SCHUNK

Hand in hand for tomorrow

Performance Factors for Magnetic workholding / handling / lifting

Material Name DIN	Material-No.	Condition	Performance (%)
Structural steels			
St37-2	1.0037	annealed	95%
St52-3 N	1.0570	annealed	93%
St50-2	1.0050	annealed	75%
Construction steels			
C10	1.0301	annealed	93%
C15	1.0401	annealed	93%
C45	1.0503	annealed	85%
C60	1.0601	annealed	82%
17CrNiMo6	1.6587	annealed	72%
16MnCr5	1.7131	annealed	83%
20MnCr5	1.7149	annealed	82%
34CrNiMo6	1.6582	annealed	75%
C10	1.0301	case hardened	48%
C15	1.0401	case hardened	48%
C45	1.0503	case hardened	50%
C60	1.0601	case hardened	50%
17CrNiMo6	1.6587	case hardened	38%
16MnCr5	1.7131	case hardened	43%
20MnCr5	1.7149	case hardened	42%
34CrNiMo6	1.6582	case hardened	50%
Nitrided steels			
34CrAl6	1.8504	untreated	77%
31CrMoV9	1.8519	untreated	76%
34CrAlNi7	1.8550	untreated	70%
39CrMoV13-9	1.8523	untreated	68%
34CrAl6	1.8504	nitrided	50%
31CrMoV9	1.8519	nitrided	49%
34CrAlNi7	1.8550	nitrided	46%
39CrMoV13-9	1.8523	nitrided	44%
Machining steel			
15S10	1.0710	untreated	90%
9SMn28	1.0715	untreated	89%
45S20	1.0727	untreated	88%
60SPb20	1.0758	untreated	85%

Material Name DIN	Material-No.	Condition	Performance (%)
Heat treatable steel			
C22	1.0402	annealed	84%
C45	1.0503	annealed	83%
Ck45	1.1191	annealed	81%
C60	1.0601	annealed	81%
Ck60	1.1221	annealed	80%
43CrMo4	1.3563	annealed	80%
36CrNiMo4	1.6511	annealed	77%
C22	1.0402	Q + T	49%
C45	1.0503	Q + T	48%
Ck45	1.1191	Q + T	47%
C60	1.0601	Q + T	47%
Ck60	1.1221	Q + T	47%
43CrMo4	1.3563	Q + T	47%
36CrNiMo4	1.6511	Q + T	45%
Bearing steels			
100Cr6	1.3501	annealed	83%
100CrMn6	1.3520	annealed	73%
102CrMo17	1.3543	annealed	26%
X84WMoCrV6-5-4	1.3553	annealed	27%
100Cr6	1.3501	hardened	43%
100CrMn6	1.3520	hardened	38%
102CrMo17	1.3543	hardened	13%
X84WMoCrV6-5-4	1.3553	hardened	14%
Spring steels			
Ck67	1.1231	annealed	88%
60SiMn5	1.5142	annealed	83%
51MnV7	1.5225	annealed	84%
Ck67	1.1231	hardened	46%
60SiMn5	1.5142	hardened	43%
51MnV7	1.5225	hardened	44%
Cold extrusion steel			
Cp15	1.1132	annealed	94%
41Cr4	1.7035	annealed	81%

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Material Name DIN	Material-No.	Condition	Performance (%)
Tool and Die steels			
55 NiCrMo V 7	1.2714	annealed	85%
40 CrMnMo 7	1.2311	annealed	75%
40 CrMnMoS 8-6	1.2312	annealed	75%
X37 CrMo V 5-1	1.2343	annealed	70%
X155 CrMoV 12	1.2379	annealed	67%
X210 Cr 12	1.2080	annealed	70%
55 NiCrMo V 7	1.2714	case hardened	40%
40 CrMnMo 7	1.2311	case hardened	45%
40 CrMnMoS 8-6	1.2312	case hardened	45%
X37 CrMo V 5-1	1.2343	case hardened	45%
X155 CrMoV 12	1.2379	case hardened	42%
X210 Cr 12	1.2080	case hardened	45%
Martenisitic Magnetic stainless			
C30Cr13	1.4028	annealed	65%
X46Cr13	1.4034	annealed	65%
C30Cr13	1.4028	case hardened	50%
X46Cr13	1.4034	case hardened	45%
Ferritic Magnetic stainless			
X2CrTi12	1.4512	-	70%
X8Cr17	1.4016	-	70%
Cast Irons			
GGG40	0.7040	-	50%
GGG70	0.7070	-	45%

The performance factors are only a estimated value during our experiences.

If the material you are using is not listed, you can contact the SCHUNK service. Based on the material number we can calculate / examine the adhesion strength of your material and give you a feedback about the performance factor.

Factors influencing magnetic performance

- **Chemical composition:** Increasing presence of main alloying elements (C, Cr, Mn, Ni, W etc) reduces performance, up to a point where material can be non-magnetic (see AISI 304, 316 and similar).
- **Heat treatments:** hardening reduces holding force and increases residual.
- **Production processes:** hold or cold rolling, moulding, sintering etc.

Please be careful about materials wich are marked with „X" like (X102CrMo17).