Zapp Tooling Alloys Linecard

PM Tool and High-Speed Steel + Special Tool Steel

Zapp is certified to ISO 9001

PM-Tool and High-Speed Steel / Analysis and Hardness /
PM–Werkzeug- und Schnellarbeitsstahl / Analyse und Härte

Brand / trade name* Marke / Stahlbezeichnung*	Typical chemical analysis (Mass-%) typische chemische Zusammensetzung (Gew.-%)							Typical hardness** (HRC) typische Arbeitshärte** (HRC)
	C	Cr	Mo	W	V	Co	Others	
Z- PM^{cold}								
Z-1 PM^{cold}	0.6	4.0	2.3	2.1	1.3	-	-	56.0 - 62.0
Z-3 PM^{cold}	0.8	7.5	1.3	-	2.8	-	-	54.0 - 60.0
Z-9 PM^{cold}	1.9	5.3	1.3	-	9.1	-	-	49.0 - 57.0
Z-10 PM^{cold}	2.5	5.3	1.3	-	9.8	-	-	58.0 - 63.0
Z-Tuff PM^{cold}	0.7	7.5	2.0	-	1.0	-	+ Ni	54.0 - 62.0
Z-Wear5 PM^{cold}	1.5	4.5	2.3	+	3.9	-	+	58.0 - 63.0
Z- PM^{speed}								
Z-23 PM^{speed}	1.3	4.2	5.0	6.4	3.0	-	-	60,0 - 64.0
Z-30 PM^{speed}	1.3	4.2	5.0	6.3	3.0	8.4	-	62.0 - 66.0
Z-M4 PM^{speed}	1.4	4.0	5.2	5.5	4.0	-	-	60,0 - 65.0
Z-M48 PM^{speed}	1.5	3.8	5.3	9.7	3.1	8.5	-	64.0 - 69.0
Z-M62 PM^{speed}	1.3	3.8	10.5	6.3	2.0	-	-	64.0 - 66.0
Z-T15 PM^{speed}	1.6	4.0	< 1.0	12.0	5.0	5.0	-	62.0 - 66.0
Z- PM^{resist}								
Z-420 PM^{resist}	2.3	14.0	1.0	-	9.0	-	-	56.0 - 61.0
ASP®								
ASP® 2053	2.5	4.2	3.1	4.2	8.0	-	-	60.0 - 64.0
ASP® 2060	2.3	4.2	7.0	6.5	6.5	10.5	-	65.0 - 68.0

Special Tool Steel / Analysis and Hardness
Special Tool Steel / Analyse und Härte

Brand / trade name* Marke / Stahlbezeichnung*	Typical chemical analysis (Mass-%) typische chemische Zusammensetzung (Gew.-%)							Typical hardness** (HRC) typische Arbeitshärte** (HRC)
	C	Cr	Mo	W	V	Co	andere	
Cold								
US 2000^{cold}	1.1	7.8	1.6	1.1	2.4	-	-	54.0 – 63.0
Vaco 180T^{cold}	Special analysis, please contact us!							40.0 – 54.0
Resist								
LC 200 N^{resist}	0.3	15.0	1.0	-	-	-	+ N	40.0 – 60.0

PM-Tool and High-Speed Steel / Stock and delivery program* /
PM–Werkzeug- und Schnellarbeitsstahl / Liefer- und Lieferprogramm*

Brand / trade name* Marke / Stahlbezeichnung*	Short name Kurzbezeichnung	Round bar* from - to (mm) Rundabmessungen* von – bis (mm)	Flat bar* from - to height (mm) Flachabmessungen* von - bis Höhe (mm)	Sheet* from (mm) Bleche* ab (mm)
Z-PM^{cold}				
Z-1 PM^{cold}		18.5 – 128.6	10,0 – 400.0	*
Z-3 PM^{cold}		13.1 – 238.0	10.0 – 155.0	*
Z-9 PM^{cold}		3.5 – 206.4	10.0 – 101.6	*
Z-10 PM^{cold}		2.3 – 282.0	10.0 – 400.0	4.0*
Z-Tuff PM^{cold}		18.5 – 206.4	10.0 – 308.0	*
Z-Wear5 PM^{cold}		15.0 – 315.0	10.0 – 405.0	*
Z-PM^{speed}				
Z-23 PM^{speed}	PM 6-5-3	1.8 – 321.0	10.0 – 405.0	*
Z-30 PM^{speed}	PM 6-5-3-8	3.7 – 136.0	10.0 – 155.0	*
Z-M4 PM^{speed}	PM 6-5-4	4.3 – 351.0	10.0 – 300.0	*
Z-M48 PM^{speed}	PM 10-5-3-8	10.3 – 206.0	10.0 – 100.0	*
Z-T15 PM^{speed}	PM 12-0-5-5	4.3 – 82.0	10.0 – 508,0	*
Z-PM^{resist}				
Z-420 PM^{resist}		22.5 – 206.0	10.0 – 100.0	2.2*
ASP®				
ASP® 2053	PM 4-3-8	16.0 – 263.0	10.0 – 210.0	1.3*
ASP® 2060	PM 6-7-6-10	5.5 – 141.0	10.0 – 101.0	*

Special Tool Steel / Stock and delivery program* /
Special Tool Steel / Liefer- und Lieferprogramm

Brand / trade name* Marke / Stahlbezeichnung*	Short name Kurzbezeichnung	Round bar* from - to (mm) Rundabmessungen* von – bis (mm)	Flat bar* from - to height (mm) Flachabmessungen* von - bis Höhe (mm)	Sheet* from (mm) Bleche* ab (mm)
Cold				
US 2000^{cold}		25.0 – 302.0	10.0 – 155.0	*
Resist				
LC 200 N^{resist}		8.0 – 445.0	10.0 – 110.0	*

* other bars and alloys available on request / weitere Abmessungen und Legierungen auf Anfrage lieferbar
**for cold working applications / für Kaltarbeitsanwendungen

Round bar: ground, peeled or rough-turned; Flat bar: sawn or pre-milled from sheets / blocks /
Rundabmessungen: geschliffen, geschält oder überdreht; Flachabmessungen: aus Platten / Blöcken gesägt oder gefräst,
-
Delivery condition: soft annealed /
Lieferzustand: weichgeglüht

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TOOLING ALLOYS

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