

# X210Cr12

W.Nr. 1.2080

## Properties

cold working tool steel; high wear resistance; very good compression strength  
enduse = cutting tools, stamping tools, deep drawing/pressing tools.

## Chemical composition

<b>C=1,90-2,20</b>	<b>Si=0,10-0,60</b>	<b>Mn=0,20-0,60</b>	<b>P=max.0,030</b>	<b>S=max.0,030</b>
<b>Cr=11,00-13,00</b>				

DIN EN ISO 4957

## Grade equivalents Similar grades

<b>BD3</b>	-----	<b>Z200C12</b>	<b>SKD 1</b>	<b>19436</b>
<b>BS</b>	<b>GB</b>	<b>AFNOR</b>	<b>JIS</b>	<b>CSN</b>
<b>D3</b>	<b>X205Cr12KU</b>	-----	<b>CH12</b>	<b>F.5212</b>
<b>AISI / SAE</b>	<b>UNI</b>	<b>SS</b>	<b>GOST</b>	<b>UNE</b>

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 248 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class C/c or  
EN 10228-3 quality grade 2, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 30

**Microstructure** Carbide distribution as per Böhler classification Chart  
AL011DE10.91 edition 1984, aiming max. acceptable figures:  
diamter / thickness : up to 100 mm 3.3 ; 2.4 ; 1.4  
100 - 250 mm 3.4 ; 1.5  
251 - 400 mm 4.3 ; 3.5 ; 2.6

## Hot rolled and/or forged, peeled and/or turned

Ø 10 – 503 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

10 - 105 x  
20 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, all sides machined

10 x 10 -  
300 x 300 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 250 x  
120 - 600 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# X40Cr14

W.Nr. 1.2083

## Properties

mould steel, corrosion resistant, high cleanliness  
enduse = tools for processing corrosive plastics

## Chemical composition

<b>C=0,36-0,42</b>	<b>Si=max. 1,00</b>	<b>Mn=max. 1,00</b>	<b>P=max.0,025</b>	<b>S=max.0,010</b>
<b>Cr=12,50-14,50</b>				

DIN EN ISO 4957

## Grade equivalents Similar grades

----- BS 420 AISI / SAE	----- GB ----- UNI	Z40C14 AFNOR (2314) SS	SUS420J2 JIS ----- GOST	----- CSN X40Cr13 UNE

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 240 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class E/e or  
EN 10228-3 quality grade 4, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 20

**Microstructure** soft annealed / fine - even structure

## Hot rolled and/or forged, peeled and/or turned

Ø 10 – 403 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

20 - 105 x  
90 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, black all sides machined

20 x 20 -  
300 x 300 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 355 x  
120 - 1.050 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# X40Cr14 ESR

W.Nr. 1.2083

## Properties

mould steel, corrosion resistant, high cleanliness  
enduse = tools for processing corrosive plastics

## Chemical composition

<b>C=0,36-0,42</b>	<b>Si=max. 1,00</b>	<b>Mn=max. 1,00</b>	<b>P=max.0,025</b>	<b>S=max.0,008</b>
<b>Cr=12,50-14,50</b>				

**DIN EN ISO 4957**

## Grade equivalents Similar grades

----- <b>BS</b>	----- <b>GB</b>	<b>Z40C14</b>	<b>SUS420J2</b>	-----
<b>420</b>	-----	<b>AFNOR</b>	<b>JIS</b>	<b>CSN</b>
<b>AISI / SAE</b>	<b>UNI</b>	<b>(2314)</b>	-----	<b>X40Cr13</b>
		<b>SS</b>	<b>GOST</b>	<b>UNE</b>

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 240 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class E/e or  
EN 10228-3 quality grade 4, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K1 max. 30

**Microstructure** soft annealed / fine - even structure

## Hot rolled and/or forged, peeled and/or turned

Ø 10 – 403 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

20 - 105 x  
90 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, black all sides machined

20 x 20 -  
300 x 300 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 355 x  
120 - 1.050 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# 40CrMnMo7

W.Nr. 1.2311

## Properties

mould steel, quenched and tempered  
enduse = moulds for plastic, mould frames for plastic and die casting moulds

## Chemical composition

<b>C=0,35-0,45</b>	<b>Si=0,20-0,40</b>	<b>Mn=1,30-1,60</b>	<b>P=max.0,025</b>	<b>S=max.0,010</b>
<b>Cr=1,80-2,10</b>	<b>Mo=0,15-0,25</b>			

DIN EN ISO 4957

## Grade equivalents Similar grades

----- <b>BS</b> P20 AISI / SAE	----- <b>GB</b> ----- UNI	----- <b>AFNOR</b> ----- SS	----- <b>JIS</b> ----- GOST	<b>19520</b> CSN ----- UNE
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## General conditions

**Heat treatment** =+QT DIN EN ISO 4957

**Hardness** 280 - 325 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class E/e or  
EN 10228-3 quality grade 4, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 20

**Microstructure** quenched and tempered / fine - even structure

## Hot rolled and/or forged, peeled and/or turned

Ø 10 – 403 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, all sides machined

20 x 20 -  
300 x 300 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

105 - 405 x  
120 - 1.500 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# 40CrMnMoS8-6

W.Nr. 1.2312

## Properties

**mould steel, quenched and tempered, best machinability**  
enduse = mould frames, mould plates, mould frames for plastic and die casting moulds.

## Chemical composition

<b>C=0,35-0,45</b>	<b>Si=0,20-0,40</b>	<b>Mn=1,30-1,60</b>	<b>P=max.0,025</b>	<b>S=0,050-0,100</b>
<b>Cr=1,80-2,10</b>	<b>Mo=0,15-0,25</b>			

**DIN EN ISO 4957**

## Grade equivalents Similar grades

----- <b>BS</b>	----- <b>GB</b>	----- <b>AFNOR</b>	----- <b>JIS</b>	<b>19520</b>
<b>P20</b>	-----	-----	-----	<b>CSN</b>
<b>AISI / SAE</b>	<b>UNI</b>	<b>SS</b>	<b>GOST</b>	<b>UNE</b>

## General conditions

**Heat treatment** =+QT DIN EN ISO 4957

**Hardness** 280 - 325 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class D/d or  
EN 10228-3 quality grade 3, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 20 ( inclusion SS not to be considered ! )

**Microstructue** quenched and tempered / fine - even structure

## Hot rolled and/or forged, peeled and/or turned

Ø 20 – 853 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, all sides machined

20 x 20 -  
300 x 300 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

150 - 805 x  
150 - 1.500 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# 40CrMnNiMo8-6-4

W.Nr. 1.2738

## Properties

mould steel, quenched and tempered, for moulds with bigger thickn./size range  
enduse = mould for bumpers, vehicle dashboards, large car body parts;  
die casting frames

## Chemical composition

<b>C=0,35-0,45</b>	<b>Si=0,20-0,40</b>	<b>Mn=1,30-1,60</b>	<b>P=max.0,025</b>	<b>S=max. 0,010</b>
<b>Cr=1,80-2,10</b>	<b>Mo=0,15-0,25</b>	<b>Ni=0,90-1,20</b>		

**DIN EN ISO 4957**

## Grade equivalents Similar grades

----- <b>BS</b>	----- <b>GB</b>	----- <b>AFNOR</b>	----- <b>JIS</b>	----- <b>CSN</b>
----- <b>AISI / SAE</b>	----- <b>UNI</b>	----- <b>SS</b>	----- <b>GOST</b>	----- <b>UNE</b>

## General conditions

**Heat treatment** =+QT DIN EN ISO 4957

**Hardness** 280 - 325 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class D/d or  
EN 10228-3 quality grade 3, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 20

**Microstructue** quenched and tempered / fine - even structure

## Hot rolled and/or forged, peeled and/or turned

Ø 403 – 1.053 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, all sides machined

300 x 300 mm  
1.000 x 1.000 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

150 - 955 x  
805 - 1.500 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# X37CrMoV5-1

W.Nr. 1.2343

## Properties

hot working tool steel; high level toughness, good high temperature strength  
enduse = tools for dies, die inserts, extrusions, hot shearing knives, plastic processing

## Chemical composition

C=0,33-0,41	Si=0,80-1,20	Mn=0,25-0,50	P=max.0,025	S=max.0,010
Cr=4,80-5,50	Mo=1,10-1,50	V=0,30-0,50		

DIN EN ISO 4957

## Grade equivalents Similar grades

BH 11 BS	----- GB	Z38CDV5 AFNOR	SKD 6 JIS	19552 CSN
H 11 AISI / SAE	X37CrMoV5-1KU UNI	----- SS	4Ch5MFS GOST	F.5317 UNE

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 229 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class D/d or  
EN 10228-3 quality grade 3, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 20

**Microstructure** soft annealed / acc. to SEP 1614, max. figures as follows :  
segregation = SA1-SA4; SB1-SB4;SC1-SC4;SD1-SD4  
microstructure = GA1-GA5; GB1-GB4;GC1-GC2;GD1-GD2;GE1

## Hot rolled and/or forged, peeled and/or turned

Ø 10 – 703 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

20 - 105 x  
90 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, black all sides machined

20 x 20 -  
500 x 500 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 455 x  
120 - 1.050 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# X37CrMoV5-1-ESR

W.Nr. 1.2343

## Properties

hot working tool steel; highest level of toughness, temperature fatigue resistant  
enduse = tools for highly stressed extrusion dies and die casting moulds

## Chemical composition

C=0,33-0,41	Si=0,80-1,20	Mn=0,25-0,50	P=max.0,025	S=max.0,008
Cr=4,80-5,50	Mo=1,10-1,50	V=0,30-0,50		

DIN EN ISO 4957

## Grade equivalents Similar grades

BH 11 BS	----- GB	Z38CDV5 AFNOR	SKD 6 JIS	19552 CSN
H 11 AISI / SAE	X37CrMoV5-1KU UNI	----- SS	4Ch5MFS GOST	F.5317 UNE

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 229 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class E/e or  
EN 10228-3 quality grade 4, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K1 max. 30

**Microstructure** soft annealed / acc. to SEP 1614, max. figures as follows :  
segregation = SA1-SA4; SB1-SB4;SC1-SC4  
microstructure = GA1-GA5; GB1-GB4;GC1-GC2;GD1-GD2;GE1

## Hot rolled and/or forged, peeled and/or turned

Ø 553 – 903 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

20 - 105 x  
90 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, black all sides machined

20 x 20 -  
500 x 500 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 605 x  
120 - 1.050 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# X40CrMoV5-1

W.Nr. 1.2344

## Properties

hot working tool steel; high level toughness, good high temperature strength  
enduse = tools for dies, die inserts, extrusions, hot shearing knives, plastic processing

## Chemical composition

<b>C=0,35-0,42</b>	<b>Si=0,80-1,20</b>	<b>Mn=0,25-0,50</b>	<b>P=max.0,025</b>	<b>S=max.0,010</b>
<b>Cr=4,80-5,50</b>	<b>Mo=1,20-1,50</b>	<b>V=0,85-1,15</b>		

**DIN EN ISO 4957**

## Grade equivalents Similar grades

<b>BH 13</b> <b>BS</b>	<b>-----</b> <b>GB</b>	<b>Z40CDV5</b> <b>AFNOR</b>	<b>SKD 61</b> <b>JIS</b>	<b>19554</b> <b>CSN</b>
<b>H 13</b> <b>AISI / SAE</b>	<b>X40CrMoV511KU</b> <b>UNI</b>	<b>2242</b> <b>SS</b>	<b>4Ch5MF1S</b> <b>GOST</b>	<b>F.5318</b> <b>UNE</b>

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 229 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class D/d or  
EN 10228-3 quality grade 3, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 20

**Microstructure** soft annealed / acc. to SEP 1614, max. figures as follows :  
segregation = SA1-SA4; SB1-SB4;SC1-SC4;SD1-SD4  
microstructure = GA1-GA5; GB1-GB4;GC1-GC2;GD1-GD2;GE1

## Hot rolled and/or forged, peeled and/or turned

Ø 15 - 553 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

20 - 105 x  
90 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, black all sides machined

20 x 20 -  
500 x 500 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 455 x  
120 - 1.050 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# X40CrMoV5-1-ESR

W.Nr. 1.2344

## Properties

hot working tool steel; highest level of toughness, temperature fatigue resistant  
enduse = tools for highly stressed extrusion dies and die casting moulds, press dies

## Chemical composition

<b>C=0,35-0,42</b>	<b>Si=0,80-1,20</b>	<b>Mn=0,25-0,50</b>	<b>P=max.0,025</b>	<b>S=max.0,008</b>
<b>Cr=4,80-5,50</b>	<b>Mo=1,20-1,50</b>	<b>V=0,85-1,15</b>		

DIN EN ISO 4957

## Grade equivalents Similar grades

<b>BH 13</b>	<b>-----</b>	<b>Z40CDV5</b>	<b>SKD 61</b>	<b>19554</b>
<b>BS</b>	<b>GB</b>	<b>AFNOR</b>	<b>JIS</b>	<b>CSN</b>
<b>H 13</b>	<b>X40CrMoV511KU</b>	<b>2242</b>	<b>4Ch5MF1S</b>	<b>F.5318</b>
<b>AISI / SAE</b>	<b>UNI</b>	<b>SS</b>	<b>GOST</b>	<b>UNE</b>

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 229 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class E/e or  
EN 10228-3 quality grade 4, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K1 max. 30

**Microstructure** soft annealed / acc. to SEP 1614, max. figures as follows :  
segregation = SA1-SA4; SB1-SB4;SC1-SC4  
microstructure = GA1-GA5; GB1-GB4;GC1-GC2;GD1-GD2;GE1

## Hot rolled and/or forged, peeled and/or turned

Ø 553 – 903 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

20 - 105 x  
90 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, all sides machined

20 x 20 -  
500 x 500 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 605 x  
120 - 1.050 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# 32CrMoV12-28

W.Nr. 1.2365

## Properties

hot working tool steel; high level toughness  
enduse = extrusion dies, casting moulds

## Chemical composition

<b>C=0,28-0,35</b>	<b>Si=0,10-0,40</b>	<b>Mn=0,15-0,45</b>	<b>P=max.0,025</b>	<b>S=max.0,010</b>
<b>Cr=2,70-3,20</b>	<b>Mo=2,50-3,00</b>	<b>V=0,40-0,70</b>		

DIN EN ISO 4957

## Grade equivalents Similar grades

<b>BH 10</b>	-----	<b>32CDV12 28</b>	<b>SKD7</b>	<b>19541</b>
<b>BS</b>	<b>GB</b>	<b>AFNOR</b>	<b>JIS</b>	<b>CSN</b>
<b>H 10</b>	<b>30CrMoV1227KU</b>	-----	<b>3Ch3M3F</b>	<b>F.5313</b>
<b>AISI / SAE</b>	<b>UNI</b>	<b>SS</b>	<b>GOST</b>	<b>UNE</b>

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 229 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class D/d or  
EN 10228-3 quality grade 3, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 20

**Microstructure** soft annealed / acc. to SEP 1614, max. figures as follows :  
segregation = SA1-SA4; SB1-SB4;SC1-SC4;SD1-SD4  
microstructure = GA1-GA5; GB1-GB4;GC1-GC2;GD1-GD2;GE1

## Hot rolled and/or forged, peeled and/or turned

Ø 15 - 403 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

20 - 105 x  
90 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, black all sides machined

20 x 20 -  
300 x 300 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 455 x  
120 - 1.050 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# 32CrMoV12-28 ESR

W.Nr. 1.2365

## Properties

hot working tool steel; high level toughness  
enduse = extrusion dies / casting moulds with special requirements

## Chemical composition

C=0,28-0,35	Si=0,10-0,40	Mn=0,15-0,45	P=max.0,025	S=max.0,008
Cr=2,70-3,20	Mo=2,50-3,00	V=0,40-0,70		

DIN EN ISO 4957

## Grade equivalents Similar grades

BH 10 BS	----- GB	32CDV12 28 AFNOR	SKD7 JIS	19541 CSN
H 10 AISI / SAE	30CrMoV1227KU UNI	----- SS	3Ch3M3F GOST	F.5313 UNE

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 229 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class E/e or  
EN 10228-3 quality grade 4, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K1 max. 30

**Microstructure** soft annealed / acc. to SEP 1614, max. figures as follows :  
segregation = SA1-SA4; SB1-SB4;SC1-SC4  
microstructure = GA1-GA5; GB1-GB4;GC1-GC2;GD1-GD2;GE1

## Hot rolled and/or forged, peeled and/or turned

Ø 15 - 603 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

20 - 105 x  
90 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, black all sides machined

20 x 20 -  
500 x 500 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 605 x  
120 - 1.050 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# X38CrMoV5-3

W.Nr. 1.2367

## Properties

hot working tool steel; high level toughness  
enduse = extrusion tools / injection moulds / die inserts / mandrels

## Chemical composition

<b>C=0,35-0,40</b>	<b>Si=0,30-0,50</b>	<b>Mn=0,30-0 50</b>	<b>P=max.0,025</b>	<b>S=max.0,010</b>
<b>Cr=4,80-5,20</b>	<b>Mo=2,70-3,30</b>	<b>V=0,40-0,60</b>		

DIN EN ISO 4957

## Grade equivalents Similar grades

----- BS	----- GB	----- AFNOR	----- JIS	----- CSN
----- AISI / SAE	----- UNI	----- SS	----- GOST	----- UNE

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 229 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class D/d or  
EN 10228-3 quality grade 3, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 20

**Microstructure** soft annealed / acc. to SEP 1614, max. figures as follows :  
segregation = SA1-SA4; SB1-SB4;SC1-SC4; SD1-SD4  
microstructure = GA1-GA5; GB1-GB4;GC1-GC2;GD1-GD2;GE1

## Hot rolled and/or forged, peeled and/or turned

Ø 15 - 403 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

20 - 105 x  
90 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, all sides machined

20 x 20 -  
300 x 300 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 405 x  
120 - 805 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# X38CrMoV5-3 ESR

W.Nr. 1.2367

## Properties

hot working tool steel; high level / temperature toughness  
enduse = extrusion tools / injection moulds / die inserts / mandrels

## Chemical composition

<b>C=0,35-0,40</b>	<b>Si=0,30-0,50</b>	<b>Mn=0,30-0 50</b>	<b>P=max.0,025</b>	<b>S=max.0,008</b>
<b>Cr=4,80-5,20</b>	<b>Mo=2,70-3,30</b>	<b>V=0,40-0,60</b>		

DIN EN ISO 4957

## Grade equivalents Similar grades

----- <b>BS</b>	----- <b>GB</b>	----- <b>AFNOR</b>	----- <b>JIS</b>	----- <b>CSN</b>
----- <b>AISI / SAE</b>	----- <b>UNI</b>	----- <b>SS</b>	----- <b>GOST</b>	----- <b>UNE</b>

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 229 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class E/e or  
EN 10228-3 quality grade 4, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K1 max. 30

**Microstructure** soft annealed / acc. to SEP 1614, max. figures as follows :  
segregation = SA1-SA4; SB1-SB4;SC1-SC4  
microstructure = GA1-GA5; GB1-GB4;GC1-GC2;GD1-GD2;GE1

## Hot rolled and/or forged, peeled and/or turned

Ø 15 - 403 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

20 - 105 x  
90 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, all sides machined

20 x 20 -  
300 x 300 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 405 x  
120 - 805 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# X153CrMoV12

W.Nr. 1.2379

## Properties

cold working tool steel; good toughness ; very good compression strength  
enduse = shearing knives; hobbing tools; deep drawing tools; extrusion dies

## Chemical composition

C=1,45-1,60	Si=0,10-0,60	Mn=0,20-0,60	P=max.0,030	S=max.0,030
Cr=11,00-13,00	Mo=0,70-1,00	V=0,70-1,00		

DIN EN ISO 4957

## Grade equivalents Similar grades

BD2 BS	----- GB	Z160CDV12 AFNOR	SKD 11 JIS	19573 CSN
D2 AISI / SAE	X155CrVMo121 KU UNI	2310 SS	----- GOST	F.520 A UNE

## General conditions

Heat treatment =+A DIN EN ISO 4957

Hardness max. 250 HB

Surface surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

US test SEP 1921 group 3, class C/c or  
EN 10228-3 quality grade 2, 100% scanning or  
specific FBH eq.

Degree of Purity DIN 50 602, K4 max. 30

Microstructure Carbide distribution as per Böhler classification Chart  
AL011DE10.91 edition 1984, aiming max. acceptable figures:  
diamter / thickness : up to 100 mm 3.3 ; 2.4 ; 1.4  
100 - 250 mm 3.4 ; 1.5  
251 - 400 mm 4.3 ; 3.5 ; 2.6

## Hot rolled and/or forged, peeled and/or turned

Ø 10 – 603 mm

Tolerances - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
Lengths 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

10 - 105 x  
20 - 610 mm

Tolerances EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
Lengths 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, all sides machined

10 x 10 -  
355 x 355 mm

Tolerances EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
Lengths 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 350 x  
120 - 600 mm

Tolerances DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
Lengths 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# X210CrW12

W.Nr. 1.2436

## Properties

cold working tool steel; very good hardenability, wear resistance  
enduse = cutting tools; shearing knives; rollers; deep drawing tools;  
drawing mandrels; extrusion dies; nozzles for sandblasting

## Chemical composition

C=2,00-2,30	Si=0,10-0,40	Mn=0,30-0,60	P=max.0,030	S=max.0,030
Cr=11,00-13,00	W=0,60-0,80			

DIN EN ISO 4957

## Grade equivalents Similar grades

----- BS	----- GB	Z210CW1201 AFNOR	----- JIS	19717 CSN
----- AISI / SAE	X215CrW121 KU UNI	2312 SS	----- GOST	F.5213 UNE

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 255 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class C/c or  
EN 10228-3 quality grade 2, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 30

**Microstructure** Carbide distribution as per Böhler classification Chart  
AL011DE10.91 edition 1984, aiming max. acceptable figures:  
diamter / thickness : up to 100 mm 3.3 ; 2.4 ; 1.4  
100 - 250 mm 3.4 ; 1.5  
251 - 400 mm 4.3 ; 3.5 ; 2.6

## Hot rolled and/or forged, peeled and/or turned

Ø 10 – 453 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

10 - 105 x  
20 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, black all sides machined

10 x 10 -  
305 x 305

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 250 x  
120 - 600 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# 46CrSiMoV7

W.Nr. 1.2329

## Properties

hot working tool steel  
enduse = heated recipient casings; internal boxes; pressing punches

## Chemical composition

C=0,42-0,47	Si=0,70-0,80	Mn=0,85-1,00	P=max.0,025	S=max.0,015
Cr=1,80-2,00	Mo=0,30-0,40	Ni=0,50-0,60	V=0,20-0,25	

DIN EN ISO 4957

## Grade equivalents Similar grades

----- BS	----- GB	----- AFNOR	----- JIS	----- CSN
----- AISI / SAE	----- UNI	----- SS	----- GOST	----- UNE

## General conditions

Heat treatment =+A DIN EN ISO 4957

Hardness max. 230 HB

Surface surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

US test SEP 1921 group 3, class D/d or  
EN 10228-3 quality grade 3, 100% scanning or  
specific FBH eq.

Degree of Purity DIN 50 602, K4 max. 20

Microstructure soft annealed structure / fine / even

## Hot rolled and/or forged, peeled and/or turned

Ø 10 – 853 mm

Tolerances - 0 / + 0,8 - 4,0 mm (dep. on dia) or specific tol.  
Lengths 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# 55NiCrMoV7

W.Nr. 1.2714

## Properties

hot working / die tool steel; high temperature strength, good toughness  
enduse = drop forging; forging saddles; extrusion tools; die holders  
hot shearing knives

## Chemical composition

C=0,50-0,60	Si=0,10-0,40	Mn=0,60-0,90	P=max.0,025	S=max.0,015
Cr=0,80-1,20	Mo=0,35-0,55	Ni=1,50-1,80	V=0,05-0,15	

DIN EN ISO 4957

## Grade equivalents Similar grades

----- BS L 6 AISI / SAE	----- GB ----- UNI	----- AFNOR ----- SS	SKT 4 JIS 5ChGNM GOST	19663 CSN F.520 B UNE
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## General conditions

**Heat treatment** =+A DIN EN ISO 4957 ; also available in QT DIN EN ISO 4957

**Hardness** max. 248 HB : in QT as per agreement !

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class D/d or  
EN 10228-3 quality grade 3, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 20

**Microstructure** soft annealed structure / Ferrite / Carbides

## Hot rolled and/or forged, peeled and/or turned

Ø 10 – 953 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

10 - 105 x  
20 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, all sides machined

10 x 10 -  
305 x 305

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 500 x  
120 - 1.250 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1

# 45NiCrMo16

W.Nr. 1.2767

## Properties

tool steel - very good toughness, good hardenability  
enduse = tools for heavy cold forming, hobbing; shearing blades;  
moulds ( plastic - compression - injection )

## Chemical composition

<b>C=0,40-0,50</b>	<b>Si=0,10-0,40</b>	<b>Mn=0,20-0,50</b>	<b>P=max.0,025</b>	<b>S=max.0,010</b>
<b>Cr=1,20-1,50</b>	<b>Mo=0,15-0,35</b>	<b>Ni=3,80-4,30</b>		

**DIN EN ISO 4957**

## Grade equivalents Similar grades

----- <b>BS</b>	----- <b>GB</b>	----- <b>AFNOR</b>	<b>SKT 6</b> <b>JIS</b>	----- <b>CSN</b>
----- <b>AISI / SAE</b>	----- <b>UNI</b>	----- <b>SS</b>	----- <b>GOST</b>	----- <b>UNE</b>

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 285 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class D/d or  
EN 10228-3 quality grade 3, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 20

**Microstructue** soft annealed struture

## Hot rolled and/or forged, peeled and/or turned

Ø 10 – 503 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

20 - 105 x  
20 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, all sides machined

20 x 20 -  
205 x 205

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 455 x  
120 - 1.250 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

## Remarks :

also available in ESR !

- supply range file - issued: 20.02.2009 rev. 1

# 90MnCrV8

W.Nr. 1.2842

## Properties

cold working tool steel - good hardenability, oil hardening steel  
enduse = tools for cutting, punching, stamping, deep drawing; guide columns  
moulds ( compression - injection )

## Chemical composition

<b>C=0,85-0,95</b>	<b>Si=0,10-0,40</b>	<b>Mn=1,80-2,20</b>	<b>P=max.0,030</b>	<b>S=max.0,020</b>
<b>Cr=0,20-0,50</b>	<b>V=0,05-0,20</b>			

**DIN EN ISO 4957**

## Grade equivalents Similar grades

<b>BO 2</b>	<b>-----</b>	<b>90MV8</b>	<b>-----</b>	<b>19313</b>
<b>BS</b>	<b>GB</b>	<b>AFNOR</b>	<b>JIS</b>	<b>CSN</b>
<b>O 2</b>	<b>90MnVCr8 KU</b>	<b>-----</b>	<b>-----</b>	<b>F.5229</b>
<b>AISI / SAE</b>	<b>UNI</b>	<b>SS</b>	<b>GOST</b>	<b>UNE</b>

## General conditions

**Heat treatment** =+A DIN EN ISO 4957

**Hardness** max. 229 HB

**Surface** surface flaws / cracks if any are removed by polishing.  
cleaning marks/scale pitting/peripheral decarburisation within  
the standard machining allowance is allowed.

**US test** SEP 1921 group 3, class D/d or  
EN 10228-3 quality grade 3, 100% scanning or  
specific FBH eq.

**Degree of Purity** DIN 50 602, K4 max. 20

**Microstructue** soft annealed struture / fine / even

## Hot rolled and/or forged, peeled and/or turned

Ø 10 – 503 mm

**Tolerances** - 0 / + 0,8 - 4,0 mm ( dep. on dia ) or specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled, black and/or Hot rolled all sides machined

10 - 125 x  
30 - 610 mm

**Tolerances** EN 10058 positiv allowance only or  
DIN 50602 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Hot rolled and/or forged, black Hot rolled and/or forged, black all sides machined

20 x 20 -  
305 x 305 mm

**Tolerances** EN 10059 positiv allowance only or  
DIN 7527 / 6 positiv allowance only or  
specific tol.  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Forged, black and/or forged all side machined

100 - 405  
120 - 1.250 mm

**Tolerances** DIN 7527 / 6 positiv allowance only or  
specific tol. positiv allowance only  
**Lengths** 2,5 - 5,5 m or specific lengths ends of bars are sawn

## Test certificate

EN 10204/3.1 with chem. Analysis; hardness HB ; heat treatment ; US test  
( copy of original on our letter head ! )

- supply range file - issued: 20.02.2009 rev. 1