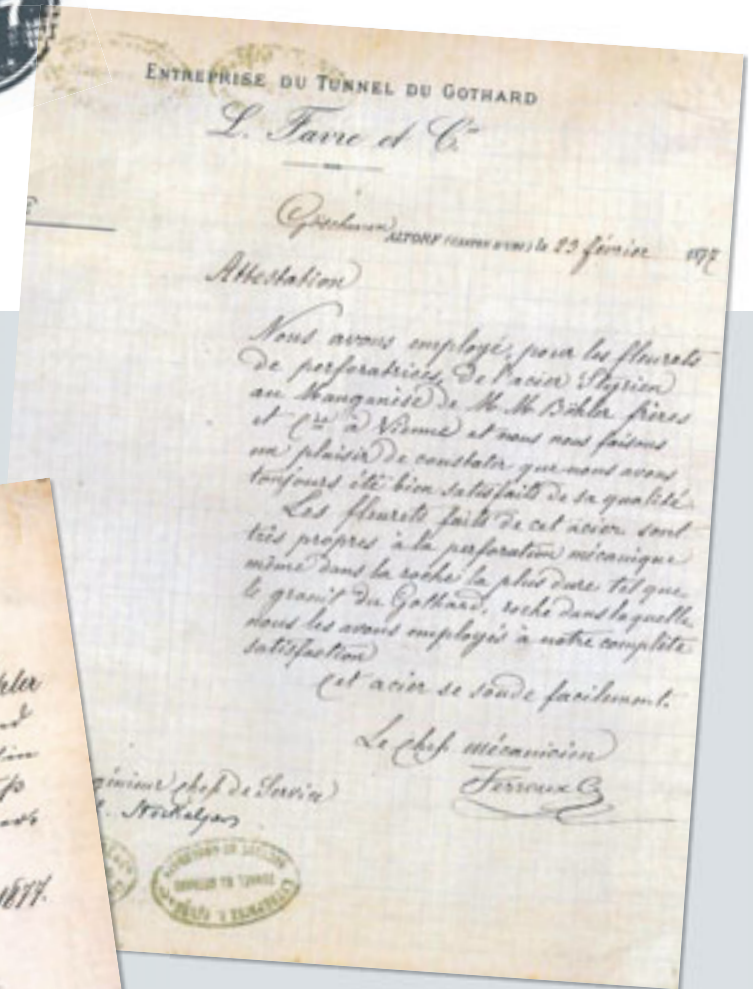


HIGH PERFORMANCE
TOOL STEELS FOR COINING



A LOT OF MONEY IS BEING MADE WITH BÖHLER STEEL

Since generations BÖHLER special steel is a synonym for high performance tooling solutions. Even in the coining industry. A number of well-known mints worldwide trusts BÖHLER and its innovative steel grades, for endless coining processes.





The major grades for endless coining

BÖHLER grade	Chemical composition in %						Standards	
	C	Cr	Mo	V	W	Others	DIN / EN	AISI
BÖHLER K340 ISODUR®	1.10	8.30	2.10	0.50	–	+ Al + Nb	Eigenpatent / Patent	–
BÖHLER K455 *	0.63	1.10	–	0.18	2.00	–	< 1.2550 > 60WCrV7	~ S1
BÖHLER K605	0.55	1.00	0.25	–	–	Si = 0.30 Mn = 0.40 Ni = 3.00	≈ 1.2721 ≈ 50NiCr13	–
BÖHLER K490 MICROCLEAN®	1.40	6.40	1.50	3.70	3.50	+ Nb	Eigenpatent / Patent	–
BÖHLER K890 MICROCLEAN®	0.85	4.35	2.80	2.10	2.55	Si = 0.55 Mn = 0.40 Co = 4.50	Eigenpatent / Patent	–

* Available in ESR and VAR quality.

RECOMMENDED MATERIALS

Qualitative comparison of the major steel properties

BÖHLER grade	Wear resistance		Toughness	Compressive strength	Dimensional stability during heat treatment
	abrasive	adhesive			
BÖHLER K340 ISODUR®	★★★	★★★★	★★★	★★★	★★★
BÖHLER K455	★★	★	★★★★★	★★	★
BÖHLER K605	★	★	★★★★★	★	★
BÖHLER K490 MICROCLEAN®	★★★★	★★★★	★★★★	★★★★	★★★★
BÖHLER K890 MICROCLEAN®	★★★	★★★★	★★★★★	★★★	★★★★

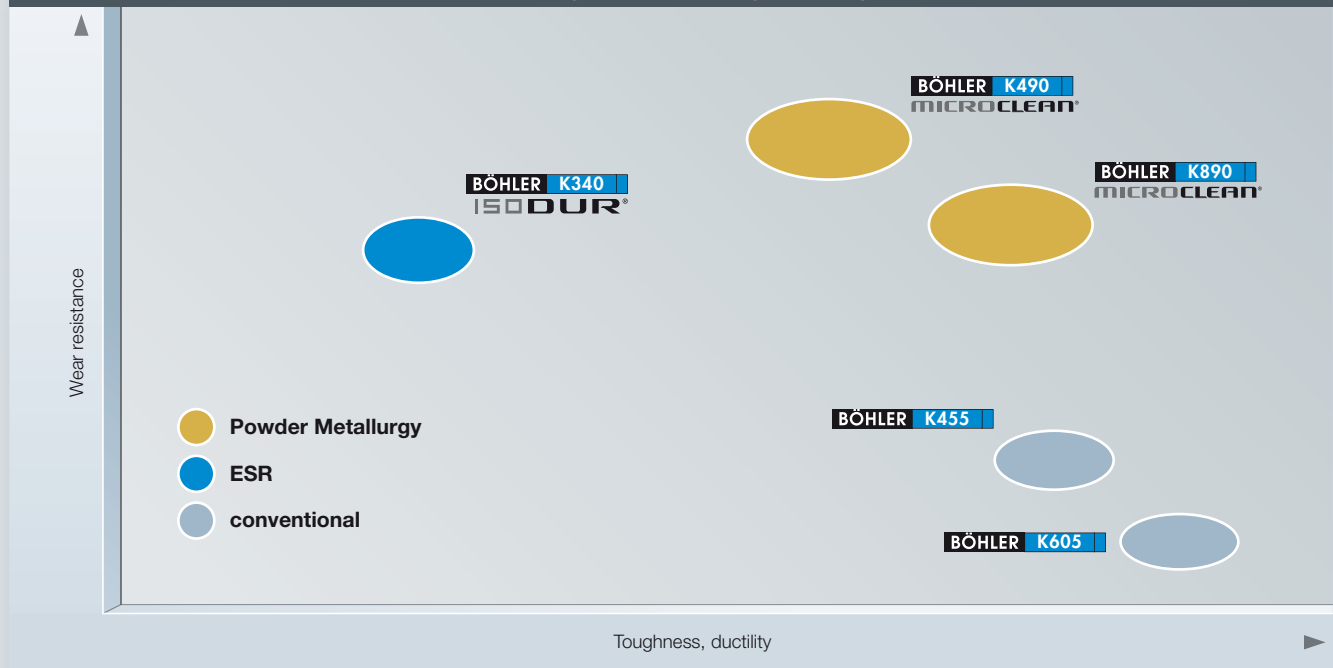
Important: This evaluation is solely intended for use in **blanking and cutting** and the steel grades mentioned above. Comparison is strongly dependent on the heat treatment conditions. For detailed material selection please contact your local BÖHLER sales agent.



The reason for making the decision to use quality tool materials is obvious, as the material amount of a high performance tool is often only 5% of the total value of a

tool, yet it **increases tool service life many times over**. In a word, it's a direct commercial advantage in production.

Property profile of BÖHLER cold work steels according to manufacturing technologies



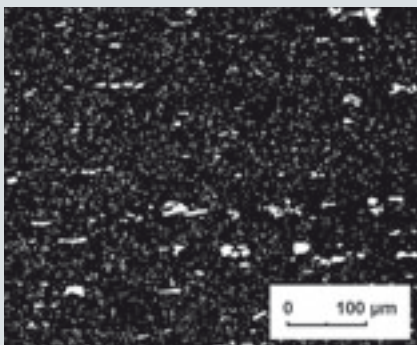
3 PREMIUM QUALITY LEVELS



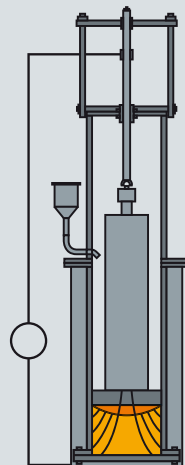
PESR Manufacture ISODUR®

Improved service life due to:

- least possible inclusion content
- lower micro and macro segregation
- good homogeneity and a higher degree of purity
- a homogenic structure throughout the entire cross-section and bar length
- producing larger bar dimensions at a constant carbide distribution
- uniform correction of dimensions
- a broad range of application due to a high degree of toughness



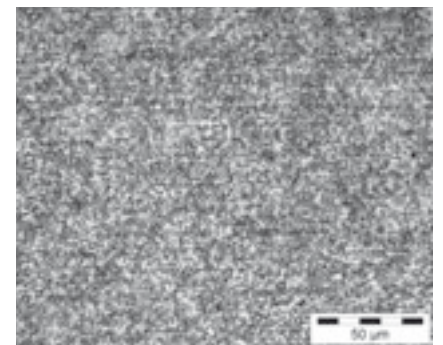
Microstructure of an 8% Cr-steel in ESR quality



VAR Manufacture VMR®

Material properties:

- minimum gas contents
- reduction of trace elements such as Pb, Bi, Te, As, Sn, Sb
- minimum microsegregations in the ingot centre
- low susceptibility to the formation of freckles (segregations)
- highly precise chemical analysis
- high cleanliness



K455 VMR technology

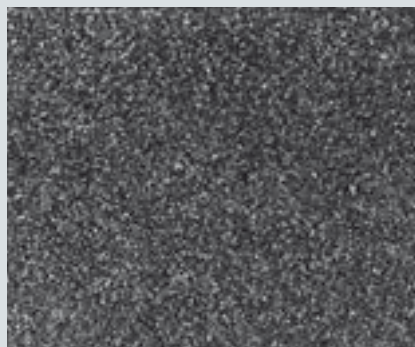
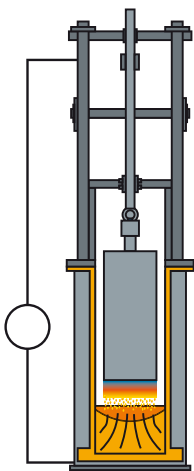
3 ADVANCED TECHNOLOGIES



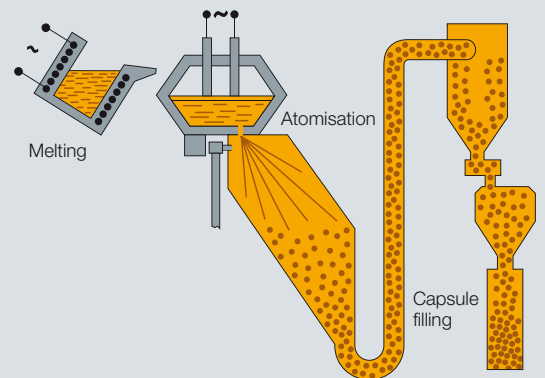
Powder metallurgical manufacturing **MICROCLEAN®**

For the highest demands:

- finest carbide distribution
- highest metallurgical purity
- segregation free high performance steel
- isotropic properties
- maximum wear resistance with a simultaneously higher toughness
- a high degree of hardness
- very good dimensional stability
- high compressive strength
- good polishability



Microstructure PM materials





SPECIAL STEEL FOR THE WORLD'S TOP PERFORMERS

Your partner: _____

BÖHLER Edelstahl GmbH & Co KG
Mariazeller Straße 25
A-8605 Kapfenberg/Austria
Phone: +43-3862-20-60 46
Fax: +43-3862-20-75 63
E-Mail: info@bohler-edelstahl.at
www.bohler-edelstahl.com

