

Appendix I

Table A1 Tensile strength of thin C-ring (d_i - d_o :: 40-50mm)specimens tested in tension

Sl. No.	Unimodular strength (MPa)	Bimodular strength (MPa)	Sl. No.	Unimodular strength (MPa)	Bimodular strength (MPa)
Sample1	42.435	46.786	Sample31	55.608	61.311
Sample2	37.534	41.384	Sample32	50.760	55.966
Sample3	32.901	36.275	Sample33	38.759	42.734
Sample4	55.527	61.221	Sample34	53.158	58.609
Sample5	45.785	50.480	Sample35	51.335	56.599
Sample6	62.964	69.421	Sample36	39.212	43.234
Sample7	60.560	66.771	Sample37	55.0279	60.671
Sample8	51.341	56.606	Sample38	47.282	52.131
Sample9	28.193	31.084	Sample39	59.074	65.132
Sample10	56.839	62.668	Sample40	50.058	55.191
Sample11	49.541	54.621	Sample41	39.857	43.944
Sample12	48.560	53.540	Sample42	46.696	51.485
Sample13	50.528	55.710	Sample43	49.767	54.871
Sample14	53.030	58.468	Sample44	52.421	57.796
Sample15	53.739	59.249	Sample45	50.900	56.119
Sample16	34.823	38.394	Sample46	49.076	54.109
Sample17	35.148	38.753	Sample47	40.890	45.083
Sample18	46.191	50.928	Sample48	49.158	54.199
Sample19	36.396	40.129	Sample49	51.747	57.054
Sample20	45.976	50.691	Sample50	52.386	57.758
Sample21	35.084	38.682	Sample51	54.511	60.101
Sample22	45.094	49.718	Sample52	44.902	49.507
Sample23	55.805	61.528	Sample53	47.805	52.707
Sample24	57.373	63.257	Sample54	48.560	53.540
Sample25	37.610	41.467	Sample55	50.243	55.396
Sample26	56.200	61.964	Sample56	48.165	53.104
Sample27	51.869	57.188	Sample57	53.953	59.486
Sample28	57.739	63.660	Sample58	41.419	45.666
Sample29	55.091	60.741	Sample59	59.614	65.728
Sample30	58.592	64.601	Sample60	41.935	46.236

Table A2 Tensile strength of thick (d_i-d_o : 30-50mm)C-ring specimens tested in tension

Sl. No.	Unimodular Strength (MPa)	Bimodular Strength(MPa)	Sl. No.	Unimodular Strength(MPa)	Bimodular Strength(MPa)
Sample1	35.896	39.109	Sample31	47.576	51.834
Sample2	45.191	49.235	Sample32	55.909	60.913
Sample3	43.040	46.892	Sample33	54.779	59.682
Sample4	27.568	30.035	Sample34	54.366	59.232
Sample5	41.971	45.727	Sample35	53.246	58.011
Sample6	47.081	51.295	Sample36	58.817	64.081
Sample7	44.225	48.183	Sample37	53.505	58.294
Sample8	59.240	64.542	Sample38	51.240	55.825
Sample9	33.486	36.482	Sample39	52.532	57.233
Sample10	40.985	44.653	Sample40	53.929	58.756
Sample11	45.560	49.637	Sample41	42.365	46.157
Sample12	56.518	61.576	Sample42	55.358	60.313
Sample13	44.461	48.440	Sample43	58.441	63.672
Sample14	31.482	34.299	Sample44	56.563	61.625
Sample15	42.563	46.372	Sample45	38.574	42.026
Sample16	37.728	41.105	Sample46	43.419	47.305
Sample17	45.557	49.634	Sample47	56.609	61.676
Sample18	49.220	53.626	Sample48	51.817	56.455
Sample19	33.573	36.578	Sample49	48.744	53.107
Sample20	44.914	48.934	Sample50	50.607	55.136
Sample21	41.349	45.050	Sample51	57.175	62.291
Sample22	56.669	61.740	Sample52	45.260	49.310
Sample23	52.213	56.886	Sample53	42.347	46.137
Sample24	40.000	43.579	Sample54	43.011	46.860
Sample25	37.630	40.997	Sample55	51.003	55.567
Sample26	40.844	44.499	Sample56	40.365	43.977
Sample27	50.048	54.527	Sample57	39.492	43.027
Sample28	51.506	56.116	Sample58	48.954	53.335
Sample29	48.957	53.338	Sample59	52.823	57.551
Sample30	41.960	45.715	Sample60	50.694	55.231

Table A3 Tensile strength of thin (d_i - d_o :: 40-50mm) C-ring specimens tested in compression

Sl. No.	Unimodular Strength (MPa)	Bimodular Strength(MPa)	Sl. No.	Unimodular Strength(MPa)	Bimodular Strength(MPa)
Sample1	45.794	51.213	Sample31	56.826	63.551
Sample2	50.627	56.618	Sample32	40.696	45.512
Sample3	52.553	58.773	Sample33	59.728	66.796
Sample4	55.010	61.520	Sample34	60.573	67.742
Sample5	52.120	58.291	Sample35	70.675	79.039
Sample6	60.919	68.128	Sample36	56.476	63.159
Sample7	55.470	62.035	Sample37	73.016	81.657
Sample8	57.521	64.329	Sample38	57.862	64.709
Sample9	57.176	63.943	Sample39	66.332	74.182
Sample10	63.515	71.032	Sample40	54.264	60.686
Sample11	31.410	35.127	Sample41	42.242	47.241
Sample12	56.115	62.756	Sample42	66.987	74.915
Sample13	58.942	65.918	Sample43	59.227	66.237
Sample14	44.798	50.100	Sample44	54.304	60.731
Sample15	52.098	58.263	Sample45	31.119	34.802
Sample16	47.470	53.088	Sample46	75.288	84.198
Sample17	61.584	68.872	Sample47	54.980	61.486
Sample18	69.374	77.584	Sample48	47.705	53.351
Sample19	61.269	68.520	Sample49	49.476	55.331
Sample20	52.593	58.817	Sample50	68.408	76.504
Sample21	58.202	65.090	Sample51	62.049	69.392
Sample22	33.636	37.617	Sample52	64.511	72.145
Sample23	64.356	71.972	Sample53	63.025	70.484
Sample24	64.806	72.475	Sample54	61.624	68.917
Sample25	47.690	53.334	Sample55	63.925	71.491
Sample26	67.623	75.626	Sample56	52.508	58.722
Sample27	37.388	41.813	Sample57	50.657	56.652
Sample28	55.755	62.354	Sample58	59.578	66.628
Sample29	53.169	59.461	Sample59	59.653	66.712
Sample30	58.877	65.845	Sample60	65.787	73.572

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Table A4 Tensile strength of thick (d_i-d_o : 30-50mm) C-ring specimens tested in compression

Sl. No.	Unimodular Strength (MPa)	Bimodular Strength (MPa)	Sl. No.	Unimodular Strength (MPa)	Bimodular Strength (MPa)
Sample1	43.950	50.021	Sample31	51.128	58.191
Sample2	30.220	34.395	Sample32	51.969	59.149
Sample3	50.487	57.462	Sample33	53.910	61.358
Sample4	39.033	44.425	Sample34	60.167	68.479
Sample5	41.997	47.799	Sample35	53.908	61.355
Sample6	40.299	45.866	Sample36	54.659	62.210
Sample7	45.860	52.195	Sample37	52.187	59.396
Sample8	40.019	45.547	Sample38	50.160	57.089
Sample9	37.800	43.022	Sample39	53.477	60.865
Sample10	33.671	38.322	Sample40	58.245	66.291
Sample11	40.154	45.701	Sample41	55.516	63.186
Sample12	60.349	68.686	Sample42	56.106	63.856
Sample13	53.333	60.701	Sample43	59.709	67.957
Sample14	41.139	46.822	Sample44	36.446	41.480
Sample15	48.430	55.120	Sample45	57.914	65.915
Sample16	45.633	51.937	Sample46	57.220	65.125
Sample17	49.110	55.895	Sample47	54.344	61.851
Sample18	42.081	47.894	Sample48	60.910	69.325
Sample19	48.832	55.578	Sample49	59.279	67.468
Sample20	43.630	49.658	Sample50	61.461	69.951
Sample21	51.917	59.089	Sample51	57.505	65.448
Sample22	49.246	56.049	Sample52	63.573	72.355
Sample23	48.032	54.668	Sample53	63.828	72.646
Sample24	47.686	54.273	Sample54	55.501	63.169
Sample25	51.341	58.433	Sample55	55.830	63.543
Sample26	50.047	56.961	Sample56	62.351	70.965
Sample27	51.248	58.327	Sample57	43.735	49.777
Sample28	46.460	52.878	Sample58	56.774	64.617
Sample29	52.815	60.111	Sample59	30.601	34.828
Sample30	52.712	59.994	Sample60	36.379	41.404