Table S5. Mechanical properties and density ranges of various reinforcement and particle size groups. This table provides detailed information on the mechanical properties of different reinforcement types (Dispersion, Large Particles, Aligned Cut Fibers, Random Cut Fibers, Continuous Fibers, Laminates, and Sandwich structures) and particle size groups (smaller than 0.1 mm, 0.1–1 mm, 1–2 mm, 2–5 mm, 5–10 mm, and larger than 10 mm). The mechanical properties include maximum and minimum tensile strength, compressive strength and flexural strength alongside the maximum and minimum density. These parameters are critical for evaluating the structural performance and applicability of materials in various contexts, particularly in sustainable construction.

REINFORCEMENT GROUP	σ_{tmax} [MPa]	σ_{tmin} [MPa]	σ_{cmax} [MPa]	σ_{min} [MPa]	σ_{fmax} [MPa]	σ_{fmin} [MPa]	ρ_{max} [kg/m³]	ρ_{min} [kg/m³]
Dispersion	69	1.1	48.7	0.48	98	1.88	1820	14
Large particles	40.9	0.52	7.2	0.0016	27.17	0.0308	2160	33.1
Aligned cut fibers	421.5	18.55	NA	NA	211.19	211.19	1080	1080
Random cut fibers	95.67	0.64	70	1.8	110.73	0.04	1700	53
Continuous fibers	52.81	15.34	NA	NA	311	247	2060	1990
Laminat	NA	NA	NA	NA	110.7	73.62	2700	1300
Sandwich	NA	NA	25.4	23.4	28.6	26.7	178.19	131.43

PARTICLE SIZE GROUP	σ_{tmax} [MPa]	σ_{tmin} [MPa]	σ_{cmax} [MPa]	σ_{min} [MPa]	σ_{fmax} [MPa]	σ_{fmin} [MPa]	ρ_{max} [kg/m³]	ρ_{min} [kg/m³]
smaller than 0.1mm	69	1.1	48.7	0.48	98	1.88	1820	14
0.1 - 1mm	31.9	0.52	NA	NA	27.17	19.04	875	230.04
1 -2 mm	9.27	7.98	3.35	0.283	110.7	2.34	2700	159
2-5mm	NA	NA	0.305	0.0016	9.99	0.0308	1777.83	33.1
5-10mm	NA	NA	NA	NA	311	247	2060	97
bigger than 10mm	95.67	0.64	70	1.8	110.73	0.21	2160	53