The dynamic impact characteristics of ARPRO, with no influence from moulded part geometry, are set out herein.

Test method: A flat impactor strikes an ARPRO cube at a pre-determined velocity of 2.2m/s (8km/h). The impact weight and cube dimensions as well as temperature are selected to ensure a minimum strain of 85% on the sample. The deceleration of the impactor is recorded over time and converted into a stress (MPa) vs. strain (%) curve. Tested densities: 30, 40, 60 and 80g/l, tested at different temperatures.

Density 30g/l

Impact weight: 170kg (-30°C), 140kg (23°C), 86kg (60°C) and 80kg (85°C).
Sample shape: cube 100 x 100 x 100mm.
Temperature: -30°C, 23°C, 60°C and 85°C.

Strain (%)	Stress (MPa)			
	-30°C	23°C	60°C	85°C
0	0.00	0.00	0.00	0.00
5	0.38	0.20	0.13	0.11
10	0.41	0.27	0.15	0.12
15	0.43	0.29	0.16	0.13
20	0.46	0.31	0.17	0.14
25	0.48	0.33	0.18	0.15
30	0.50	0.34	0.19	0.16
35	0.52	0.36	0.21	0.17
40	0.55	0.38	0.22	0.19
45	0.58	0.39	0.24	0.20
50	0.61	0.42	0.26	0.22
55	0.64	0.46	0.29	0.24
60	0.68	0.50	0.32	0.28
65	0.74	0.56	0.36	0.33
70	0.85	0.65	0.43	0.39
75	1.03	0.81	0.53	0.49
80	1.34	1.11	0.69	0.65
85	2.02	1.84	1.01	0.99

Example: A moulded sample of ARPRO at 30g/l impacted at 8km/h at 23°C resists to a stress of 0.65MPa without being deformed by more than 70% of its original thickness.
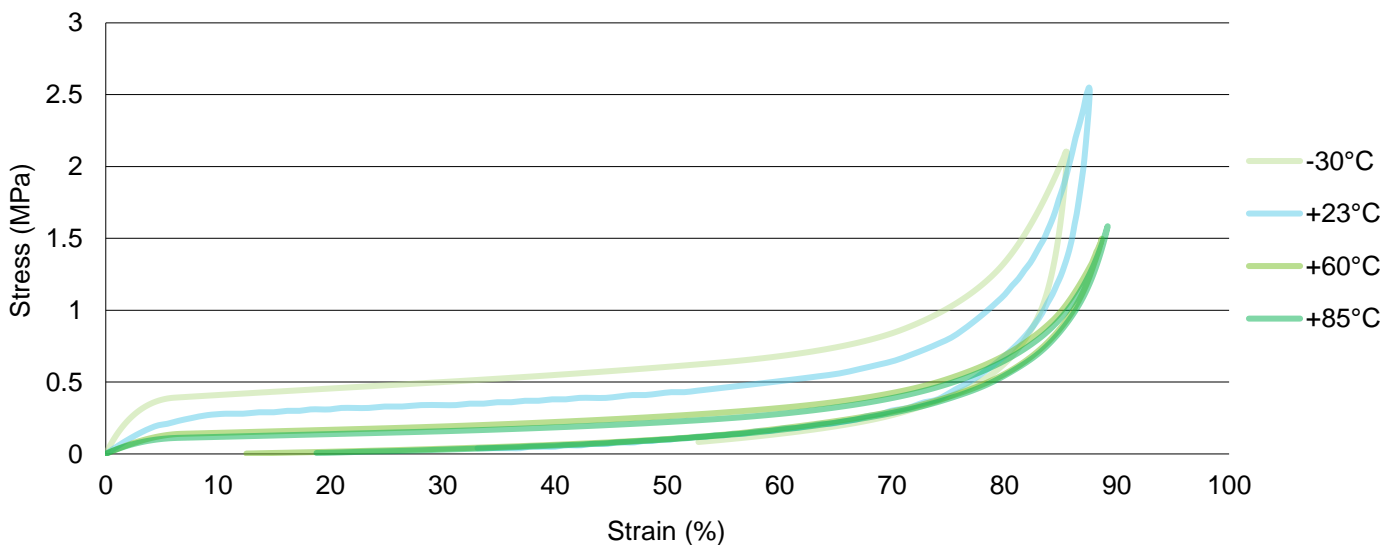
Density 40g/l

Impact weight: 270kg (-20°C), 260kg (-10°C), 200kg (23°C) and 140kg (40°C).
Sample shape: cube 100 x 100 x 100mm.
Temperature: -20°C, -10°C, 23°C and 40°C.

Strain (%)	Stress (MPa)			
	-20°C	-10°C	23°C	40°C
0	0.00	0.00	0.00	0.00
5	0.65	0.58	0.39	0.27
10	0.68	0.60	0.41	0.28
15	0.71	0.63	0.42	0.30
20	0.74	0.65	0.43	0.31
25	0.77	0.68	0.45	0.32
30	0.80	0.70	0.46	0.34
35	0.82	0.73	0.48	0.36
40	0.85	0.76	0.50	0.37
45	0.88	0.79	0.53	0.40
50	0.91	0.83	0.55	0.42
55	0.96	0.87	0.59	0.45
60	1.03	0.93	0.63	0.49
65	1.15	1.01	0.69	0.54
70	1.32	1.17	0.80	0.64
75	1.57	1.47	1.01	0.80
80	2.16	1.97	1.34	1.07
85	3.37	3.11	2.10	1.61

Example: A moulded sample of ARPRO at 40g/l impacted at 8km/h at 23°C resists to a stress of 0.80MPa without being deformed by more than 70% of its original thickness.
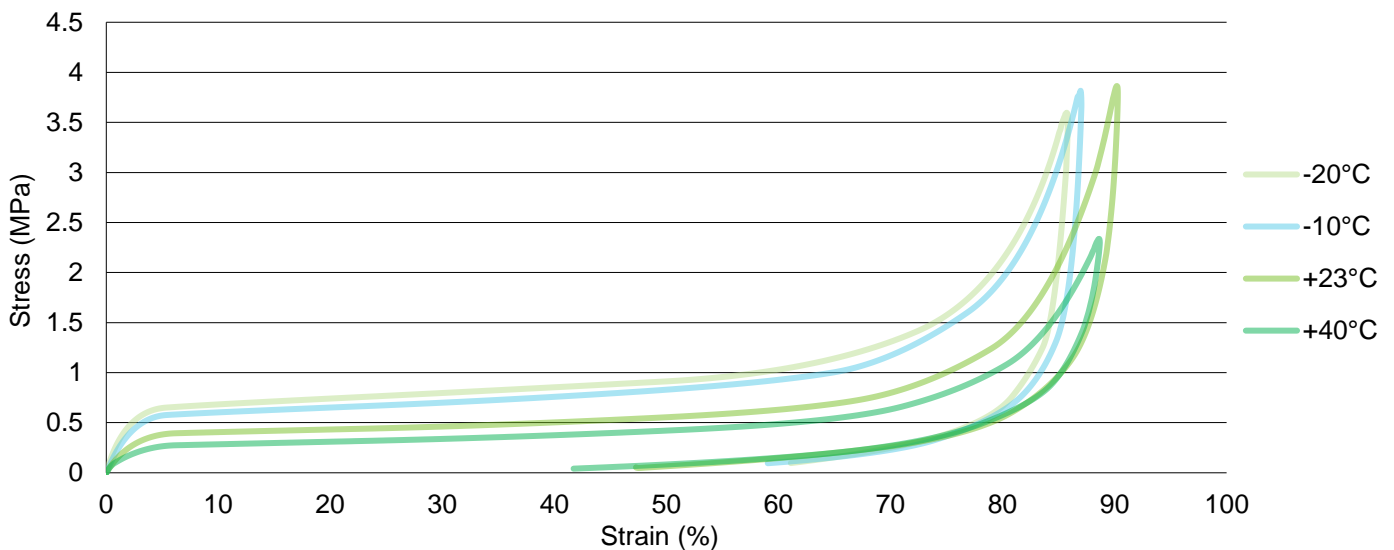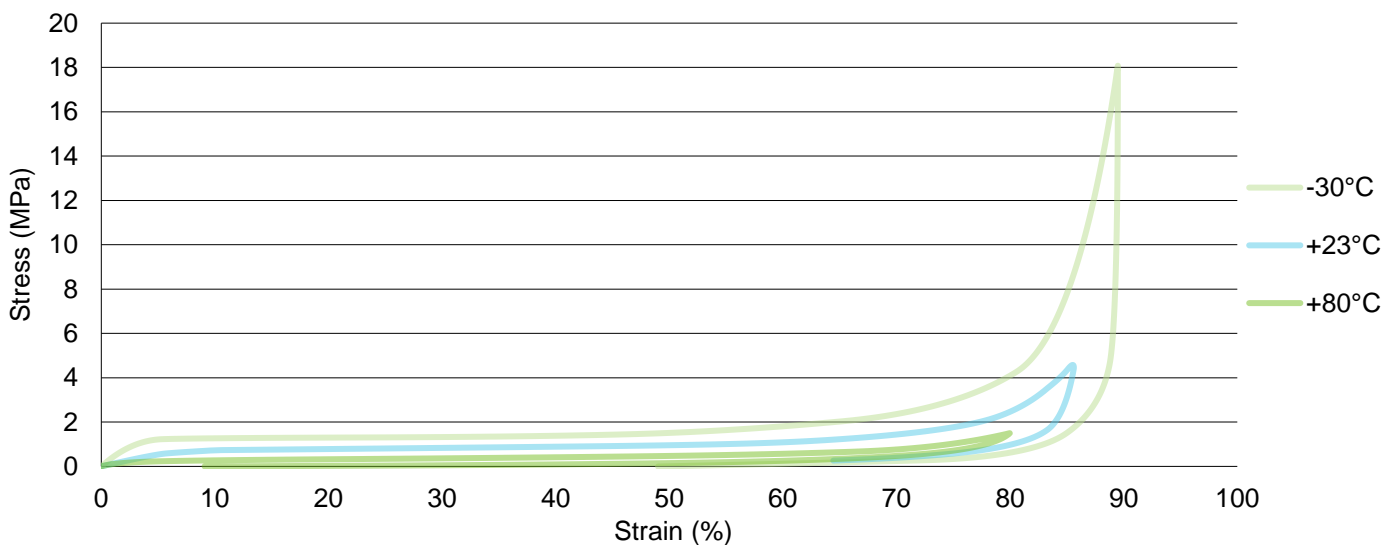
Density 60g/l

Impact weight: 90kg (-30°C), 280kg (23°C) and 120kg (80°C).
Sample shape: cube 50 x 50 x 50mm (-30°C) and 100 x 100 x 100mm (23°C & 80°C).
Temperature: -30°C, 23°C and 80°C.

Strain (%)	Stress (MPa)		
	-30°C	23°C	80°C
0	0.00	0.00	0.00
5	1.22	0.53	0.23
10	1.27	0.72	0.27
15	1.29	0.75	0.30
20	1.30	0.78	0.32
25	1.31	0.81	0.34
30	1.32	0.83	0.36
35	1.35	0.86	0.39
40	1.38	0.89	0.41
45	1.43	0.92	0.44
50	1.51	0.95	0.47
55	1.63	1.00	0.52
60	1.81	1.08	0.57
65	2.03	1.22	0.64
70	2.38	1.43	0.77
75	3.02	1.77	1.03
80	4.09	2.46	1.50
85	7.80	4.32	N/A

Example: A moulded sample of ARPRO at 60g/l impacted at 8km/h at 23°C resists to a stress of 1.43MPa without being deformed by more than 70% of its original thickness.
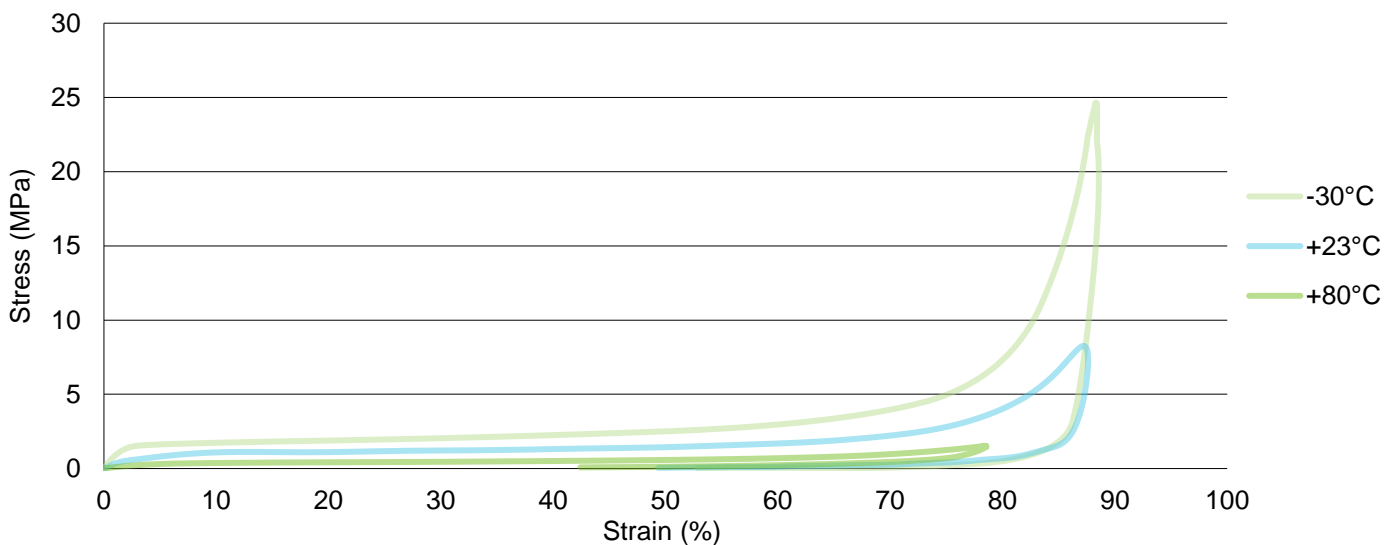
Density 80g/l

Impact weight: 140kg (-30°C), 70kg (23°C) and 140kg (80°C).

Sample shape: cube 50 x 50 x 50mm (-30°C and 23°C) and cube 100 x 100 x 100mm (80°C).

Temperature: -30°C, 23°C and 80°C.

Strain (%)	Stress (MPa)		
	-30°C	23°C	80°C
0	0.00	0.00	0.00
5	1.62	0.81	0.31
10	1.73	1.07	0.37
15	1.81	1.11	0.40
20	1.88	1.10	0.42
25	1.94	1.17	0.44
30	2.04	1.21	0.46
35	2.14	1.24	0.48
40	2.24	1.31	0.51
45	2.36	1.37	0.54
50	2.48	1.43	0.58
55	2.68	1.55	0.63
60	2.97	1.68	0.70
65	3.34	1.87	0.80
70	4.00	2.22	0.97
75	5.03	2.81	1.26
80	7.34	4.06	N/A
85	14.28	6.70	N/A

Example: A moulded sample of ARPRO at 80g/l impacted at 8km/h at 23°C resists to a stress of 2.22MPa without being deformed by more than 70% of its original thickness.

Version 02