

SPRING PRESSURE NITRURED AUSTENITIC STEEL

BIOFLEX[®]

Bioflex alloy has been patented by Générale Ressorts with the purpose of mainspring manufacturing.

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Its chemical composition guarantees excellent corrosion resistance and completely non-magnetic behavior. The alloy is entirely Nickel free and suitable for medical applications.

Bioflex is the ideal material to spring applications thanks to its very high mechanical strength and relatively low Young modulus.

Its mechanical properties can be finely tuned combining work hardening and heat treatment, to obtain the best compromise between strength and ductility

Alloy Composition (wt. %)

Fe	Cr	Mn	Mo	N	C	Nb
Rest	16 - 20	5 - 25	2.5 - 4.2	0.1 - 5.0	0.1 - 1.0	≤ 0.25

Mechanical values (Cold drawn bar)

Strength forming rate [%]	Elastic Modulus [GPa]	R _{p0.2} [MPa]	R _m [MPa]	A ₅ [%]
LG	185	615	930	56.2
20	-	1070	1290	25.2
30	-	1220	1570	16.2
40	-	1440	1800	10.2

Mechanical values (Solution-annealed)

Yield strength [MPa]	> 600
Tensile strength [MPa]	> 900
Fracture elongation [%]	56.2
Fracture toughness [%]	77.5
Notch impact toughness [J]	> 350