 4300 kPa
Confidence Interval (95%)	: 4300 ... 4300 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

This sample is found to P A S S at 22.0 °C

AASHTO T315 PAV RHEOPLUS/32 V3.62 21004242-33025

TEST PARAMETERS:

File name	: C:\Users\usuario\Documents\Anton Paar\Rheoplus\0%.orx
Data series	: 3865 3
Used measuring points	: I 2, P 11 ... I 2, P 20
Date of test	: 05/10/2016
Time of test	: 16:00:44
Operator	: CMF
Sample	: 0%
Remark	:
Measuring device	: MCR301 SN80526902; FW3.55; Slot3; Adj478d
Temperature control unit	: TU1=P-PTD200+H-PTD120-SN80517412-80520108
Measuring system	: PP08/PE-SN13071
Diameter	: 8.00 mm
Gap	: 2.000 mm

MEASURING DATA:

No. [1]	Time [s]	Temp. [°C]	Freq. [rad/s]	Deform. [%]	|G*| [kPa]	delta [°]
1	250.9	19.0	10.0	1.00	11700	29.0
2	256.7	19.0	10.0	1.00	11700	29.0
3	262.6	19.0	10.0	1.00	11700	29.0
4	268.4	19.0	10.0	1.00	11600	29.0
5	274.2	19.0	10.0	1.00	11600	29.0
6	280.1	19.0	10.0	1.00	11600	29.0
7	285.9	19.0	10.0	1.00	11600	29.1
8	291.8	19.0	10.0	1.00	11600	29.1
9	297.6	19.0	10.0	1.00	11600	29.1
10	303.5	19.0	10.0	1.00	11600	29.1

TEST RESULTS:

Mean frequency	: 10.0 rad/s = 1.59 Hz
Mean strain amplitude	: 1.00 %
Mean stress amplitude	: 116.414 kPa
Mean phase angle	: 29.0 °
Mean complex modulus |G*|	: 11600 kPa
Mean temperature lower plate	: 19.0 °C
Mean temperature sample	: 19.0 °C

EVALUATION RESULTS:

Number of data points	: 10
|G*|·sin(delta)	: 5650 kPa
Standard deviation	: 0.679 kPa
Median	: 5650 kPa
Confidence Interval (95%)	: 5650 ... 5650 kPa
AASHTO T315 PAV PERFORMANCE CRIT.	: |G*|·sin(delta) <= 5000 kPa

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This sample is found to F A I L at 19.0 °C

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Pass/Fail Temperature 20.3 °C

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Contenido orgánico

Muestra N°					
Descripción					
N° en tabla					

Abrasión

Muestra N°					
Descripción					
Tipo de gradación					
N° de revoluciones					
Masa inicial					
Masa retenida tam N°12					

Peso unitario del grueso

Muestra N°					
Descripción					
Masa del molde					
Volumen del molde					
Molde + mat. Compacto					
Molde + mat. Suelto					

Peso unitario del fino

Muestra N°					
Descripción					
Masa del molde					
Volumen del molde					
Molde + mat. Compacto					
Molde + mat. Suelto					

Humedad natural de los agregados

Muestra N°					
Descripción					
Masa inicial					
Masa seca					

Gravedad especifica y absorción del agregado grueso

Muestra N°	3/4 (3032,7	3/8 (#4)	Serena (#4)		
Descripción			-5%		
Masa SSS	2988,3	1132,4	No SPLICS		
Masa de la muestra seca	2920,7				
Masa sumergida en agua	1849,0	703,0			

Gravedad especifica y absorción del agregado fino

Muestra N°	3/8	Arena			
Descripción Masa Picn + Agua	658,56	647,92			
Masa matraz	161,2	150,2			
Matraz + agua + muestra	969,18	959,98			
Masa SSS	500,8	507,2			
Masa de la muestra seca	483,2 | 488,7	488,3 | 489,7			

Partículas alargadas yplanas

Muestra N°					
Descripción					
Partículas alargadas					
Partículas planas					
Partículas alargadas y planas					

Equivalente de arena

Muestra N°					
Descripción					
Lectura inicial					
Lectura final					

Material fino que pasa el tamiz 200

Muestra N°					
Descripción					
Masa inicial					
Masa final					

Deletéreos del agregado fino

Muestra N°					
Descripción					
Masa muestra seca					
Masa partículas livianas					

Deletéreos del agregado grueso

Muestra N°					
Descripción					
Masa muestra seca					
Masa partículas livianas					

Laboratorista

Contenido orgánico

Muestra N°				
Descripción				
N° en tabla				

Abrasión

Muestra N°				
Descripción				
Tipo de gradación				
N° de revoluciones				
Masa inicial				
Masa retenida tam N°12				

Peso unitario del grueso

Muestra N°				
Descripción				
Masa del molde				
Volumen del molde				
Molde + mat. Compacto				
Molde + mat. Suelto				

Peso unitario del fino

Muestra N°				
Descripción				
Masa del molde				
Volumen del molde				
Molde + mat. Compacto				
Molde + mat. Suelto				

Humedad natural de los agregados

Muestra N°				
Descripción				
Masa inicial				
Masa seca				

Gravedad especifica y absorción del agregado grueso

Muestra N°				
Descripción	3/4 (3032)	3/8 (#9)	Sobreno (#4)	
Masa SSS	2988,3	1132,4	-5%	
Masa de la muestra seca	2920,7		No SPLICO	
Masa sumergida en agua	1849,0	703,0		

Gravedad especifica y absorción del agregado fino

Muestra N°				
Descripción	3/8 Masa Picn + Agua		Arena	
Masa matraz	658,56		647,92	
Matraz + agua + muestra	161,2		150,2	
Masa SSS	969,18		959,98	
Masa de la muestra seca	500,3		507,2	
	483,2	488,7	488,3	489,7

Partículas alargadas yplanas

Muestra N°				
Descripción				
Partículas alargadas				
Partículas planas				
Partículas alargadas y planas				

Equivalente de arena

Muestra N°				
Descripción				
Lectura inicial				
Lectura final				

Material fino que pasa el tamiz 200

Muestra N°				
Descripción				
Masa inicial				
Masa final				

Deletéreos del agregado fino

Muestra N°				
Descripción				
Masa muestra seca				
Masa particulas livianas				

Deletéreos del agregado grueso

Muestra N°				
Descripción				
Masa muestra seca				
Masa particulas livianas				

Laboratorista

Contenido orgánico

Muestra N°					
Descripción					
N° en tabla					

Abrasión

Muestra N°					
Descripción					
Tipo de gradación					
N° de revoluciones					
Masa inicial					
Masa retenida tam N°12					

Peso unitario del grueso

Muestra N°					
Descripción					
Masa del molde					
Volumen del molde					
Molde + mat. Compacto					
Molde + mat. Suelto					

Peso unitario del fino

Muestra N°					
Descripción					
Masa del molde					
Volumen del molde					
Molde + mat. Compacto					
Molde + mat. Suelto					

Humedad natural de los agregados

Muestra N°					
Descripción					
Masa inicial					
Masa seca					

Gravedad especifica y absorción del agregado grueso

Muestra N°	3/4 (30327)	3/8 (#9)	Zarandeo (#4)		
Descripción			-5%		
Masa SSS	2988,3	1132,4	NO DPLICO		
Masa de la muestra seca	2920,7				
Masa sumergida en agua	1849,0	703,0			

Gravedad especifica y absorción del agregado fino

Muestra N°	3/8	Arena			
Descripción Matraz Pion + Agua	658,56	647,92			
Masa matraz	161,2	150,2			
Matraz + agua + muestra	969,18	959,98			
Masa SSS	500,3	507,2			
Masa de la muestra seca	483,2 | 488,7	488,3 | 489,7			

Partículas alargadas yplanas

Muestra N°					
Descripción					
Partículas alargadas					
Partículas planas					
Partículas alargadas y planas					

Equivalente de arena

Muestra N°					
Descripción					
Lectura inicial					
Lectura final					

Material fino que pasa el tamiz 200

Muestra N°					
Descripción					
Masa inicial					
Masa final					

Deletéreos del agregado fino

Muestra N°					
Descripción					
Masa muestra seca					
Masa partículas livianas					

Deletéreos del agregado grueso

Muestra N°					
Descripción					
Masa muestra seca					
Masa partículas livianas					

Laboratorista

ÁREA DE PAVIMENTOS

ANÁLISIS POR TAMIZADO DE AGREGADOS GRUESOS Y FINOS

NORMA: AASHTO T 27-06			**ORDEN:**	**HOJA:**	

CLIENTE:				**SOLICITA:**	
PROYECTO:				**FISCALIZA:**	
UBICACIÓN:				**CONSTRUYE:**	
PROVINCIA:		**CANTÓN:**		**EMISIÓN:**	

ID MUESTRA:					
MEZCLA:				**FECHA ELAB:**	
ORIGEN MUESTRA:					
MÉTODO:		**MUESTREO:**		**POR:**	
CONDICIÓN MUESTRA:					
RECEPCIÓN:		**POR:**		**ENSAYO:**	

¿SE HA LAVADO LA MUESTRA CONFORME AASHTO T 11?	NO

3/4

B	9870	Masa seca original de la muestra [g]
C		Masa seca después del lavado de la muestra [g]
A		Porcentaje de material más fino que 75 µm [(B-C)/B]x100

Seco 3/4

	Tamaño [mm]	Masa Ret. [g]	M. Ret. Ac. [g]	Retenido Acum. [%]	Pasa [%]
1½"	37,5	—			
1"	25	—			
¾"	19,0	1211,0			
	16,0				
	13,2				
½"	12,5	5780,0			
⅜"	9,5	1937,5			
4"	4,75	466.7			
8	2,36	39,9			
16	1,18	23,4			
30	0,600	21,6			
50	0,300	42,8			
100	0,150	87,4			
#200	0,075	99,7			
	130,8		**Módulo de finura**		

Pasa 4" (445.9)
Suma 445.3 finos.

COMENTARIOS SOBRE EL ENSAYO:

MEI

Andrés Muñoz	Ing. Jorge Albuja	Ing. Guillermo Realpe
Responsable de Ensayos	**Responsable Pavimentos**	**Director LMC**

ÁREA DE PAVIMENTOS 3/4

ANÁLISIS POR TAMIZADO DE AGREGADOS GRUESOS Y FINOS

NORMA: AASHTO T 27-06		ORDEN:		HOJA:	
CLIENTE:				SOLICITA:	
PROYECTO:				FISCALIZA:	
UBICACIÓN:				CONSTRUYE:	
PROVINCIA:		CANTÓN:		EMISIÓN:	
ID MUESTRA:					
MEZCLA:				FECHA ELAB:	
ORIGEN MUESTRA:					
MÉTODO:		MUESTREO:		POR:	
CONDICIÓN MUESTRA:					
RECEPCIÓN:		POR:		ENSAYO:	

¿SE HA LAVADO LA MUESTRA CONFORME AASHTO T 11?	NO

Mojado

B	10965	Masa seca original de la muestra [g]
C		Masa seca después del lavado de la muestra [g]
A		Porcentaje de material más fino que 75 µm [(B-C)/B]x100

	Tamaño [mm]	Masa Ret. [g]	M. Ret. Ac. [g]	Retenido Acum. [%]	Pasa [%]
1 1/2	37,5				
1	25				
3/4	19,0	1481,2			
	16,0				
	13,2				
1/2	12,5	5690,0			
3/8	9,5	3286,6			
4	4,75	852,4			
8	2,36	· 11,5			
16	1,18	· 6,9			
30	0,600	· 8,4			
50	0,300	· 22,1			
100	0,150	· 29,4			
200	0,075	· 22,0			
	· 26,4		Módulo de finura		

Pasa 4 (146.1) Mojado
Pasa #4 138,5 Seco
Pasa #4 137,0 Tamizado

COMENTARIOS SOBRE EL ENSAYO:

MEI

Andrés Muñoz	Ing. Jorge Albuja	Ing. Guillermo Realpe
Responsable de Ensayos	**Responsable Pavimentos**	**Director LMC**

(1)

AREA DE PAVIMENTOS
HOJA DE CAMPO
ANALISIS GRANULOMETRICO DE AGREGADOS FINO Y GRUESOS
ASTM C 136-05 - AASHTO T 27-06

HOJA N° _____
N° DE ORDEN _____

		(1) DESCRIPCION DE LAS MUESTRAS			
MUESTRA N°		3/4	3/8	ARENA	
DESCRIPCION		2650,8 2612,8 3/4	1202.3 1203.9 3/8	ARENA 1259,7 1058,4	
TAMIZ N°	ABERTURA (mm)	PESO RETENIDO gramos	PESO RETENIDO gramos	PESO RETENIDO gramos	PESO RETENIDO gramos
MASA INICIAL SECA				—	
2 1/2"	62.5	—	—	—	
2"	50	—	—	—	
1 1/2"	37.5	—	—	—	
1"	25	—	—	—	
3/4"	19	462.4	—	—	
1/2"	12.5	1515.8	4.4	—	
3/8"	9.5	369.0	24.7	4,5	
4	4.75	179.2	298.9	6.1	
PASA 4		86.5	876.4	1048.3	
8	2.36	13.8	223,0	253,9	
16	1.18	5.4	216.7	218,1	
30	0.6	5.7	193.3	155,9	
50	0.3	10.9	116.8	142,2	
100	0.15	19.5	69.5	139,9	
200	0.075	21.7	47.6	119,5	
PASA N°200		9.2	8.4	18,2	
EJECUTADO POR					
FECHA					

TAMIZ N°	ABERTURA (mm)	MASAS MINIMAS gramos
2"	50	20000
1 1/2"	37.5	15000
1"	25	10000
3/4"	19	5000
1/2"	12.5	2000
3/8"	9.5	1000

REALIZA IFORME: _____

(2)

AREA DE PAVIMENTOS
HOJA DE CAMPO
ANALISIS GRANULOMETRICO DE AGREGADOS FINO Y GRUESOS
ASTM C 136-05 - AASHTO T 27-06

HOJA N° _____
N° DE ORDEN _____

		(2) DESCRIPCION DE LAS MUESTRAS			
MUESTRA N°		3/4	3/8	Arena	
DESCRIPCION		~~2536~~ 2531.6 2502.4	1183.3 1093.3	1021.9 869.6	
TAMIZ N°	ABERTURA (mm)	PESO RETENIDO gramos	PESO RETENIDO gramos	PESO RETENIDO gramos	PESO RETENIDO gramos
MASA INICIAL SECA					
2 1/2"	62.5	—	—	—	
2"	50	—	—	—	
1 1/2"	37.5	—	—	—	
1"	25	—	—	—	
3/4"	19	386.8	—	—	
1/2"	12.5	1487.8	—	—	
3/8"	9.5	422.0	16.4	4.2	
4	4.75	146.5	249.0	4.2	
PASA 4		60.2	828.1	861.4	
8	2.36	8.9	243.3	197.9	
16	1.18	3.8	206.8	174.6	
30	0.6	3.1	162,6	128,7	
50	0.3	6.4	98,1	119,5	
100	0.15	13.6	61,1	117,5	
200	0.075	16.8	43,1	99,5	
PASA N°200		8,1	12,4	22,7	
EJECUTADO POR					
FECHA					

TAMIZ N°	ABERTURA (mm)	MASAS MINIMAS gramos
2"	50	20000
1 1/2"	37.5	15000
1"	25	10000
3/4"	19	5000
1/2"	12.5	2000
3/8"	9.5	1000

REALIZA IFORME: _____

(37)

AREA DE PAVIMENTOS
HOJA DE CAMPO
ANALISIS GRANULOMETRICO DE AGREGADOS FINO Y GRUESOS
ASTM C 136-05 - AASHTO T 27-06

HOJA N° _____
N° DE ORDEN _____

		DESCRIPCION DE LAS MUESTRAS			
MUESTRA N°					
DESCRIPCION			3/8 SECO 1073.0 gr.	ARENA SECO 1019.3	
TAMIZ N°	ABERTURA (mm)	PESO RETENIDO gramos	PESO RETENIDO gramos	PESO RETENIDO gramos	PESO RETENIDO gramos
MASA INICIAL SECA					
2 1/2"	62.5		—	—	
2"	50		—	—	
1 1/2"	37.5		—	—	
1"	25		—	—	
3/4"	19		—	—	
1/2"	12.5		—	—	
3/8"	9.5		29.9	4,0	
4	4.75		278,2	4,8	
PASA 4			764,1	1010,1	
8	2.36		171,2	250,5	
16	1.18		189,5	211,7	
30	0.6		158,1	149,9	
50	0.3		105,2	132,9	
100	0.15		58,0	129,6	
200	0.075		41,0	111,4	
PASA N°200			40,5	22,9	
EJECUTADO POR					
FECHA					

TAMIZ N°	ABERTURA (mm)	MASAS MINIMAS gramos
2"	50	20000
1 1/2"	37.5	15000
1"	25	10000
3/4"	19	5000
1/2"	12.5	2000
3/8"	9.5	1000

REALIZA IFORME: _____

ÁREA DE PAVIMENTOS

ANÁLISIS POR TAMIZADO DE AGREGADOS GRUESOS Y FINOS

NORMA: AASHTO T 27-06		ORDEN:		HOJA:	
CLIENTE:				SOLICITA:	
PROYECTO:				FISCALIZA:	
UBICACIÓN:				CONSTRUYE:	
PROVINCIA:		CANTÓN:		EMISIÓN:	
ID MUESTRA:					
MEZCLA:				FECHA ELAB:	
ORIGEN MUESTRA:					
MÉTODO:		MUESTREO:		POR:	
CONDICIÓN MUESTRA:					
RECEPCIÓN:		POR:		ENSAYO:	

¿SE HA LAVADO LA MUESTRA CONFORME AASHTO T 11?	NO

T27 ~~5230~~ 3/4

B	9910	Masa seca original de la muestra [g] Seca
C		Masa seca después del lavado de la muestra [g]
A		Porcentaje de material más fino que 75 µm [(B-C)/B]x100

Tamaño [mm]	Masa Ret. [g] 3/4	M. Ret. Ac. [g]	Retenido Acum. [%]	Pasa [%]
37,5 (1 1/2")	—			
25 (1")	—			
19,0 (3/4")	1081.1			
16,0	—			
13,2	—			
12,5 (1/2")	5390.0			
9,5 (3/8")	2461.5			
4,75 (#4)	506.1			
2,36				
1,18				
0,600				
0,300				
0,150				
0,075				
	Módulo de finura			

Pasa #4 (4349) Suma (9870) todo

COMENTARIOS SOBRE EL ENSAYO:

MEI

Andrés Muñoz	Ing. Jorge Albuja	Ing. Guillermo Realpe
Responsable de Ensayos	**Responsable Pavimentos**	**Director LMC**

ÁREA DE PAVIMENTOS

ANÁLISIS POR TAMIZADO DE AGREGADOS GRUESOS Y FINOS 3/4

NORMA: AASHTO T 27-06				ORDEN:		HOJA:	
CLIENTE:					SOLICITA:		
PROYECTO:					FISCALIZA:		
UBICACIÓN:					CONSTRUYE:		
PROVINCIA:		CANTÓN:			EMISIÓN:		
ID MUESTRA:							
MEZCLA:					FECHA ELAB:		
ORIGEN MUESTRA:							
MÉTODO:		MUESTREO:			POR:		
CONDICIÓN MUESTRA:							
RECEPCIÓN:		POR:			ENSAYO:		

¿SE HA LAVADO LA MUESTRA CONFORME AASHTO T 11?	NO

B	10355	Masa seca original de la muestra [g]
C		Masa seca después del lavado de la muestra [g]
A		Porcentaje de material más fino que 75 µm [(B-C)/B]x100

	Tamaño [mm]	Masa Ret. [g]	M. Ret. Ac. [g]	Retenido Acum. [%]	Pasa [%]
1 1/2"	37,5	—			
1"	25	—			
3/4	19,0	1580			
5/8	16,0	+			
0.53	13,2	+			
1/2	12,5	6235			
3/8	9,5	1700			
Pasa 4 (335,3) 4	4,75	525			
8	2,36	27,9			
Ret #16 (261,08) 14	1,18	14,1			
20	0,600	12,9			
50	0,300	32,9			
100	0,150	60,5			
200	0,075	71,2			
Pasa (200) 6.5 Pasa 200			Módulo de finura		

COMENTARIOS SOBRE EL ENSAYO:

MEI

Andrés Muñoz	Ing. Jorge Albuja	Ing. Guillermo Realpe
Responsable de Ensayos	**Responsable Pavimentos**	**Director LMC**

=10375

AREA DE PAVIMENTOS

HOJA DE CAMPO

ANALISIS GRANULOMETRICO DE AGREGADOS FINO Y GRUESOS

ASTM C 136-05 - AASHTO T 27-06

HOJA N° _____

N° DE ORDEN _____

		DESCRIPCION DE LAS MUESTRAS			
MUESTRA N°			• 1153.1	• 1039,9	
DESCRIPCION		3/4 10355	• 1058.4 3/8 • 1057.4	• 866,6 ARENA ~~1039,78~~ ~~1226,2~~	
TAMIZ N°	ABERTURA (mm)	PESO RETENIDO gramos	PESO RETENIDO gramos	PESO RETENIDO gramos	PESO RETENIDO gramos
MASA INICIAL SECA					
2 1/2"	62.5		—	—	
2"	50		—	—	
1 1/2"	37.5		—	—	
1"	25		—	—	
3/4"	19		—	—	
1/2"	12.5		—	2.7	
3/8"	9.5		26.1	4.4	
4	4.75		237.8	11.1	
PASA 4			794.5	845.9	
8	2.36		~~444,2~~ 180.3	209,8	
16	1.18		198,3	181,3	
30	0.6		184,2	123,8	
50	0.3		114,2	109,5	
100	0.15		66,3	110,9	
200	0.075		43,8	98,4	
PASA N°200			6,00+1,4	12,0	
EJECUTADO POR					
FECHA					

Σ: 864.3

TAMIZ N°	ABERTURA (mm)	MASAS MINIMAS gramos
2"	50	20000
1 1/2"	37.5	15000
1"	25	10000 10355
3/4"	19	5000
1/2"	12.5	2000
3/8"	9.5	1000

REALIZA IFORME: _____

BACK

Anton Paar

MSCR (according to AASHTO TP70-12), v8.1
==========

Date: 13/10/2016
Time: 13:32:05
Name: 3865 1
Sample: 30% 2
Remark:
Operator: CMF
File: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30 % 2.orx
Temperature: 64.0042 °C

30% ETFO

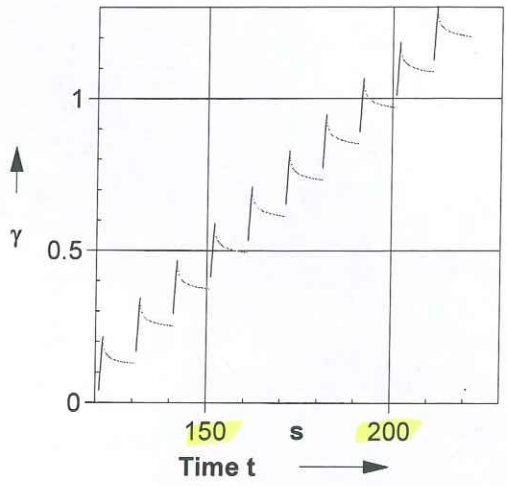
AVERAGE PERCENT RECOVERY
0.1 kPa: 44.3324%
3.2 kPa: 3.1211%

PERCENT DIFFERENCE BETWEEN AVERAGE PERCENT RECOVERIES
92.9598%

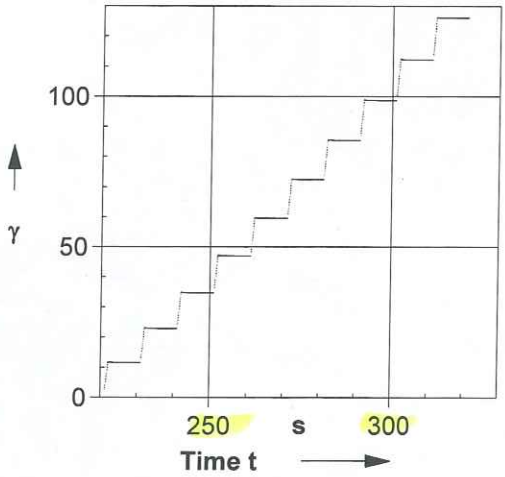
NON-RECOVERABLE CREEP COMPLIANCE (Jnr)
0.1 kPa: 1.2037 1/kPa
3.2 kPa: 3.8991 1/kPa

PERCENT DIFFERNCE BETWEEN Jnr
[Jnr_diff=((Jnr3.2-Jnr0.1)·100)/(Jnr0.1)]
223.9295 %

MSCR 100 Pa



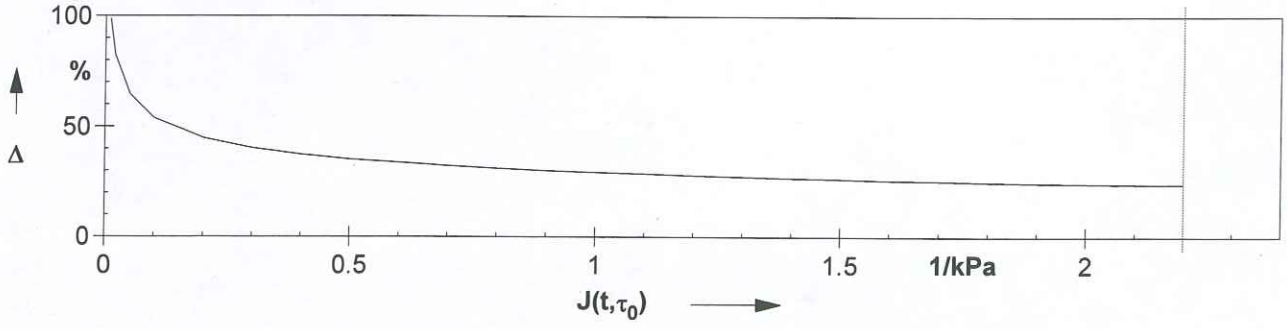
MSCR 3200 Pa



Meas. Pts.	Shear Stress [kPa]	X [%]	Y [%]	Z [%]
Meas. Pts.	Shear Stress	X	Y	Z
1	0.1	0.0000121585	21.6677	12.8813
2	0.1	12.8813	34.5392	25.2407
3	0.1	25.2407	46.8934	37.3883
4	0.1	37.3883	59.0483	49.4286
5	0.1	49.4286	71.0745	61.3865
6	0.1	61.3865	83.0206	73.2831
7	0.1	73.2831	94.8936	85.1189
8	0.1	85.1189	106.717	96.9207
9	0.1	96.9207	118.476	108.664
10	0.1	108.664	130.2	120.368
11	3.2	120.368	1,196.69	1,149.09
12	3.2	1,149.09	2,328.34	2,283.94
13	3.2	2,283.94	3,515.76	3,473.32
14	3.2	3,473.32	4,740.94	4,700.04
15	3.2	4,700.04	5,995.04	5,955.36
16	3.2	5,955.36	7,273.98	7,235.47
17	3.2	7,235.47	8,577.73	8,540.35
18	3.2	8,540.35	9,905.14	9,869.01
19	3.2	9,869.01	11,255.7	11,220.6
20	3.2	11,220.6	12,631.2	12,597.4

X=epsilon_0, Y=epsilon_c, Z=epsilon_r

Jnr vs. % recovery.
X axis=Jnr, Y axis=% recovery



Signature:

Filename: 30 % 2.orx

BACK

Anton Paar

MSCR (according to AASHTO TP70-12), v8.1
==========
Date: 13/10/2016
Time: 11:48:24
Name: 3865 1
Sample: 0%
Remark:
Operator: cmf
File: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865.orx
Temperature: 64.0025 °C

0% RTFO

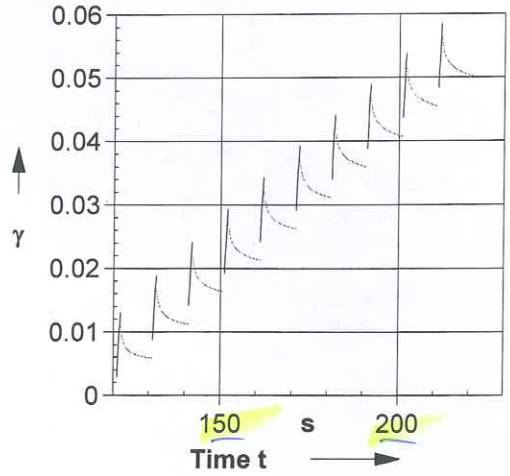
AVERAGE PERCENT RECOVERY
0.1 kPa: 61.5718%
3.2 kPa: 59.7291%

PERCENT DIFFERENCE BETWEEN AVERAGE PERCENT RECOVERIES
2.9926%

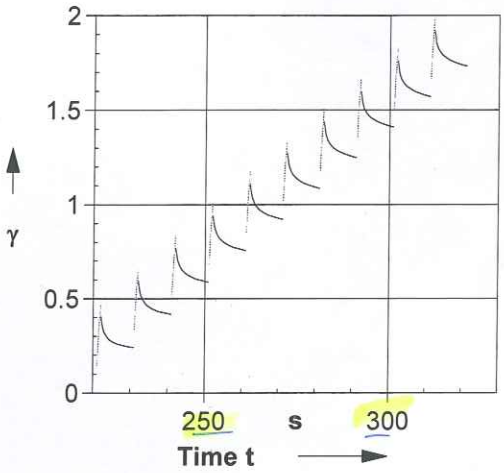
NON-RECOVERABLE CREEP COMPLIANCE (Jnr)
0.1 kPa: 0.0501 1/kPa
3.2 kPa: 0.0526 1/kPa

PERCENT DIFFERNCE BETWEEN Jnr
[Jnr_diff=((Jnr3.2-Jnr0.1)·100)/(Jnr0.1)]
4.8837 %

MSCR 100 Pa



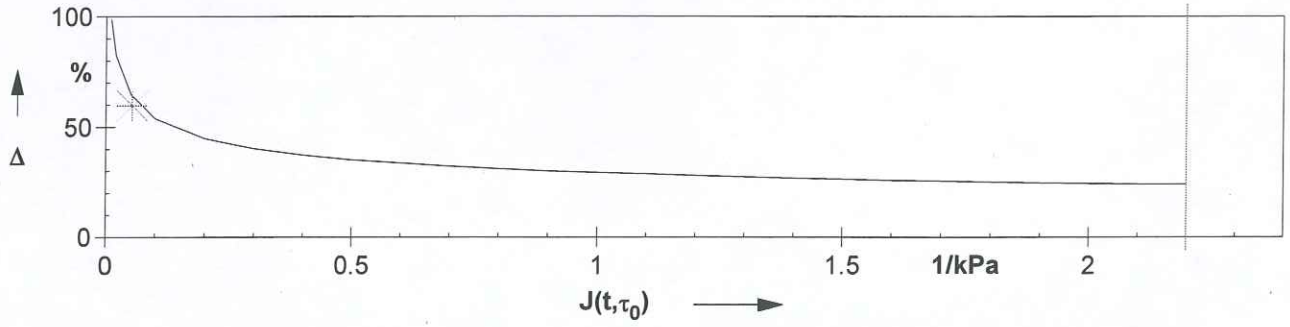
MSCR 3200 Pa



Meas. Pts.	Shear Stress [kPa]	X [%]	Y [%]	Z [%]
Meas. Pts.	Shear Stress	X	Y	Z
1	0.1	-0.00000958469	1.30815	0.579098
2	0.1	0.579098	1.89041	1.1235
3	0.1	1.1235	2.41539	1.62797
4	0.1	1.62797	2.93759	2.13218
5	0.1	2.13218	3.43435	2.62461
6	0.1	2.62461	3.93254	3.11234
7	0.1	3.11234	4.42141	3.59384
8	0.1	3.59384	4.89954	4.0735
9	0.1	4.0735	5.37344	4.54645
10	0.1	4.54645	5.84707	5.01391
11	3.2	5.01391	47.1317	24.0579
12	3.2	24.0579	65.9641	41.6877
13	3.2	41.6877	83.533	58.7495
14	3.2	58.7495	100.568	75.5095
15	3.2	75.5095	117.286	92.0684
16	3.2	92.0684	133.809	108.488
17	3.2	108.488	150.186	124.796
18	3.2	124.796	166.461	141.024
19	3.2	141.024	182.658	157.187
20	3.2	157.187	198.791	173.295

X=epsilon_0, Y=epsilon_c, Z=epsilon_r

Jnr vs. % recovery.
X axis=Jnr, Y axis=% recovery



Signature:

Filename: 3865.orx

BACK

Anton Paar

MSCR (according to AASHTO TP70-12), v8.1
==========
Date: 07/10/2016
Time: 11:07:28
Name: MSCR_161007_1051 1
Sample: 30%
Remark:
Operator: 30% RTFO
File: C:\Users\usuario\Documents\Anton Paar\Rheoplus\30 %.orx
Temperature: 63.9975 °C

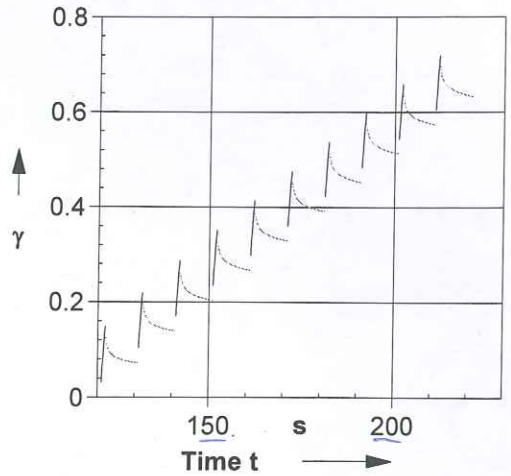
AVERAGE PERCENT RECOVERY
0.1 kPa: 56.8998%
3.2 kPa: 6.285%

PERCENT DIFFERENCE BETWEEN AVERAGE PERCENT RECOVERIES
88.9543%

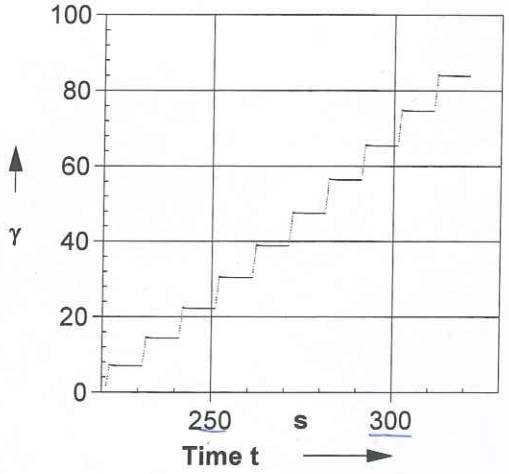
NON-RECOVERABLE CREEP COMPLIANCE (Jnr)
0.1 kPa: 0.6333 1/kPa
3.2 kPa: 2.6033 1/kPa

PERCENT DIFFERNCE BETWEEN Jnr
[Jnr_diff=((Jnr3.2-Jnr0.1)·100)/(Jnr0.1)]
311.0631 %

MSCR 100 Pa



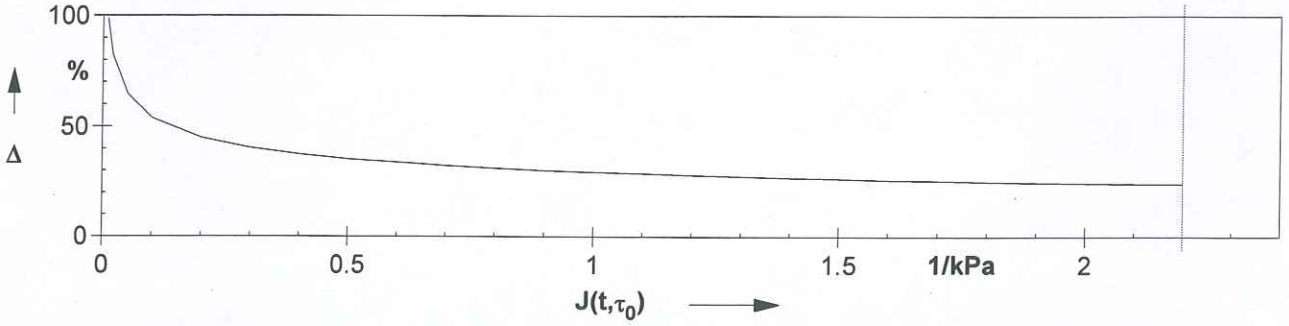
MSCR 3200 Pa



Meas. Pts.	Shear Stress [kPa]	X [%]	Y [%]	Z [%]
Meas. Pts.	Shear Stress	X	Y	Z
1	0.1	-0.00000579406	14.873	7.23034
2	0.1	7.23034	22.006	13.9246
3	0.1	13.9246	28.6625	20.3874
4	0.1	20.3874	35.0986	26.7156
5	0.1	26.7156	41.3978	32.9568
6	0.1	32.9568	47.6073	39.1201
7	0.1	39.1201	53.7597	45.2289
8	0.1	45.2289	59.856	51.2964
9	0.1	51.2964	65.908	57.3313
10	0.1	57.3313	71.9187	63.3305
11	3.2	63.3305	755.662	693.175
12	3.2	693.175	1,490.34	1,432.04
13	3.2	1,432.04	2,278.25	2,221.56
14	3.2	2,221.56	3,097.6	3,042.18
15	3.2	3,042.18	3,940.11	3,885.67
16	3.2	3,885.67	4,803.9	4,750.66
17	3.2	4,750.66	5,686.77	5,634.23
18	3.2	5,634.23	6,588.85	6,536.58
19	3.2	6,536.58	7,509.29	7,457.5
20	3.2	7,457.5	8,445.34	8,393.84

X=epsilon_0, Y=epsilon_c, Z=epsilon_r

Jnr vs. % recovery.
X axis=Jnr, Y axis=% recovery



Signature:

BACK

Anton Paar

MSCR (AASHTO TP70-13), v11
==========
Date: 13/10/2016
Time: 10:20:10
Name: 3865 1
Sample: ac 20 virgen
Remark:
Operator: cmf
File: C:\Users\usuario\Documents\Anton Paar\Rheoplus\3865.orx
Temperature: 63.9995°C

virgen RTFO

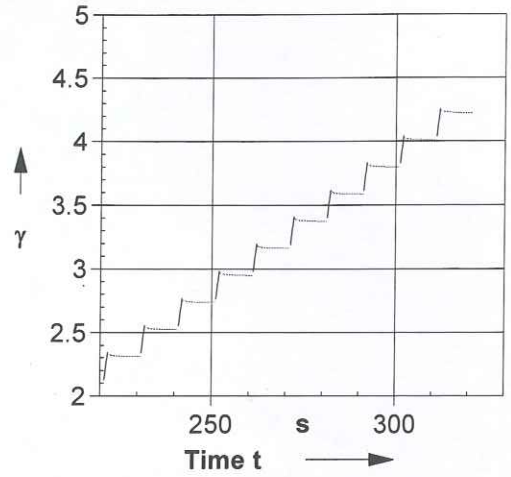
AVERAGE PERCENT RECOVERY
0.1 kPa: 13.999%
3.2 kPa: 2.2823%

PERCENT DIFFERENCE BETWEEN AVERAGE PERCENT RECOVERIES
83.6964%

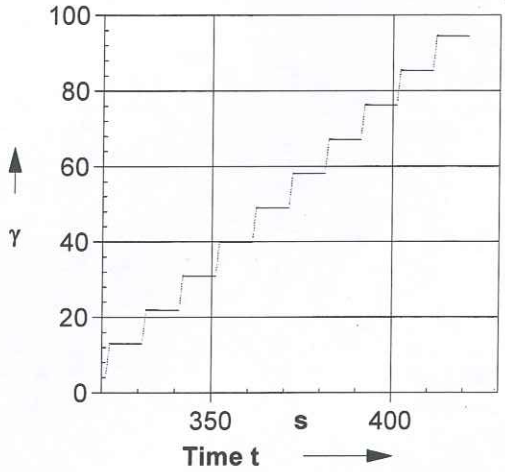
NON-RECOVERABLE CREEP COMPLIANCE (Jnr)
0.1 kPa: 2.124 1/kPa
3.2 kPa: 2.8196 1/kPa

PERCENT DIFFERNCE BETWEEN Jnr
[Jnr_diff=((Jnr3.2-Jnr0.1)·100)/(Jnr0.1)]
32.7511 %

MSCR 100 Pa



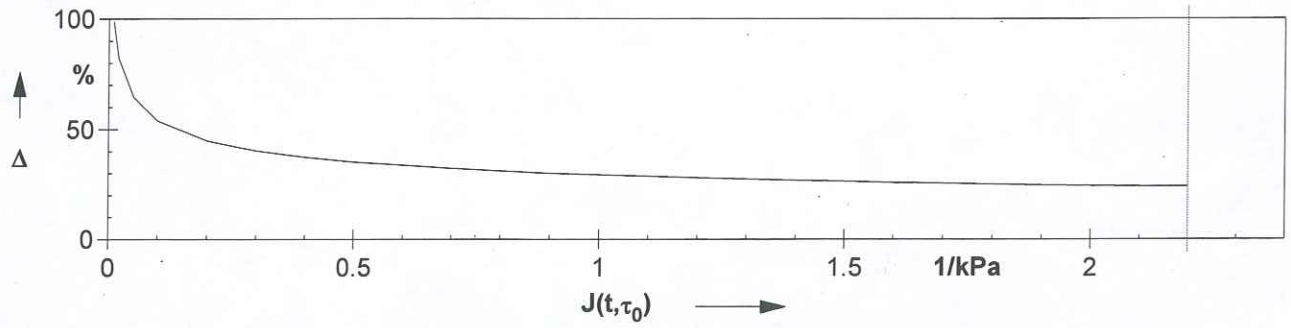
MSCR 3200 Pa



Meas. Pts.	Shear Stress [kPa]	X [%]	Y [%]	Z [%]
Meas. Pts.	Shear Stress	X	Y	Z
1	0.1	209.799	234.452	231.019
2	0.1	231.019	255.706	252.27
3	0.1	252.27	276.984	273.543
4	0.1	273.543	298.262	294.808
5	0.1	294.808	319.537	316.078
6	0.1	316.078	340.799	337.344
7	0.1	337.344	362.049	358.587
8	0.1	358.587	383.275	379.803
9	0.1	379.803	404.484	401.004
10	0.1	401.004	425.678	422.195
11	3.2	422.195	1,323.81	1,301.49
12	3.2	1,301.49	2,215.53	2,193.87
13	3.2	2,193.87	3,113.05	3,091.62
14	3.2	3,091.62	4,014.08	3,992.61
15	3.2	3,992.61	4,919.25	4,897.53
16	3.2	4,897.53	5,825.48	5,805.12
17	3.2	5,805.12	6,732.91	6,713.02
18	3.2	6,713.02	7,643.65	7,622.25
19	3.2	7,622.25	8,554.67	8,533.57
20	3.2	8,533.57	9,464.19	9,444.88

X=epsilon_0, Y=epsilon_c, Z=epsilon_r

Jnr vs. % recovery.
X axis=Jnr, Y axis=% recovery



Signature:

Filename: 3865.orx

BACK

Anton Paar

MSCR (according to AASHTO TP70-12), v8.1
==========

Date: 13/10/2016
Time: 15:24:00
Name: 3865 1
Sample: VIRGEN 2
Remark:
Operator: CMF
File: C:\Users\usuario\Documents\Anton Paar\Rheoplus\VIRGEN 2.or
Temperature: 64.0015 °C

Virgen RTFo

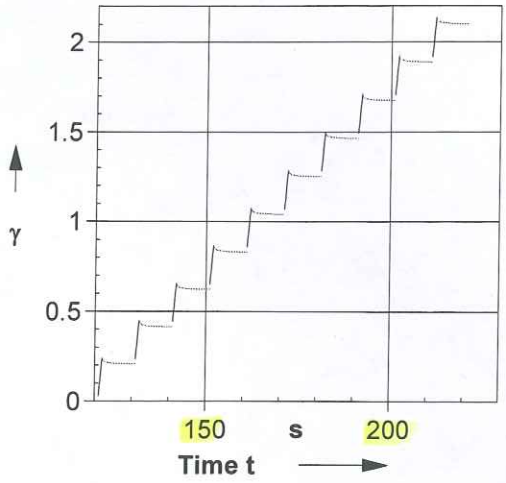
AVERAGE PERCENT RECOVERY
0.1 kPa: 14.1471%
3.2 kPa: 2.4149%

PERCENT DIFFERENCE BETWEEN AVERAGE PERCENT RECOVERIES
82.9304%

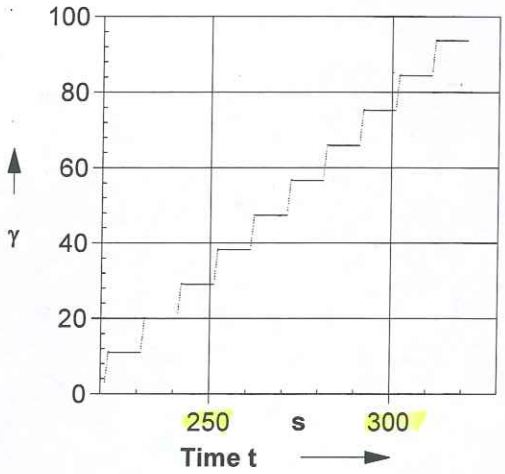
NON-RECOVERABLE CREEP COMPLIANCE (Jnr)
0.1 kPa: 2.1004 1/kPa
3.2 kPa: 2.8617 1/kPa

PERCENT DIFFERNCE BETWEEN Jnr
[Jnr_diff=((Jnr3.2-Jnr0.1)·100)/(Jnr0.1)]
36.2444 %

MSCR 100 Pa



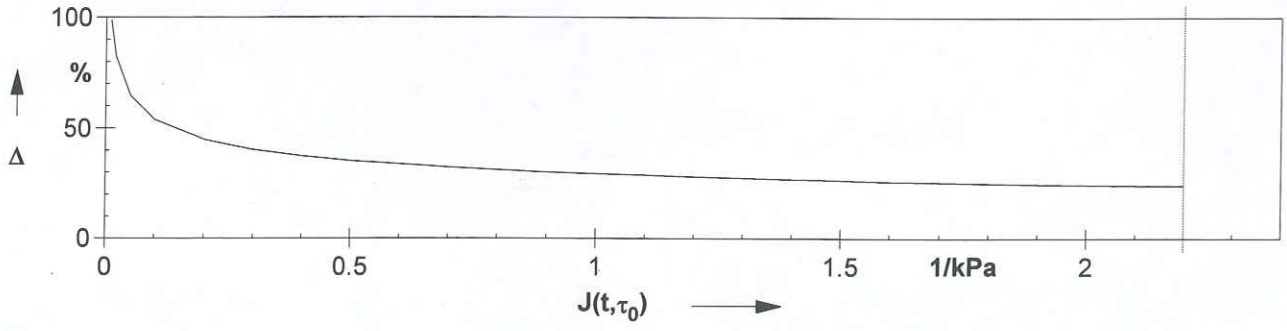
MSCR 3200 Pa



Meas. Pts.	Shear Stress [kPa]	X [%]	Y [%]	Z [%]
Meas. Pts.	Shear Stress	X	Y	Z
1	0.1	0.00000649687	23.9502	20.6669
2	0.1	20.6669	44.8023	41.3839
3	0.1	41.3839	65.6551	62.2072
4	0.1	62.2072	86.5957	83.13
5	0.1	83.13	107.614	104.136
6	0.1	104.136	128.7	125.214
7	0.1	125.214	149.854	146.358
8	0.1	146.358	171.053	167.543
9	0.1	167.543	192.286	188.775
10	0.1	188.775	213.564	210.045
11	3.2	210.045	1,119.89	1,095.92
12	3.2	1,095.92	2,019.64	1,996.22
13	3.2	1,996.22	2,927.9	2,904.8
14	3.2	2,904.8	3,842.28	3,819.45
15	3.2	3,819.45	4,760.23	4,737.64
16	3.2	4,737.64	5,682.89	5,660.48
17	3.2	5,660.48	6,607.8	6,585.66
18	3.2	6,585.66	7,534.19	7,512.15
19	3.2	7,512.15	8,462.04	8,439.66
20	3.2	8,439.66	9,389.22	9,367.62

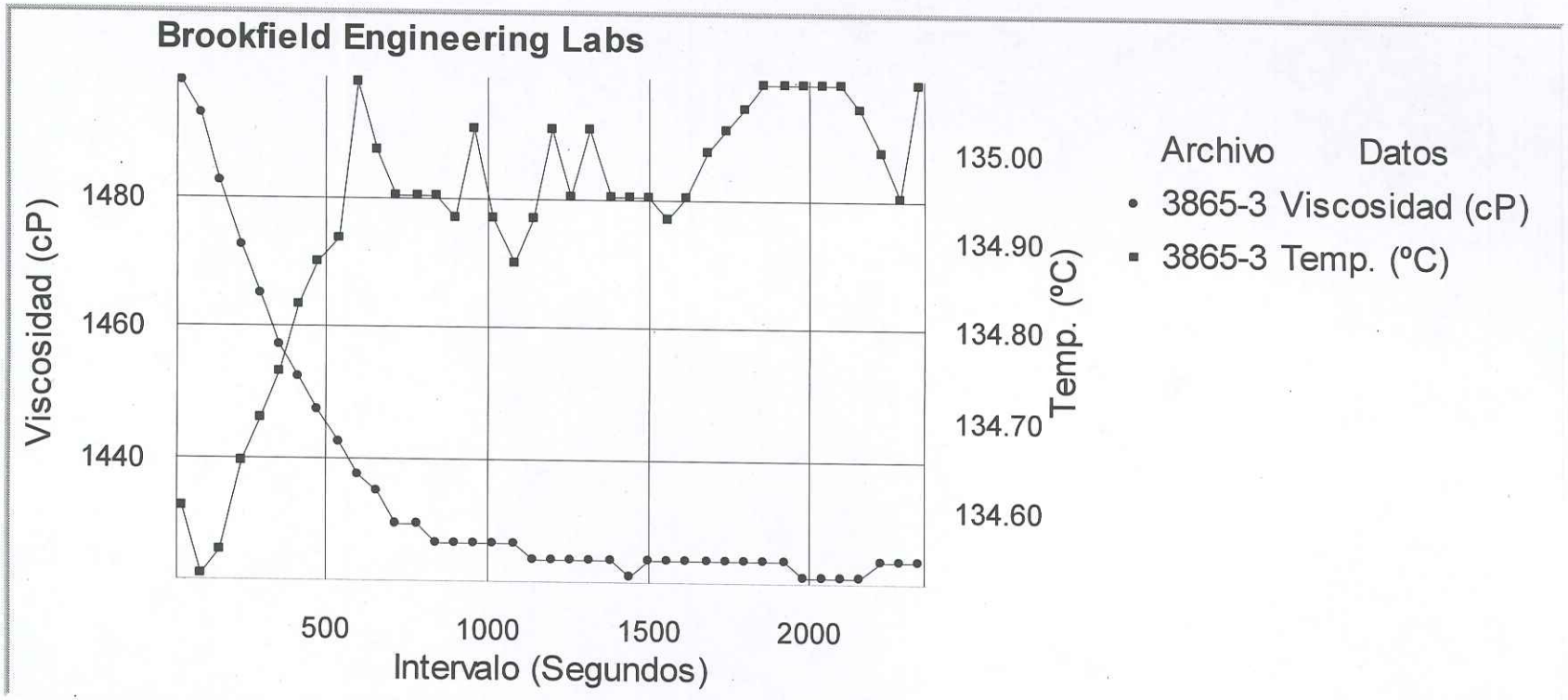
X=epsilon_0, Y=epsilon_c, Z=epsilon_r

Jnr vs. % recovery.
X axis=Jnr, Y axis=% recovery

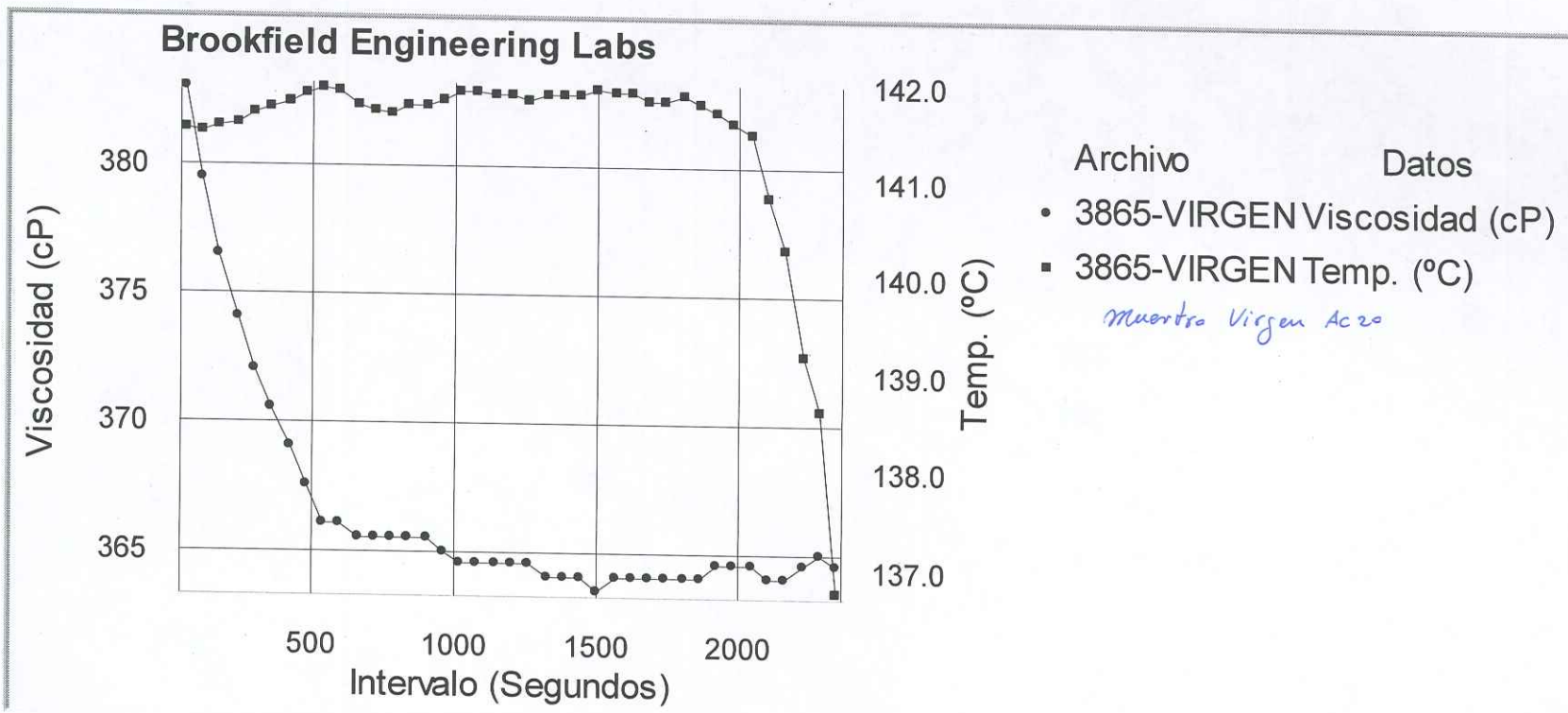


Signature:

Filename: VIRGEN 2.orx



Viscacidad 3,5 %


Brookfield Engineering Labs
Viscosidad (cP)
380
375
370
365
142.0
141.0
140.0
139.0
138.0
137.0
Temp. (°C)
500
1000
1500
2000
Intervalo (Segundos)
Archivo
Datos
3865-VIRGEN
Viscosidad (cP)
3865-VIRGEN
Temp. (°C)
Muestra Virgen Ac 20

Rheocalc V3.1-1 — Brookfield Engineering Labs

Arch: D:\BROOKFIELD\3865 0%.DB

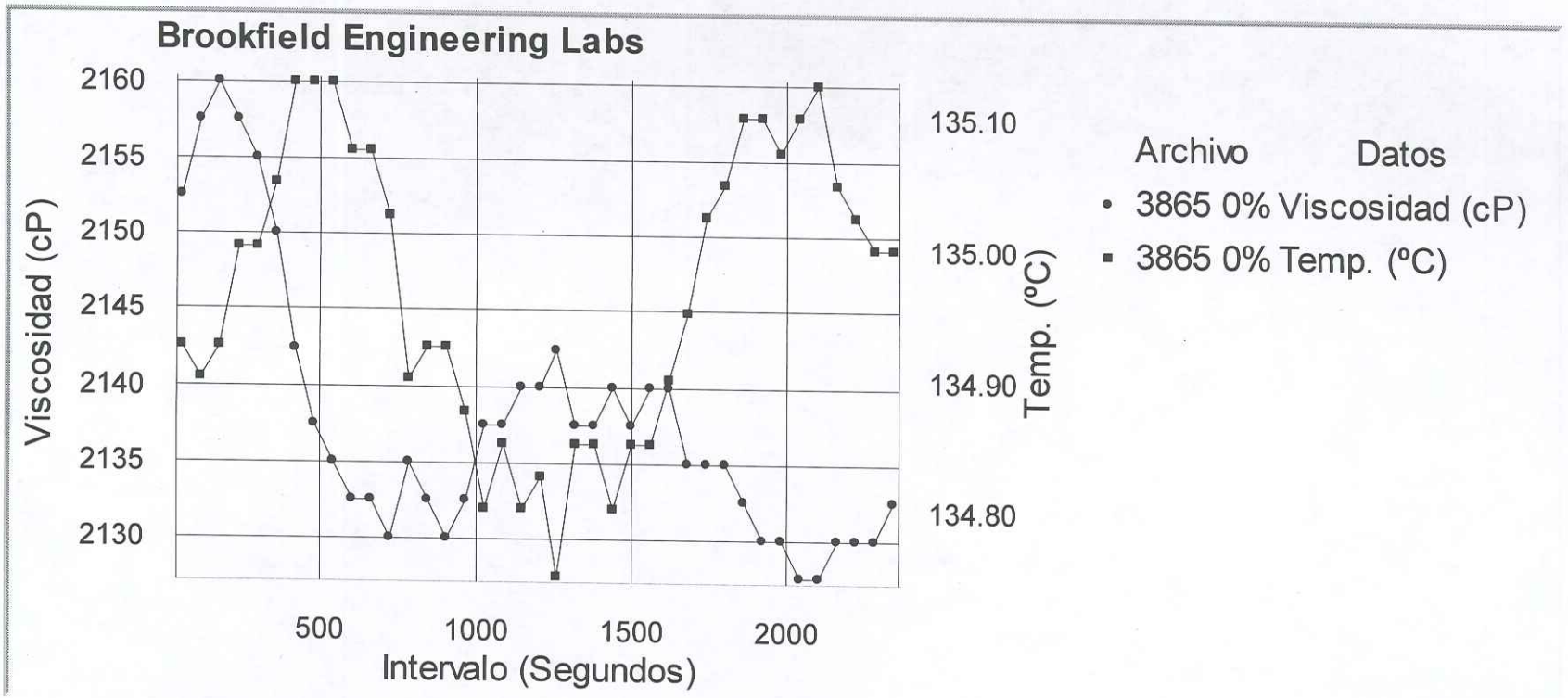
Fecha: 27/10/2016 **Hora:** 10:29:30 **Tipo:** RV **Husillo:** SC4-21

Muestra:

#	Viscosidad (cP)	Veloc. (RPM)	% Par (%)	Esf. Cortante (D/cm²)	G. Velocidad (1/seg)	Temperatura (ºC)	Bath (ºC)	Intervalo (mm:ss.t)
1	2152.50	20.00	86.1	400.37	18.60	134.9	134.9	00:01:00.2
2	2157.50	20.00	86.3	401.30	18.60	134.9	134.9	00:01:00.0
3	2160.00	20.00	86.4	401.76	18.60	134.9	134.9	00:01:00.1
4	2157.50	20.00	86.3	401.30	18.60	135.0	135.0	00:01:00.1
5	2155.00	20.00	86.2	400.83	18.60	135.0	135.0	00:01:00.1
6	2150.00	20.00	86.0	399.90	18.60	135.1	135.1	00:01:00.1
7	2142.50	20.00	85.7	398.51	18.60	135.1	135.2	00:01:00.1
8	2137.50	20.00	85.5	397.58	18.60	135.1	135.1	00:01:00.0
9	2135.00	20.00	85.4	397.11	18.60	135.1	135.2	00:01:00.1
10	2132.50	20.00	85.3	396.64	18.60	135.1	135.1	00:01:00.1
11	2132.50	20.00	85.3	396.64	18.60	135.1	135.1	00:01:00.0
12	2130.00	20.00	85.2	396.18	18.60	135.0	135.1	00:01:00.0
13	2135.00	20.00	85.4	397.11	18.60	134.9	135.0	00:01:00.0
14	2132.50	20.00	85.3	396.64	18.60	134.9	135.0	00:01:00.0
15	2130.00	20.00	85.2	396.18	18.60	134.9	135.0	00:01:00.1
16	2132.50	20.00	85.3	396.64	18.60	134.9	134.9	00:01:00.1
17	2137.50	20.00	85.5	397.58	18.60	134.8	134.8	00:01:00.0
18	2137.50	20.00	85.5	397.58	18.60	134.8	134.9	00:01:00.0
19	2140.00	20.00	85.6	398.04	18.60	134.8	134.9	00:01:00.0
20	2140.00	20.00	85.6	398.04	18.60	134.8	134.9	00:01:00.0
21	2142.50	20.00	85.7	398.51	18.60	134.8	134.8	00:01:00.0
22	2137.50	20.00	85.5	397.58	18.60	134.8	134.9	00:01:00.0
23	2137.50	20.00	85.5	397.58	18.60	134.8	134.9	00:01:00.0
24	2140.00	20.00	85.6	398.04	18.60	134.8	134.8	00:01:00.0
25	2137.50	20.00	85.5	397.58	18.60	134.8	134.9	00:01:00.0
26	2140.00	20.00	85.6	398.04	18.60	134.8	134.9	00:01:00.0
27	2140.00	20.00	85.6	398.04	18.60	134.9	134.9	00:01:00.1
28	2135.00	20.00	85.4	397.11	18.60	134.9	135.0	00:01:00.1

Rheocalc V3.1-1							Brookfield Engineering Labs	
#	Viscosidad (cP)	Veloc. (RPM)	% Par (%)	Esf. Cortante (D/cm²)	G. Velocidad (1/seg)	Temperatura (ºC)	Bath (ºC)	Intervalo (mm:ss.t)
29	2135.00	20.00	85.4	397.11	18.60	135.0	135.0	00:01:00.1
30	2135.00	20.00	85.4	397.11	18.60	135.1	135.0	00:01:00.1
31	2132.50	20.00	85.3	396.64	18.60	135.1	135.1	00:01:00.1
32	2130.00	20.00	85.2	396.18	18.60	135.1	135.1	00:01:00.1
33	2130.00	20.00	85.2	396.18	18.60	135.1	135.1	00:01:00.0
34	2127.50	20.00	85.1	395.71	18.60	135.1	135.1	00:01:00.0
35	2127.50	20.00	85.1	395.71	18.60	135.1	135.1	00:01:00.0
36	2130.00	20.00	85.2	396.18	18.60	135.1	135.0	00:01:00.1
37	2130.00	20.00	85.2	396.18	18.60	135.0	135.0	00:01:00.1
38	2130.00	20.00	85.2	396.18	18.60	135.0	135.1	00:01:00.0
39	2132.50	20.00	85.3	396.64	18.60	135.0	135.0	00:01:00.0

Notas:



Viscosidad 0%. 27 Oct '16

Pontificia Universidad Católica del Ecuador
Laboratorio de Materiales de Construcción

LMC-MPT-5.4-AP-3-R1

ÁREA DE PAVIMENTOS

ENSAYO DEL HORNO DE PELÍCULA DELGADA RODANTE (RTFO)

ORDEN DE TRABAJO N° _____ FECHA DE ENSAYO: ___ ___ ___

IDENTIFICACIÓN DE LA MUESTRA: virgen mesa

MASA DE BOTELLA 1 + ASFALTO ANTES (g): 203.444 PARA CAMBIO DE MASA

MASA DE BOTELLA 2 + ASFALTO ANTES (g): _____ PARA CAMBIO DE MASA

MASA DE BOTELLA 1 + ASFALTO DESPUÉS (g): _____ PARA CAMBIO DE MASA

MASA DE BOTELLA 2 + ASFALTO DESPUÉS (g): _____ PARA CAMBIO DE MASA

OBSERVACIONES:

_____

_____

_____

FIRMAS DE RESPONSABILIDAD:

_____ _____

ENSAYO INFORME

Pontificia Universidad Católica del Ecuador
Laboratorio de Materiales de Construcción

LMC-MPT-5.4-AP-3-R1

ÁREA DE PAVIMENTOS

ENSAYO DEL HORNO DE PELÍCULA DELGADA RODANTE (RTFO)

ORDEN DE TRABAJO N° [ ] FECHA DE ENSAYO: [ ] [ ] [ ]

IDENTIFICACIÓN DE LA MUESTRA: RTFO 0 %

MASA DE BOTELLA 1 + ASFALTO ANTES (g):	195,837	PARA CAMBIO DE MASA
MASA DE BOTELLA 2 + ASFALTO ANTES (g):	205, 478	PARA CAMBIO DE MASA
MASA DE BOTELLA 1 + ASFALTO DESPUÉS (g):	195, 781	PARA CAMBIO DE MASA
MASA DE BOTELLA 2 + ASFALTO DESPUÉS (g):	205, 321	PARA CAMBIO DE MASA

OBSERVACIONES:

La botella El asfalto se salio fuera botella durante Ensayo

FIRMAS DE RESPONSABILIDAD:

ENSAYO INFORME

Pontificia Universidad Católica del Ecuador
Laboratorio de Materiales de Construcción

LMC-MPT-5.4-AP-3-R1

ÁREA DE PAVIMENTOS

ENSAYO DEL HORNO DE PELÍCULA DELGADA RODANTE (RTFO)

ORDEN DE TRABAJO N° _____ FECHA DE ENSAYO: _____

IDENTIFICACIÓN DE LA MUESTRA: 0% HCSR

MASA DE BOTELLA 1 + ASFALTO ANTES (g): 199.935 PARA CAMBIO DE MASA

MASA DE BOTELLA 2 + ASFALTO ANTES (g): _____ PARA CAMBIO DE MASA

MASA DE BOTELLA 1 + ASFALTO DESPUÉS (g): _____ PARA CAMBIO DE MASA

MASA DE BOTELLA 2 + ASFALTO DESPUÉS (g): _____ PARA CAMBIO DE MASA

OBSERVACIONES:

_____

_____

_____

FIRMAS DE RESPONSABILIDAD:

_____ ENSAYO

_____ INFORME

Pontificia Universidad Católica del Ecuador
Laboratorio de Materiales de Construcción

LMC-MPT-5.4-AP-3-R1

ÁREA DE PAVIMENTOS

ENSAYO DEL HORNO DE PELÍCULA DELGADA RODANTE (RTFO)

ORDEN DE TRABAJO N° [ ] FECHA DE ENSAYO: [ ] [ ] [ ]

IDENTIFICACIÓN DE LA MUESTRA: 3.5%

MASA DE BOTELLA 1 + ASFALTO ANTES (g): 203.232 PARA CAMBIO DE MASA

MASA DE BOTELLA 2 + ASFALTO ANTES (g): 204.742 PARA CAMBIO DE MASA

MASA DE BOTELLA 1 + ASFALTO DESPUÉS (g): 203.107 PARA CAMBIO DE MASA

MASA DE BOTELLA 2 + ASFALTO DESPUÉS (g): 204.238 PARA CAMBIO DE MASA

OBSERVACIONES:

FIRMAS DE RESPONSABILIDAD:

ENSAYO INFORME

Pontificia Universidad Católica del Ecuador
Laboratorio de Materiales de Construcción

LMC-MPT-5.4-AP-3-R1

ÁREA DE PAVIMENTOS

ENSAYO DEL HORNO DE PELÍCULA DELGADA RODANTE (RTFO)

ORDEN DE TRABAJO N° _____ FECHA DE ENSAYO: ___ ___ ___

IDENTIFICACIÓN DE LA MUESTRA: RTFO 9%

MASA DE BOTELLA 1 + ASFALTO ANTES (g):	203.492	PARA CAMBIO DE MASA
MASA DE BOTELLA 2 + ASFALTO ANTES (g):	201,457	PARA CAMBIO DE MASA
MASA DE BOTELLA 1 + ASFALTO DESPUÉS (g):	202.988	PARA CAMBIO DE MASA
MASA DE BOTELLA 2 + ASFALTO DESPUÉS (g):	201,020	PARA CAMBIO DE MASA

OBSERVACIONES:

FIRMAS DE RESPONSABILIDAD:

ENSAYO INFORME

Pontificia Universidad Católica del Ecuador
Laboratorio de Materiales de Construcción

LMC-MPT-5.4-AP-3-R1

ÁREA DE PAVIMENTOS

ENSAYO DEL HORNO DE PELÍCULA DELGADA RODANTE (RTFO)

ORDEN DE TRABAJO N° _____ FECHA DE ENSAYO: _____

IDENTIFICACIÓN DE LA MUESTRA: _____

MASA DE BOTELLA 1 + ASFALTO ANTES (g): 204.960 PARA CAMBIO DE MASA

MASA DE BOTELLA 2 + ASFALTO ANTES (g): 198.531 PARA CAMBIO DE MASA

MASA DE BOTELLA 1 + ASFALTO DESPUÉS (g): ~~204.960~~ 205.066 PARA CAMBIO DE MASA

MASA DE BOTELLA 2 + ASFALTO DESPUÉS (g): 198.486 PARA CAMBIO DE MASA

OBSERVACIONES:

_____

_____

_____

FIRMAS DE RESPONSABILIDAD:

_____ _____

ENSAYO INFORME

Pontificia Universidad Católica del Ecuador
Laboratorio de Materiales de Construcción

LMC-MPT-5.4-AP-3-R1

ÁREA DE PAVIMENTOS

ENSAYO DEL HORNO DE PELÍCULA DELGADA RODANTE (RTFO)

ORDEN DE TRABAJO N° _____ FECHA DE ENSAYO: _____

IDENTIFICACIÓN DE LA MUESTRA: 30%

MASA DE BOTELLA 1 + ASFALTO ANTES (g): 1 204.458 — PARA CAMBIO DE MASA

MASA DE BOTELLA 2 + ASFALTO ANTES (g): 2 195.987 — PARA CAMBIO DE MASA

MASA DE BOTELLA 1 + ASFALTO DESPUÉS (g): 203,706 — PARA CAMBIO DE MASA

MASA DE BOTELLA 2 + ASFALTO DESPUÉS (g): 195.391 — PARA CAMBIO DE MASA

OBSERVACIONES:

_____

_____

_____

FIRMAS DE RESPONSABILIDAD:

_____ ENSAYO

_____ INFORME

Pontificia Universidad Católica del Ecuador
Laboratorio de Materiales de Construcción

LMC-MPT-5.4-AP-3-R1

ÁREA DE PAVIMENTOS

ENSAYO DEL HORNO DE PELÍCULA DELGADA RODANTE (RTFO)

ORDEN DE TRABAJO N° | FECHA DE ENSAYO:

IDENTIFICACIÓN DE LA MUESTRA: 20%. NCSE

MASA DE BOTELLA 1 + ASFALTO ANTES (g):	196.106	PARA CAMBIO DE MASA
MASA DE BOTELLA 2 + ASFALTO ANTES (g):		PARA CAMBIO DE MASA
MASA DE BOTELLA 1 + ASFALTO DESPUÉS (g):		PARA CAMBIO DE MASA
MASA DE BOTELLA 2 + ASFALTO DESPUÉS (g):		PARA CAMBIO DE MASA

OBSERVACIONES:

FIRMAS DE RESPONSABILIDAD:

ENSAYO | INFORME

Pontificia Universidad Católica del Ecuador
Laboratorio de Materiales de Construcción

LMC-MPT-5.4-AP-4-R1

ÁREA DE PAVIMENTOS

ENSAYO DE PUNTO DE CHISPA Y LLAMA CON EL EQUIPO DE COPA ABIERTA CLEVELAND

ORDEN DE TRABAJO N° _____ FECHA DE ENSAYO: _____

IDENTIFICACIÓN DE LA MUESTRA: _____

PUNTO DE CHISPA (°C): 312

PUNTO DE LLAMA (°C): 330

PRESIÓN BAROMÉTRICA (mmHg) : 549.5

OBSERVACIONES:

_____

_____

_____

FIRMAS DE RESPONSABILIDAD:

_____ _____

ENSAYO INFORME

Pontificia Universidad Católica del Ecuador
Laboratorio de Materiales de Construcción
Av. 12 de Octubre y Veintimilla
Teléfono: 2991-529 Fax: 2991-624
E-mail: LMC-PUCE@puce.edu.ec
www.puce.edu.ec

LMC - MPA - 4.4 - 1 - R1

ÁREA DE HORMIGONES
ORDEN DE TRABAJO

Nº 003261

M

Patricia Guerrero

CLIENTE: Hernán Pazmiño (estudiante Postgrado) R.U.C / C.I.: 0603123461

TELÉFONO: [illegible]

MUESTRAS: [illegible]

	DÍA	MES	AÑO
FECHA DE INGRESO:	21	05	15
FECHA DE INICIO:	22	05	15
FECHA DE ENTREGA:	–	–	–
FECHA DE ENTREGA:			
FECHA DE ENTREGA:			
FECHA DE ENTREGA:			

OBRA: Tesis [illegible]

SOLICITADO POR: Hernán Pazmiño

FISCALIZACIÓN:

LOCALIZACIÓN:

CONTRATISTA:

MATERIAL EMPLEADO PARA: [illegible]

CANTERA: [illegible]

LOCALIZACIÓN CANTERA: [illegible]

AGREGADOS:

- 3 [X] Granulometría de áridos
- [ ] Granulometría completa
- [ ] Peso unitario suelto, peso unitario compacto
- 3 [X] Absorción / Densidad Bulk / Densidad aparente
- [ ] Materia Orgánica
- 3 [X] Desgaste a los sulfatos (5 ciclos)
- 2 [X] Abrasión (masiva / triturada)
- 1 [X] Equivalente de arena
- 1 [X] Material que pasa el tamiz Nº 200
- 3 [X] Terrones de arcilla
- 3 [X] Partículas livianas (Deletereos)
- 2 [X] Partículas alargadas y planas
- 2 [X] % de caras fracturadas

HORMIGÓN:

- [ ] Diseño de hormigón (Completo) f'c
- [ ] Diseño de hormigón (solo dosificación teórica) f'c
- [ ] Toma de muestras de cilindros
- [ ] Muestreo de agregado

OTROS:

OBSERVACIONES: [illegible] como agregado de [illegible] [illegible] muestras entregadas por cliente

El cliente se compromete a cancelar los ensayos máximo 2 días antes de la fecha de inicio de ejecución del ensayo, caso contrario, la fecha de entrega queda anulada y los ensayos serán replanificados después de la cancelación.

El tiempo máximo de permanencia de las muestras sin cancelar en el Laboratorio será de 2 semanas a partir de la fecha de ingreso, transcurrido este tiempo serán desechadas.

ELABORADO POR

CLIENTE

Del 3001 al 3500

PONTIFICIA UNIVERSIDAD CATOLICA DEL ECUADOR
RUC. 1790105601001
AV. 12 DE OCTUBRE 1076 Y ROCA Quito - Ecuador
AP:17012184 PBX:022991700 FAX:022991638
E-mail:webmaster@puce.edu.ec

F A C T U R A
Autorización S.R.I No. 1114724746
No. Factura 001-023-000287010
FECHA DE AUTORIZACION: 02/05/2014
Fecha Validez SRI: 02/05/2015

Somos contribuyentes especiales. Resolución No. 155 del 24/04/1999-No retener IVA

Cliente:Guerrero Godoy Alexandra Patricia
Código: EST004662
RUC/CI: 0603366212
Dirección:PJE. SAN LUIS 102
Facultad y Carrera:MAESTRIA EN INGENIERIA VIAL
Fecha: 19/06/2014

Caja: psantama
No. Comprobante: 20140165980

CANT	DETALLE	VALOR UNITARIO	VALOR TOTAL
1	Proceso de Graduación/titulación	1,473.00	1,473.00

Forma de Pago:

DINERS CLUB DIFERIDO	1,553.18
TOTAL	1,553.18

SUBTOTAL	1,473.00
DESCUENTO 1	0.00
DESCUENTO 2	0.00
TOTAL VENTA NETA	1,473.00
TOTAL GRAVADO CON IVA 0%	1,473.00
TOTAL GRAVADO CON IVA 12%	0.00
VALOR DEL IVA 12%	0.00
TOTAL	1,473.00

COMPROBANTE DE PAGO
RETENCIONES ASOCIACIONES Y OTROS (NO DEDUCIBLE IMP. RENTA) 80.18

TOTAL A PAGAR 1,553.18

PONTIFICIA UNIVERSIDAD CATOLICA DEL ECUADOR TESORERÍA 19 JUN. 2014 CANCELADO 2360

Firma y Sello

Recibí Conforme

ORIGINAL-CLIENTE

RAUL COKA BARRIGA ASESORES DE SEGUROS 19 JUN 2014 RECIBIDO

PUCE SECRETARIA GENERAL MATRICULADO

Pontificia Universidad Católica Del Ecuador
QUITO . ECUADOR
www.puce.edu.ec
dge@puce.edu.ec
Av. 12 de Octubre 1076 y Roca. PBX(593) 02 2991700 / 2565627 . Fax(593) 02 2562249

Estudiante (Consumidor Final) : Pazmiño Chiluiza Hernán Vladimir **CI :** 0603123464
Facultad y Carrera : FACULTAD DE INGENIERÍA- MAESTRÍA EN INGENIERÍA VÍAL
Ciclo Académico : 2014-01 **N° de comprobante :** 20140165979
Email : HPAZMINO535@PUCE.EDU.EC
Username : HPAZMINO535

1	**Desglose de retenciones asociaciones y otros**	
	Seguro de accidentes para Dir. Tesis (cobertura un año y medio) Mov.	80,18
		$ 80,18
1	**Derechos Dir. Tesis**	
	Proceso de Graduación/titulación postgrado (un año y medio)	1.473,00
		$ 1.473,00
	SERVICIOS FACTURADOS + IVA	
	TOTAL SERVICIOS FACTURADOS + IVA	$ 1.553,18

Observaciones:
1.REVISIÓN OBLIGATORIA DEL SISTEMA DE PENSIÓN DIFERENCIADA: Los estudiantes que ingresaron el Segundo Semestre 2010-2011, deben actualizar su categoría del 2 al 30 de febrero del 2014. Retirar el formulario y díptico de requisitos en la DGE, en el counter y en las oficinas 3 y 4 de Pensión Diferenciada, del 26 al 30 de ENERO del 2014. Quienes no cumplan con este requisito pasarán a la categoría inmediata superior.
2. Las materias declaradas son responsabilidad del estudiante.
3. Este documento solo es informativo, y no es necesario presentarlo en Tesorería.

Parqueadero:
Los estudiantes con parqueadero deben colocar su sticker en el auto inmediatamente después del pago de este comprobante en el parqueadero tras la Facultad de Arquitectura.

Evaluación Docente:
Se recuerda a los estudiantes que la evaluación docente a sus profesores es obligatoria. El período de evaluación correspondiente al segundo semestre 2013-2014 se llevará a cabo del 31 de marzo al 30 de abril del 2014. La evaluación docente correspondiente al primer ciclo intensivo de lenguas se realizará del 17/feb al 7/mar del 2014. La evaluación docente del primer módulo de la Facultad de Arquitectura, Diseño y Artes se realizará del 17 al 28 de marzo del 2014. El incumplimiento de esta obligación tiene una multa económica.

UNIVERSIDAD CENTRAL DEL ECUADOR
FACULTAD DE INGENIERÍA QUÍMICA
DEPARTAMENTO DE PETRÓLEOS, ENERGÍA Y CONTAMINACIÓN

INFORME DE RESULTADOS
PETRÓLEO

Informe Nº 17-02-05-P-1
Fecha 2017-03-01

Referencia: **OT-17-02-05-P**
Atención: Ing. Patricia Guerrero
Empresa: **PARTICULAR**
Dirección: España y Venezuela
Tipo de ensayos: Análisis Fisicoquímicos
Tipo de muestra: ASFALTO (SÓLIDO)
Identificación de la muestra: #1
Descripción de la Muestra: Sin descripción específica
Fecha de ingreso de la muestra: 2017-02-15
Código de muestra: OE-17-02-05-P-1
Fecha de realización de ensayos: 2017-02-23 a 2017-03-01

DETERMINACIÓN	UNIDADES	MÉTODO	RESULTADO
Asfaltenos en C7*	%P	PNE/DPEC/P/ASTM D-3279	18,0

Nota.- Los ensayos marcados con (*) no están incluidos en el alcance de acreditación del SAE

Condiciones Ambientales.- Presión 542,3 mm Hg; Temperatura: 18,4 ºC

Realizado por: VRT

Revisado por:

Ing. Fernanda Toasa L.
RESPONSABLE TÉCNICO

Aprobado por:

Ing. Ghem Carvajal C.
DIRECTOR DEL LAB. DEL DPEC

ADVERTENCIA: EL USUARIO DEBE EXIGIR EL ORIGINAL. EL DPEC NO SE RESPONSABILIZA POR DOCUMENTOS FOTOCOPIADOS.

INFORME DE RESULTADOS
PETRÓLEO

Informe Nº 17-02-05-P-2
Fecha 2017-03-01

Referencia: **OT-17-02-05-P**
Atención: Ing. Patricia Guerrero
Empresa: **PARTICULAR**
Dirección: España y Venezuela
Tipo de ensayos: Análisis Fisicoquímicos
Tipo de muestra: ASFALTO (SÓLIDO)
Identificación de la muestra: #2
Descripción de la Muestra: Sin descripción específica
Fecha de ingreso de la muestra: 2017-02-15
Código de muestra: OE-17-02-05-P-2
Fecha de realización de ensayos: 2017-02-23 a 2017-03-01

DETERMINACIÓN	UNIDADES	MÉTODO	RESULTADO
Asfaltenos en C7*	%P	PNE/DPEC/P/ASTM D-3279	23,6

Nota.- Los ensayos marcados con (*) no están incluidos en el alcance de acreditación del SAE

Condiciones Ambientales.- Presión 542,3 mm Hg; Temperatura: 18,4 ºC

Realizado por: VRT

Revisado por:
Ing. Fernanda Toasa L.
RESPONSABLE TÉCNICO

Aprobado por:
Ing. Ghem Carvajal C.
DIRECTOR DEL LAB. DEL DPEC

INFORME DE RESULTADOS
PETRÓLEO

Informe Nº 17-02-05-P-3
Fecha 2017-03-01

Referencia: **OT-17-02-05-P**
Atención: Ing. Patricia Guerrero
Empresa: **PARTICULAR**
Dirección: España y Venezuela
Tipo de ensayos: Análisis Fisicoquímicos
Tipo de muestra: ASFALTO (SÓLIDO)
Identificación de la muestra: #3
Descripción de la Muestra: Sin descripción específica
Fecha de ingreso de la muestra: 2017-02-15
Código de muestra: OE-17-02-05-P-3
Fecha de realización de ensayos: 2017-02-23 a 2017-03-01

DETERMINACIÓN	UNIDADES	MÉTODO	RESULTADO
Asfaltenos en C7*	%P	PNE/DPEC/P/ASTM D-3279	19,5

Nota.- Los ensayos marcados con (*) no están incluidos en el alcance de acreditación del SAE

Condiciones Ambientales.- Presión 542,3 mm Hg; Temperatura: 18,4 ºC

Realizado por: VRT

Revisado por:
Ing. Fernanda Toasa L.
RESPONSABLE TÉCNICO

Aprobado por:
Ing. Ghem Carvajal C.
DIRECTOR DEL LAB. DEL DPEC

ADVERTENCIA: EL USUARIO DEBE EXIGIR EL ORIGINAL. EL DPEC NO SE RESPONSABILIZA POR DOCUMENTOS FOTOCOPIADOS.