Report of Meeting
L-60-1 Surveillance Panel
Nov. 4th 2026

1.0 Membership review

- All voting members were present

2.0 Meeting minutes Approval

Motion #1 à Shaup 1st/Muransky 2nd approve the meeting minutes from August 12, 2026, ASTM Meeting. Motion passed unanimously, 16-0-0 (Yes-No-Abstain)

3.0 Action Item Review

Previous Action Items:

- What if analysis for target updates (Closed)
- Off cadence meetings (Open)

4.0 Gear Data Review

- TMC presented data for unleaded gears, used gears, and Dauch pilot batch
- TMC presented used gear performance relative to historical stand performance
- There were some outliers with used gears, but in general performance followed historical trends. Outliers were typically more severe results
- Surveillance Panel approved the use of used gears with the predetermined cleaning procedure.

Motion #2 à Sangpeal 1st /2nd Schaup to approve use of used gears. Motion passed unanimously 16-0-0 (Yes-No-Abstain)

5.0 Paths forward concerning L-60 leaded gear shortage

- Same analysis to be completed with unleaded gears and Dauch pilot batch of gears.

6.0 Targets and Severity Adjustments

- Surveillance panel approved the stats group's recommended changes to targets and severity adjustments for the current hardware/reference fluids (details shared previously). These will be used to evaluate both new and used gearsets.

Motion #3 à Schaup 1st /2nd Lange to approve. Motion passed unanimously, 16-0-0 (Yes-No-Abstain)

7.0 Reference Oil 155-2

- Intertek saw debris floating on the surface of 155-2 after recent severe sludge and carbon varnish results.
- Labs to review their retains for any concerns.
- Intertek to send the fluid back to TMC for analysis

8.0 Old Business

9.0 New Business

10.0 Action Item Summary

- Action Item #1: TMC to plot unleaded, used, and Dauch gears against new targets.
- Action Item #2: TMC to inspect plastic L-60 reference oil bottle to see if contaminated.
- Action Item #3: Nick Schaup to revise procedure.
- Action Item #4: Nick Schaup to continue off cadence meetings.

11.0 Adjourn

Motion #4 à Schaup 1st /2nd Warden to adjourn. Motion passed unanimously, 16-0-0 (Yes-No-Abstain)

D02.B0.03

L-60-1 Surveillance Panel Meeting

11/04/2026

Nick Schaup

Agenda

- Call to Order/Agenda review
- Meeting Minute Approvals
  - Aug 13 th 2026, Surveillance panel meeting
- Action Item Review
- Data review and decision time
- Reference oil concerns
- Old Business?
- New business
- Adjournment

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Meeting Minutes Approval

– Aug 13th, 2026, Surveillance Panel Mtg

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TMC to present data

- Unleaded gear runs
- Re-used gear runs
- Dauch Gears

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Possible paths forward

- Use unleaded gears with a correction factor
- Approve the use of re-used gears in the interim
- Approve and start manufacturing of Dauch manufactured gears
- Gather data on lead coupons with unleaded gears

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Reference oil concerns

- Potential additive dropout in 155-2, similar to 155-1 in years past

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Action Item Review

- What if analysis for target updates (Wes)
- Schedule meetings between LRI to move forward with hardware shortage (Nick)

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Old Business

New Business

Adjournment

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Recommendation

- Updated targets based on last couple years of data
  - *RO145 n=38 (from 20250312)*
  - *RO155-2 n=108 (from 20230813)*
- Effective date of target change starting 2026

L-60-1	Current				Updated				Current	Updated
	145		155-2		145		155-2		SA	SA
Parameters	Mean	Standard Deviation	Mean	Standard Deviation	LSMean	Standard Deviation	LSMean	Standard Deviation	Standard Deviation	Standard Deviation
VISI	70.225	5.099	23.000	2.832	73.708	5.054	23.649	2.525	7.659	3.431
PEN	1.198	0.249	1.509	0.434	0.912	0.241	1.350	0.272	0.413	0.265
ACV	6.329	0.747	8.760	0.708	6.730	0.954	8.792	0.742	0.511	0.821
ASL	8.575	0.648	9.426	0.101	8.885	0.531	9.503	0.174	0.106	0.337
TOL	1.217	0.409	1.109	0.530	0.683	0.149	0.859	0.286	0.249	0.260

Motion to approve new targets and severity adjustments for both 145 and 155-2 oils on the L-60-1 tests. This change is not retroactive and will only been implemented moving forward.

Motion Made by Nick Schaup , Second Anthony Lange

Approved unanimously

Effective 11/18/2026

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Motion:

Re-using gears in an L-60-1 test is permissible, but the stand must be referenced on re-used gears and for the duration of the reference period all candidate runs must be on re-used gearsets from the same batch as used in the reference test. On the all reports using re-used gears this must be noted when reporting the gear batch number by adding an X after the last digit of the gear batch.

A gear may only be re-used one time after its initial run. All previously used gears must follow the pre-defined gear cleaning procedure below.

Gear Cleaning Procedure for used L-60 Gears:

Penmul soak for 24 hours, wash off with water, use nylon brushes to remove excess debris

Inspect gear teeth to ensure nothing is left over from previous test

Put used gears in the sonic cleaner for 1 hour and 40 minutes

After removal from sonic cleaner, rinse the gears with hot water, heptane and then if gears are not going to be used within 24 hours coat gears in EF411 and wrap in anti-rust packaging

Prep the gear surface using the ASTM L-60 procedure, be sure to lap each gear side at least 80 times.

Gears must adhere to all requirements in ASTM L-60 procedure from this point forward

Install the gears in their original orientation (as tested the first time)

Record the time that the gears were prepped so that it can be compared against the test start time.

Motion made by Matt Sangpeal, seconded by Nick Schaup

Motion Passed Unanimously

Motion Effective 11/6/2026

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L-60-1

Dauch Gear Testing

Brad Transue

Process Engineer

Raw Data

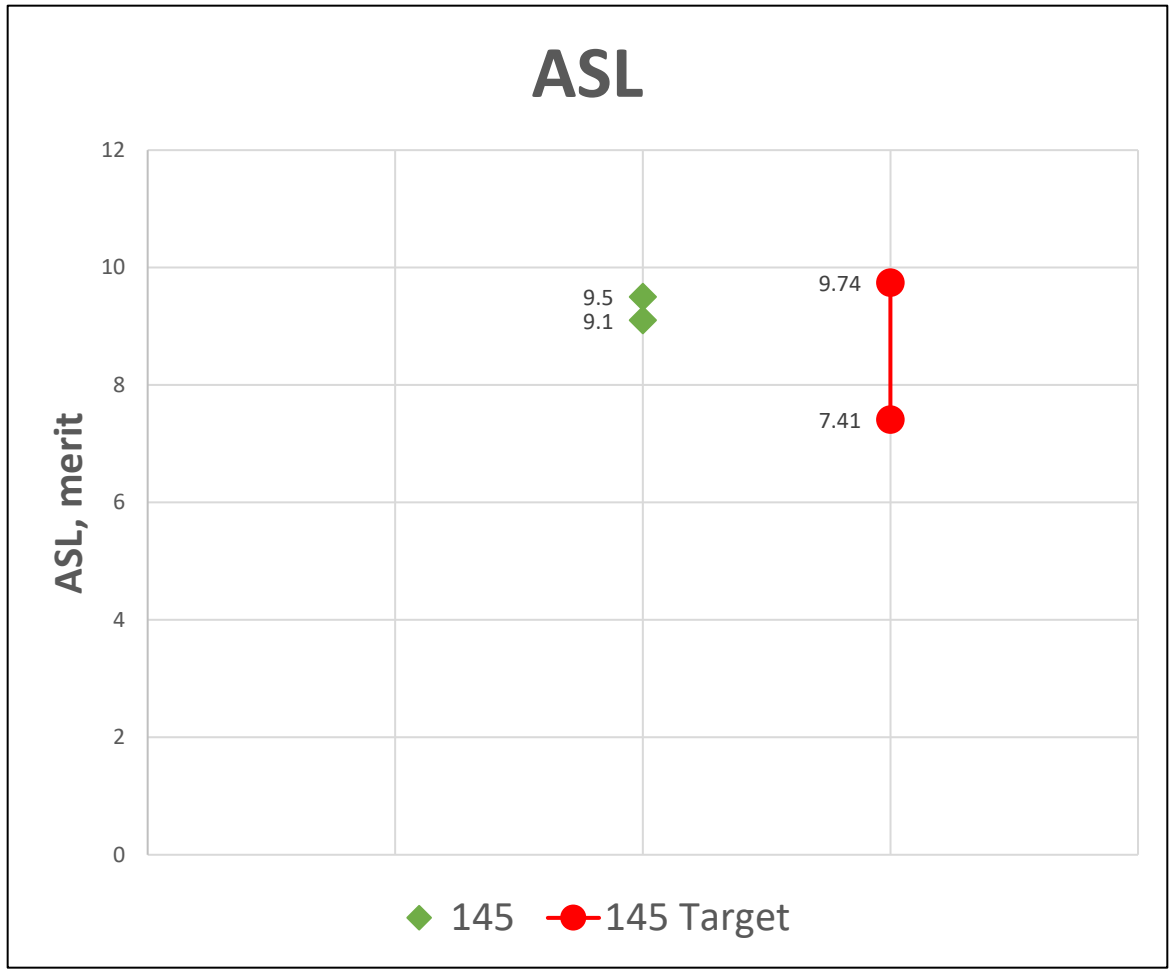
145

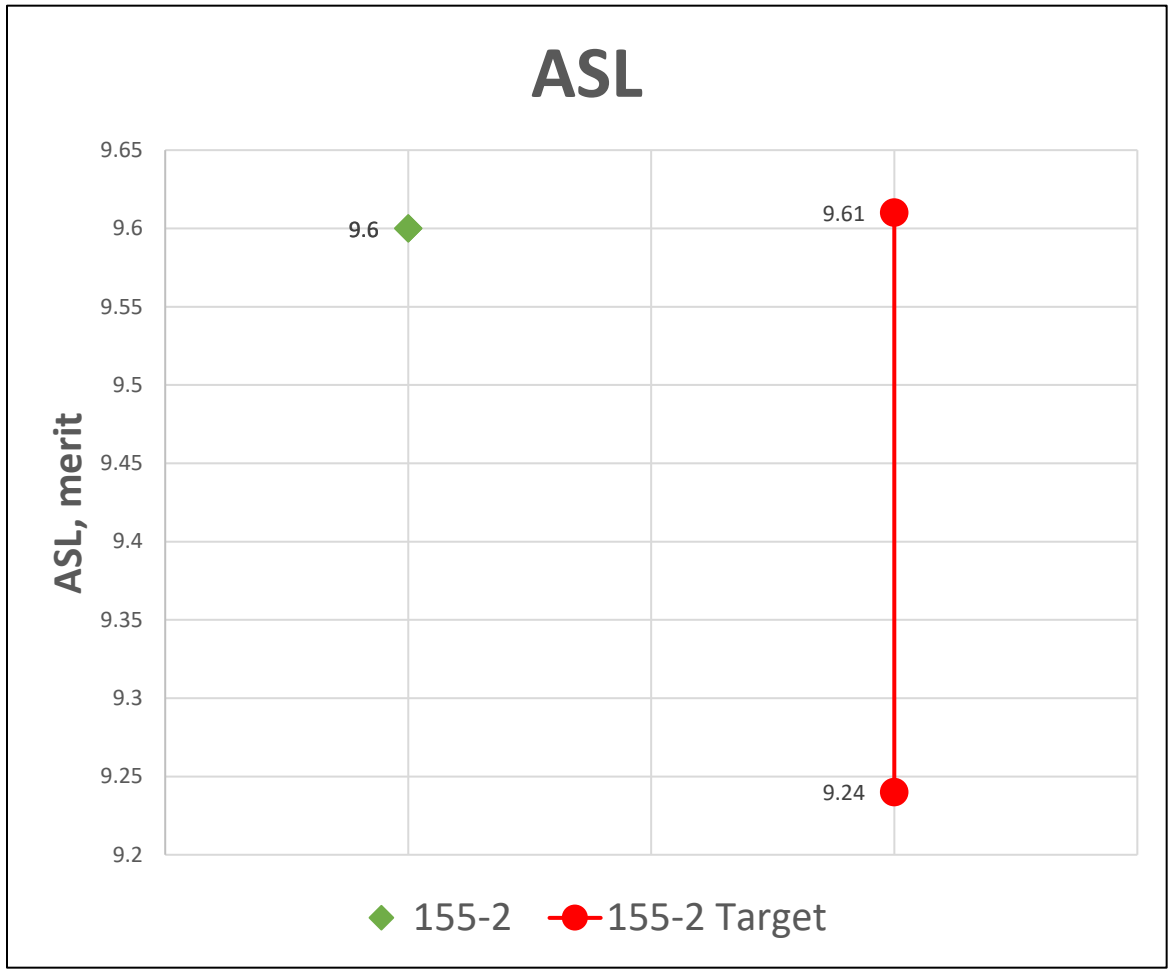
Testkey	Lab	ind	ASL	ACV	TOL	PEN	VISI
207628-L601	D	145	9.1	5	0.5	0.6	77
206880-L601	B	145	9.5	3.7	0.6	1	58
208198 (assigned)	A	145	xx	xx	xx	xx	xx
XX (not assigned)	G	145	xx	xx	xx	xx	xx

155-2

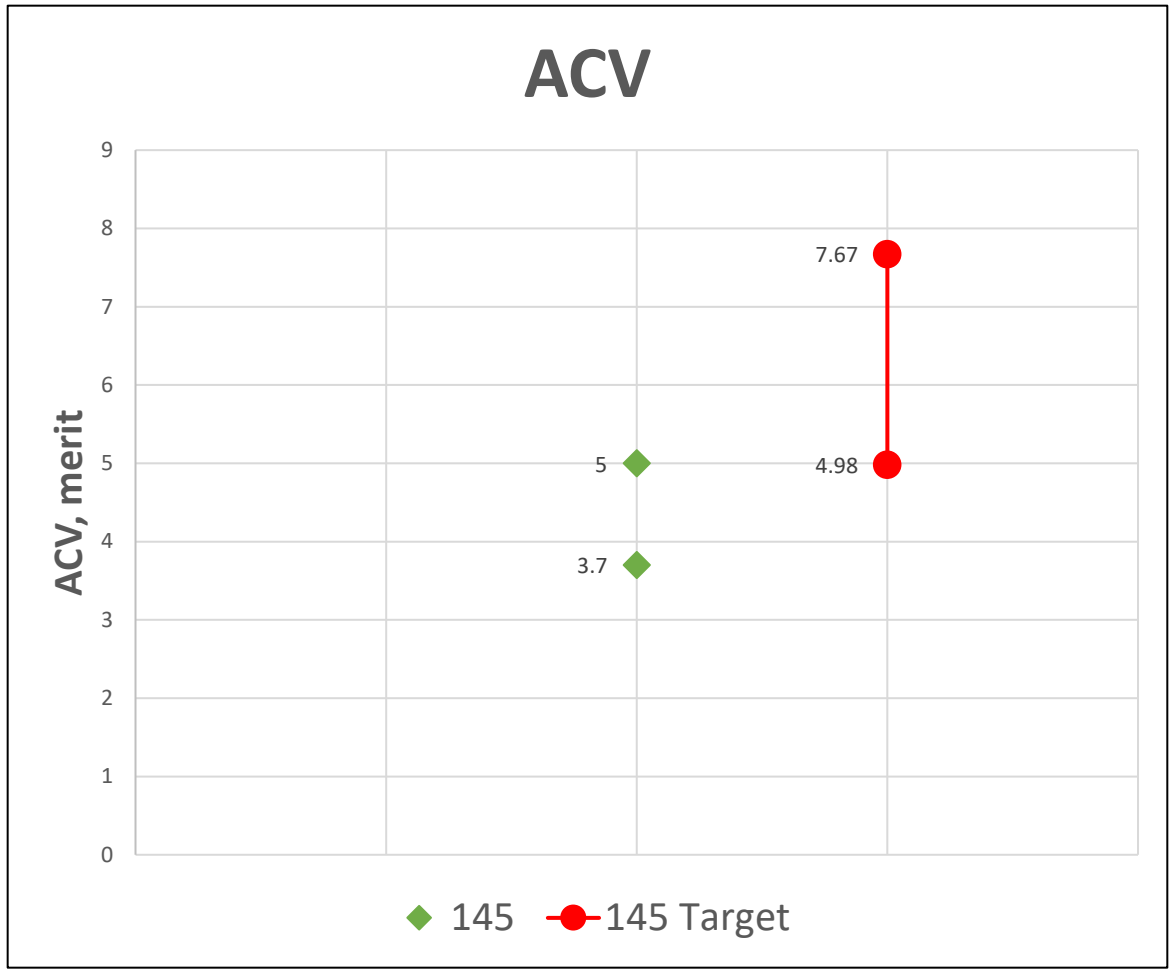
Testkey	Lab	ind	ASL	ACV	TOL	PEN	VISI
205447-L601	D	155-2	9.6	8.6	0.8	1	23
209696-L601	B	155-2	9.6	7.5	0.4	1.4	26
208201 (assigned)	A	155-2	xx	xx	xx	xx	xx
XX (not assigned)	G	155-2	xx	xx	xx	xx	xx

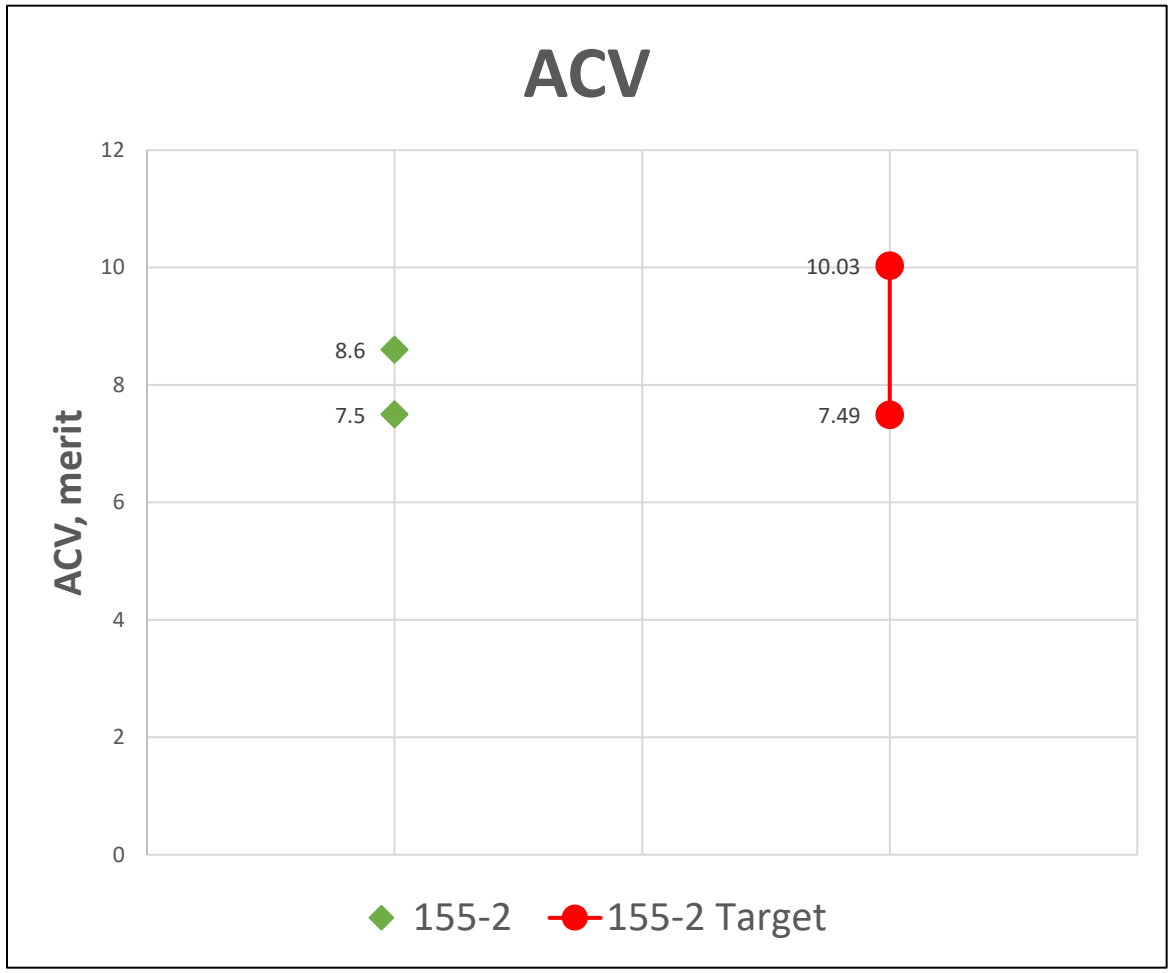
Average Sludge Results



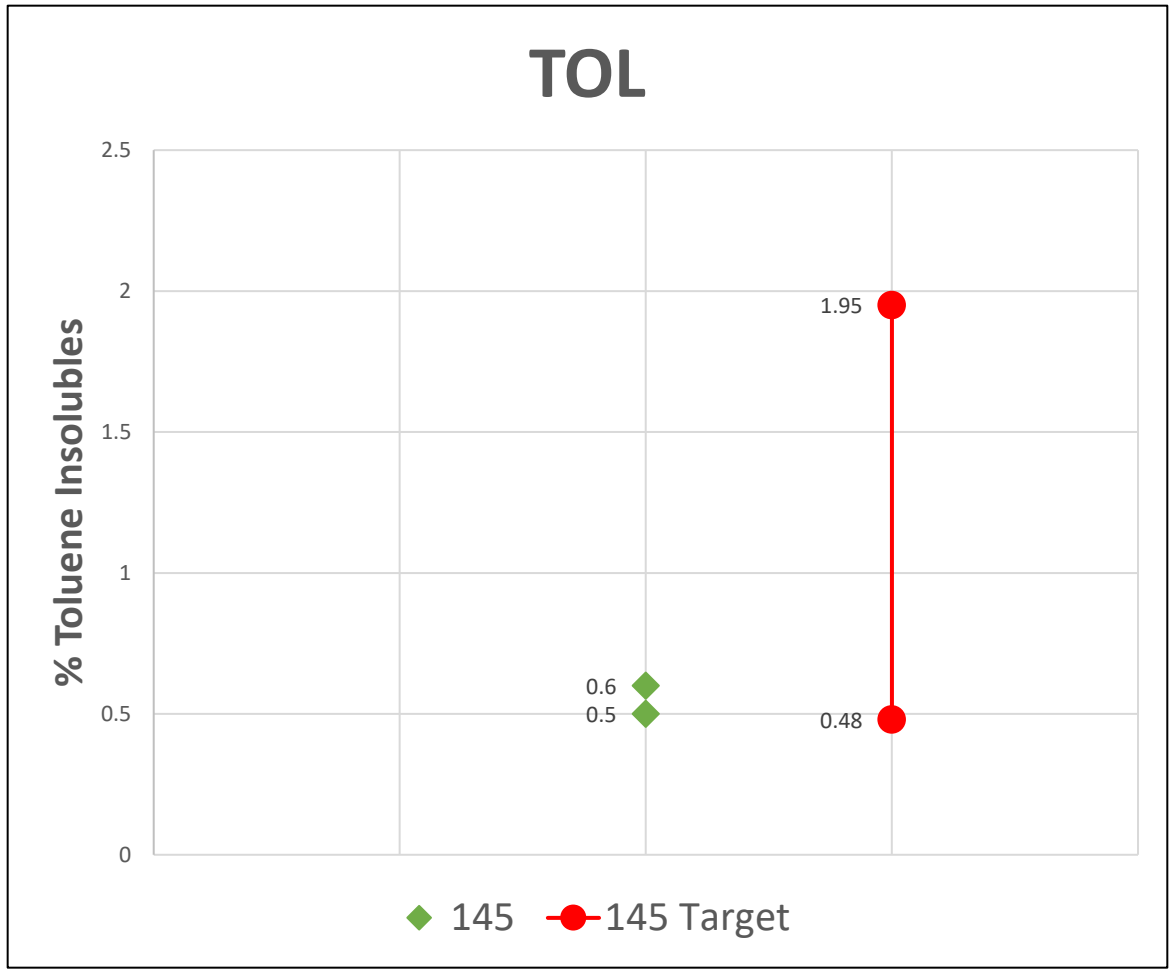


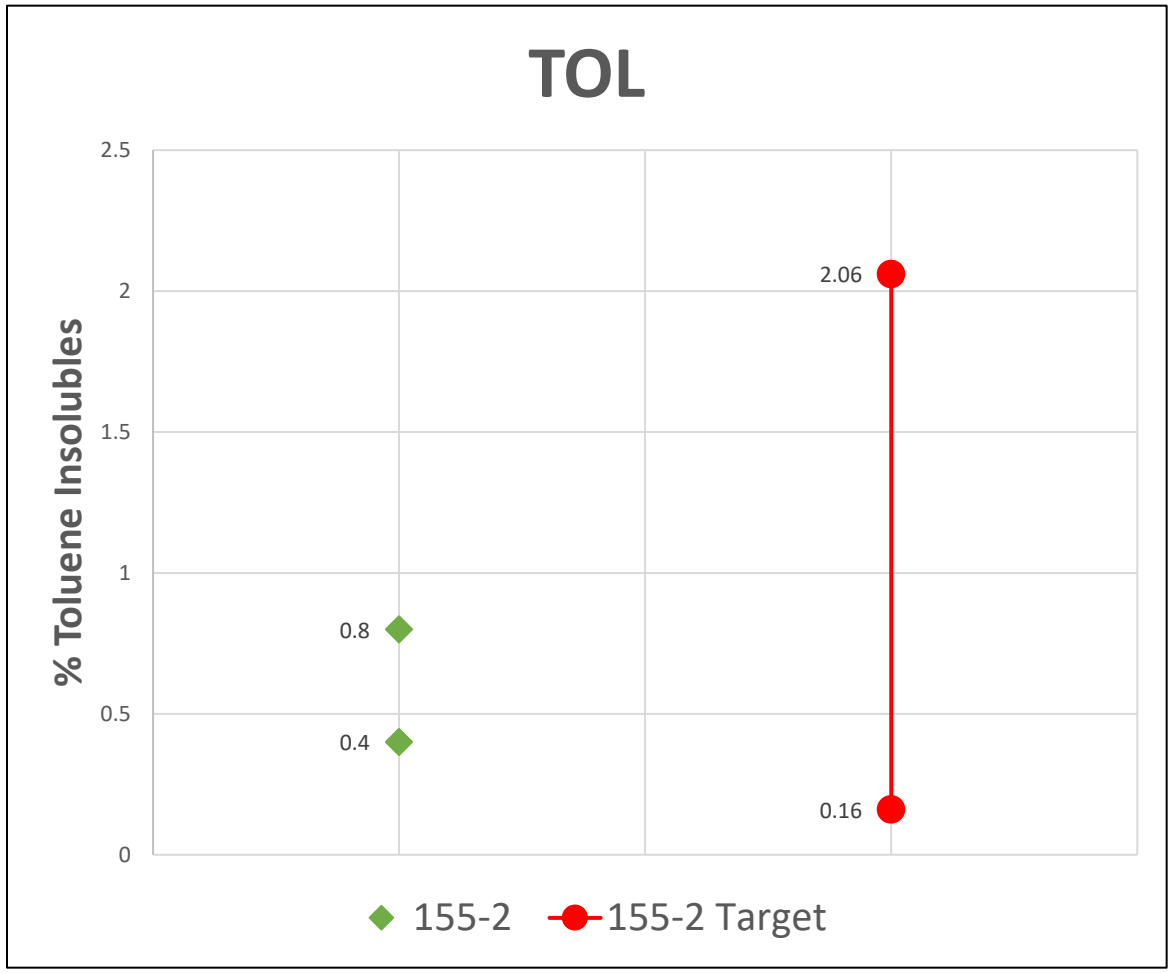
Average Carbon Varnish Results



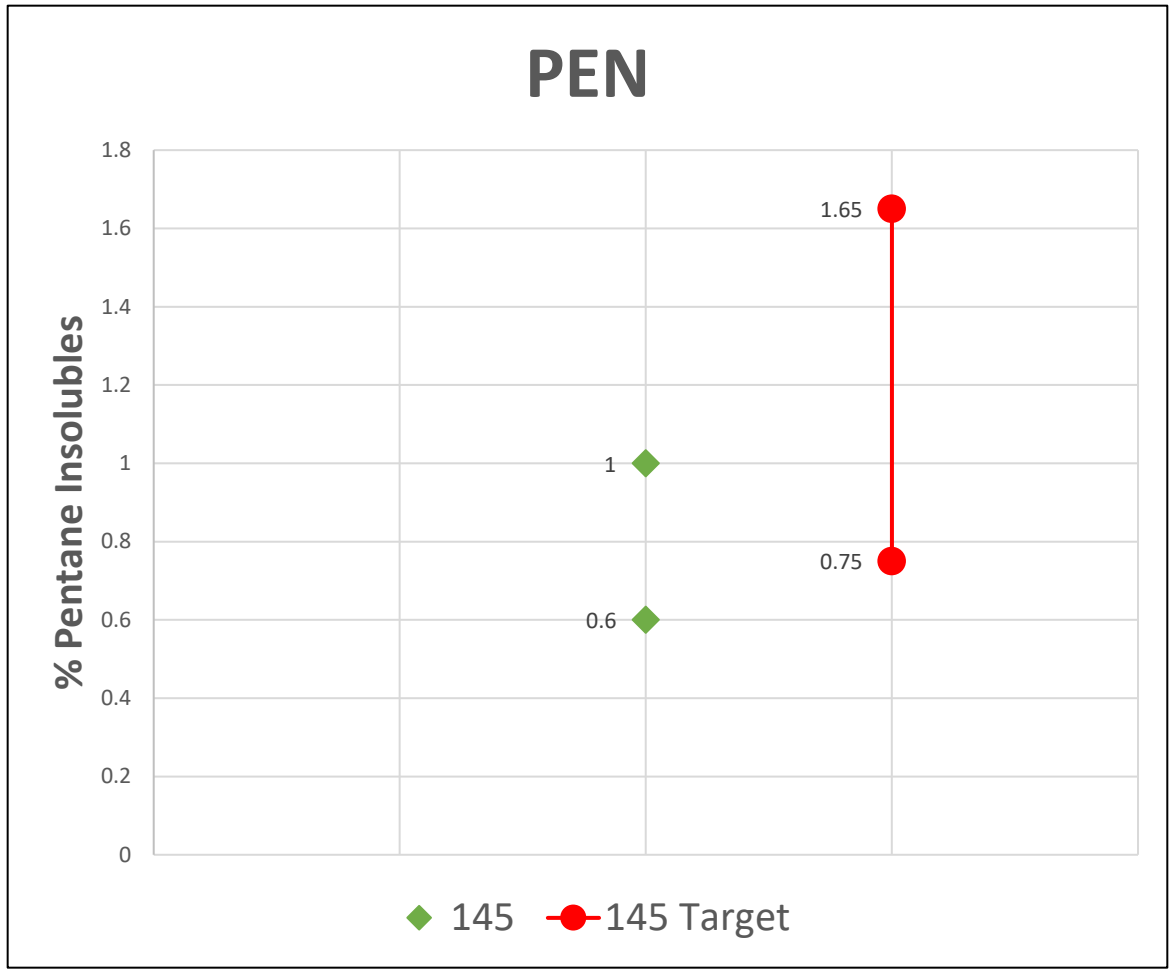


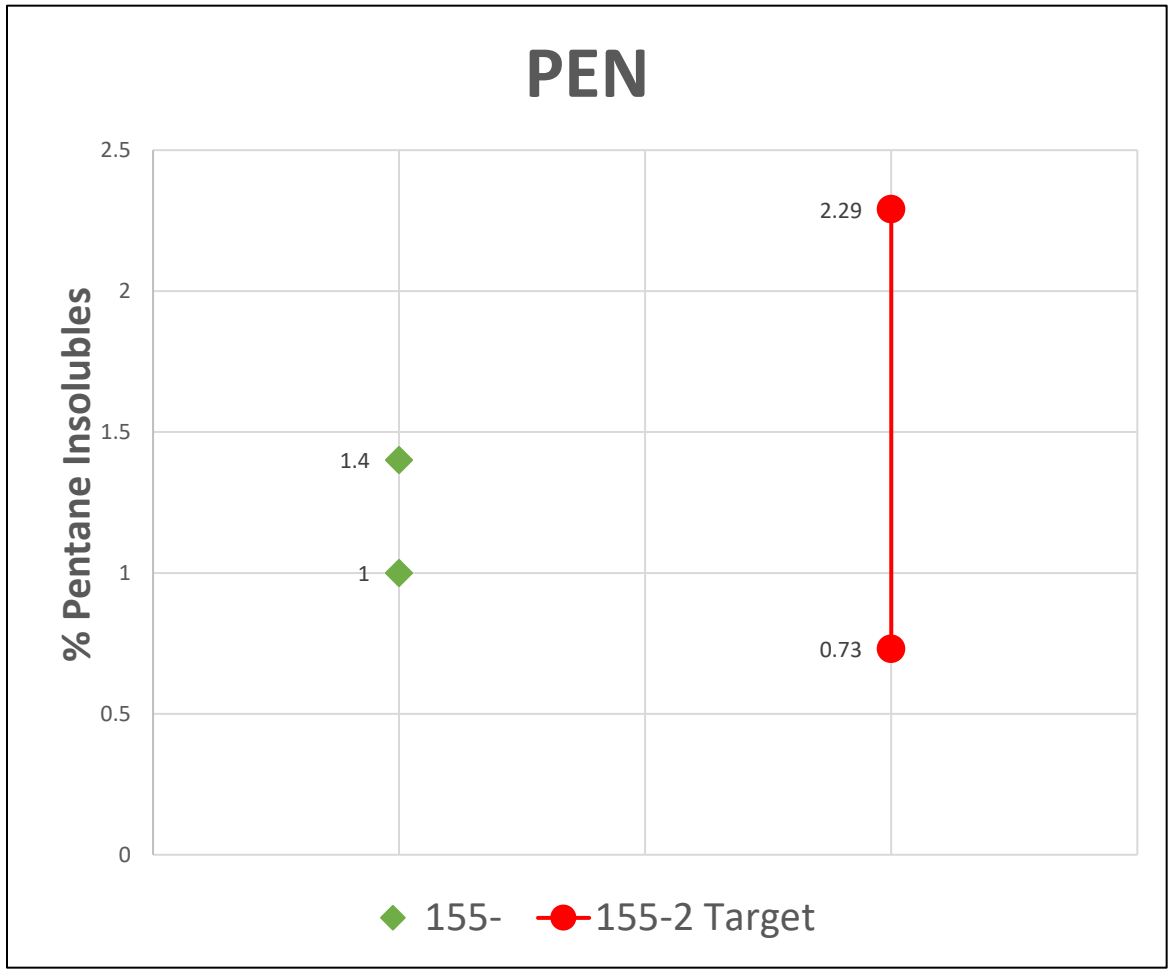
Toluene Results



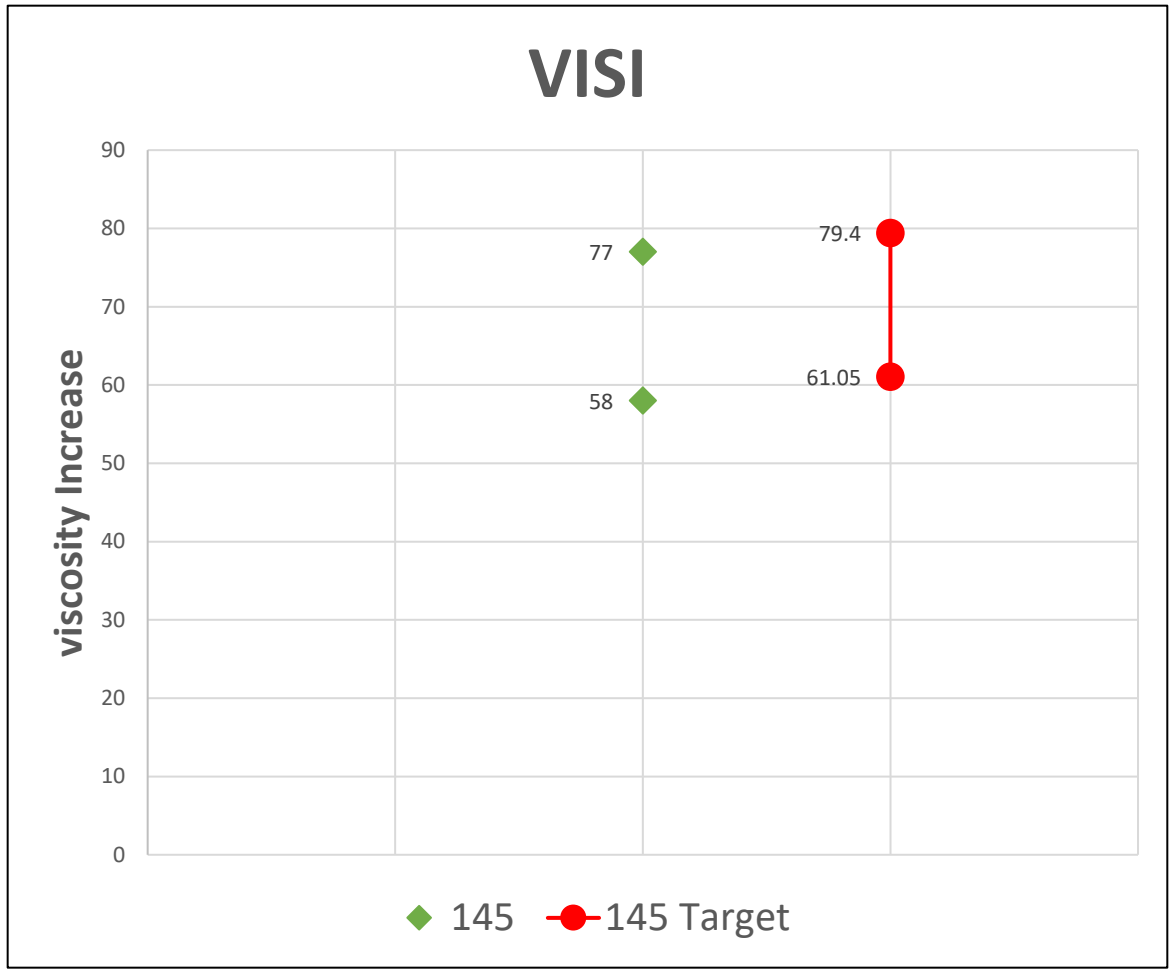


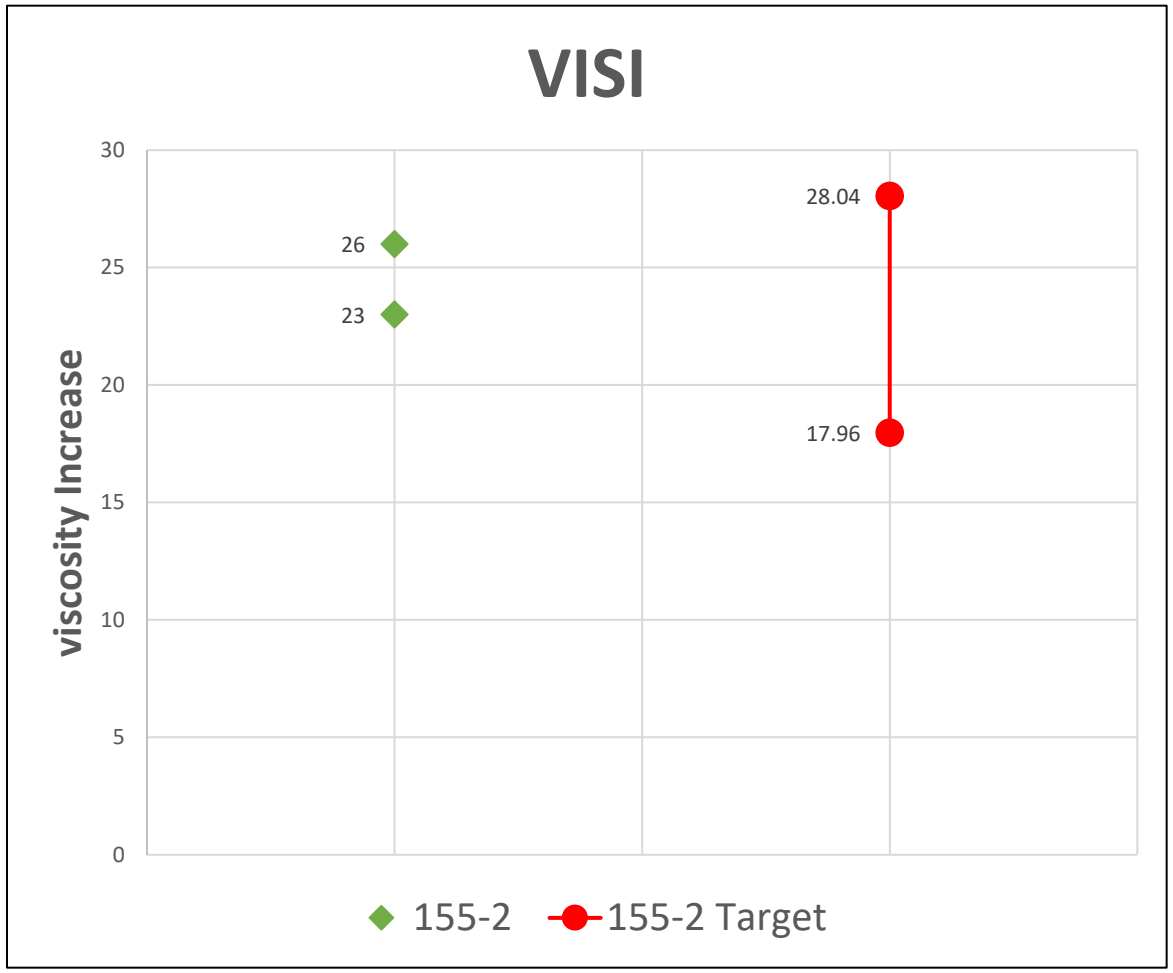
Pentane Results





Viscosity Results





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Thank you.

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L-60-1
Used Gear Testing

Brad Transue
Process Engineer

Raw Data

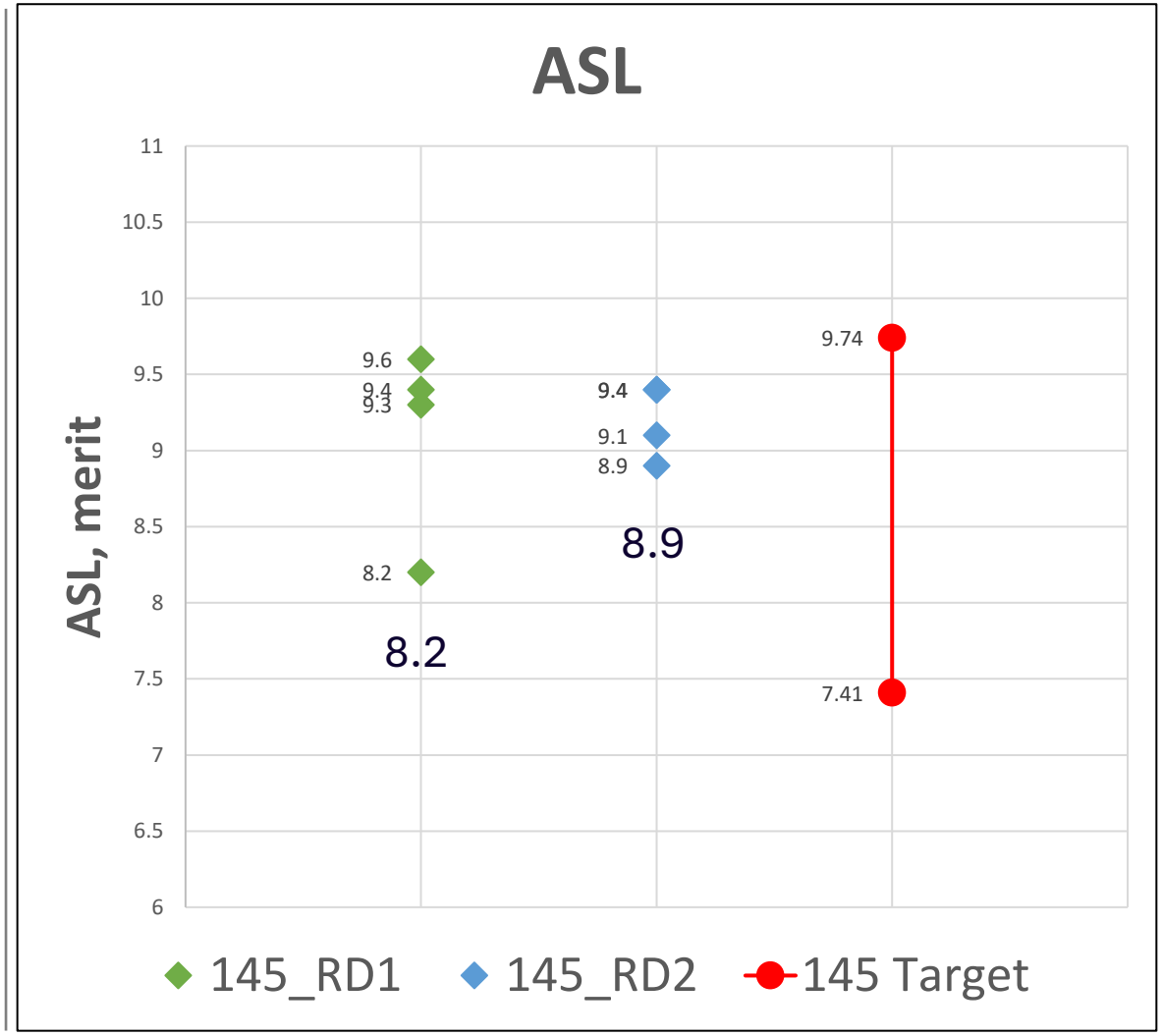
Rd1 – Original Gears 155-2

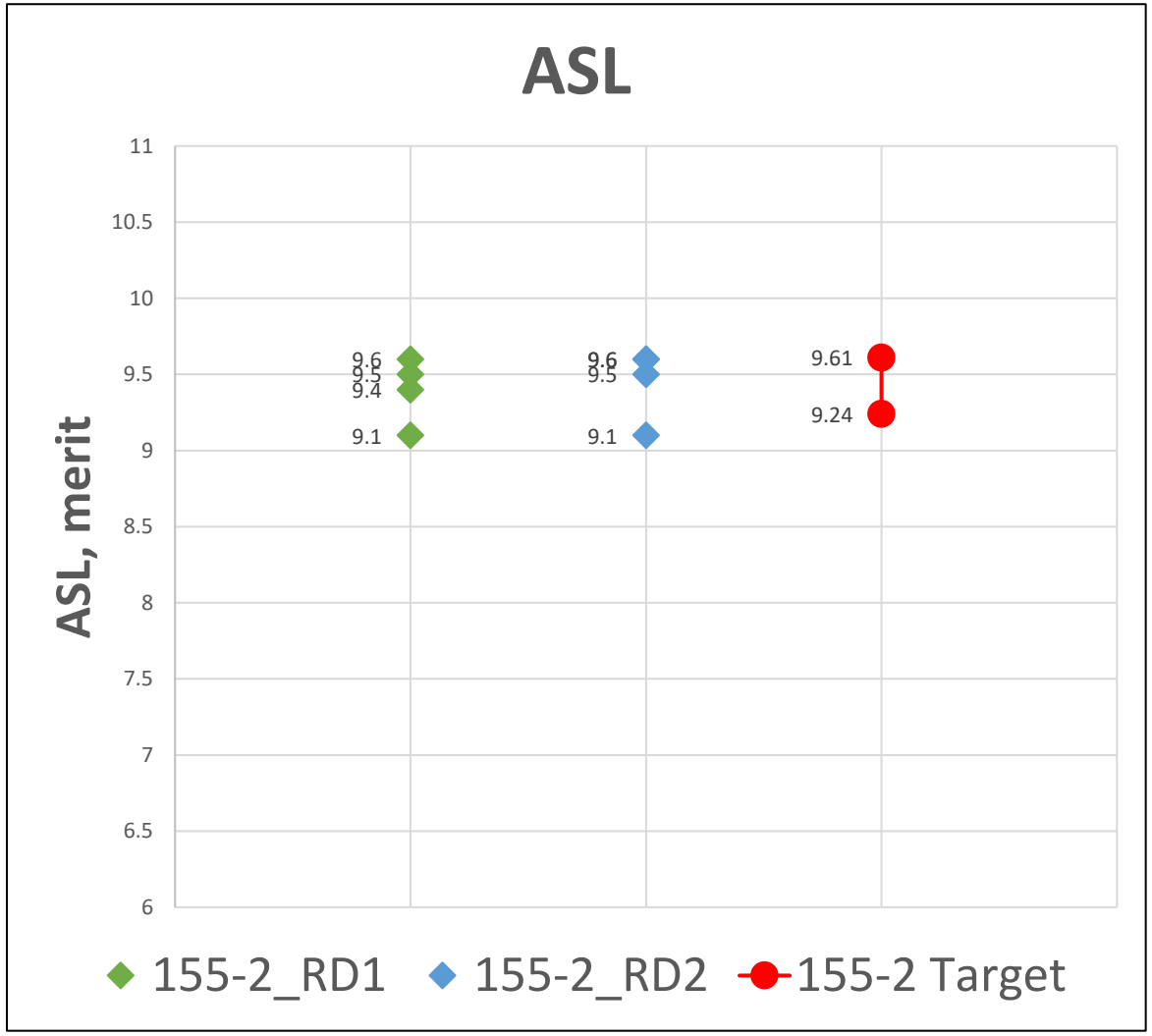
Testkey	Lab	ind	ASL	ACV	TOL	PEN	VISI
200004-L601	D	145	9.6	5.4	0.8	1.1	75
197349-L601	G	145	8.2	9.3	0.6	0.8	79
203143-L601	A	145	9.3	9.1	0.7	1	72
202567-L601	B	145	9.4	5.5	0.8	1	68
200001-L601	D	155-2	9.6	9.1	1	1.4	23
202534-L601	G	155-2	9.1	9.8	0.8	1.3	24
203140-L601	A	155-2	9.5	9.2	0.9	1.4	25
202572-L601	B	155-2	9.4	7.8	0.7	0.7	21

Rd2 – Original Gears 145

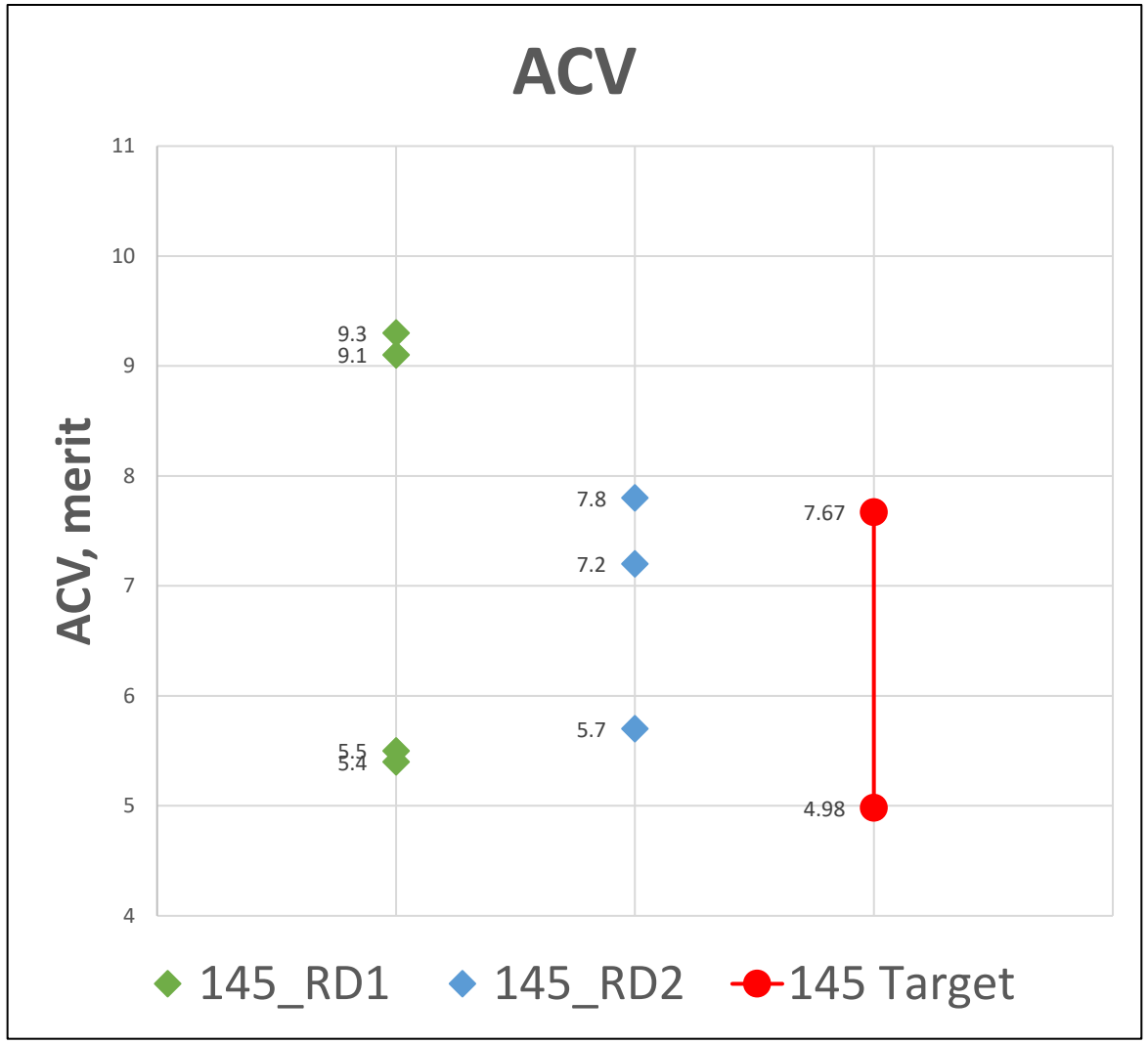
Testkey	Lab	ind	ASL	ACV	TOL	PEN	VISI
203562-L601	D	145	8.9	5.7	0.7	1.1	71
202540-L601	G	145	9.4	7.8	0.6	0.7	98
203559-L601	A	145	9.1	7.2	0.7	0.7	77
206879-L601	B	145	9.4	3.9	0.6	0.9	70
203567-L601	D	155-2	9.6	9	1	1.5	28
202535-L601	G	155-2	9.1	9	0.8	1.2	26
206975-L601	A	155-2	9.5	9.5	0.7	1.3	25
206883-L601	B	155-2	9.6	8.5	0.6	1.3	26

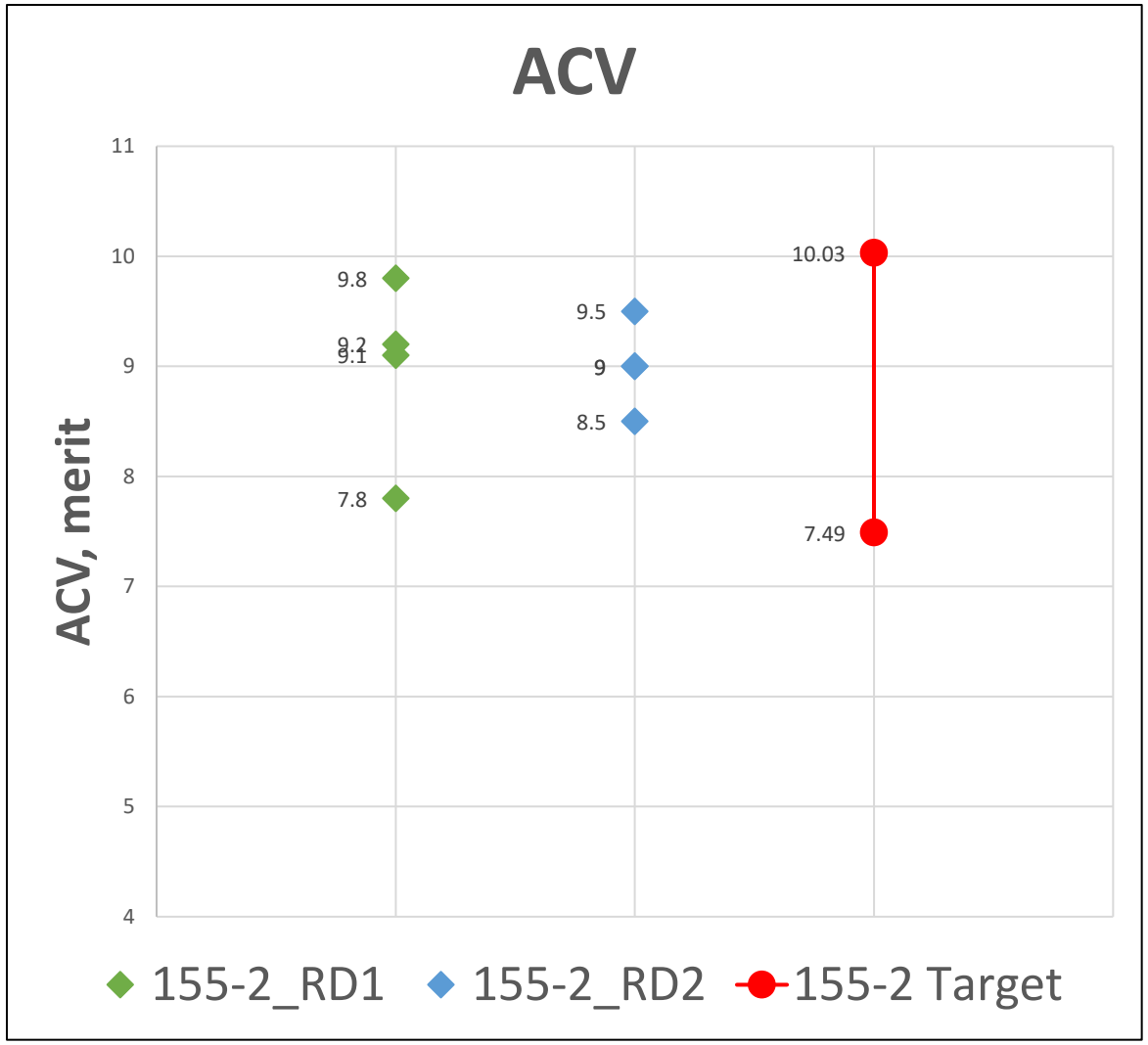
Average Sludge Results



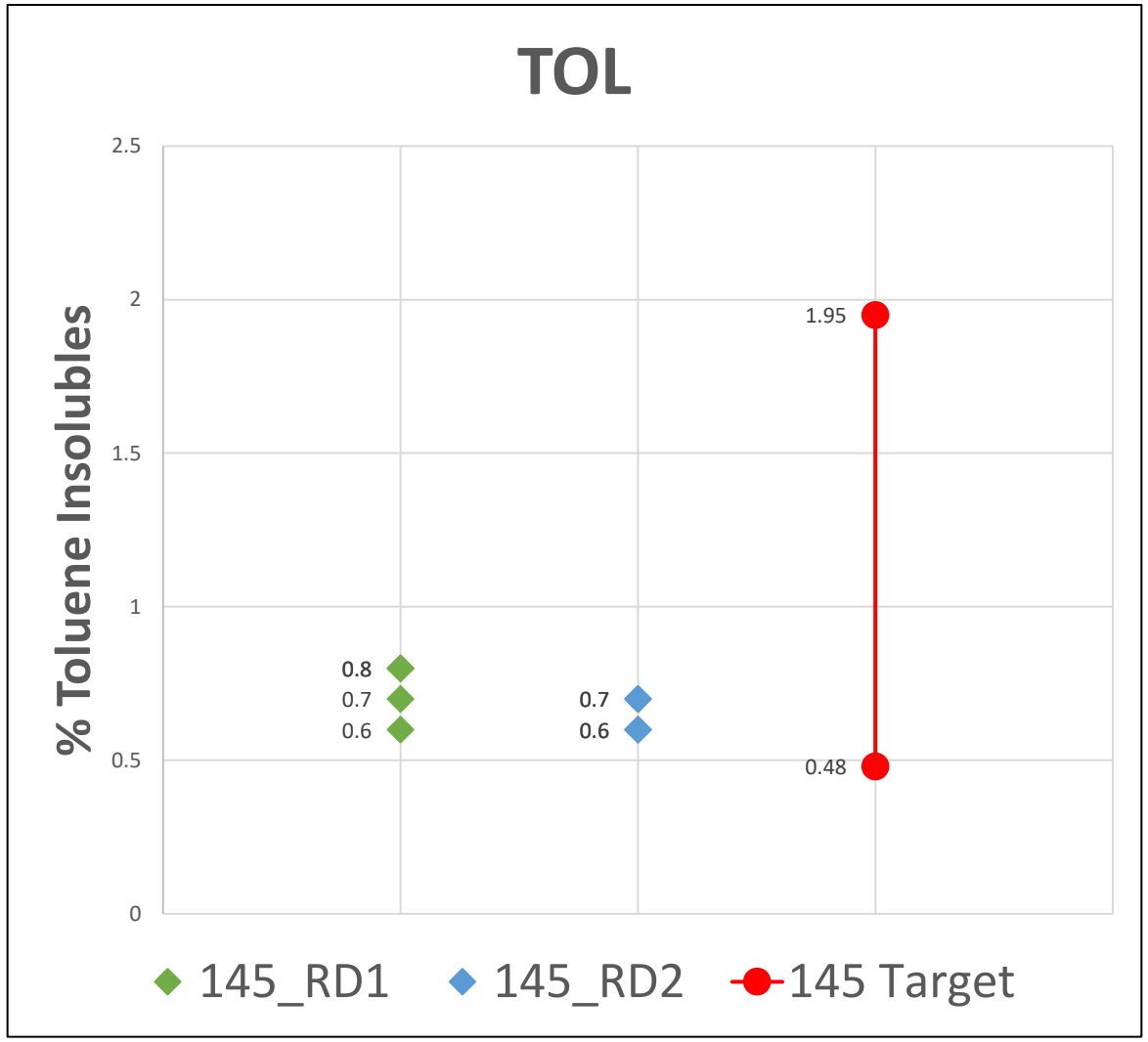


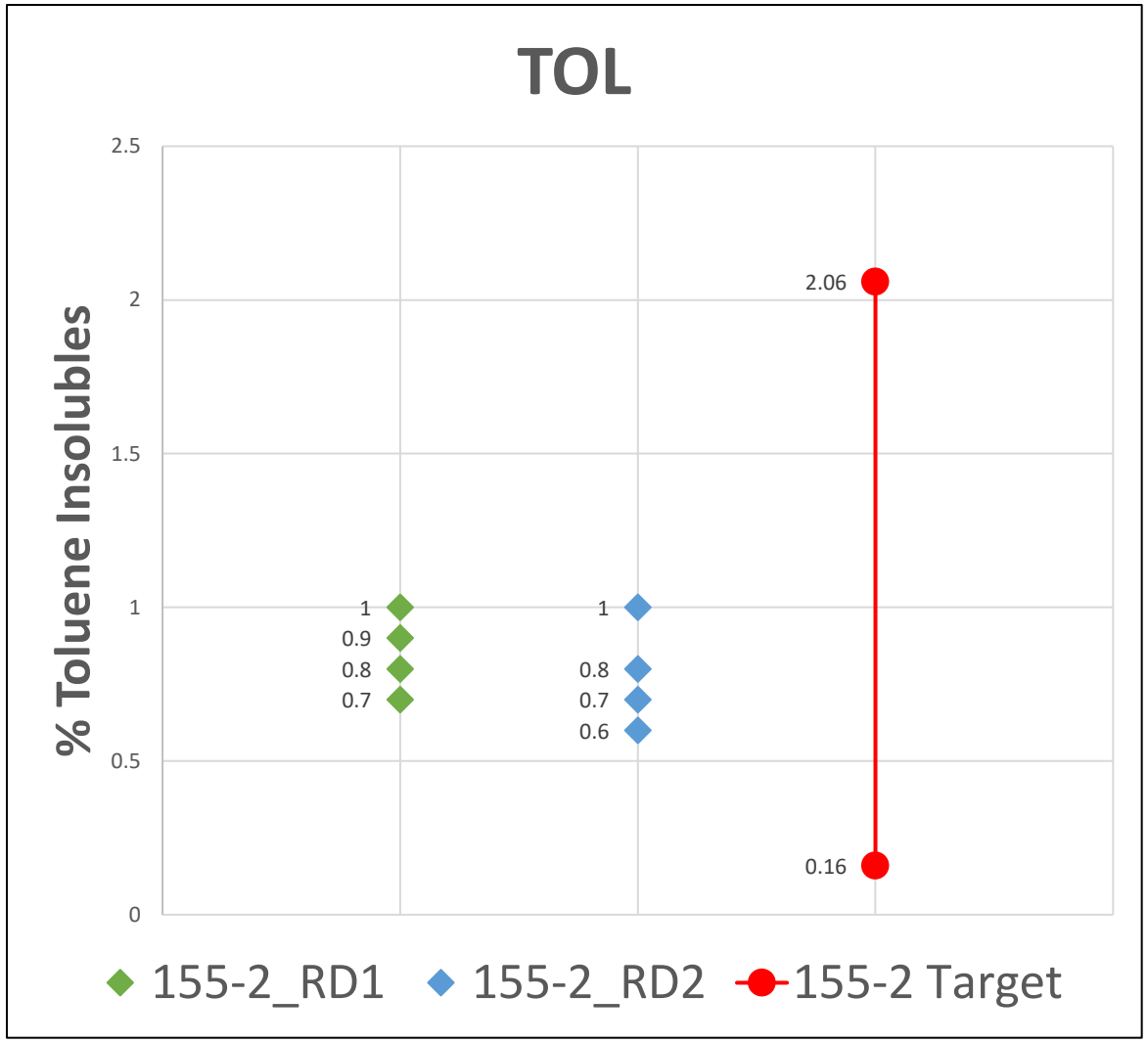
Average Carbon Varnish Results



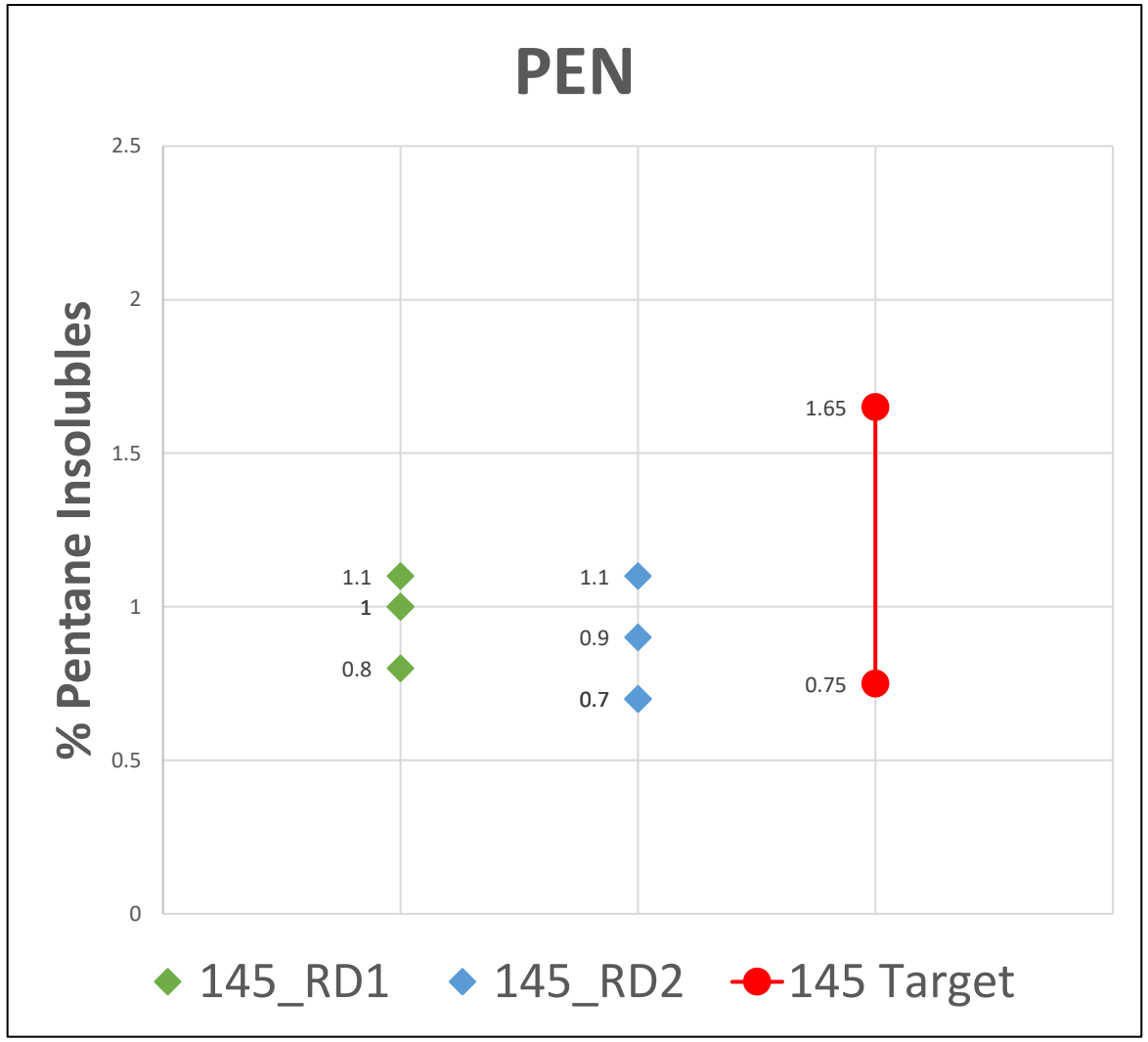


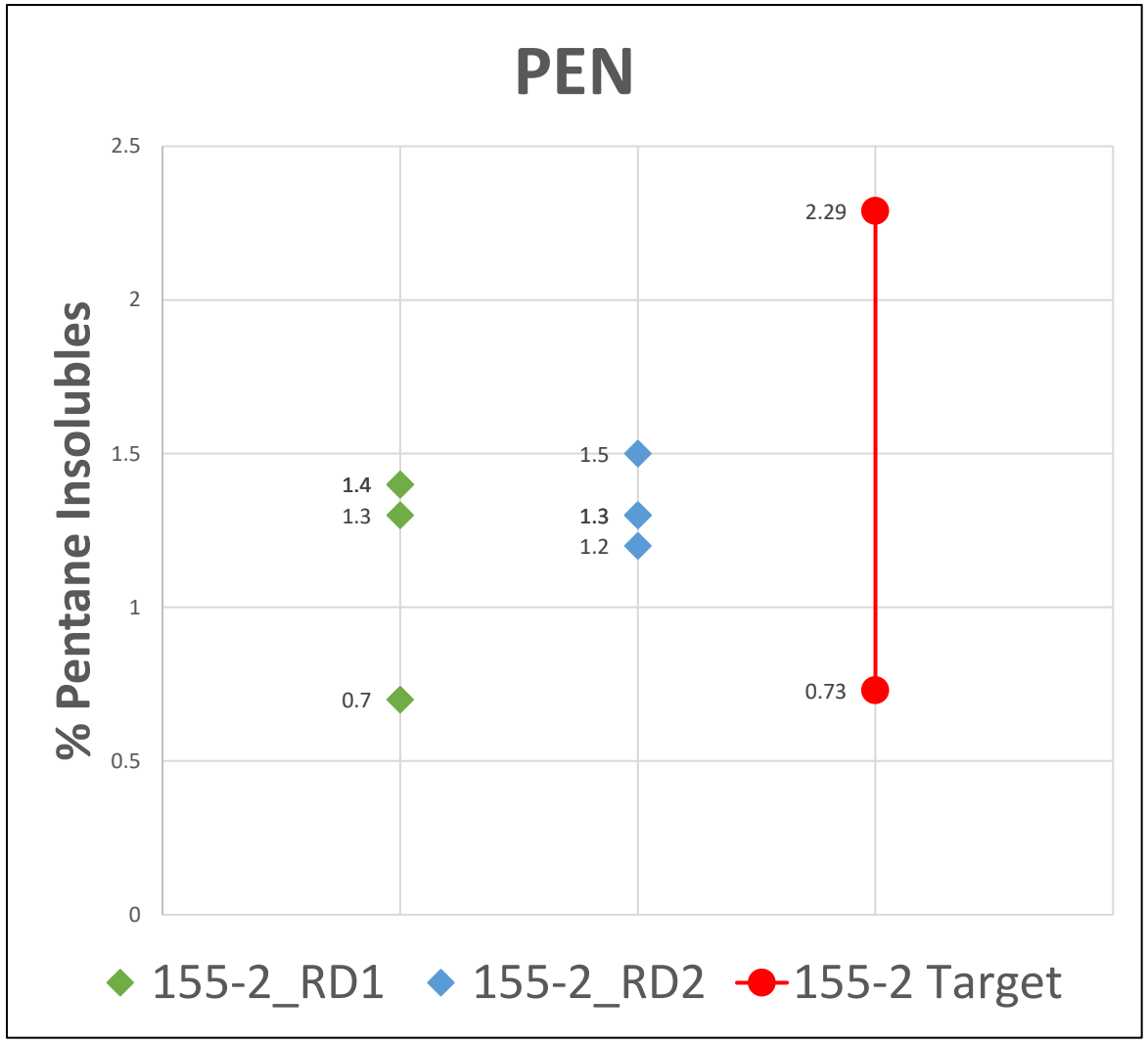
Toluene Results



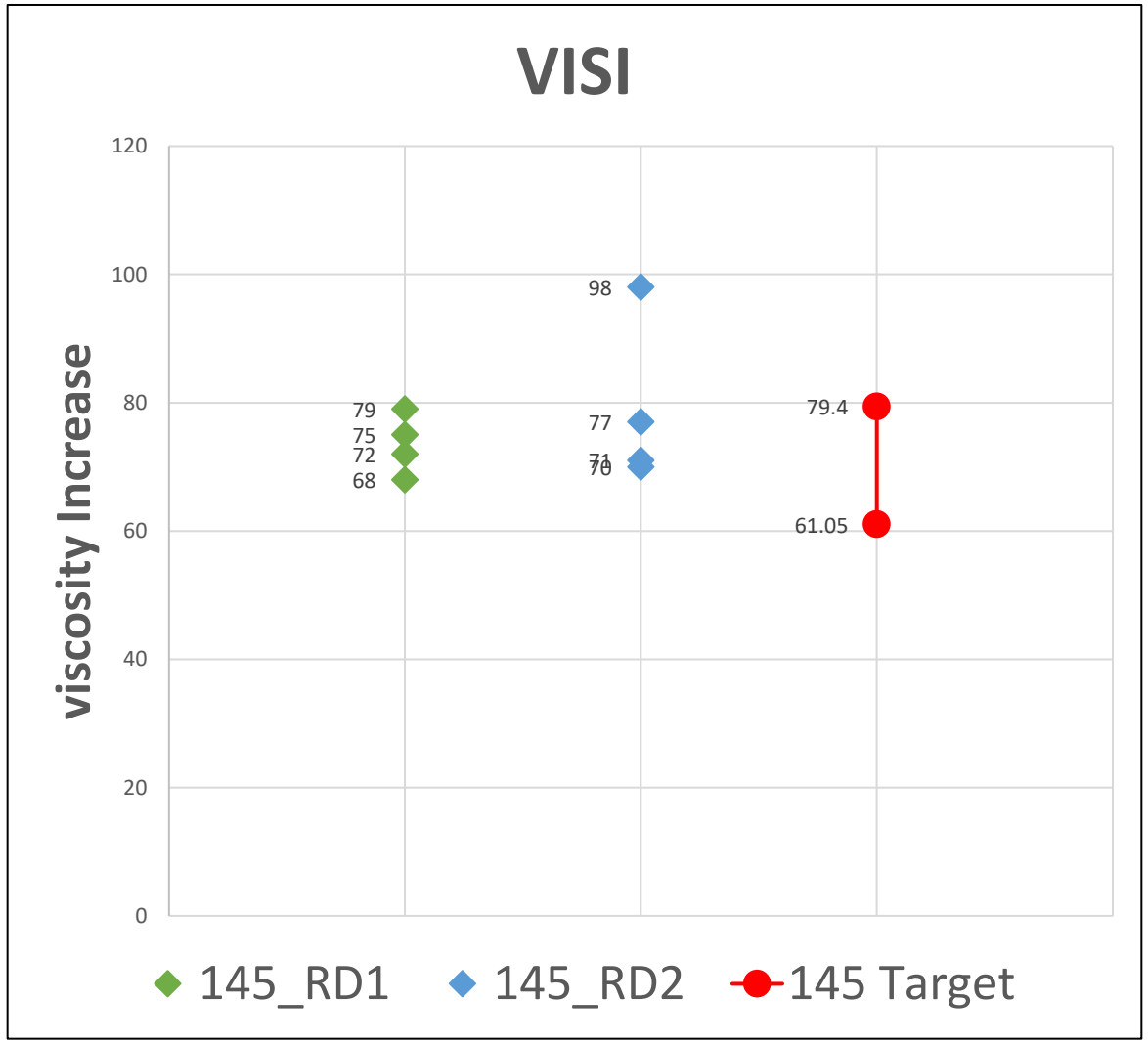


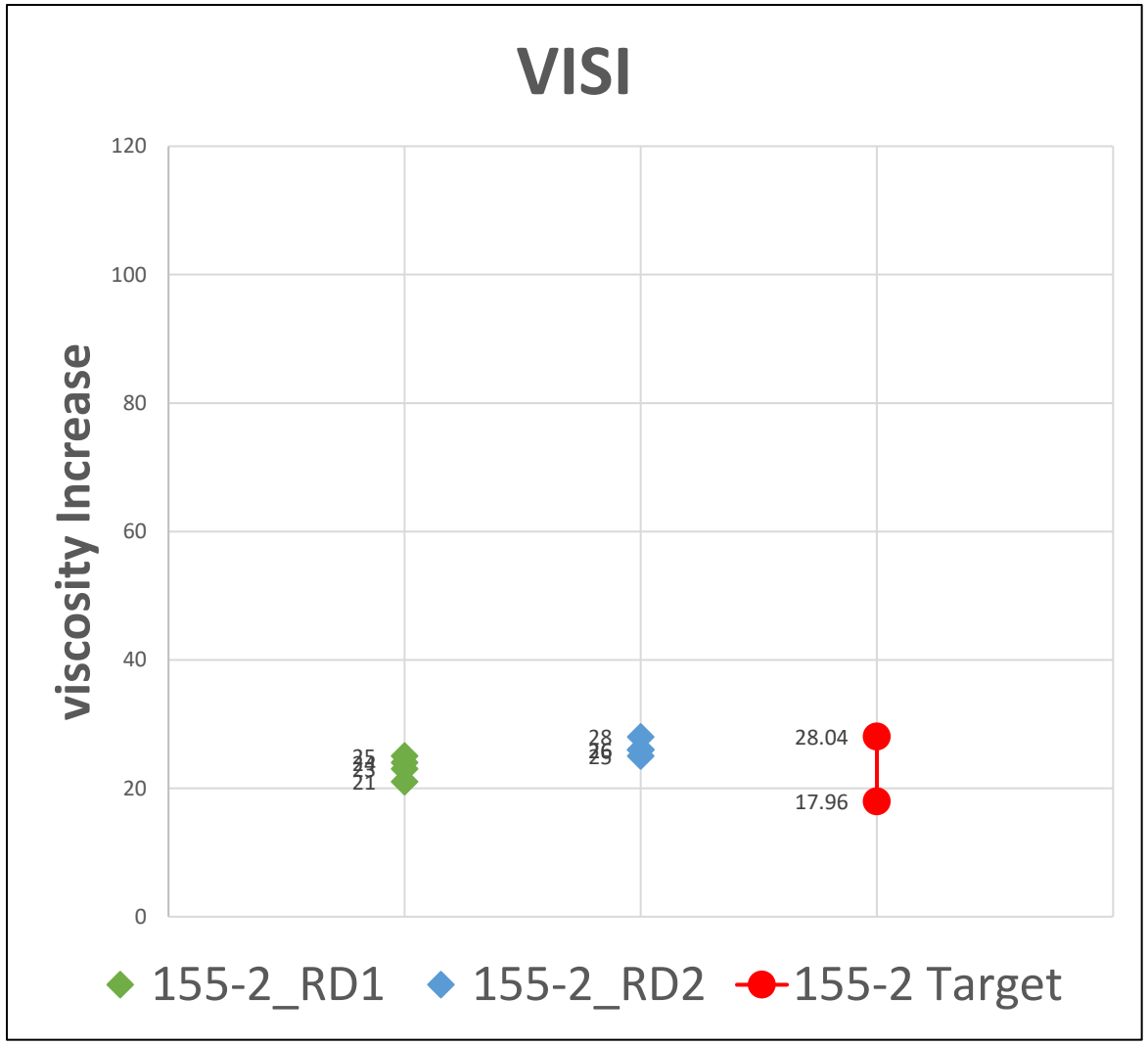
Pentane Results





Viscosity Results





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Thank you.