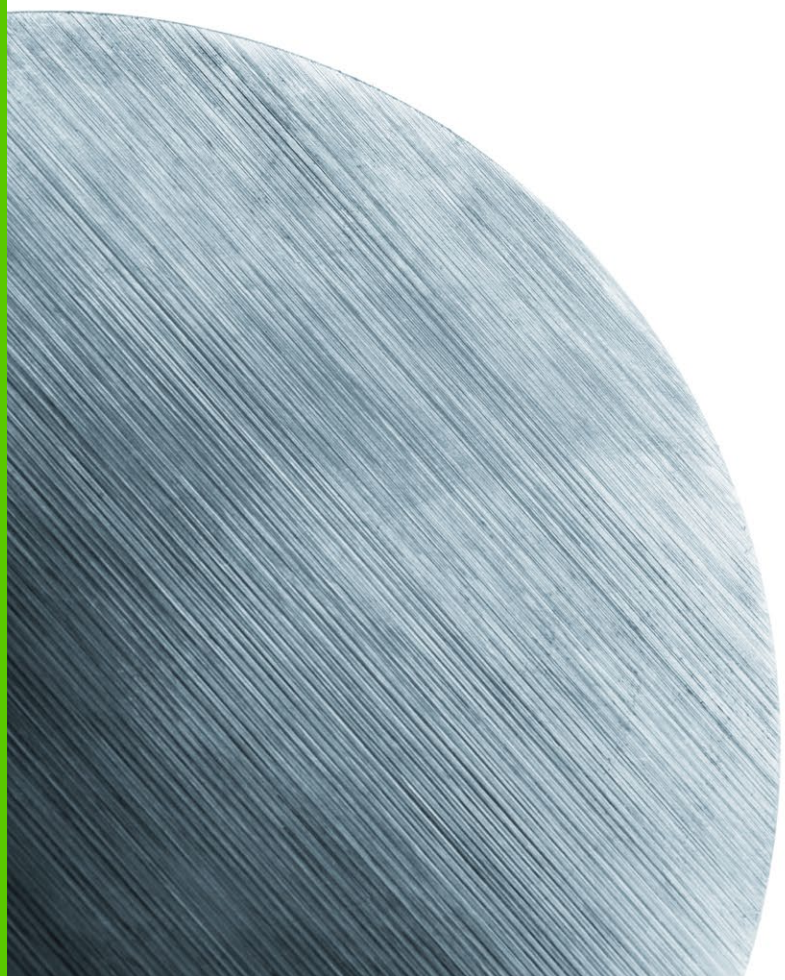
Zapp Precision Metals GmbH

EVERYTHING ZAPP!
PM TOOL STEEL
PM HIGH-SPEED STEEL
SPECIAL TOOL STEEL
SOLID CARBIDE



DISCOVER THE ADVANTAGES

Conventional tooling steels group with working hardness up to ~63 HRC

_ In this group, US2000^{cold} special tool steel offers higher performance and better dimensional stability in heat treatment than the standard.

Brand/Steel designation*	US 2000^{cold}	1.2379/D2
Melting	conventional/ESU	conventional
Tribology*	**A**	C
Toughness*	**A**	C
Compressive strength*	**A**	C
Typ. working hardness HRC	57 – 63	57 – 61

PM Tooling and high-speed steels group with working hardness up to ~64 HRC

Tool steels must be suitable for a wide range of applications. With powder metallurgical steels (PM), property characteristics can be achieved that are perfectly suited to your application!

_ Z-1 PM^{cold} and Z-3 PM^{cold} stand for maximum breakage resistance with good resistance to plastic deformation.
_ Z-M4 PM^{speed} and Z-Wear5 PM^{cold} are a good choice for safe and stable tools under tough production conditions.
_ The Z-10 PM^{cold} offers the highest wear resistance.

Brand/Steel designation*	Z-1 PM^{cold}	Z-3 PM^{cold}	Z-Wear5 PM^{cold}	Z-23 PM^{speed}	Z-M4 PM^{speed}	Z-9 PM^{cold}	Z-10 PM^{cold}	1.3343/M2
Melting	powder metallurgical							conventional
Tribology*	C–	C	**A**	B	**A**	**A+**	**A++**	C
Toughness*	**A++**	**A+**	**A**	C	B	B	C	C
Compressive strength*	B	B	**A**	**A**	**A**	C	**A**	C
Typ. working hardness HRC	54 – 62	54 – 60	58 – 63	60 – 64	60 – 65	50 – 57	58 – 63	61 – 64

Precipitation-hardening special alloys group

Brand/Steel designation	VACO 180T^{cold}
Special features	Special analysis for highest toughness requirements
Typ. working hardness HRC	~ 54

Effectiveness classes

A++ outstanding
A+ excellent
A very good
B good
C satisfactory, corresponds to average performance within the application group

Tooling steel categories

cold speed resist hard

PM TOOLING STEEL, PM HIGH-SPEED STEEL, SPECIAL TOOL STEEL AND SOLID CARBIDE

Group of high-alloy PM high-speed steels with working hardnesses up to ~69 HRC

Conventional HSS-Co steels are hard to find in toolmaking. High-alloy PM steels dominate the scene.

_ Z-M48 PM^{speed} achieves excellent results whenever forming applications require high working hardness or high-strength spring steel strips are processed.

Brand/Steel designation*	Z-30 PM^{speed}	Z-M48 PM^{speed}	Z-T15 PM^{speed}
Melting		powder metallurgical	
Tribology*	C	**A++**	**A**
Toughness*	B	**A++**	B
Compressive strength*	B	**A++**	B
Typ. working hardness HRC	62 – 66	64 – 69	62 – 66

Corrosion-resistant tooling steels

For machine and plant engineering, as well as for mold construction, we offer solutions that are a perfect fit.

_ As an upgrade to the known corrosion-resistant steels, we recommend Z-420 PM^{resist} with the highest resistance to wear and tear.
_ The LC200N^{resist} sets new standards in toughness, strength, and corrosion inertia.

Brand/Steel designation*	Z-420 PM^{resist}	LC 200 N^{resist}	1.4112/1.2083
Melting	powder metallurgical	DESU	conventional
Tribology*	**A++**	B	C
Toughness*	B	**A++**	C
PREN index*	B	**A++**	C
Typ. working hardness HRC	56 – 60	50 – 60	50 – 54

Solid carbides

Starting in 1926, Zapp established the Solid Carbide brand »WIDA« in the market exclusively with the company Krupp.

Committed to this tradition, we are starting a new with the Z-HM family into the world of solid carbides.

EDM blocks for toolmaking and mechanical engineering

Brand/Steel designation*	Z-G200K-HM
Manufacture	Sintered, all-around ground
Special feature	Optimized for the requirements of spark erosion in toolmaking
Grain Size	medium – fine
Hardness (HV30)	1.400
Co content	10,5 %

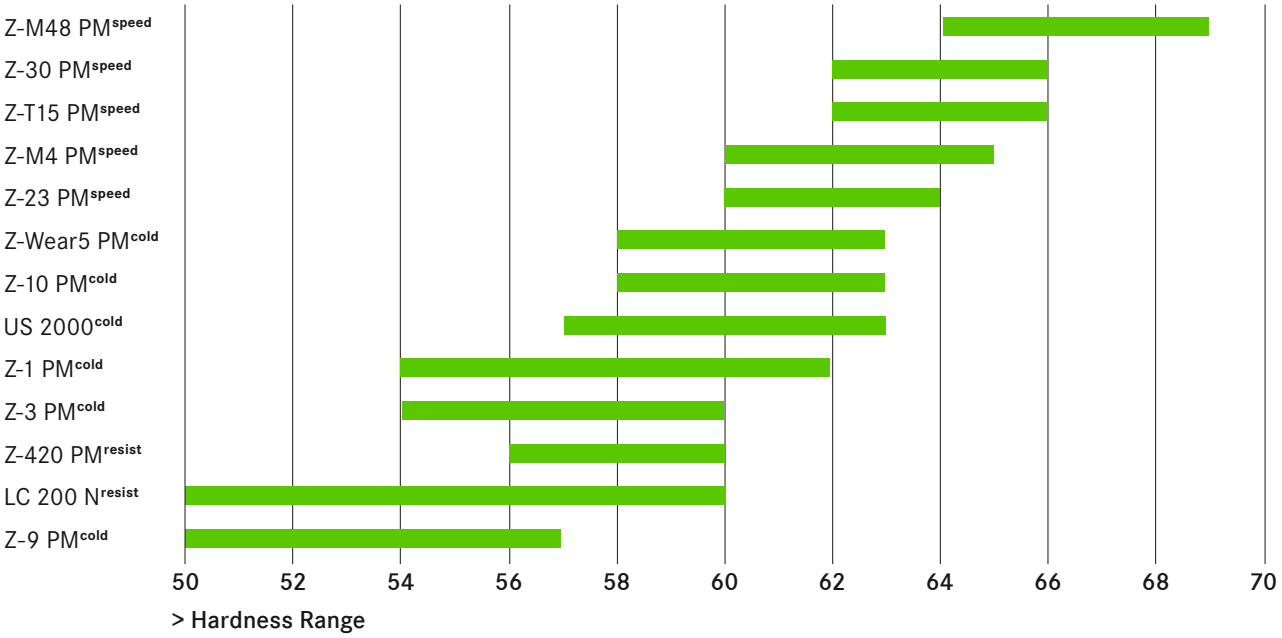
Blanks for forming applications

Brand/Steel designation*	Z-G300F-HM	Z-G500F-HM
Production	sintered	
Typ. designation	G30	G50/G55
Grain size	fine	fine
Hardness (HV10)	1.080	920
Co content	15 %	25 %
Crack toughness*	**A+**	**A++**

* Relative rating of the respective group

OUR Z-GRADES AT A GLANCE

Typical working hardness of our Z-Grades



Our toughnesses

Z-1 PM cold
Z-3 PM cold

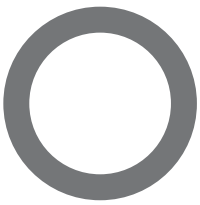
Our universal

Z-M4 PM speed
Z-Wear5 PM cold
US 2000 cold

Our abrasive resistents

Z-9 PM cold
Z-10 PM cold
Z-M48 PM speed

Solid carbides



Z-G200K-HM
Z-G300F-HM
Z-G500F-HM

Our corrosion resistents

Z-420 PM resist
LC 200 N resist

Toughness Wear Resistance Corrosion Resistance

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