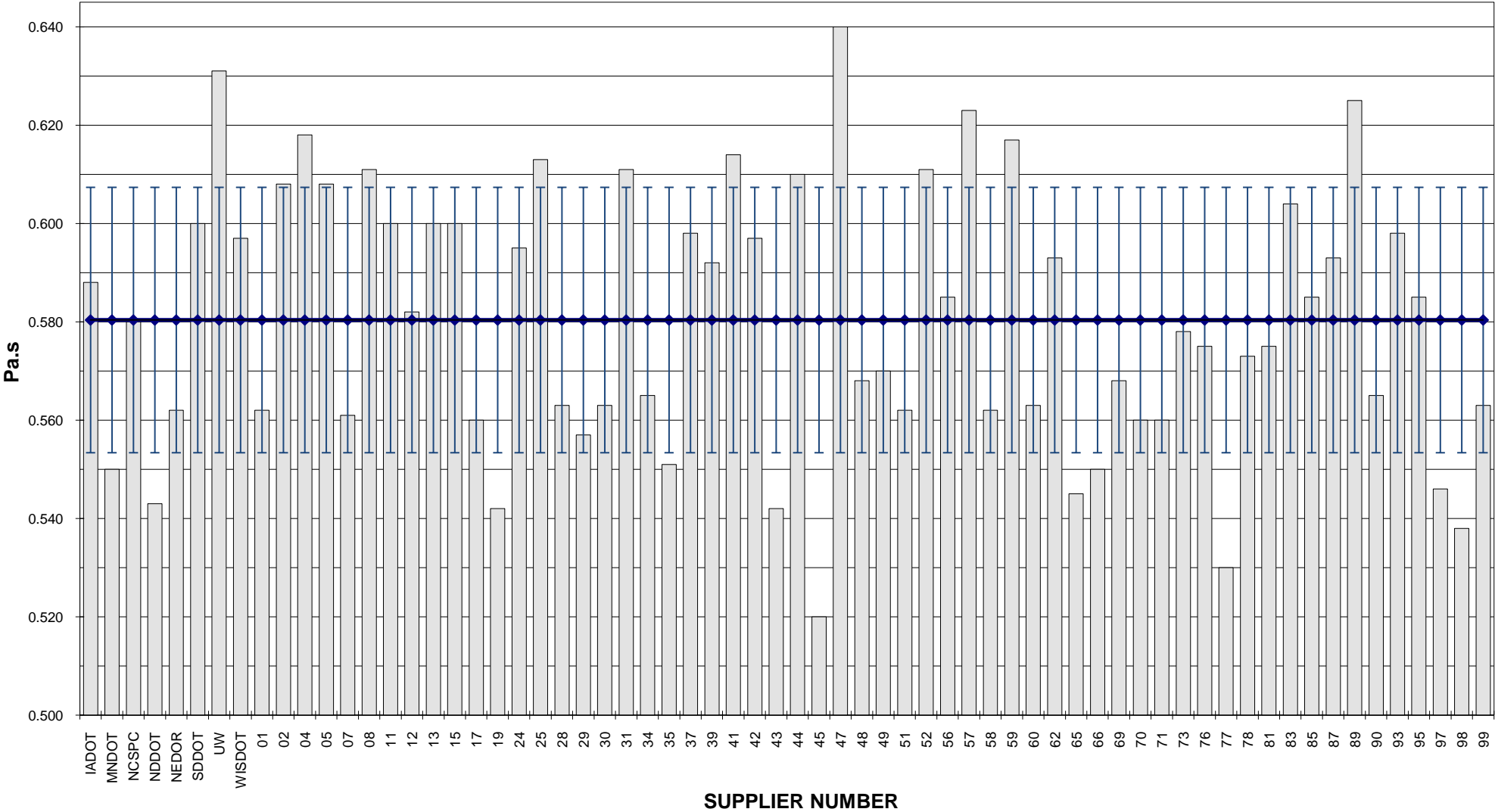


**COMBINED STATE BINDER GROUP ROUND ROBIN 2010-2  
SUMMARY A  
PG 64-28**

Supplier Number	Rotational Viscosity (Pa.s) @135°C	DSR Original (kPa) @64°C	DSR RTFO (kPa) @64°C	DSR PAV (kPa) @22°C	Mass Loss (%) @163°C	BBR S-value (MPa) @-18°C	BBR m-value @-18°C	Strain (%) @-18°C	DTT Stress (MPa) @-18°C	CRITICAL CRACK TEMP (°C)	MSCR % RECOVERY @ 100Pa	MSCR % RECOVERY @ 3200Pa
IADOT	0.588	1.41	3.64	2510	-0.445	190	0.323				35.61	18.03
MNDOT	0.550	1.41	4.28	2341	-0.591	176	0.326					
NCSPC	0.580	1.38	3.90	2360	-0.641	210	0.308				33.86	15.82
NDDOT	0.543	1.39	3.57	2314	-0.534	195	0.326				36.79	17.36
NEDOR	0.562	1.46	4.03	2512	-0.462	198	0.317				38.55	20.94
SDDOT	0.600	1.42	4.14	2314	-0.547	202	0.328				37.51	21.13
UW	0.631	1.42	4.12	2920	-0.180	193	0.312					
WISDOT	0.597	1.31	3.54	2552	-0.474	155	0.318					
01	0.562	1.36	3.94	2392	-0.466	186	0.325				38.04	20.54
02	0.608	1.42	3.51	2658	-0.472	209	0.324				34.27	16.94
04	0.618	1.29	3.50	2031	-0.500	194	0.335					
05	0.608	1.36	3.46	2406	-0.470	192	0.316				34.53	18.17
07	0.561	1.36	3.44	2744	-0.325	204	0.324				32.42	17.01
08	0.611	1.43	3.59	2371	-0.362	184	0.319				35.26	18.23
11	0.600	1.44	3.88	2656	-0.457	210	0.325				37.27	19.32
12	0.582	1.41	3.42	2708	-0.544	200	0.320					
13	0.600	1.38	3.99	2460	-0.430	174	0.328	1.45	3.57	-30.5	34.98	17.48
15	0.600	1.39	3.95	2106	-0.525	183	0.345				37.41	18.06
17	0.560	1.36	4.11	2479	-0.480	186	0.327				38.06	20.33
19	0.542	1.42	3.74	2522	-0.515	209	0.328				21.18	18.29
24	0.595	1.37	3.98	2435	-0.445	172	0.329	1.94	4.28	-35.1	36.56	17.67
25	0.613	1.31	4.18	3038	-0.526	211	0.326				36.58	19.53
28	0.563	1.41	3.45	2596	-0.495	204	0.318				34.80	16.70
29	0.557	1.34	3.77	2779	-0.527	210	0.327				36.50	18.00
30	0.563	1.60	4.21	1822	-0.496	196	0.334					
31	0.611	1.48	3.44	2560	-0.458	182	0.317				33.45	17.36
34	0.565	1.37	3.81	2278	-0.476	214	0.326				35.84	19.00
35	0.551	1.42	4.12	1580	-0.498	171	0.333					
37	0.598	1.29	2.99	2729	-0.501	223	0.305				33.76	15.53
39	0.592	1.33	3.95	2154	-0.433	206	0.328				37.90	19.45
41	0.614	1.34	3.50	2083	-0.360	177	0.323				35.17	17.88
42	0.597	1.39	3.90	1862	-0.614	189	0.313				16.00	11.00
43	0.542	1.39	3.78	2030	-0.504	200	0.344					
44	0.610	1.36	3.42	2435	-0.370	182	0.320				34.75	17.98
45	0.520	1.42	4.16	2526	-0.536	184	0.322				38.75	20.64
47	0.640	1.29	3.70	3696	-0.471	194	0.334					
48	0.568	1.40	3.66	2320	-0.495	213	0.329				35.40	18.21
49	0.570	1.36	3.61	2270	-0.499	197	0.314				34.08	14.97
51	0.562	1.47	3.82	2495	-0.569	200	0.330				20.78	17.84
52	0.611	1.33	3.39	2024	-0.458	186	0.320				33.80	17.05
56	0.585	1.38	3.69	2852	-0.537	201	0.317				35.71	17.65
57	0.623	1.31	3.36	1990	-0.483	193	0.335					
58	0.562	1.41	3.75	2240	-0.480	195	0.333				35.95	18.31
59	0.617	1.31	4.19	2934	-0.463	207	0.327				34.98	17.26
60	0.563	1.40	3.33	2600	-0.598	205	0.324					
62	0.593	1.40	3.67	2598	-0.532	218	0.326				36.11	18.36
65	0.545	1.38	3.80	2143	-0.508	173	0.332				95.60	29.90
66	0.550	1.42	3.70	2431	-0.489	212	0.320				36.80	18.10
69	0.568	1.44	3.56	2553	-0.461	196	0.326	3.11	5.64	-31.60	36.32	16.05
70	0.560	1.42	3.67	2583	-0.447	205	0.324				37.49	17.81
71	0.560	1.47	3.79	2375	-0.464	185	0.334					
73	0.578	1.49	3.52	2063	-0.296	186	0.336					
76	0.575	1.35	3.92	2448	-0.475	211	0.311				34.10	15.70
77	0.530	1.40	3.88	2560	-0.400	203	0.322				33.62	15.77
78	0.573	1.41	3.93	2310	-0.473	199	0.331				35.48	18.20
81	0.575	1.41	3.84	2325	-0.494	194	0.334				35.47	18.19
83	0.604	1.36	3.57	2237	-0.366	188	0.321				35.13	18.58
85	0.585	1.38	3.82	2488	-0.488	226	0.315				33.20	14.90
87	0.593	1.34	3.98	2306	-0.554	201	0.328				39.05	20.29
89	0.625	1.39	3.98	2234	-0.513	179	0.331				37.22	18.26
90	0.565	1.41	3.83	2915	-0.486	211	0.320				36.80	18.70
93	0.598	1.42	3.59	2255	-0.473	187	0.324	1.98	4.45	-29.80	35.28	15.49
95	0.585	1.34	3.82	2278	-0.422	216	0.317					
97	0.546	1.43	3.81	2396	-0.547	199	0.333				26.29	18.56
98	0.538	1.40	3.64	2522	-0.578	205	0.331				20.26	16.93
99	0.563	1.44	3.80	2527	-0.439	202	0.313				36.80	18.50
<b>Average</b>	0.580	1.39	3.76	2428	-0.479	196	0.325	2.12	4.49	-31.75	35.53	18.04
<b>Std. Dev.</b>	0.0270	0.0533	0.2575	316.93	0.0739	13.81	0.0079	0.7026	0.8592	2.3530	9.7528	2.4255
<b>Coef. of Var.</b>	4.651	3.829	6.852	13.055	15.430	7.036	2.439	33.142	19.156	-7.411	27.450	13.447

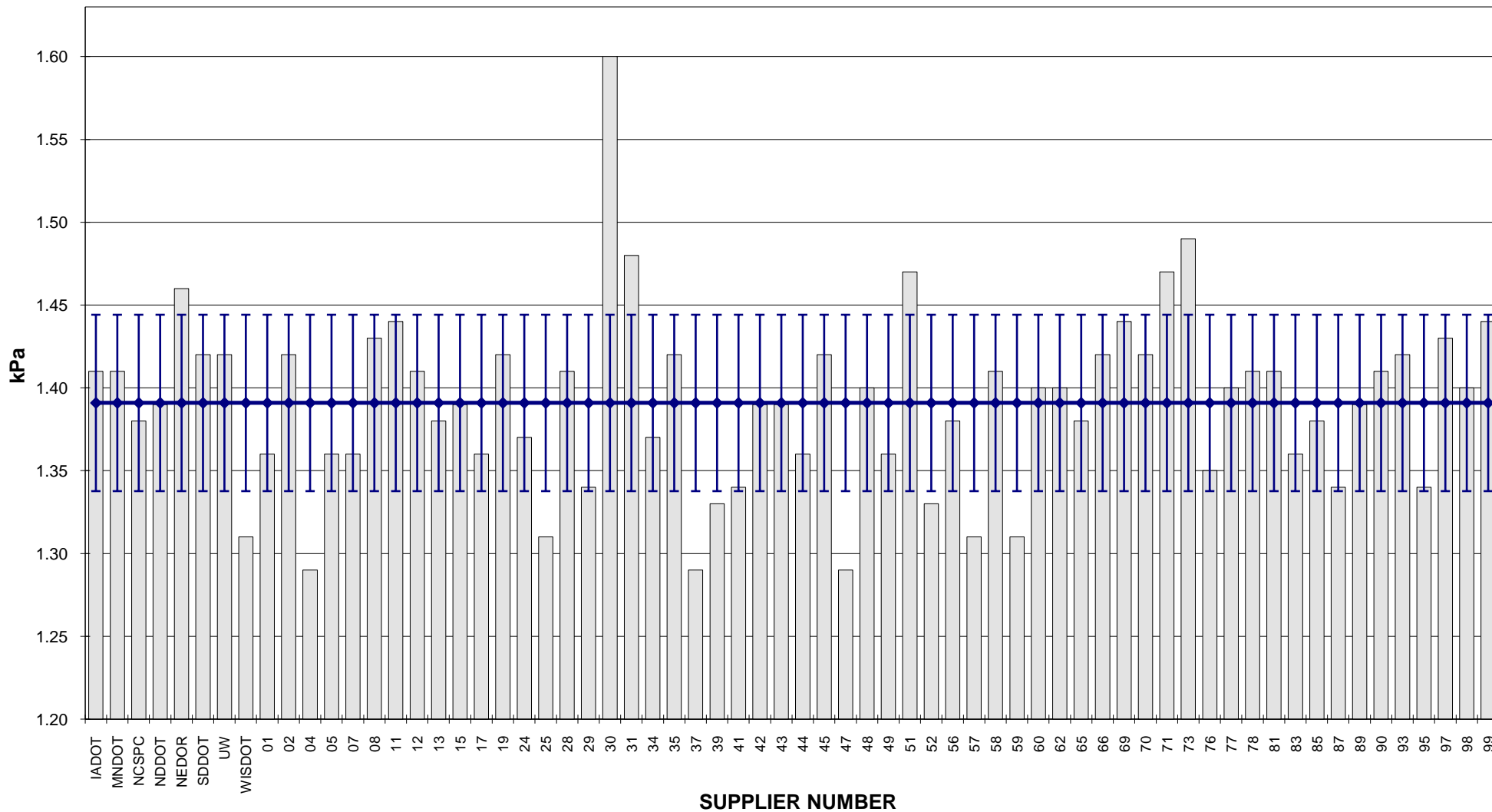
**COMBINED STATE BINDER GROUP ROUND ROBIN 2010-2  
SUMMARY A  
PG 64-28**

**ROTATIONAL VISCOSITY**



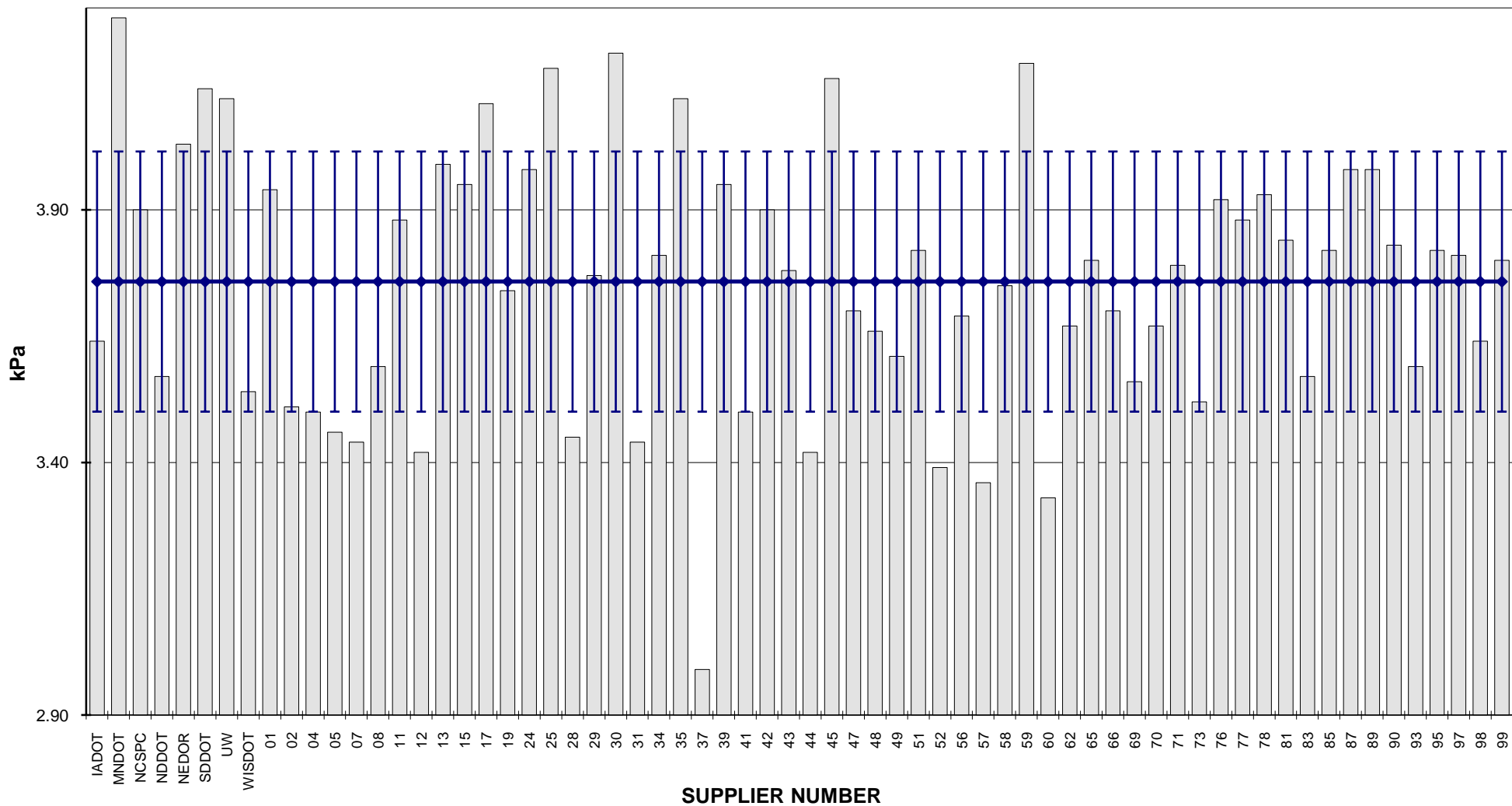
**COMBINED STATE BINDER GROUP ROUND ROBIN 2010-2  
SUMMARY A  
PG 64-28**

**DSR - ORIGINAL**

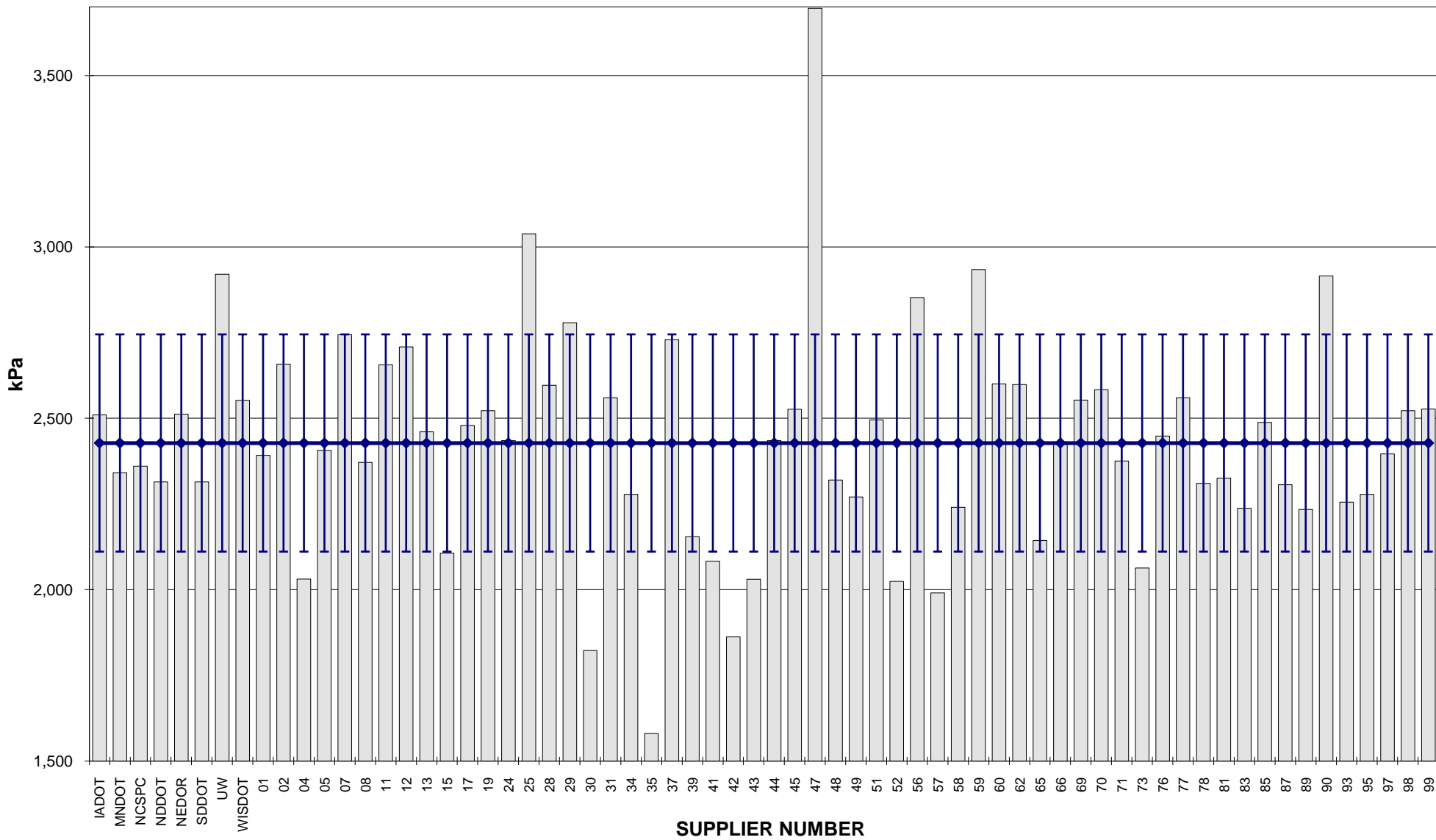


**COMBINED STATE BINDER GROUP ROUND ROBIN 2010-2  
SUMMARY A  
PG 64-28**

**DSR - RTFO**



**COMBINED STATE BINDER GROUP ROUND ROBIN 2010-2  
SUMMARY A  
PG 64-28  
DSR - PAV**

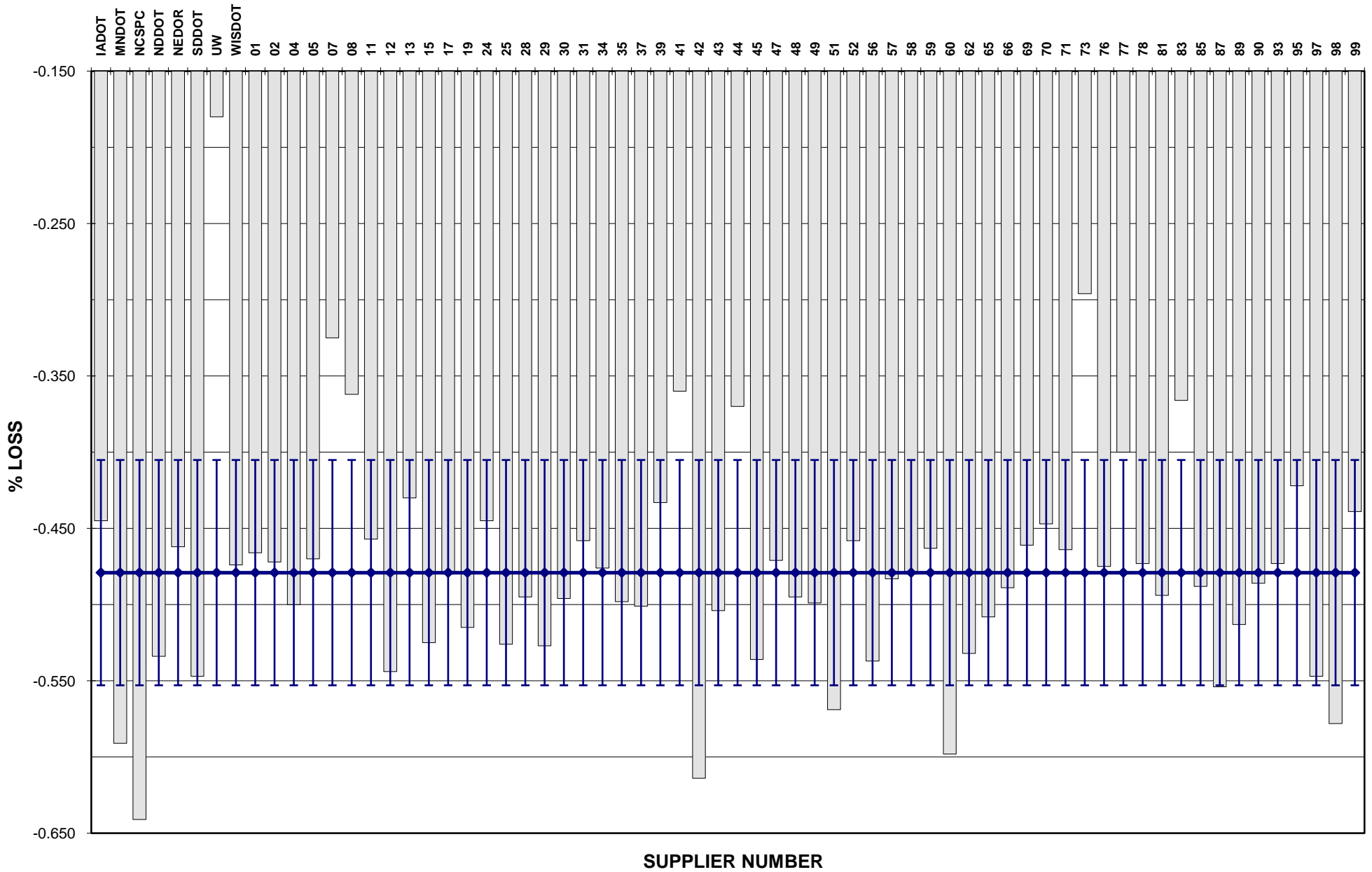


COMBINED STATE BINDER GROUP ROUND ROBIN 2010-2

SUMMARY A

PG 64-28

RTFO MASS LOSS

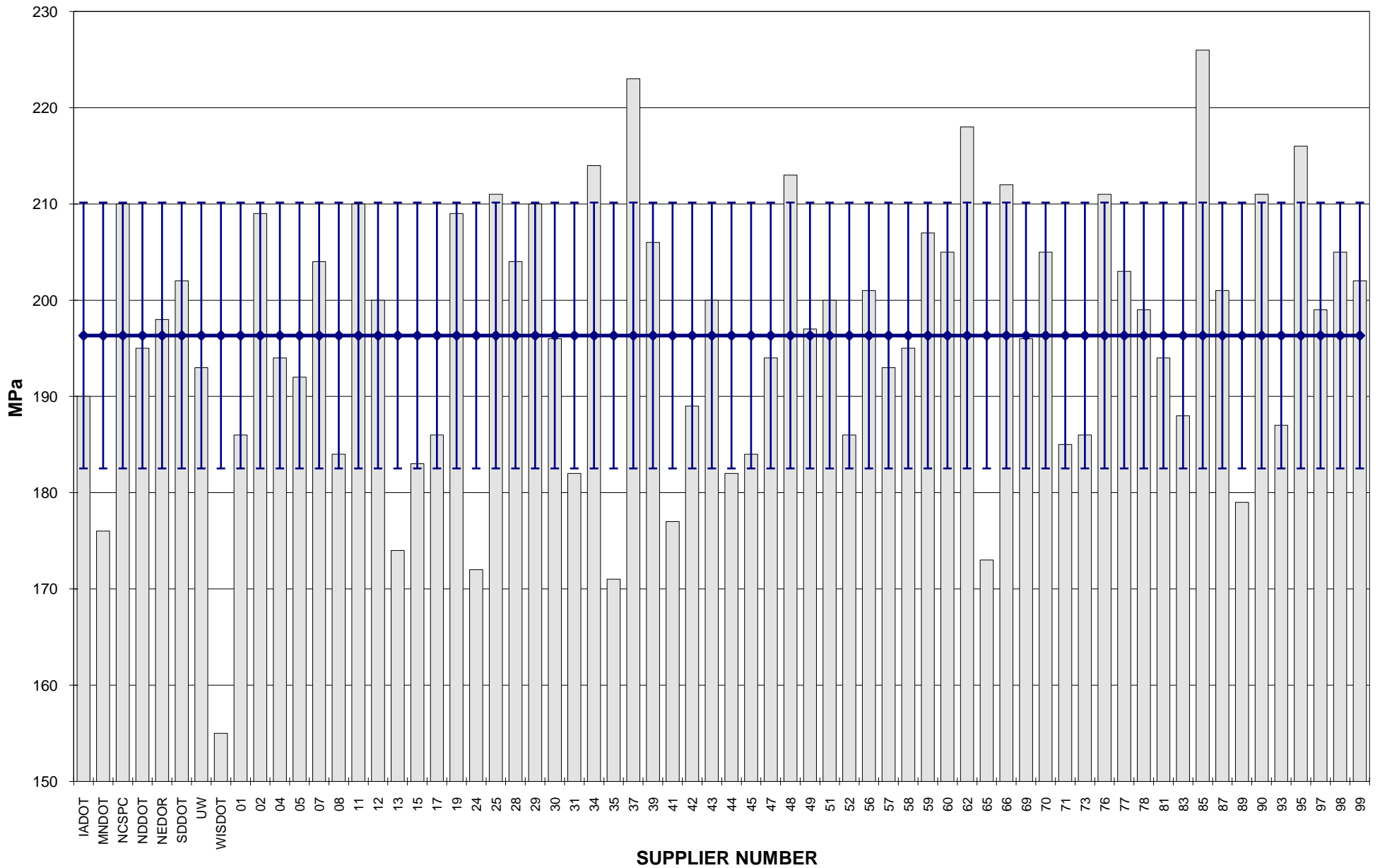


COMBINED STATE BINDER GROUP ROUND ROBIN 2010-2

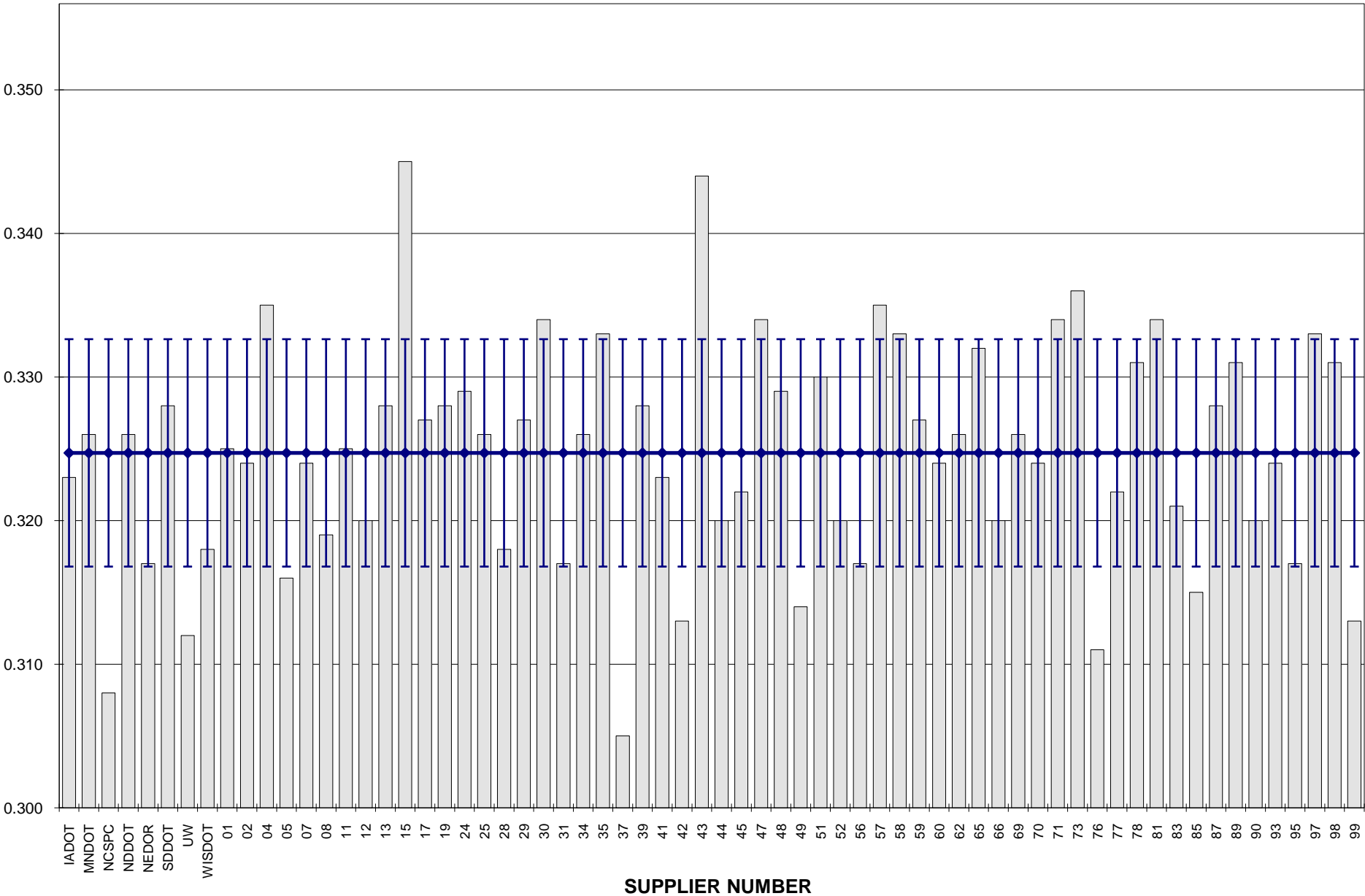
SUMMARY A

PG 64-28

BBR STIFFNESS



**COMBINED STATE BINDER GROUP ROUND ROBIN 2010-2**  
**SUMMARY A**  
**PG 64-28**  
**BBR m-VALUE**





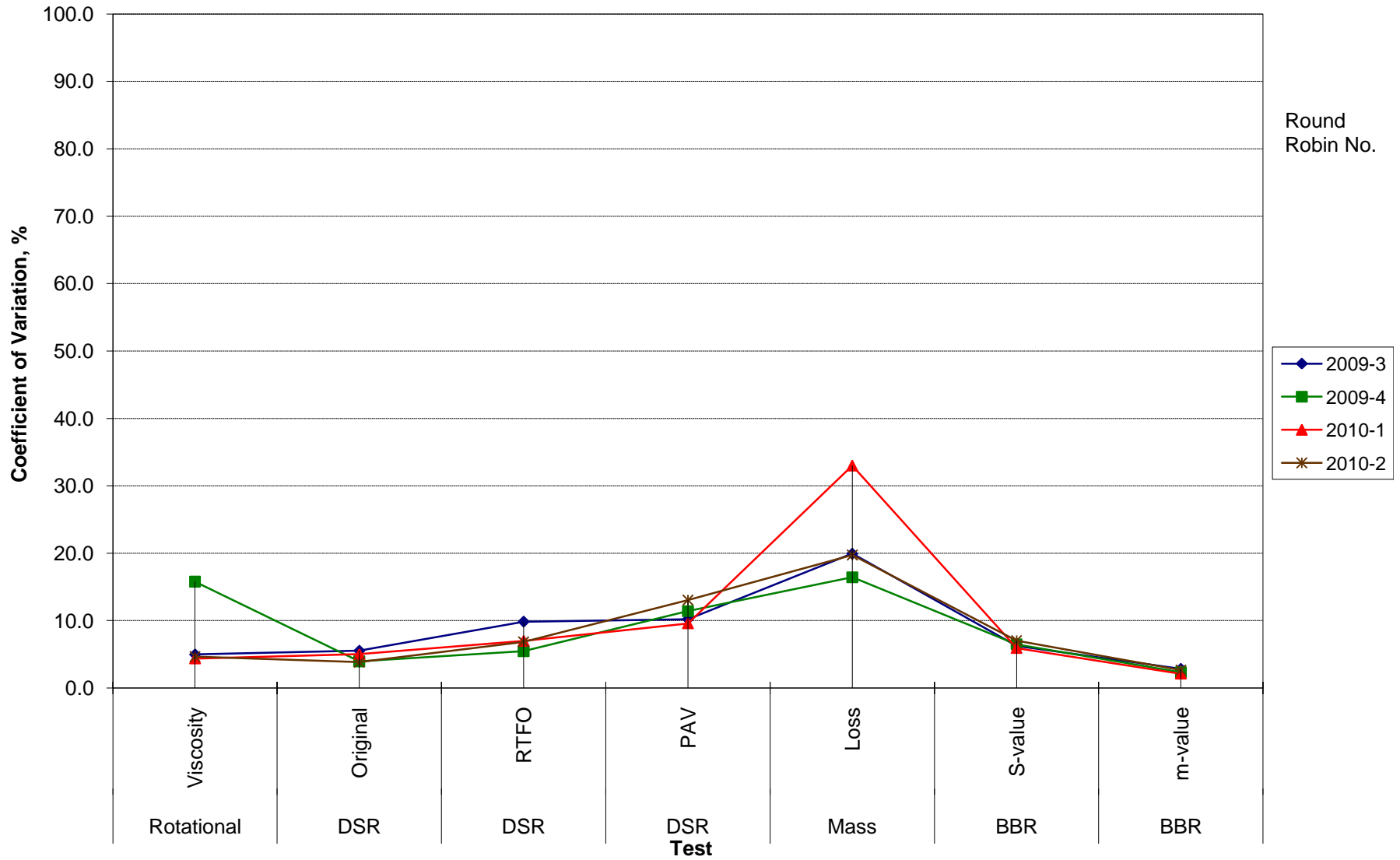
**COMBINED STATE BINDER GROUP ROUND ROBIN 2010-2  
SUMMARY A  
64-28**

**COEFFICIENT OF VARIATION**

Round Robin No.	Number of Participants	Coefficient of Variation, %							
		Rotational Viscosity	DSR Original	DSR RTFO	DSR PAV	Mass Loss	BBR S-value	BBR m-value	DTT Strain
2009-3	68	4.973	5.526	9.847	10.209	19.936	6.241	2.833	78.105
2009-4	66	15.785	3.944	5.455	11.405	16.430	6.485	2.318	29.809
2010-1	67	4.375	5.009	6.987	9.588	32.991	5.926	2.121	30.372
2010-2	66	4.651	3.829	6.852	13.055	19.736	7.036	2.666	33.142

**COMBINED STATE BINDER GROUP ROUND ROBIN 2010-2  
SUMMARY A  
64-28**

**COEFFICIENT OF VARIATION**



**COMBINED STATE BINDER GROUP ROUND ROBIN 2010-2  
SUMMARY A  
PG 64-28**

**STATISTICS WITH OUTLIERS REMOVED:**

	<b>Rotational Viscosity (Pa.s) @135°C</b>	<b>DSR Original (kPa) @64°C</b>	<b>DSR RTFO (kPa) @64°C</b>	<b>DSR PAV (kPa) @25°C</b>	<b>Mass Loss (%) @163°C</b>	<b>BBR S-value (MPa) @-12°C</b>	<b>BBR m-value @-12°C</b>
<b>Average</b>	0.580	1.39	3.76	2,408	-0.484	196	0.325
<b>Std. Dev.</b>	0.0270	0.0468	0.2575	276.58	0.0643	13.81	0.0079
<b>Coef. of Var.</b>	4.651	3.370	6.852	11.485	-13.288	7.036	2.439