Typical physical properties of ARPRO Black & On-site expansion

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Property	Test	Unit	Density (g/l)											
			20	30	40	50	60	80	100	120	140	160	180	200
Energy absorption in dynamic impact														
• 25% strain	Vertical impact drop tower Flat impactor 8km/h 23°C	J/l	40	70	100	115	160	240	330	460	530	610	710	800
• 50% strain			100	160	230	280	370	630	770	1,000	1,300	1,500	1,700	1,900
• 75% strain			200	290	410	500	670	1,200	1,500	2,000	2,800	3,200	3,550	4,000
Equivalent modulus at 3% compression	ISO 844	MPa	1.4	2.5	3.7	5.1	6.7	10.3	14.3	18.5	23.1	28.2	33.9	40.6
Compressive strength														
• 25% strain	ISO 844	kPa	80	150	210	275	340	500	700	900	1,150	1,400	1,700	2,000
• 50% strain			150	220	300	370	475	700	960	1,300	1,600	2,000	2,500	3,000
• 75% strain			370	460	600	800	1,000	1,600	2,300	3,200	4,500	6,000	7,800	9,600
Compression set	ISO 1856 C**	%	12.5	12	11.5	11.5	11.5	11	11	10.5	10.5	10.5	10.5	10.5
Resilience after dynamic impact at 75% strain	5min after impact	%	98	97	96	94	93	90	88	85	82	80	-***	-***
Burn rate	ISO 3795 12.5mm thick	mm/min	115	80	60	50	40	30	25	20	18	16	14	13

* For ARPRO Colours, White, Grey please refer to the datasheet “Typical physical properties of ARPRO additional grades” or to the grade technical datasheet.
** At 25% strain for 22 hours at 23°C and measured after stabilisation for 24 hours
*** Dynamic compression up to 75% is not recommended for ARPRO ≥ 180g/l

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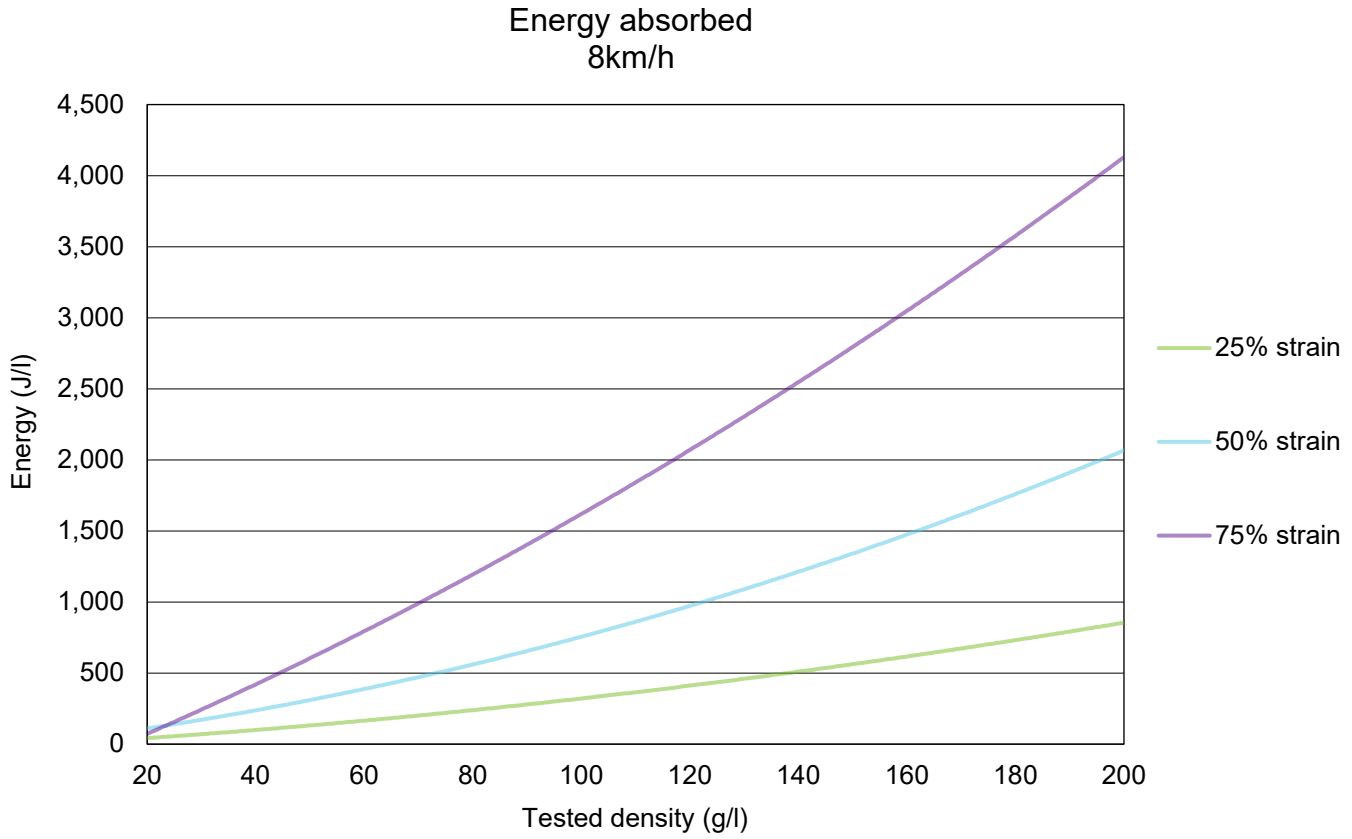
Energy absorption: The value represents the capability of ARPRO to dissipate impact energy.

Test method: A mass is dropped on a cubic test piece of 100 or 50mm at 8km/h. The impact weight and sample size are selected to ensure a minimum of 85% strain on the sample and therefore to completely describe its performance. The deceleration of the impactor is recorded over the time and converted into the energy absorbed at different strain levels.



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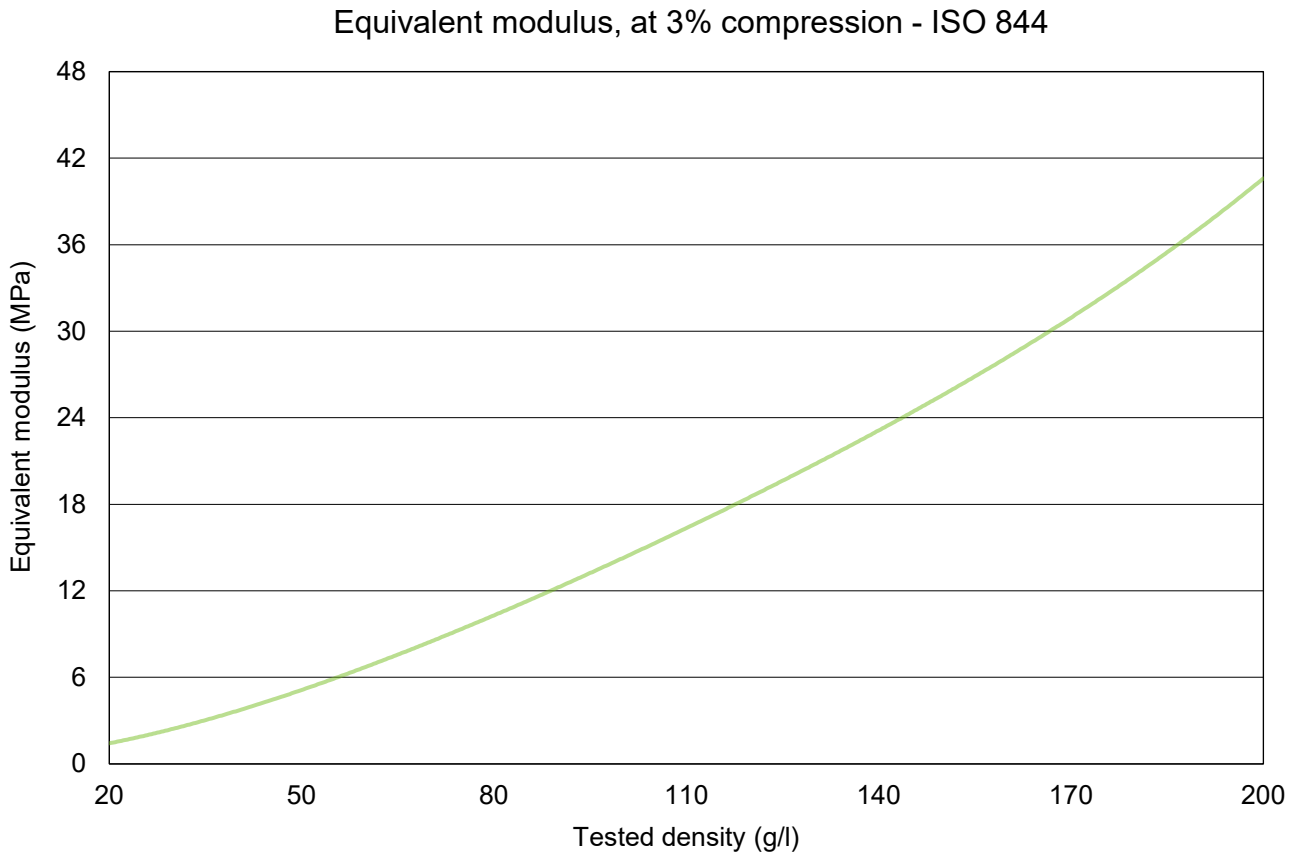
Equivalent modulus: Characterisation of the slope at the beginning of the compressive curve when ARPRO is deformed in its elastic region.

Test method: ISO 844
The compressive stress at 3% deformation is recorded when a 50mm cube is uni-axially compressed at a rate of 5mm/min.
The equivalent modulus is expressed as the ratio of compressive stress at 3% of strain over the deformation.



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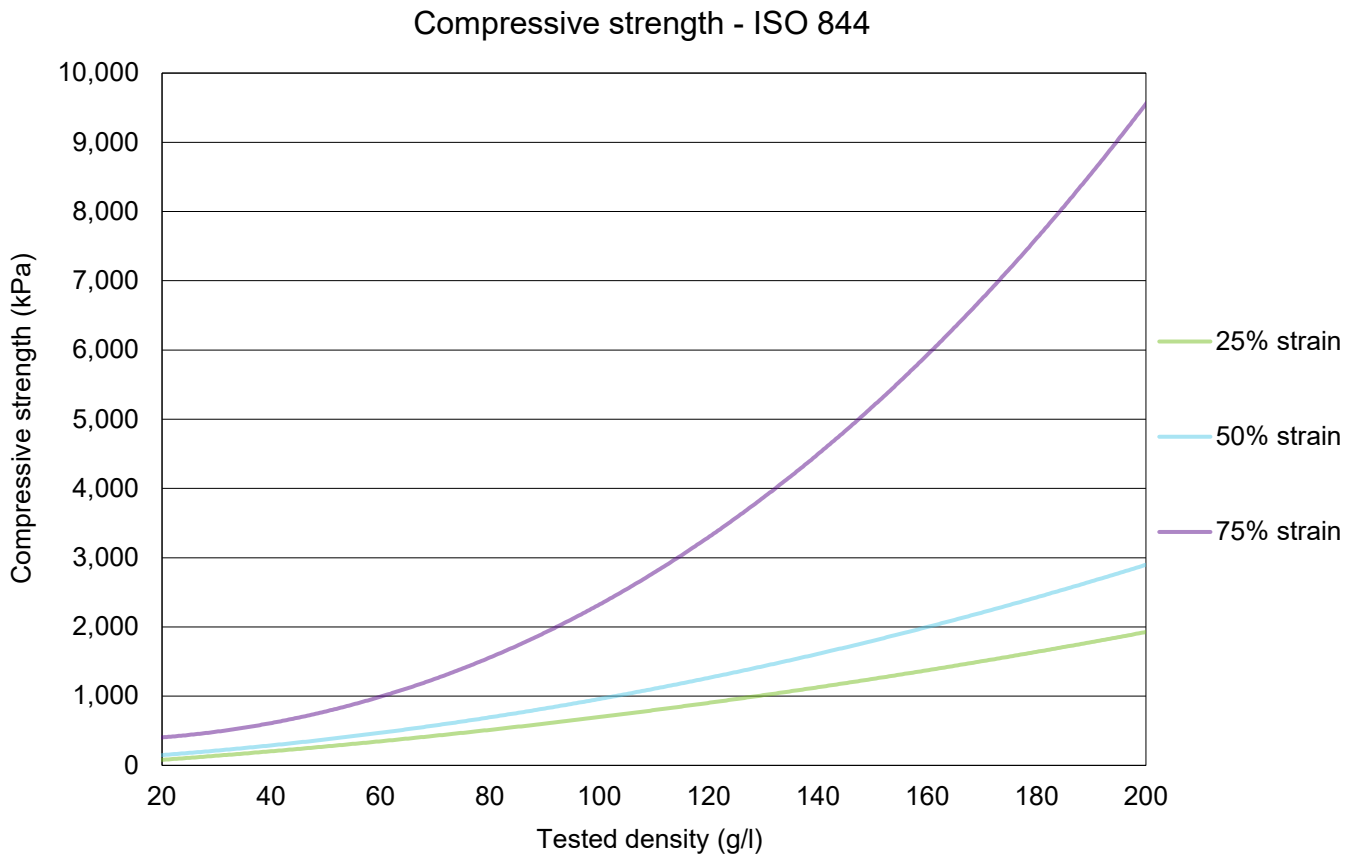
Compressive strength: The ability of a material to resist forces that attempt to compress it.

Test method: ISO 844
Five 50mm cubes are compressed uni-axially at a rate of 5mm/min, to a maximum of 85% compression. The compressive stress and corresponding relative deformation are recorded.



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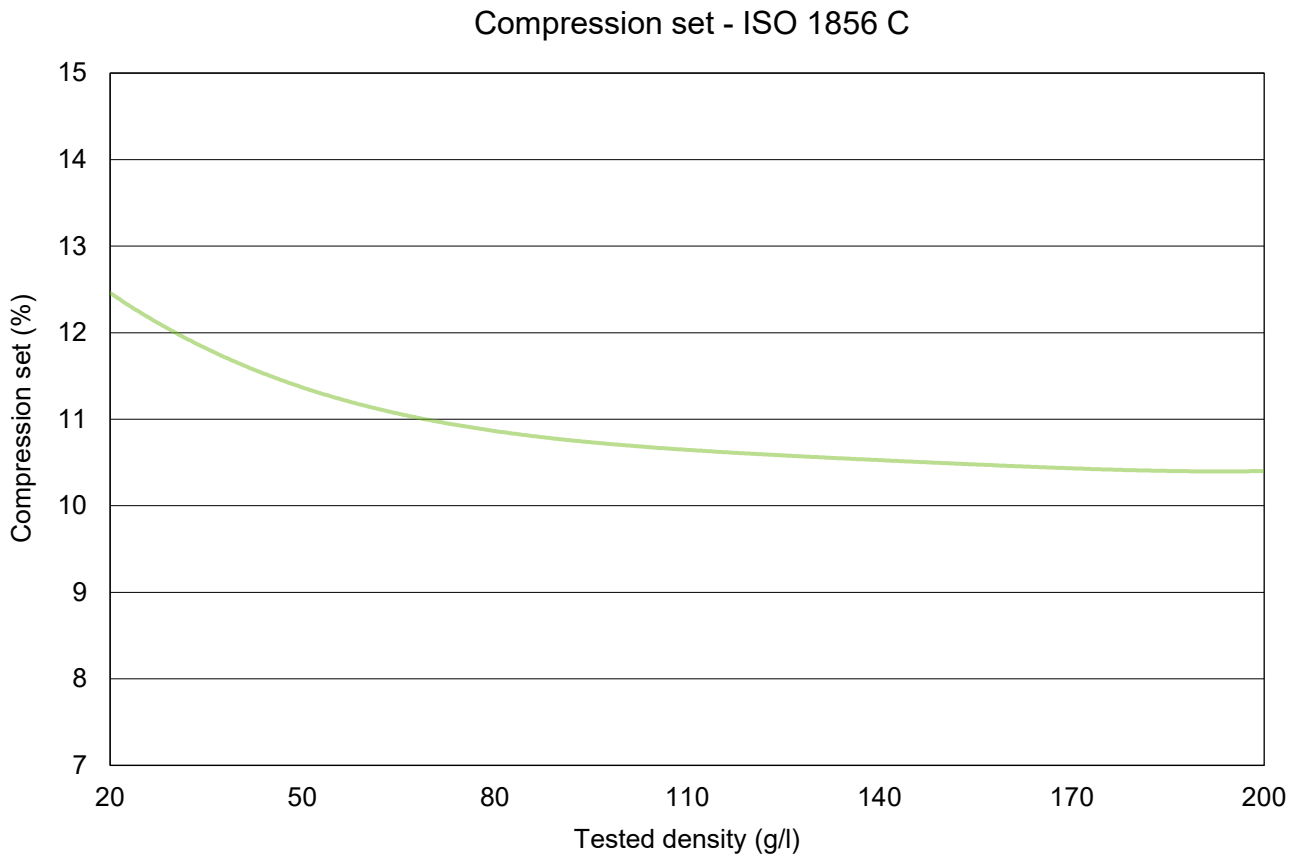
Compression set: The ability to go back to original thickness after static deformation.

Test method: ISO 1856 C
Five 50 x 50 x 25mm samples are maintained for 22 hours at 23°C under 25% strain. The effect on the thickness 24 hours after the release is recorded.



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Resilience after dynamic impact: The capability of ARPRO to recover after a dynamic compression.

Test method: A 50 or 100mm cube is impacted at 2.2m/s, with an impact weight selected to obtain 75% strain. The sample thickness is measured 5 minutes after the impact and then compared to the sample thickness before impact.