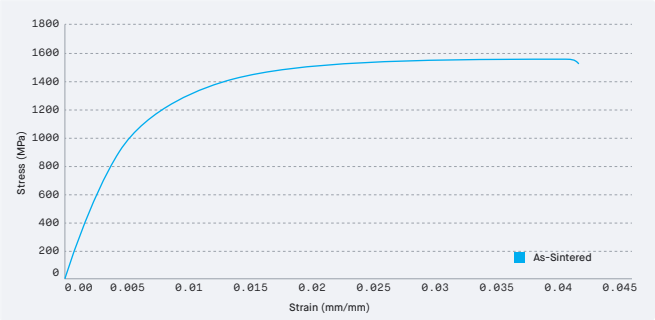
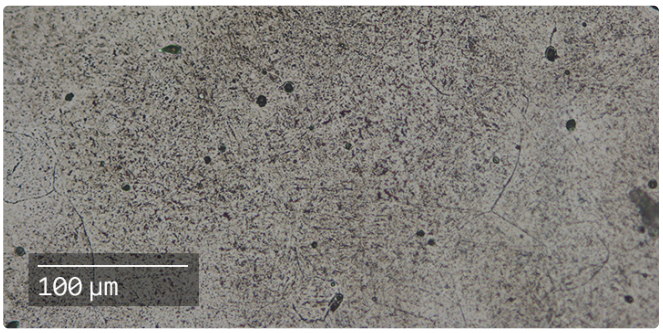
[Material Data Sheet]

420
Stainless Steel



COMPOSITION % (AISI/SAE 4140)

Fe	Balance
C	0.15 – 0.25
Cr	12 – 14
P	0.04 (max)
Mn	1.0 (max)
Si	1.0 (max)
S	0.03 (max)



MECHANICAL PROPERTIES

	Standard	Production System™	MPIF 35 Heat Treated (minimum)	MPIF 35 Heat Treated (typical)
Ultimate tensile strength [1] (MPa) Tempered	ASTM E8M	**1,500 ± 50**	1,240	1,380
Yield strength [1] (MPa) Tempered	ASTM E8M	**1,130 ± 50**	–	1,200
Elongation at break (%) Tempered	ASTM E8M	**5.9 ± 3.4**	–	<1
Young's modulus [2] (GPa) Tempered	ASTM E8M	**210**	–	190
Density Tempered	g/cm³	**7.6**	–	7.4
Surface roughness [3] (µm Ra) Tempered	ISO 4287	**3 – 8**	–	–
Hardness (HRC) Tempered	ASTM E18	**46 ± 2**	–	44
Hardness (HRC) Air quenched	ASTM E18	**50 ± 2**	–	–

ATTRIBUTES & APPLICATIONS

- High strength and hardness with the benefit of corrosion resistance
- Medical surgery equipment (locking & articulation)
- Surgical instruments for both medical and dental
- Cutting applications (shear blades, cutlery)
- Aerospace and defense components (fasteners, gauges, ball bearings)

OTHER STANDARD DESIGNATIONS

- UNS S42000
- ALSI 420

1. YS & UTS properties noted represent mean values across Xy & Yx orientations.
2. Surface roughness measured in Z direction after sintering & sand blasting.
3. Stress strain curve reported in X print orientations after heat treatment.