Cellular Silicone Elastomer Flame Resistant - Rolls

[V-0]

Grades

kSil™ V-0 Super Soft
kSil™ V-0 Soft
kSil™ V-0 Soft-medium
kSil™ V-0 Medium
kSil™ V-0 Medium-firm
kSil™ V-0 Firm

Temperature Range

-60°C to 230°C (-76°F to 446°F)
Up to 250°C (482°F) intermittently

Specifications

kSil™ V-0 is a closed cell, lightweight silicone sponge

kSil™ V-0 grades meet the following approvals:

UL94V0: ≥ 1.5mm.

EN45545-2 compliant (HL3)

NFPA 130 compliant

Bombardier - SMP 800c compliant

Airbus - ABD0031 compliant

Additional Approvals

kSil™ V-0 Super Soft - ASTM D1056 2D1

kSil™ V-0 Soft - ASTM D1056 2D1

kSil™ V-0 Soft-Med - ASTM D1056 2D2

kSil™ V-0 Medium - ASTM D1056 2D2 & AMS 3195

kSil™ V-0 Med-Firm - ASTM D1056 2D4 & AMS 3196

kSil™ V-0 Firm - ASTM D1056 2D5

Low water absorption and dust ingress capable of meeting IP67.

These products meet the flammability requirements of FAR 25/JAR 25/CS 25 Appendix F, Part 1, (a)(1)(i) and (a)(1)(ii) vertical, (a)(1)(iv) and (a)(1)(v) horizontal, (a)(2)(ii) and (a)(2)(iii) 45 degree flammability tests and Automotive Standard PART 571FMVSS302.

Environment Resistance

Silicone rubber products have an excellent resistance to ozone, oxidation, ultraviolet light, corona discharge, cosmic radiation, ionising radiation and weathering in general.

Availability

- Grey (standard) & Black
- Rolls
- Extrusions as expanSil™V-0 – Strips, Cords, Profiles, Sections and Tubes
- Pressure Sensitive Adhesive (PSA) Backing
- Punched / Water Jet Gaskets

Availability

Mouldings	Rolls	Gaskets	Cables
○	●	●	○

Extrusions	Compound	Tubing
●	○	●

General Characteristics

Test	Result	Standard
Brittle Point	-80°C (-112 °F)	ASTM D746
Limiting Oxygen Index	33.5 - 43.9 %	EN ISO 4589-2
Radiation Resistance	>10^5 Grays (10^7 Rads) typical	

Typical Industries

Automotive, Aerospace, Electronics, Heating and Ventilation (HVAC), Lighting, Marine, Military and Rail

Silicone Engineering Ltd

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Greenbank Business Park Blakewater Road
Blackburn Lancashire BB1 3HU
T. +44 (0)1254 261 321 F. +44 (0)1254 583 519

www.silicone.co.uk sales@silicone.co.uk

Mechanical Properties

Property	Units	kSil™ V-0 Super Soft	kSil™ V-0 Soft	kSil™ V-0 Soft-Medium	kSil™ V-0 Medium	kSil™ V-0 Medium-Firm	kSil™ V-0 Firm	Test Method
*Density	$kg.m^{-3}$ $lb.ft^{-3}$	150 10.0	220 13.7	300 19.4	390 24.3	450 28.1	600 37.5	BSENISO 845 ASTM D3574
**Compression Stress 25% strain	kPa psi	19 2.8	28 4.1	40 5.8	62 9.0	100 14.5	150 21.8	ASTM D1056
**Compression Stress 40% strain	kPa psi	42 6.1	63 9.1	90 13.1	140 20.3	225 32.6	335 48.6	BSENISO 3386 part1, 2
Tensile Strength	kPa psi	170 24.7	280 40.6	304 44.1	445 64.3	675 97.8	830 120.4	BSENISO 1798 ASTM D412
Elongation to Failure	%	110	130	90	100	90	90	BSENISO 1798 ASTM D412
Compression Set 50% compression 24 hours recovery. 22 hours @ 70°C (158°F)	%	<1	<1	<1	<1	<1	<1	BSENISO 1856
22 hours @ 100°C (212°F)	%	1	2	3	3	3	2	ASTM D1056
Thermal conductivity	W/m.K	0.064	0.077	0.099	0.118	0.138	0.171	DIN EN993-15
Water Absorption	%	< 3	< 3	< 3	< 2	< 2	< 2	ASTM D1056

Extra Information

* Density measured on 25 mm diameter cord sample. The density of samples of different sizes will be different from that stated here.

**Compression Stress measured on samples as defined in ASTM D1056.

The compressive stress on samples of different dimensions, especially thickness may vary from that quoted here. For further information about physical properties for, please contact the technical department.

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Flame Resistance:

Property	Units	kSil™ V-0 Super Soft	kSil™ V-0 Soft	kSil™ V-0 Soft-Medium	kSil™ V-0 Medium	kSil™ V-0 Medium-Firm	kSil™ V-0 Firm	Test Method
UL94 Vertical Burn	Minimum Thickness (mm)	V-0 @ 1.5	V-0 @ 1.5	V-0 @ 1.5	V-0 @ 1.5	V-0 @ 1.5	V-0 @ 3.0 (Grey) V-1 @ 1.5 (Black)	UL94
FAR 25 App. F sec A 1 (i) & (ii)	Minimum Thickness (mm)	1.5	1.5	1.5	1.5	1.5	1.5	FAR 25 App. F sec A 1 (i)
Limiting Oxygen Index	%	33.5	→	43.9	→		42.8	EN ISO 4589-2: OI
Flame Spread (CFE)	kW/m^2	-	-	2mm = 26.57 25mm = 20.87	-	-	-	ISO 5658-2
Smoke/Toxicity 50 kWm^{-2}	$D_s(4)$	-	-	2mm = 55 25mm = 57	-	-	-	EN ISO 5659-2
	$V0F_4$ min	-	-	2mm = 159 25mm = 154	-	-	-	
	CIT_g	-	-	2mm = 0.03 25mm = 0.04	-	-	-	
Cone Calorimeter 50 kWm^{-2}	MARHE kWm^2	-	-	2mm = 76.67 25mm = 68.14	-	-	-	ISO 5660-1
Smoke Density 25 kWm^{-2}	D_s Max	3mm = 20 25mm = 34	→	2mm = 18 25mm = 31	→		2mm = 12 25mm = 33	EN ISO 5659-2
Toxicity 600°C	CIT_{NLP}	3mm = 0.04 50mm = 0.06	→	2mm = 0.02 25mm = 0.05	→		2mm = 0.01 25mm = 0.04	NF X 70-100-1 & 2

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EN45545-2 Classifications

Property	Description	Thickness Range (mm)	kSil™ V-0 Super Soft	kSil™ V-0 Soft	kSil™ V-0 Soft-Medium	kSil™ V-0 Medium	kSil™ V-0 Medium-Firm	kSil™ V-0 Firm
R1	Interior surfaces (& non-listed interior products >0.2m^2)	2 - 25	-	-	HL2	-	-	-
R2	Limited surfaces	2 - 25	-	-	HL3	-	-	-
R3	Strips	2 - 25	-	-	HL3	-	-	-
R7	Gangway surfaces, ducting (& non-listed exterior products >0.2m^2)	2 - 25	-	-	HL2	-	-	-
R8	Roof (external)	2 - 25	-	-	HL2	-	-	-
R10	Floors and cavity wall	3 - 50	HL3	-	-	-	-	-
R17	Cab housing	2 - 25	-	-	HL2	-	-	-
R21	Seating & mattress materials	3 - 50	HL3	-	-	-	-	-
R22	Interior seals (& non-listed interior products <0.2m^2)	2 - 25	HL3 (3mm – 50mm)	HL3	HL3	HL3	HL3	HL3
R23	Exterior Seals (& non-listed exterior products <0.2m^2)	2 - 25	HL3 (3mm – 50mm)	HL3	HL3	HL3	HL3	HL3

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Flame Resistance to NFPA 130:

Property	Units	kSil™V-0 Super Soft	kSil™V-0 Soft	kSil™V-0 Soft-Medium	kSil™V-0 Medium	kSil™V-0 Medium-Firm	kSil™V-0 Firm	Test Method
Average Flame Propagation	inches	1.6	→				0.9	ASTM C1166
Surface Flammability	Is (flame spread index)	3mm = 15 30mm = 25	→				2mm = 25 30mm = 15	ASTM E 162
Smoke Density (Flaming Mode)	D_s (1.5 mins)	3mm = 8 30mm = 11	→				3mm = 7 30mm = 7	ASTM E 662
	D_s (4.0 mins)	3mm = 14 30mm = 30					3mm = 16 30mm = 33	
Smoke Density (Non-Flaming Mode)	D_s (1.5 mins)	3mm = 5 30mm = 10	→				3mm = 2 30mm = 1	ASTM E 662
	D_s (4.0 mins)	3mm = 13 30mm = 29					3mm = 13 30mm = 13	
Toxic Gas Generation	N/A	3mm = PASS 30mm = PASS	→				3mm = PASS 30mm = PASS	Bombardier SMP 800-C

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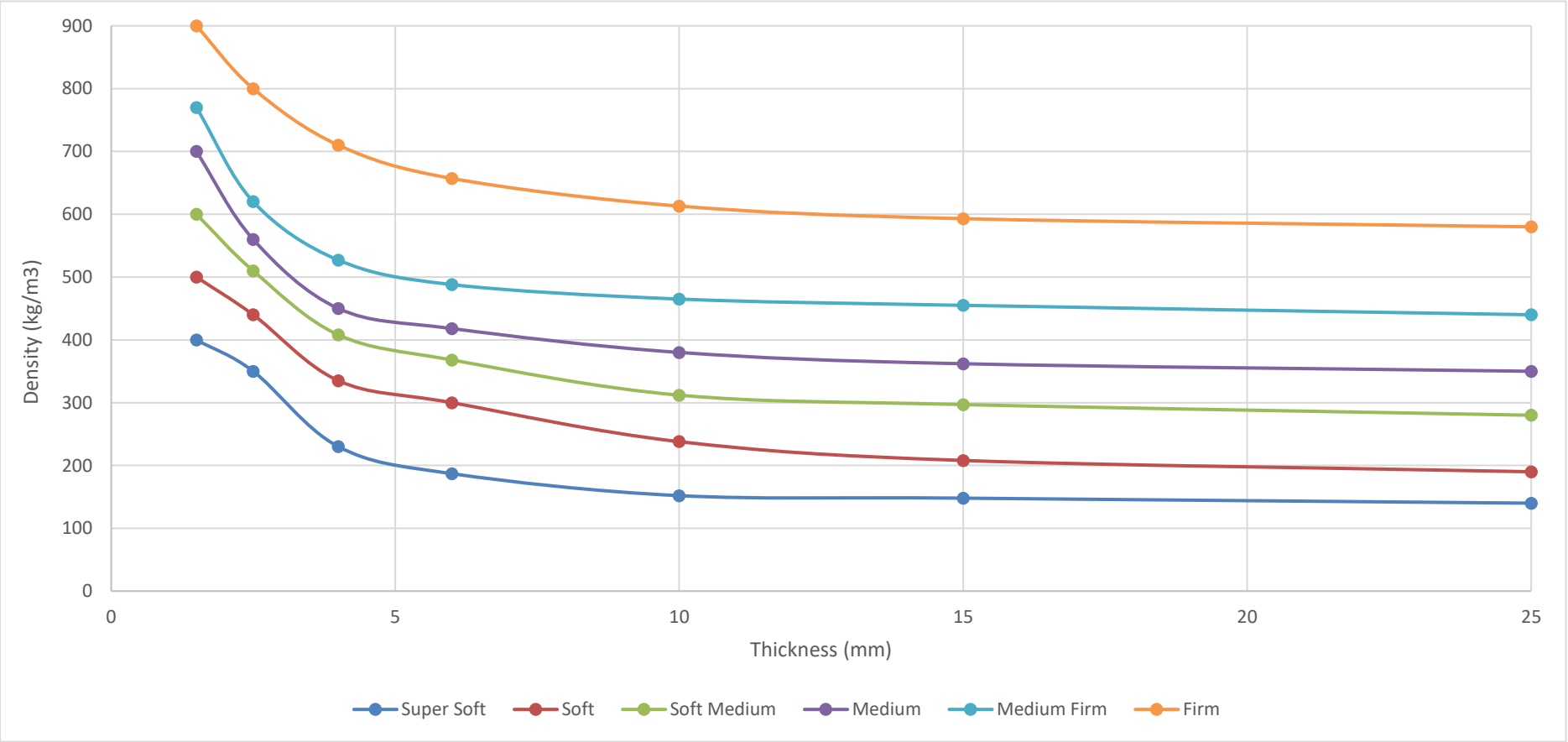
Density vs Thickness (Metric)



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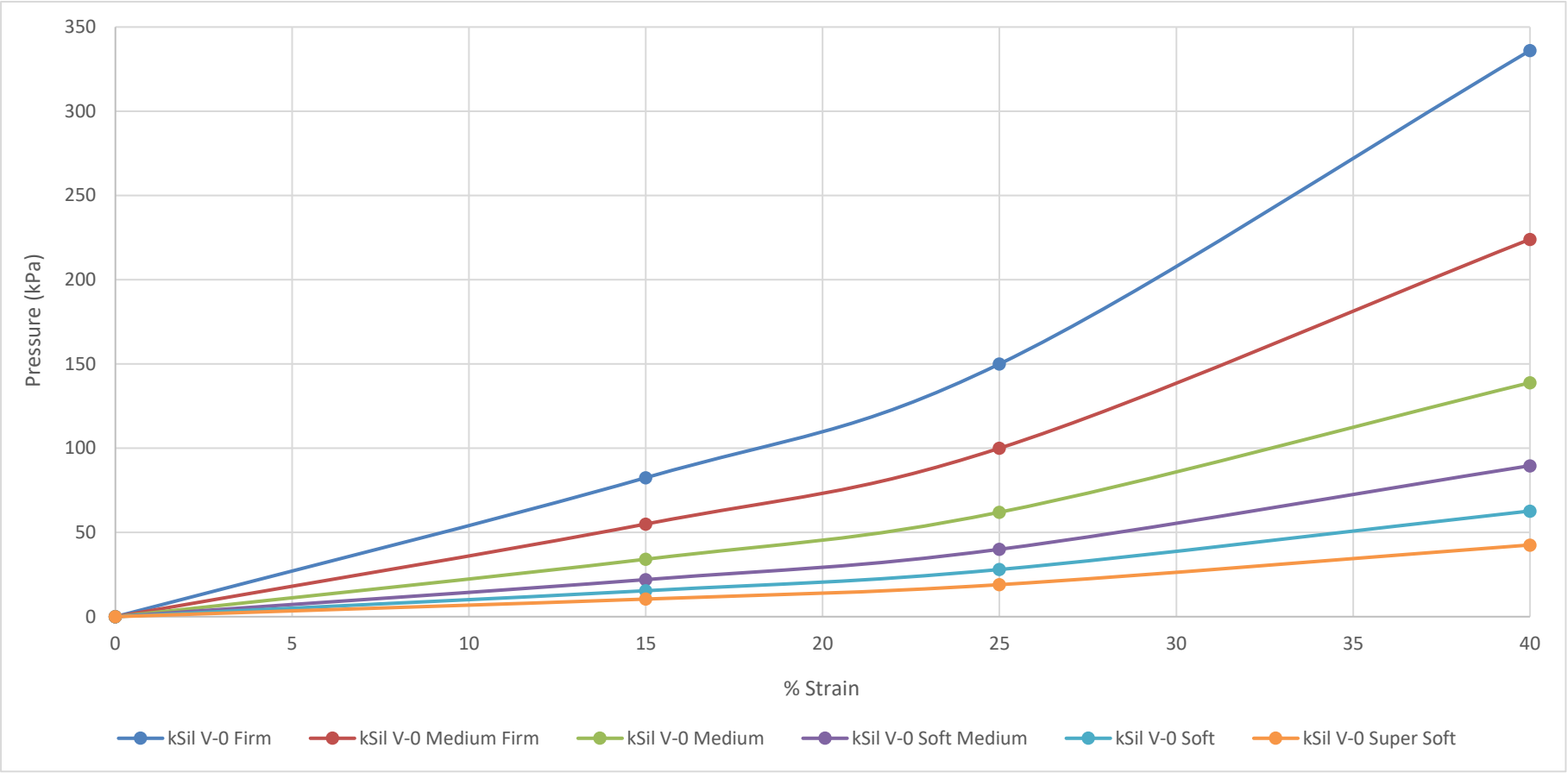
Compression Force Deflection (CFD - Metric)



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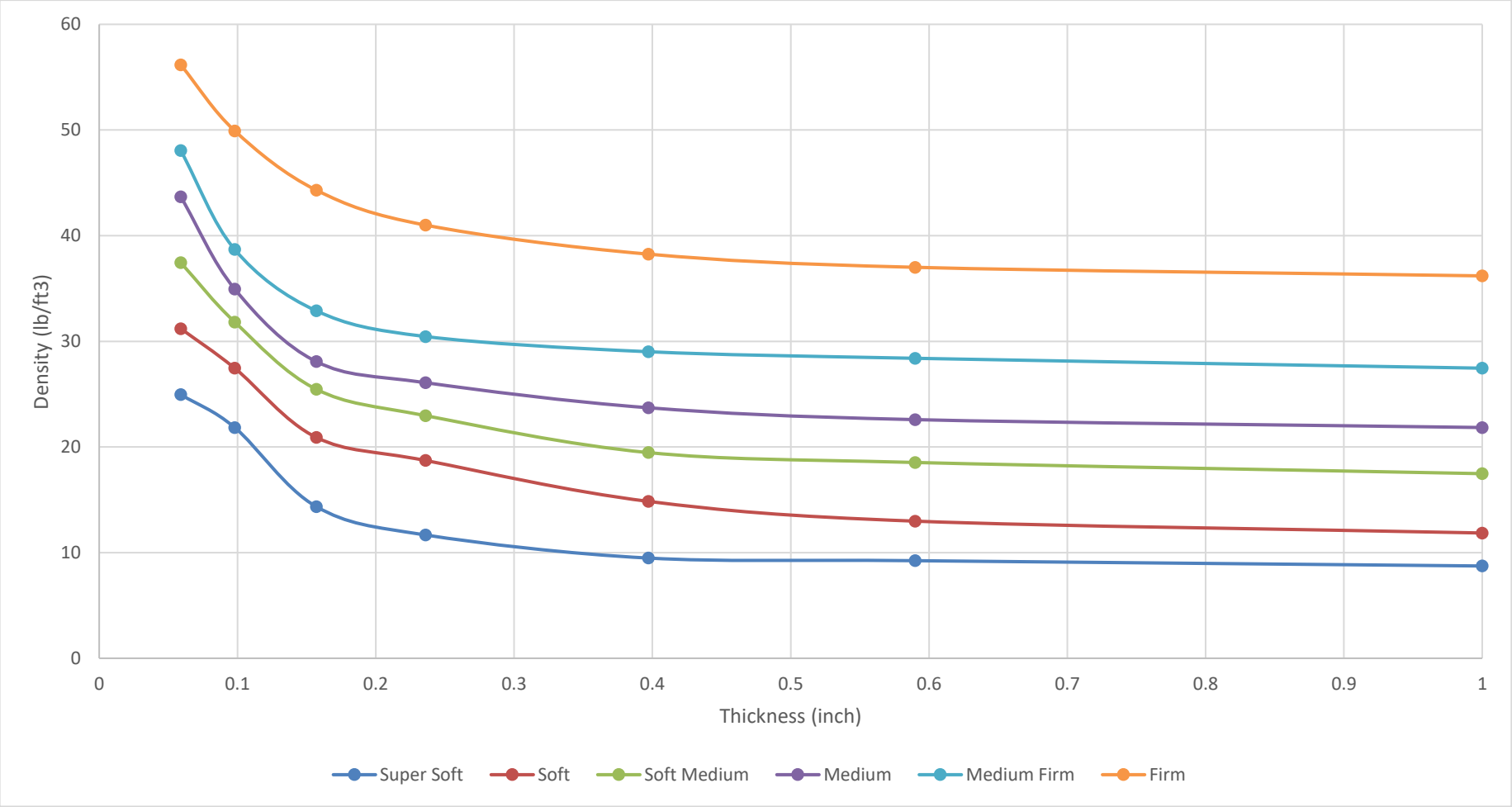
Density vs Thickness (Imperial)



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Compression Force Deflection (CFD - Imperial)