

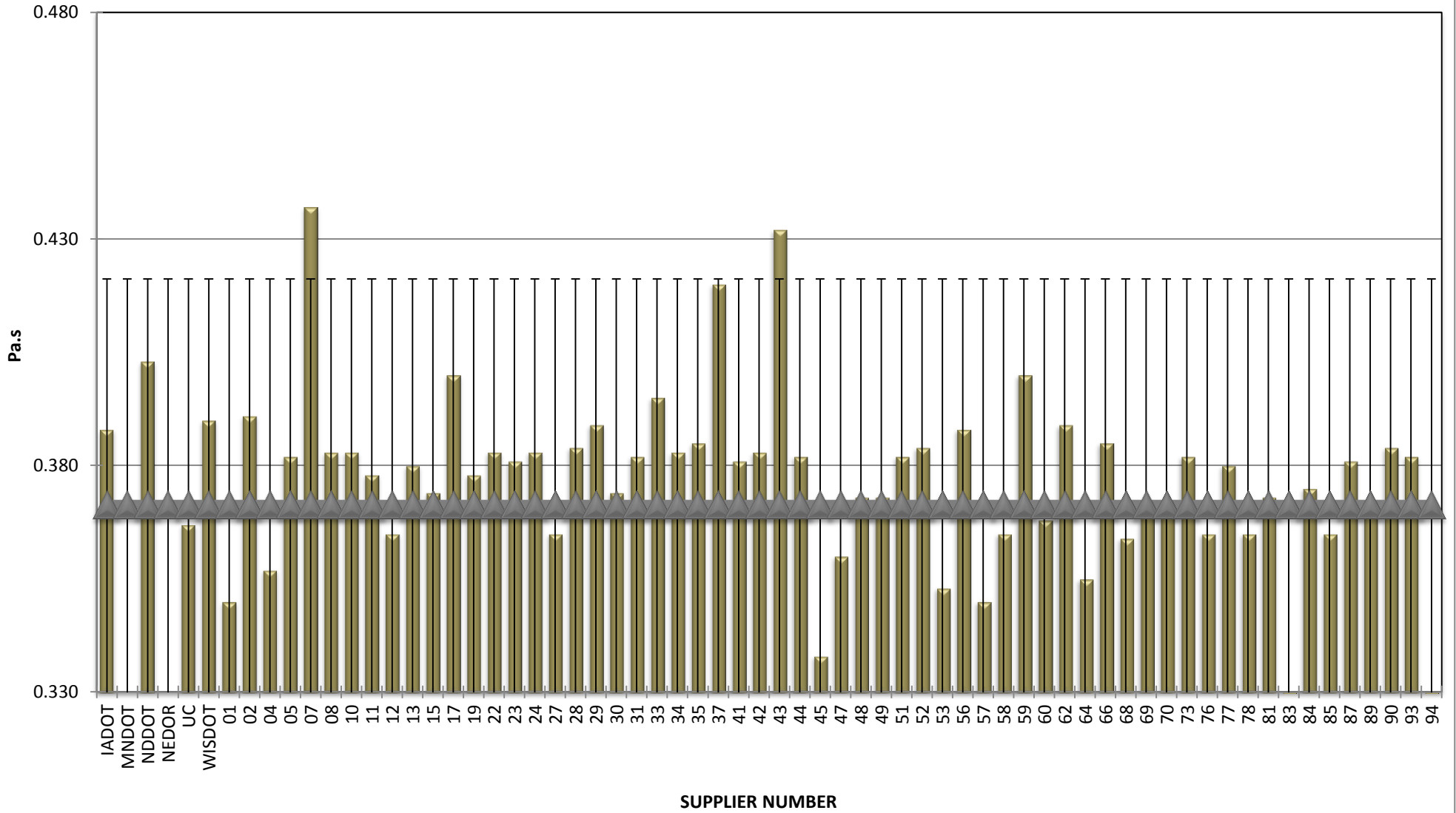
COMBINED STATE BINDER GROUP ROUND ROBIN SUMMARY A 2015-3

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Supplier Number	Rotational Viscosity (Pa.s) @135°C	DSR Original (kPa)	DSR RTFO (kPa)	DSR PAV (kPa)	Mass Loss (%) @163°C	BBR S-value (MPa)	BBR m-value	Jnr @ 100 Pa	% Recov. @ 100 Pa	Jnr @ 3200 Pa	% Recov. @ 3200 Pa
IADOT	0.388	1.12	2.790	3,910	0.625	206	0.352	1.376	5.12	1.439	2.48
MNDOT		1.08	2.350	2,910	0.700	188	0.337	1.446	4.37		2.22
NDDOT	0.403	1.13	2.810	3,811	0.706	213	0.343	1.332	4.90	1.419	2.40
NEDOR		1.11	3.890	4,411	0.654	223	0.331	0.941	6.02	0.983	4.74
UC	0.367	1.13	2.810	3,616	0.632	223	0.348	1.354	5.90	1.514	2.10
WISDOT	0.390	1.18	2.880	3,087	0.584	200	0.362	1.320	5.87	1.450	2.54
01	0.350	1.30	3.240	4,045	0.707	202	0.342	1.102	8.68	1.222	3.48
02	0.391	1.14	2.830	3,905	0.638	198	0.352	1.405	4.41	1.484	2.50
04	0.357	1.03	2.317	3,490	0.573	180	0.345		4.60		2.10
05	0.382	1.09	2.830	3,705	0.721	203	0.346	1.268	4.88	1.398	1.75
07	0.437	1.14	2.960	4,270	0.586	218	0.346	1.260	8.18	1.400	2.20
08	0.383	1.08	2.816	3,639	0.576	199	0.354	1.355	4.47	1.493	1.76
10	0.383	1.07	2.817	3,537	0.573	198	0.352	1.318	4.92	1.456	1.65
11	0.378	1.11	2.970	3,651	0.669	210	0.350	1.322	4.52	1.397	2.63
12	0.365	1.08	2.900	3,670	0.788	213	0.344				
13	0.380	1.06	2.770	3,610	0.614	208	0.337	1.310	6.33	0.430	2.32
15	0.374	1.10	2.950	3,685	0.692	208	0.349	1.304	4.51	1.379	2.27
17	0.400	1.25	2.540	4,552	0.573	192	0.346	1.541	4.51	1.926	1.93
19	0.378	1.07	2.935	4,096	0.724	212	0.351	1.374	4.90	1.464	1.80
22	0.383	1.08	2.936	3,808	0.711	206	0.348	1.275	4.66	1.404	1.94
23	0.381	1.16	3.000	3,531	0.689	204	0.357	1.240	5.82	1.330	2.86
24	0.383	1.09	2.850	3,610	0.602	193	0.342	1.340	5.06	1.430	2.15
27	0.365	1.08	2.700	3,770	0.553	208	0.354	1.415	4.63	1.513	1.68
28	0.384	1.09	2.763	3,582	0.580	182	0.342	1.492	5.07	1.590	2.23
29	0.389	1.10	2.840	4,508	0.734	215	0.349	1.394	4.36	1.463	2.55
30	0.374	1.14	2.760	3,523	0.463	207	0.362	1.460	6.21	1.550	2.43
31	0.382	1.11	2.887	3,881	0.738	220	0.344	1.274	5.16	1.407	1.77
33	0.395	1.09	2.860	3,670	0.580	214	0.344	1.341	4.67	1.426	1.98
34	0.383	1.15	2.780	3,843	0.578	211	0.347	1.411	5.54	1.520	2.25
35	0.385	1.16	3.100	3,520	0.736	214	0.344				
37	0.420	1.18	2.960	4,171	0.689	212	0.345	1.350	5.16	1.450	2.50
41	0.381	1.10	2.849	3,914	0.588	208	0.350	1.315	4.93	1.452	1.79
42	0.383	1.11	2.910	3,690	0.816	198	0.359	1.332	5.18	1.425	2.15
43	0.432	1.17	2.910	3,780	0.330	206	0.342	1.270	7.08	1.390	2.28
44	0.382	1.08	2.864	3,542	0.586	203	0.348	1.309	4.70	1.442	1.83
45	0.338	1.19	3.120	4,343	0.686	195	0.338	1.176	5.70	1.257	2.92
47	0.360	1.03	2.405	3,491	0.645	183	0.350		4.40		5.10
48	0.373	1.12	2.680	3,682	0.600	207	0.348	1.479	4.85	1.586	2.18
49	0.373	1.10	2.850	3,710	0.667	204	0.339	1.367	4.49	1.452	1.99
51	0.382	1.06	3.140	3,894	0.694	205	0.354	1.230	5.40	1.308	2.20
52	0.384	1.07	2.934	3,789	0.723	207	0.348	1.266	4.72	1.383	1.95
53	0.353	1.10	2.760	3,680	0.745	192	0.356	1.405	4.44	1.492	1.91
56	0.388	1.09	2.970	3,730	0.611	209	0.344	1.358	5.11	1.452	2.09
57	0.350	1.04	2.408	3,499	0.658	169	0.350		4.40		5.10
58	0.365	1.08	2.860	3,800	0.680	205	0.350	1.361	4.60	1.445	1.86
59	0.400	1.15	2.936	3,723	0.514			1.300	5.98		2.78
60	0.368	1.02	2.500	3,670	0.723	212	0.351	1.609	3.88	1.715	1.47
62	0.389	1.06	2.830	4,120	0.613	213	0.345	1.293	5.06	1.378	2.22
64	0.355	1.10	2.730	3,760	0.717	194	0.352	1.426	4.19	1.511	1.84
66	0.385	1.11	2.860	3,823	0.500	188	0.345	1.395	4.32	1.484	2.53
68	0.364	1.11	3.110	3,982		203	0.342	1.220	8.98	1.330	3.17
69	0.370	1.22	2.780	3,361	0.493	188	0.358	1.384	5.20	1.528	2.10
70	0.370	1.10	2.899	3,272	0.670	197	0.370	1.296	5.25	1.381	2.82
73	0.382	1.16	3.050	3,657	0.683	215	0.357	1.290	5.94	1.380	2.79
76	0.365	1.06	2.610	3,500	0.384	192	0.349	1.496	4.28	1.589	1.83
77	0.380	1.05	2.360	3,820	0.518	195	0.361	1.620	3.98		1.12
78	0.365	1.09	2.920	3,630	0.680	209	0.349	1.234	5.64	1.322	2.37
81	0.373	1.10	2.860	3,640	0.630	210	0.350	1.314	5.95	1.419	1.98
83	0.195	1.10	3.115	3,638	0.620	212	0.338	1.240	6.77	1.339	2.95
84	0.375	1.12	2.850	3,779	0.660	217	0.346	1.354	5.12	1.449	1.98
85	0.365	1.06	2.760	3,690	0.366	190	0.341	1.421	4.54	1.508	2.01
87	0.381	1.10	2.752	3,486	0.578	200	0.354	1.339	4.87	1.479	1.63
89	0.372	1.15	3.100	3,546	0.814	204	0.347	1.212	5.81	1.300	2.55
90	0.384	1.08	2.890	3,781	0.588	187	0.348	1.418	5.16	1.512	2.39
93	0.382	1.13	3.010	3,591	0.672	210	0.354	1.270	5.59	1.350	2.77
94	0.042	1.12	3.190	3,273	0.532	155	0.359	1.213	6.01		3.20
98	0.384	1.07	2.935	4,126	0.681	206	0.359	1.334	5.00	1.420	1.90
99	0.384	1.11	2.750	3,588	0.568	209	0.335	1.444	4.86	1.542	2.27
Average	0.371	1.11	2.857	3,736	0.630	203	0.349	1.338	5.24	1.423	2.35
Std. Dev.	0.050	0.05	0.231	293	0.096	12	0.007	0.108	1.00	0.180	0.72
Coef. of Var.	13.428	4.44	8.069	8	15.221	6	2.054	8.098	19.03	12.616	30.76

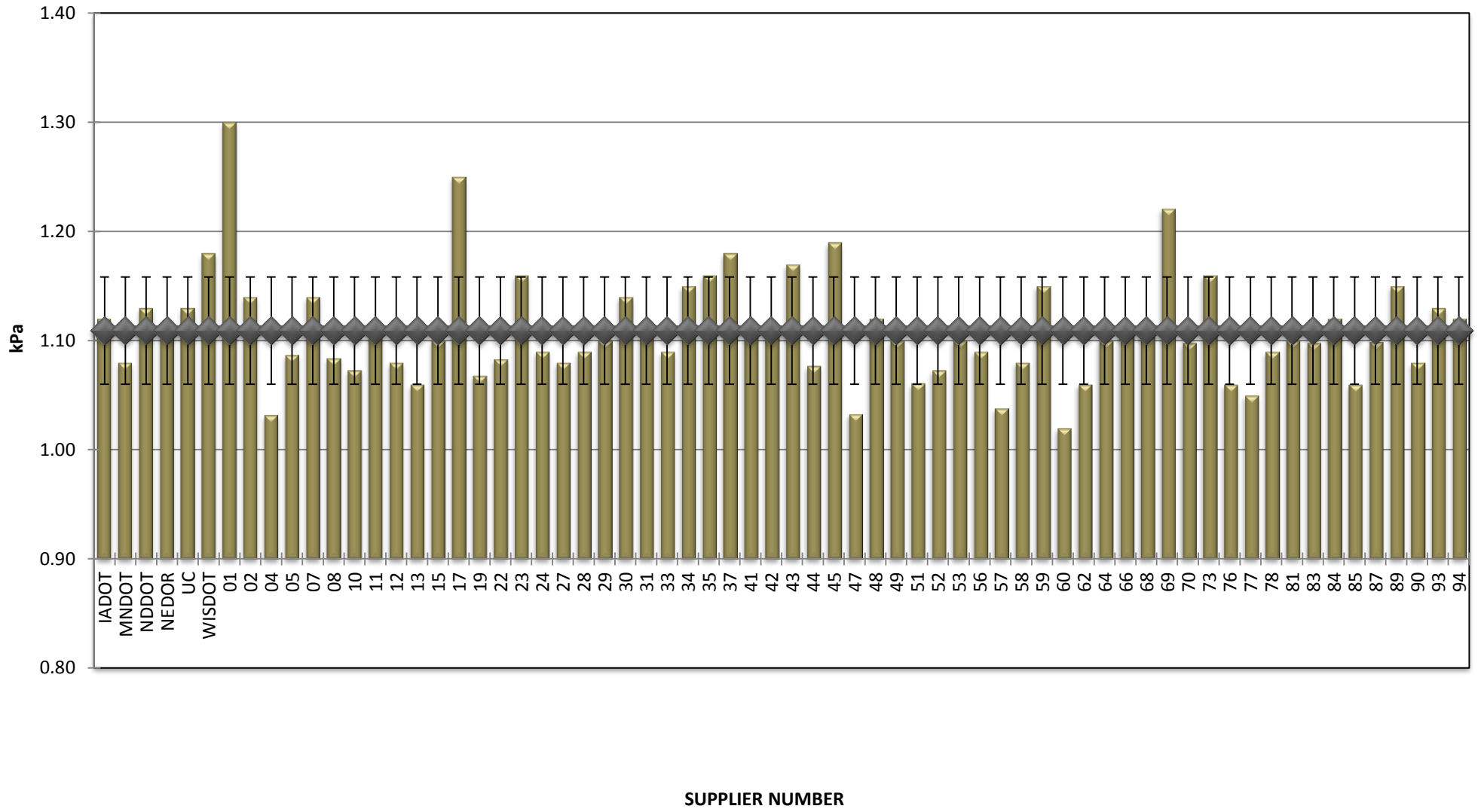
**COMBINED STATE BINDER GROUP ROUND ROBIN
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ROTATIONAL VISCOSITY



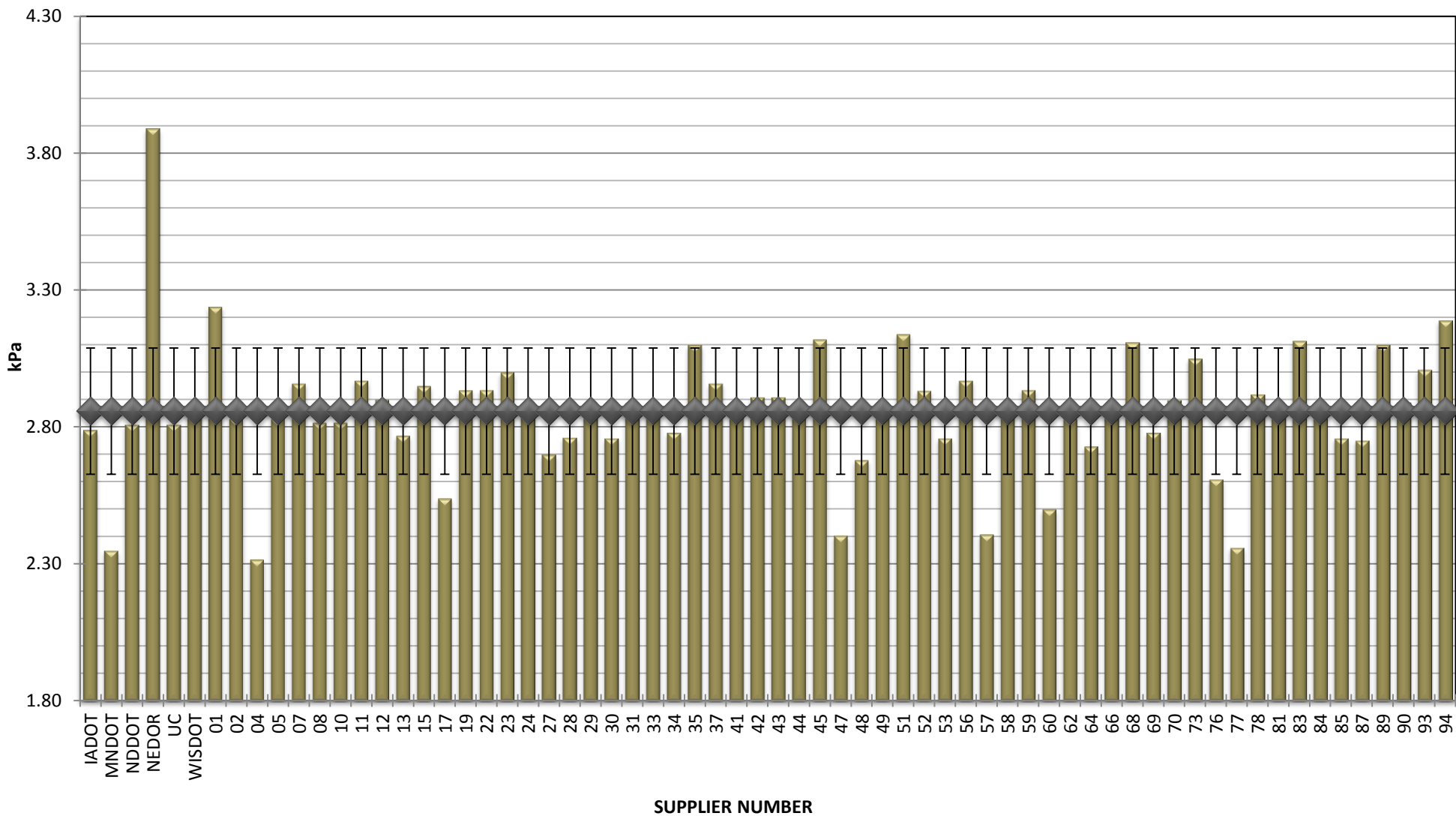
**COMBINED STATE BINDER GROUP ROUND ROBIN
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DSR - ORIGINAL



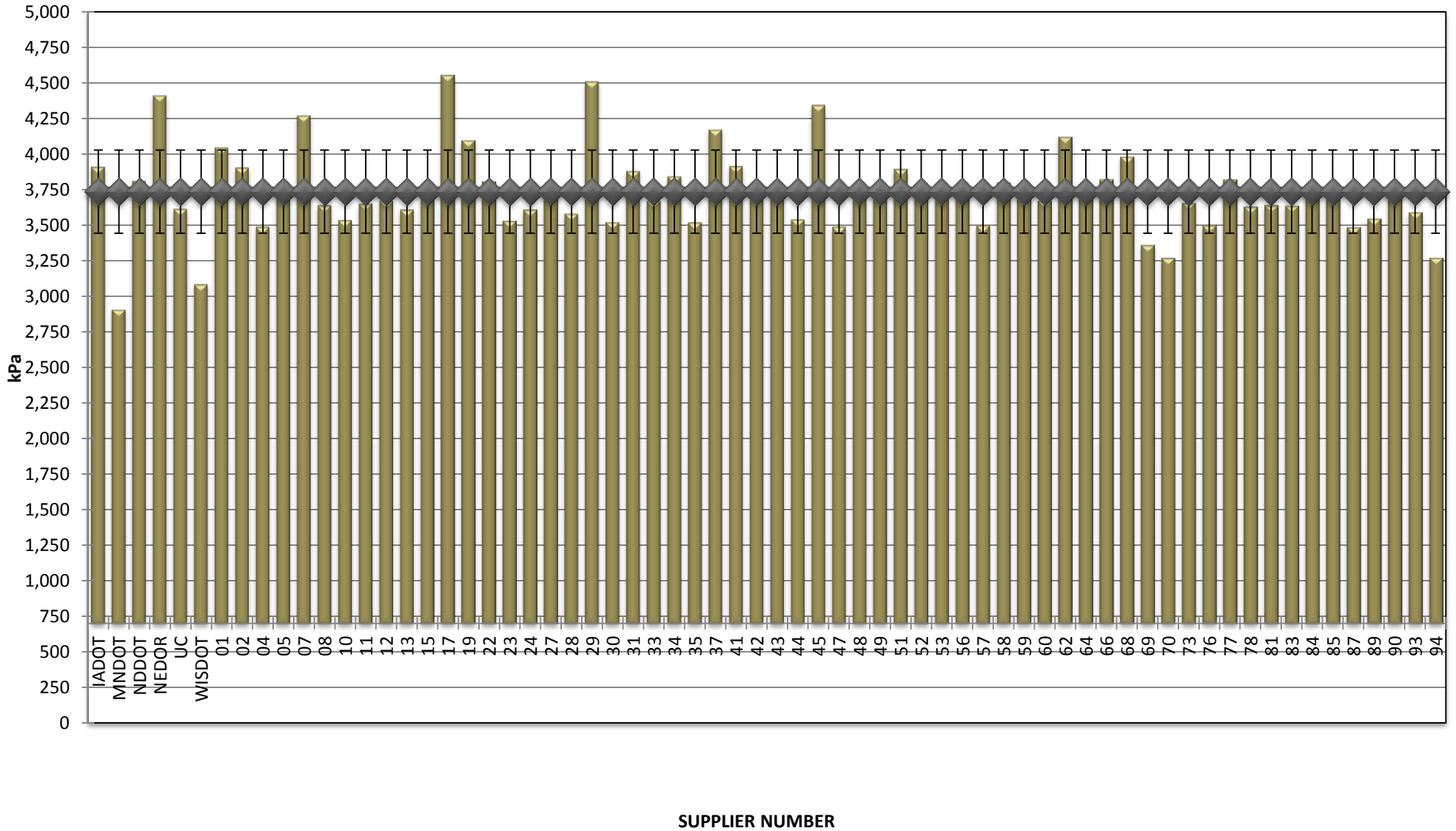
**COMBINED STATE BINDER GROUP ROUND ROBIN
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DSR - RTFO



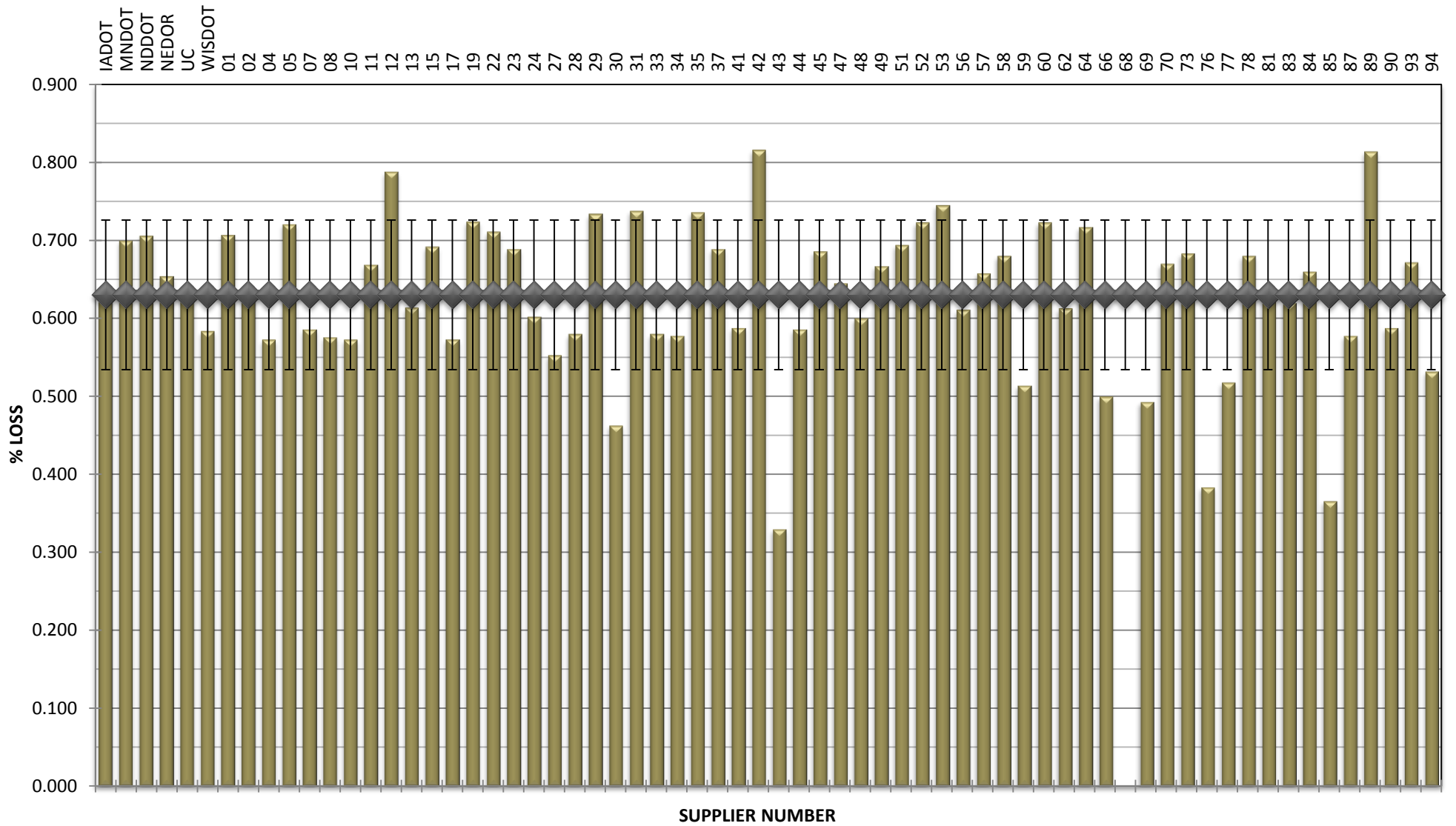
**COMBINED STATE BINDER GROUP ROUND ROBIN
SUMMARY A 2015-3
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DSR - PAV



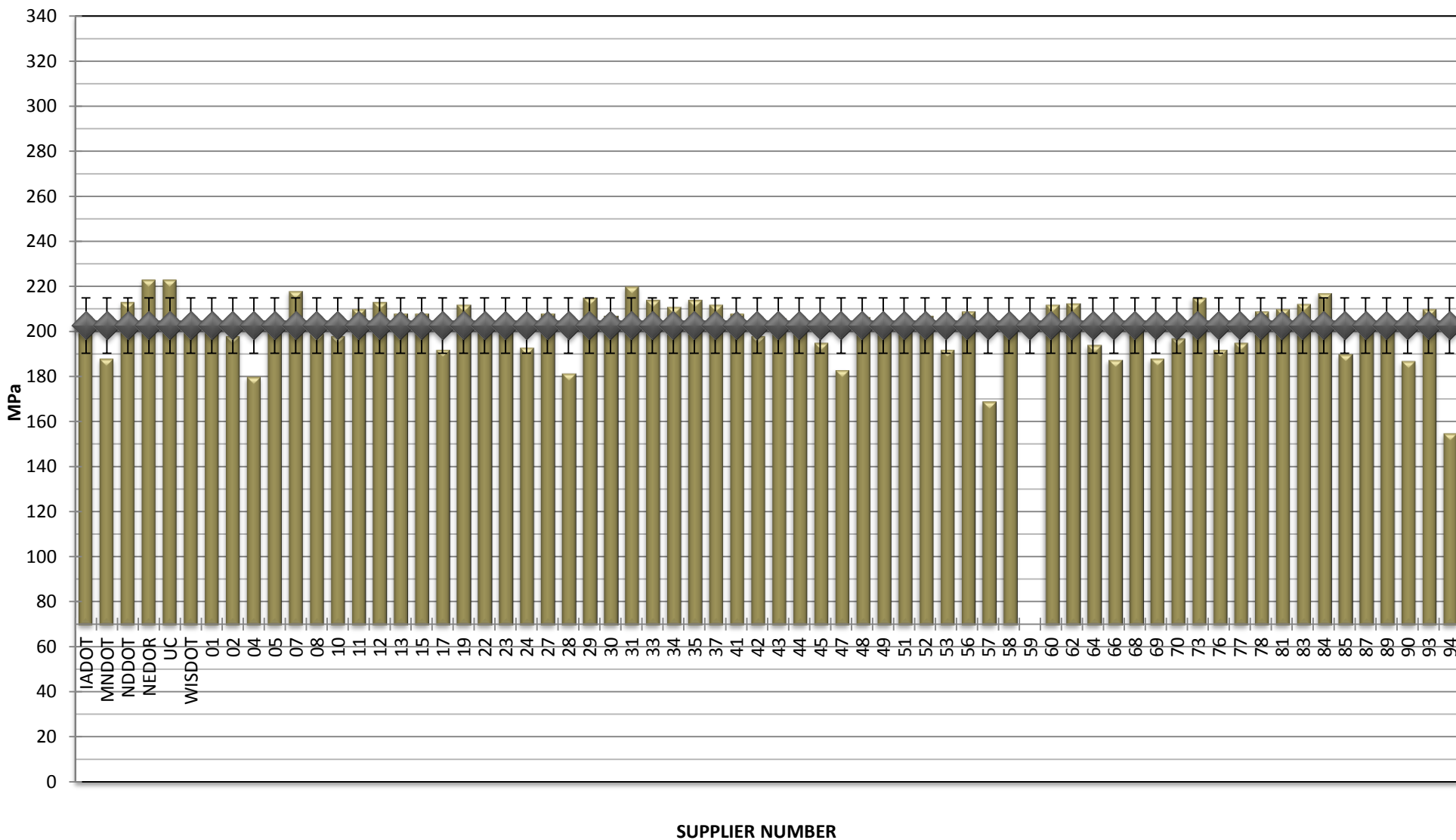
**COMBINED STATE BINDER GROUP ROUND ROBIN
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RTFO MASS LOSS



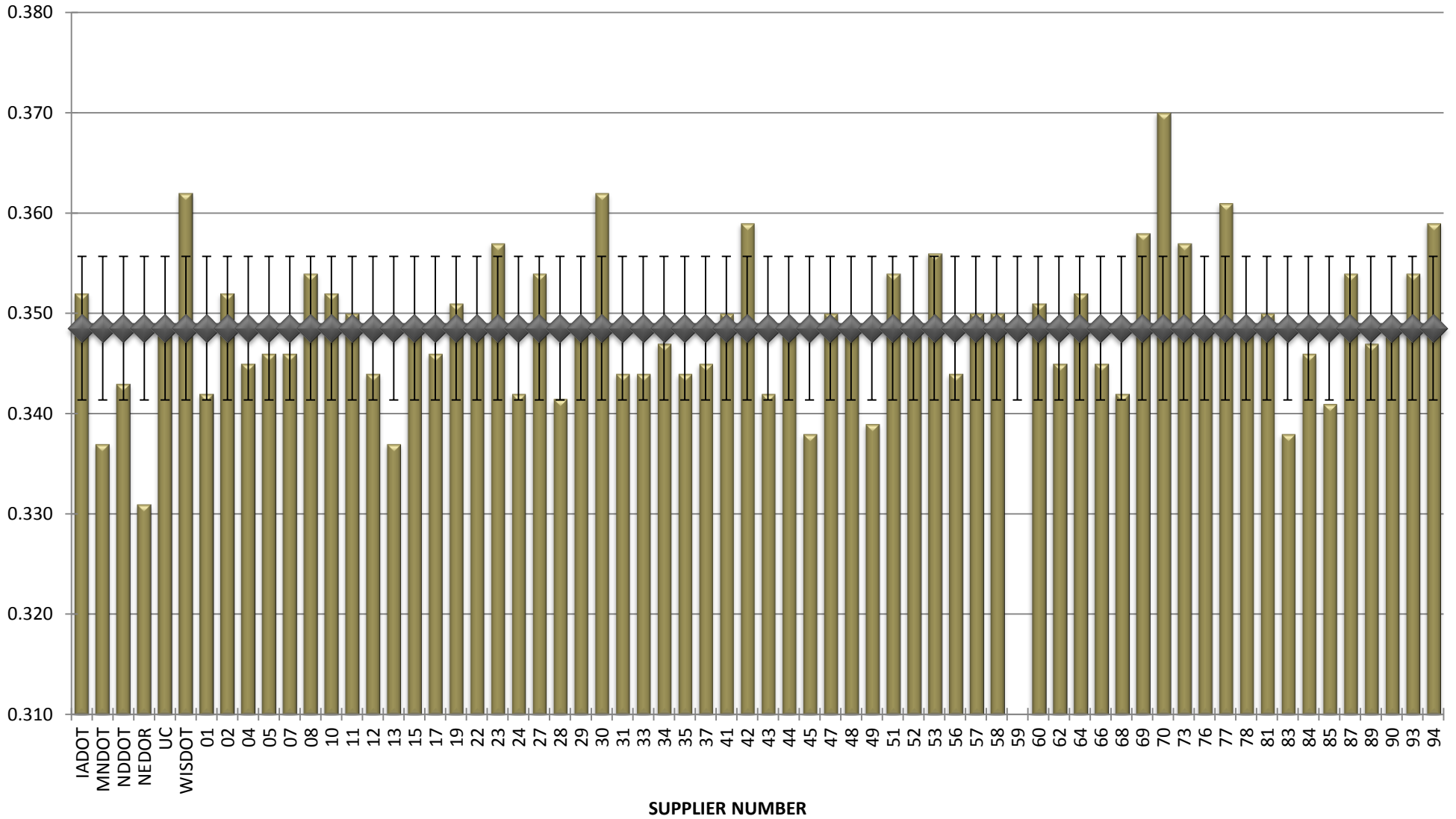
**COMBINED STATE BINDER GROUP ROUND ROBIN
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BBR STIFFNESS



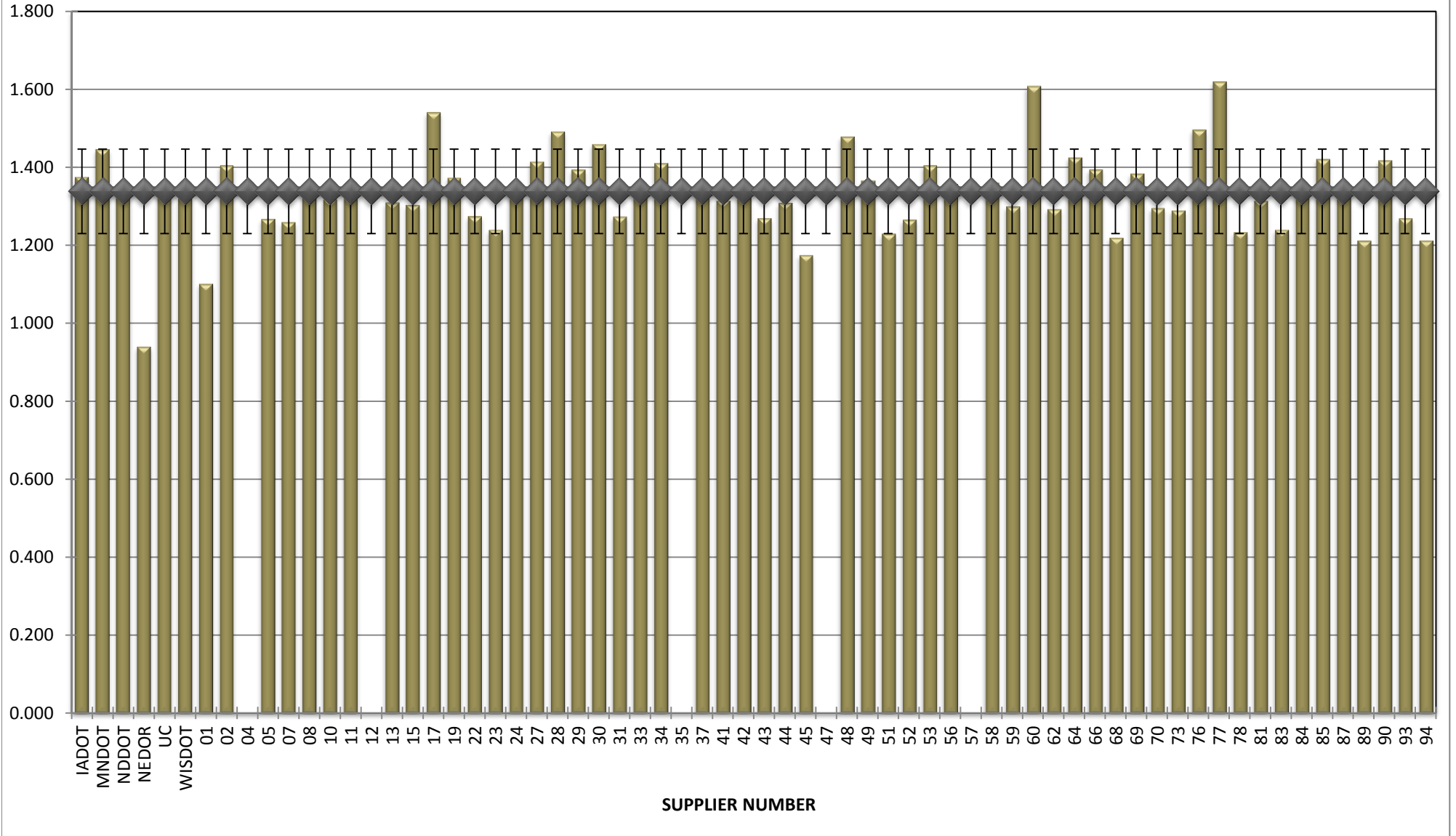
**COMBINED STATE BINDER GROUP ROUND ROBIN
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BBR m-VALUE



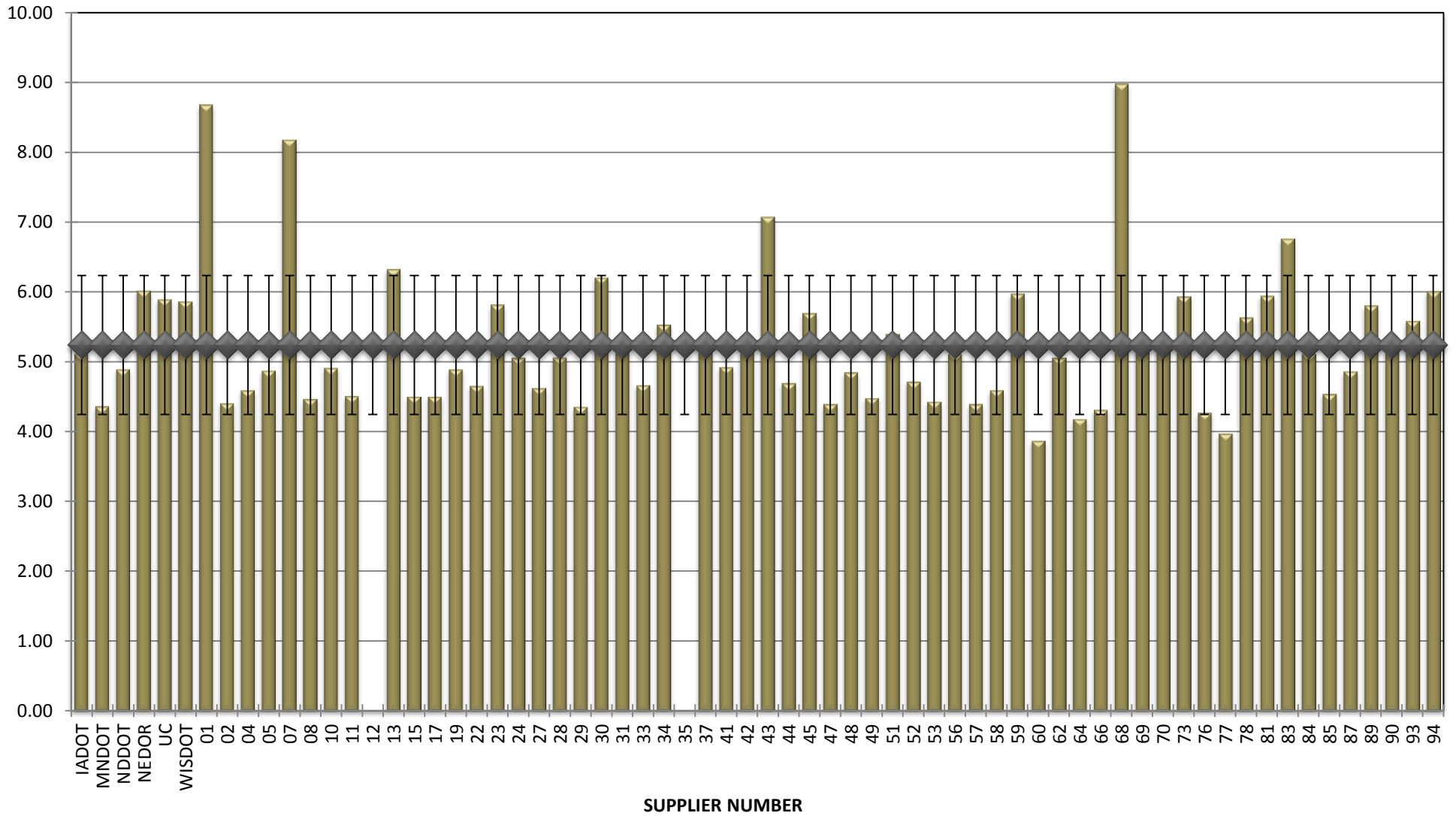
**COMBINED STATE BINDER GROUP ROUND ROBIN
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Jnr @ 100 Pa



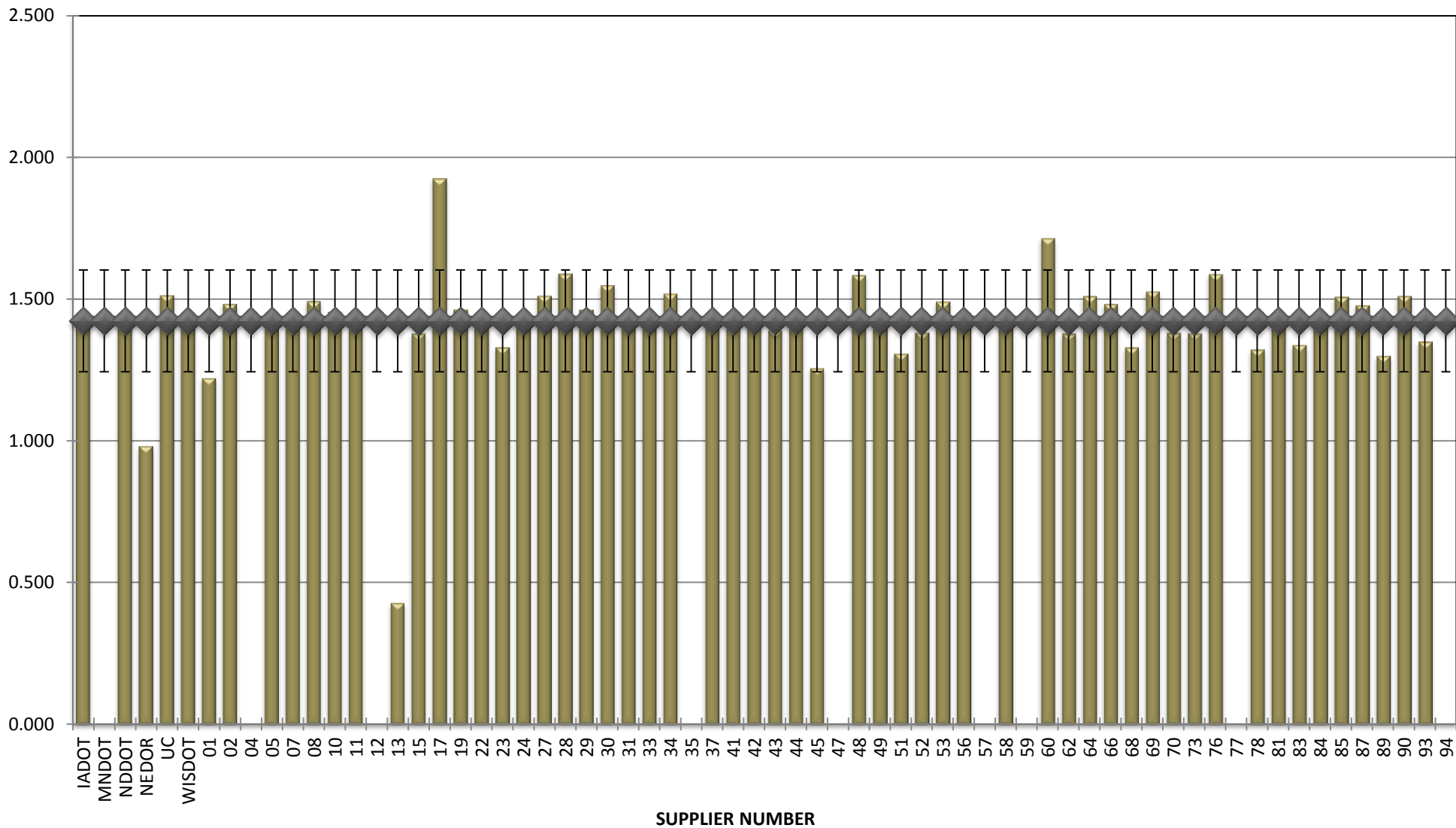
**COMBINED STATE BINDER GROUP ROUND ROBIN
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% Recovery @ 100 Pa



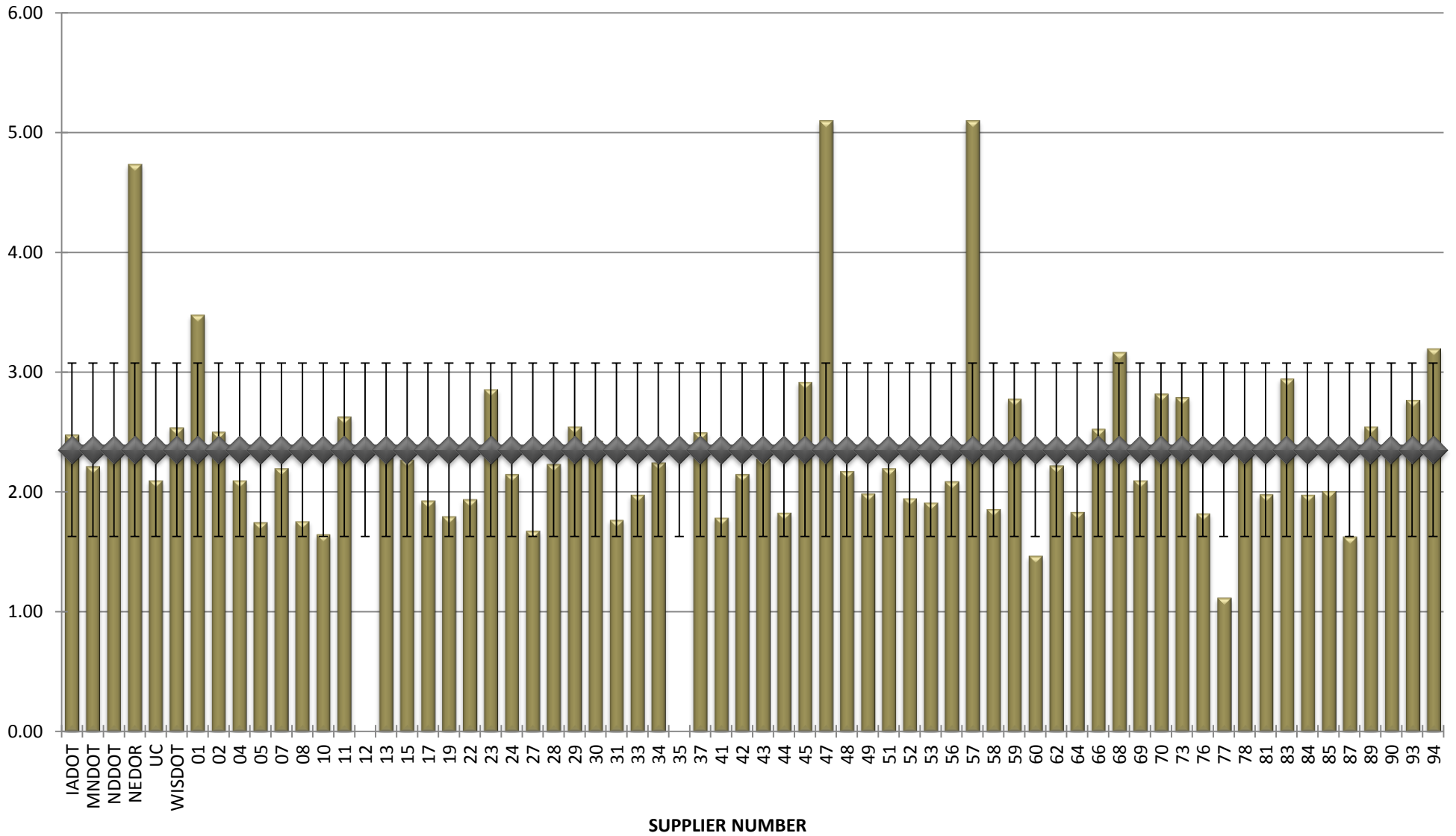
**COMBINED STATE BINDER GROUP ROUND ROBIN
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Jnr @ 3200 Pa



**COMBINED STATE BINDER GROUP ROUND ROBIN
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% Recovery @ 3200 Pa



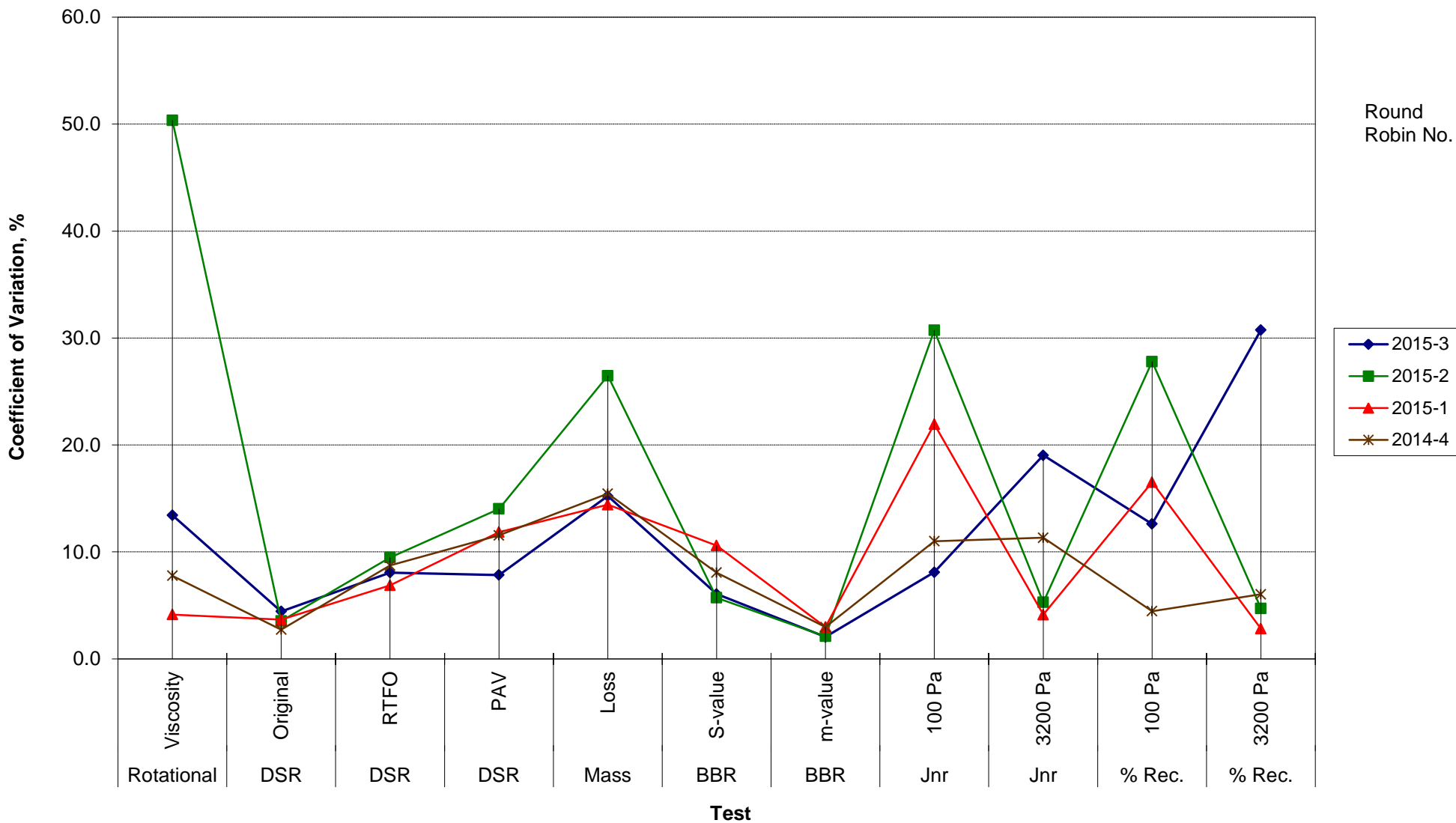
**COMBINED STATE BINDER GROUP ROUND ROBIN
SUMMARY A**

COEFFICIENT OF VARIATION

R R No.	Number of Participants	Coefficient of Variation, %											
		Rotational Viscosity	DSR Original	DSR RTFO	DSR PAV	Mass Loss	BBR S-value	BBR m-value	Jnr 100 Pa	Jnr 3200 Pa	% Rec. 100 Pa	% Rec. 3200 Pa	DTT Strain
2015-3	68	13.428	4.436	8.069	7.837	15.221	6.058	2.054	8.098	19.029	12.616	30.758	50.366
2015-2	61	50.358	3.541	9.476	14.032	26.479	5.715	2.106	30.716	5.290	27.799	4.715	38.134
2015-1	72	4.150	3.659	6.878	11.854	14.423	10.602	2.986	21.946	4.132	16.523	2.826	18.552
2014-4	69	7.780	2.733	8.730	11.549	15.452	8.069	2.975	11.001	11.328	4.454	6.044	20.593

**COMBINED STATE BINDER GROUP ROUND ROBIN
SUMMARY A
PG**

COEFFICIENT OF VARIATION



**COMBINED STATE BINDER GROUP ROUND ROBIN
SUMMARY A
PG**

STATISTICS WITH OUTLIERS REMOVED:

	Rotational Viscosity (Pa.s) @135°C	DSR Original (kPa)	DSR RTFO (kPa)	DSR PAV (kPa)	Mass Loss (%) @163°C	BBR S-value (MPa)	BBR m-value	Jnr @ 100Pa	% RECOV. @ 100Pa	Jnr @ 3200Pa	% RECOV. @ 3200Pa
Average	0.379	1.11	2.84	3,736	0.630	203	0.348	1.345	5.13	1.440	2.23
Std. Dev.	0.0700	0.0442	0.2340	283.18	0.1265	28.24	0.0451	0.3824	1.2953	0.5196	0.8283
Coef. of Var.	18.454	3.993	8.232	7.581	20.070	13.890	12.965	28.435	25.264	36.081	37.200

**COMBINED STATE BINDER GROUP ROUND ROBIN
SUMMARY A**

COEFFICIENT OF VARIATION

R R No.	Number of Participants	Coefficient of Variation, %											
		Rotational Viscosity	DSR Original	DSR RTFO	DSR PAV	Mass Loss	BBR S-value	BBR m-value	Jnr 100 Pa	Jnr 3200 Pa	% Rec. 100 Pa	% Rec. 3200 Pa	DTT Strain
2014-1	72	10.760	5.843	7.228	18.189	14.368	7.133	2.186	20.363	20.016	12.070	4.720	8.048
2014-2	52	9.206	5.504	8.472	11.343	23.598	4.651	2.543	19.850	17.336	5.312	4.362	30.979
2014-3	73	6.670	4.095	5.347	15.777	23.221	6.408	2.506	8.817	5.915	7.950	5.335	37.884
2014-4	69	7.780	2.733	8.730	11.549	15.452	8.069	2.975	11.001	11.328	4.454	6.044	20.593
2015-1	72	4.15	3.659	6.878	11.854	14.423	10.602	2.986	21.946	4.132	16.523	2.826	18.552
2015-2	61	50.3579	3.5413	9.4764	14.032	26.479447	5.715476	2.106464	30.71585	5.29002	27.79887	4.714925	38.13423
2015-3	68	13.4279	4.4364	8.0695	7.8374	15.221011	6.05844	2.053811	8.098083	19.02936	12.6164	30.7576	50.36555
