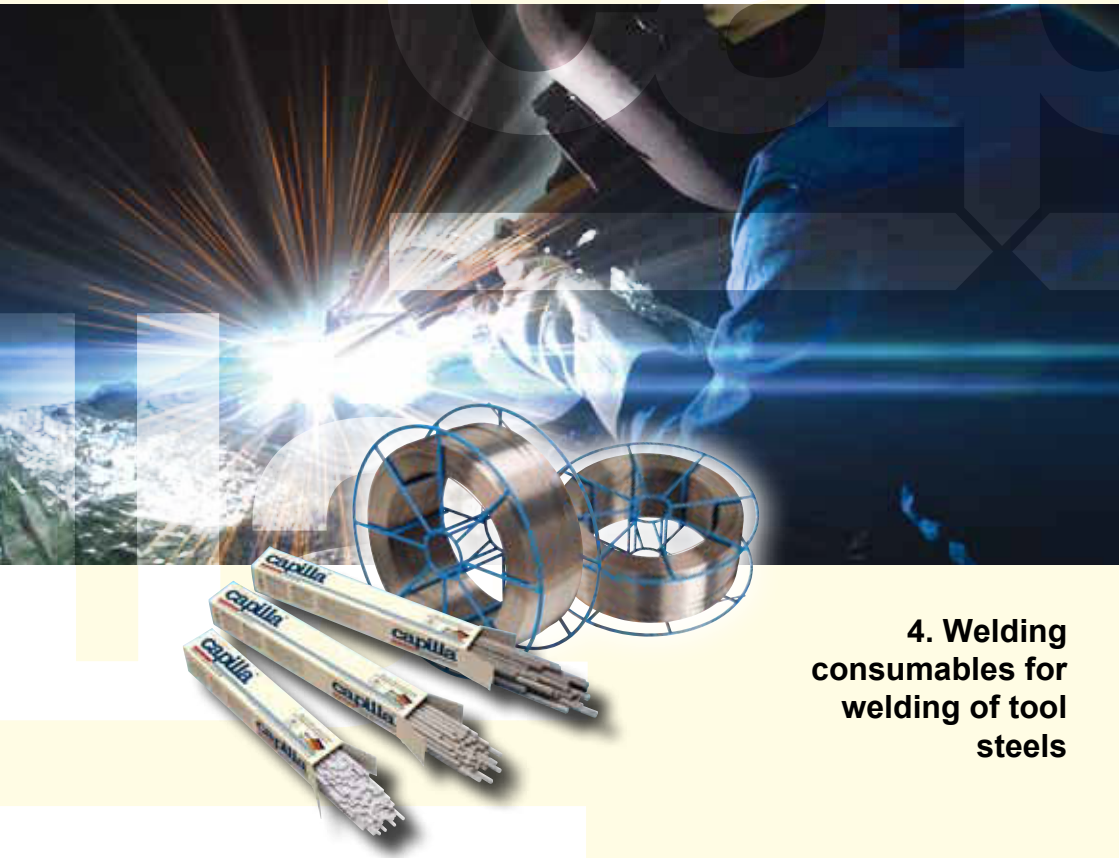
capilla®

Part catalogue



4. Welding consumables for welding of tool steels

4 Welding consumables for welding of tool steels

4.1 Coated stick electrodes for welding of tool steels

capilla®	EN 14700:	(DIN 8555):	Page
4914	E Fe 8	E 6-UM-350-PRT	**99**
64 KB	E Fe 3	E 3-UM-300-T	**100**
64 KBS	E Fe3	E 3-UM-350-T	**101**
65	E Fe 3	E 3-UM-45-T	**102**
65 Ti	E Fe 3	E 3-UM-45-T	**103**
66	E Fe 3	E 3-UM-55-T	**104**
6500	E Fe 3	E 6-UM-50-PST	**105**
6500 Ti	E Fe 3	E 6-UM-50-PST	**106**
25 S	E Fe 3	E 3-UM-50-ST	**107**
732	E Fe 3	E 3-UM-55-ST	**108**
733	E Fe 3	E 3-UM-50-T	**109**
734	E Fe 3	E 3-UM-40-PT	**110**
5400	E Fe 8	E 6-UM-60	**111**
53	E Fe 4	E 4-UM-60-ST	**112**
53 N	E Fe 4	E 4-UM-60-ST	**113**
2709	not classified	E 4-UM-40 PT	**114**
93	not classified	special alloy	**115**
6000	E Ni 2	E 23-UM-200-CRTZ	**116**
5200	E Ni 2	E 23-UM-200-CKPTZ	**117**
5200 S	E Ni 2	E 23-UM-250-CKPTZ	**118**
526	E Ni 2	E 23-UM-300-CKPTZ	**119**
533	E Ni 2	E 23-UM-200-CKPTZ	**120**
625	E Ni 2	E 23-UM-250-CKPTZ	**121**
501 EHL	E Co 3	E 20-UM-55 CTZ	**122**
501 K	E Co 3	E 20-UM-55 CTZ	**123**
506 EHL	E Co 2	E 20-UM-45 CTZ	**124**
506 K	E Co 2	E 20-UM-45 CTZ	**125**
512 EHL	E Co 2	E 20-UM-50 CTZ	**126**
512 K	E Co 2	E 20-UM-50 CTZ	**127**
516 EHL	E Co 1	E 20-UM-250 CKTZ	**128**
521 EHL	E Co 1	E 20-UM-300 CTZ	**129**
521 K	E Co 1	E 20-UM-300 CTZ	**130**
523 EHL	E Co 1	E 20-UM-350 CTZ	**131**
524 EHL	E Co 1	E 20-UM-350 CTZ	**132**

4.2 Wire electrodes for welding of tool steels

4.2.1 Solid wires for gas shielded arc welding of tool steels

capilla®	EN 14700:	(DIN 8555):	Page
4914 MAG	S Fe 8	MSG 6-GZ-350 PRT	**133**
64 MAG	S Fe 1	MSG 1-GZ-300 T	**133**
64 MAG-S	S Fe 1	MSG 1-GZ-250	**133**
65 MAG	S Fe 3	MSG 3-GZ-45 T	**133**
6500 MAG	S Fe 3	MSG 6-GZ-50 T	**133**
732 MAG	S Fe 3	MSG 6-GZ-55 ST	**133**
733 MAG	S Fe 3	MSG 6-GZ-50 ST	**133**
734 MAG	S Fe 3	MSG 3-GZ-40 ST	**133**
5400 MAG	S Fe 8	MSG 6-GZ-60 T	**133**
2709 MAG	not classified	MSG 4-GZ-40 PT	**133**
53 MAG	S Fe 4	MSG 4-GZ-60 ST	**133**
650 MAG	S Fe 8	MSG 6-GZ-350 RPT	**133**
526 MAG	S Ni 2	MSG 23-GZ-300 CKTZ	**134**
5200 MAG	S Ni 2	MSG 23-GZ-250 KPTZ	**134**
533 MAG	~ S Ni 2	MSG 23-GT-200 CPRTZ	**134**
6000 MIG	S Ni 2	MSG 23-GZ-300 CKPTZ	**134**
625 N MAG	S Ni 2	MSG 23-GZ-300 CKPTZ	**134**
838 MAG	S Ni 2	MSG 23-GZ-300 CKTZ	**134**

4.2.2 Welding rods for tungsten inert gas welding of tool steels

capilla®	EN 14700:	(DIN 8555):	Page
4914 WIG	S Fe 8	WSG 6-GZ-350 PRT	**134**
64 WIG	S Fe 1	WSG 1-GZ-300 T	**134**
64 WIG-S	S Fe 1	WSG 1-GZ-250	**134**
65 WIG	S Fe 3	WSG 3-GZ-45 T	**135**
6500 WIG	S Fe 3	WSG 6-GZ-50 T	**135**
732 WIG	S Fe 3	WSG 6-GZ-55 ST	**135**
733 WIG	S Fe 3	WSG 6-GZ-50 ST	**135**
734 WIG	S Fe 3	WSG 3-GZ-40 ST	**135**
5400 WIG	S Fe 8	WSG 6-GZ-60 T	**135**
2709 WIG	not classified	WSG 4-GZ-40 PT	**135**
53 WIG	S Fe 4	WSG 4-GZ-60 ST	**135**
650 WIG	S Fe 8	WSG 6-GZ-350 RPT	**135**
526 WIG	S Ni 2	WSG 23-GZ-300 CKTZ	**135**
5200 WIG	S Ni 2	WSG 23-GZ-250 KPTZ	**135**
533 WIG	~S Ni 2	WSG 23-GT-200 CPRTZ	**135**
6000 WIG	S Ni 2	WSG 23-GZ-300 CKPTZ	**135**
625 N WIG	S Ni 2	WSG 23-GZ-300 CKPTZ	**135**
838 WIG	S Ni 2	WSG 23-GZ-300 CKTZ	**135**
501 WIG	S Co 3	WSG 20-GG-55 CKTZ	**136**
506 WIG	S Co 2	WSG 20-GG-40 CKTZ	**136**
512 WIG	S Co 2	WSG 20-GG-45 CKTZ	**136**
516 WIG	S Co 1	WSG 20-GG-250 CKTZ	**136**
521 WIG	S Co 1	WSG 20-GG-300 CKTZ	**136**

4.2.3 Tubular wires for gas shielded arc welding of tool steels

capilla®	EN 14700:	(DIN 8555):	Page
G 135 MM	T Fe 8	MF 3-GF-40 CT	**137**
G 370 MM	T Fe 6	MF 5-GF-350 CT	**137**
G 654 MM	T Fe 3	MF 6-GF-55 G	**137**
G 654 N MM	T Fe 3	MF 6-GF-45 GP	**137**
G 5400 MM	T Fe 8	MF 6-GF-55 GP	**137**
G 64 MM	T Fe 1	MF 3-GF-300 GP	**137**
G 105 MM	T Fe 1	MF 3-GF-350 GP	**137**
G 65 MM	T Fe 3	MF 3-GF-40 PST	**137**
G 93 MM	not classified	MF 5-GF-50 CRST	**137**
G 5200 MM	T Ni 2	MF 23-GF-200 CKT	**137**
G 530 MM	~T Ni 2	MF 23-GF-200 CKTZ	**137**
G 501 MM	T Co 3	MF 20-GF-55 CKTZ	**137**
G 506 MM	T Co 2	MF 20-GF-40 CKTZ	**138**
G 512 MM	T Co 2	MF 20-GF-45 CKTZ	**138**
G 516 MM	T Co 1	MF 20-GF-250 CKTZ	**138**
G 521 MM	T Co 1	MF 20-GF-300 CKTZ	**138**
G 563 MM	T Fe 3	MF 3-GF-50 T	**138**
G 569 MM	T Fe 3	MF 6-GF-55 T	**138**
G 7940 MM	T Fe 3	MF3-GF-40 ST	**138**
G 7945 MM	T Fe 3	MF 3-GF-50 ST	**138**
G 7950 MM	T Fe 3	MF 3-GF-55 ST	**138**
G 2040 RM	TZ Fe 3	MF 3-GF-40-PT	**138**
G 2045 RM	TZ Fe 3	MF 3-GF-45-PT	**138**
G 2048 RM	TZ Fe 3	MF 3-GF-45-PT	**138**
G 2050 RM	TZ Fe 3	MF 3-GF-50-PT	**138**
G 2055 RM	TZ Fe 3	MF 3-GF-55-PT	**138**
G 53 MM	TZ Fe 4	MF 4-GF-60 ST	**138**

Standards:

EN 14700:	E Fe 7-350-cpt
EN ISO 3581-A:	EZ 13 1 R 53
(DIN 8555):	E 6-UM-350-PRT
Recovery:	**150%**

capilla® 4914

Product description:

Rutile coated high-recovery stick electrode for repair welding of hot-forming tools. The weld metal is characterised by its extraordinarily high crack resistance.

Applications:

The weld metal exhibits a combination of high tensile strength and toughness, thus allows crack-free overlays on rollers, cylinders and plier heads.

Typical weld metal composition:

[wt. - %]

	C	Cr	Ni	Fe
Min.		**12,5**	**0,8**	
Max.	**0,25**	**14**	**1**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Tensile strength R_m:	1150	[MPa]
Yield strength $R_{p0,2}$:	650	[MPa]
Yield strength $R_{p1,0}$:	-	[MPa]
Elongation (L=5d):	15	[%]
Hardness:	37	[HRC]

Positions: all except PD, PE and PG

Redrying: -

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,0	350	60 – 90
2,5	350	80 – 120
3,25	350	100 – 160
4,0	450	160 – 220
5,0	450	190 – 260

Polarity =(+)~

also available:
find in table of content

Capilla 4914 MAG
Capilla 4914 WIG

Standards:

EN 14700 E Fe 1-300-p
(DIN 8555): E 3-UM-300 GP

Recovery: **130%**

capilla® 64 KB

Product description:

Basic-coated high-recovery stick electrode for high-strength, heat treatable joint and overlay welding. The weld metal exhibits good crack resistance and is resistant against compressive and impact stress.

Applications:

The electrode is used for repair and maintenance work on dies, rails, crane rims, feeder rollers.

Base Materials:

Mild steels, tool steels, heat treatable steels (TS up to 1200 MPa), high-temperature structural steels.

Typical weld metal composition:

[wt. - %]

	C	Cr	Si	Mo	Fe
Min.	**0,06**	**2**		**0,8**	
Max.	**0,1**	**2,5**	**0,5**	**1**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Tensile strength R_m:	1000	[MPa]
Yield strength $R_{p0,2}$:	650	[MPa]
Yield strength $R_{p1,0}$:	-	[MPa]
Elongation (L=5d):	19	[%]
Hardness:	290	[HB]

Positions: all except PD, PE and PG

Redrying: 300 - 330°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	60 – 90
3,25	350	95 – 150
4,0	450	140 – 190
5,0	450	190 – 250
6,0	450	220 – 290

Polarity =(+)~

also available:
find in table of content

Capilla 64 MAG
Capilla 64 WIG

Capilla G 64 MM (tubular wire)

Standards:

EN 14700 E Fe 3-350-st
(DIN 8555): E 3-UM-350 GP

Recovery: **130%**

capilla® 64 KBS

Product description:

Basic-coated high recovery stick electrode for high-strength, heat treatable fusion and overlay welding. Also suitable as filler for difficult to weld steels. The weld metal is characterized by its high crack resistance and is extremely resistant against compressive and impact stress.

Applications:

The electrode is used for repair and maintenance welding of all kinds of medium alloyed steels especially constructional and tool steels.
Suitable for repair and manufacturing welding of dies, rails, crane rims, support rollers, various machine parts.

Typical weld metal composition:

[wt. - %]

	C	Cr	Si	Mo	Mn	Fe
Min.		**2,2**		**2**		
Max.	**0,1**	**2,7**	**0,5**	**2,5**	**1**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Tensile strength R_m:	1200	[MPa]
Yield strength $R_{p0,2}$:	810	[MPa]
Yield strength $R_{p1,0}$:	-	[MPa]
Elongation (L=5d):	-	[%]
Hardness:	350	[HB]

Positions: all except PD, PE and PG

Redrying: 300 - 330°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	60 – 90
3,25	350	95 – 150
4,0	450	140 – 190
5,0	450	190 – 250
6,0	450	220 – 290

Polarity =(+)~

also available:
find in table of content

Capilla G 105 MM (tubular wire)

Standards:

EN 14700: E Fe 3-45-st
(DIN 8555): E 3-UM-45-T
Mat.-No.: ~1.2567

Recovery: **130%**

capilla® 65

Product description:

Basic coated universal stick electrode for heat-resistant, tough repair welding of hot-forming tools, having similar alloying composition and properties. The weld metal exhibits good resistance to thermal shocks.
Service temperature max. 550°C.

Applications:

Repair and manufacturing welding of tools which are exposed to wear at elevated temperatures such as:

dies, punches, hot shearing tools, swaging tools.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mn	W	V	Si	Fe
Min.	**0,1**	**2,2**	**1**	**4**	**0,4**		
Max.	**0,3**	**2,8**	**1,2**	**5**	**0,8**	**0,6**	**Bal.**

Mechanical properties:

(Minimum values at ambient temperature)

Hardness:	41 - 45	[HRC] as welded
	45 - 50	[HRC] annealed(550°C/2h)
	20 - 25	[HRC] soft annealed (ca.800°C)

Positions: all except PE and PG

Redrying:: 300 – 330 °C/2h

Dimension::

Ø [mm]	Length [mm]	Welding current [A]	**Polarity**
2,5	350	60 - 90	=(+)~
3,25	350	95 - 150	
4,0	450	140 - 190	
5,0	450	190 - 250	
6,0	450	220 - 290	

also available:
find in table of content

Capilla 65 Ti
Capilla 65 MAG
Capilla 65 WIG
Capilla G 65 MM (tubular wire)

Standards:

EN 14700: E Fe 3-45-st
(DIN 8555): E 3-UM-45-T
Mat.-No.: ~1.2567

Recovery: **130%**

capilla® 65 Ti

Product description:

Rutile coated universal stick electrode for heat-resistant, tough repair welding of hot-forming tools having similar alloying composition and properties. The weld metal exhibits good resistance to thermal shocks.
Service temperature max. 550°C

Applications:

Repair and manufacturing welding of tools which are exposed to wear at elevated temperatures such as:

dies, punches, hot shearing tools, swaging tools.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mn	W	V	Si	Fe
Min.	**0,1**	**2,2**	**1**	**4**	**0,4**		
Max.	**0,3**	**2,8**	**1,2**	**5**	**0,8**	**0,6**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	41 - 45	[HRC] as welded
	45 - 50	[HRC] annealed(550°C/2h)
	20 - 25	[HRC] soft annealed (ca.800°C)

Positions: all except PE and PG

Redrying: 300 - 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	60 – 90
3,25	350	95 – 150
4,0	450	140 – 190
5,0	450	190 – 250
6,0	450	220 – 290

Polarity =(+)~

also available:
find in table of content

Capilla 65
Capilla 65 MAG
Capilla 65 WIG
Capilla G 65 MM (tubular wire)

Standards:

EN 14700: E Fe 3-55-st
(DIN 8555): E 3-UM-55-T

Recovery: **140%**

capilla® 66

Product description:

Rutile-basic coated high-recovery stick electrode for overlay welding on heat resistant forming tools.
The weld metal is extremely resistant to abrasion, impact and pressure.

Applications:

This electrode is used for repair welding of hot-forming tools such as dies.
Also qualified for new production (contour changes) of dies, as well as hardfacing of cold shearing tools.

Typical weld metal composition:

[wt. - %]

	C	Cr	Ni	Mo	W	V	Fe
Min.		**6**	**0,4**	**1**	**6**	**0,5**	
Max.	**0,4**	**8**	**0,7**	**1,5**	**8**	**0,8**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	50 – 55	[HRC] as welded
	53 – 56	[HRC] annealed(550°C/2-8h)

Positions: all except PD, PE and PG

Redrying: 300 - 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	80 – 120
3,25	350	100 – 160
4,0	450	160 – 220
5,0	450	190 – 260
6,0	450	220 – 290

Polarity =(+)~

Standards:

EN 14700: E Fe 3-55-st
(DIN 8555): E 6-UM-50-PST
Mat.-No.: 1.2344

Recovery: **130%**

capilla® 6500

Product description:

Basic coated stick electrode for hardfacing and repair welding of tool steels such as 1.2307-1.2377.

The surfaces of the tool to be welded must be cleaned carefully. All cracks have to be removed before welding.

Applications:

Overlays of similar alloyed hot forming tool steels and hardfacing of tools made of low alloyed steels. Before welding, tool steels need to be preheated to 300 - 500°C (max.: tempering temperature of base material). Low alloyed steels should be preheated up to 200 - 300°C. Cooling should be carried out slowly in the furnace. To improve the toughness of the weld metal, a post weld heat treatment is recommended.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	V	Fe
Min.	**0,4**	**5**	**1,2**	**0,8**	
Max.	**0,6**	**6,5**	**1,8**	**1,2**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	approx.. 55	[HRC] as welded
	52 – 55	[HRC] annealed(550°C/2-8h)
	42 – 48	[HRC] annealed(650°C/2-8h)

Positions: all except PD, PE and PG

Redrying: 300 - 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	80 – 110
3,25	350	90 – 150
4,0	450	160 – 220
5,0	450	190 – 260
6,0	450	220 – 290

Polarity =(+)~

also available:
find in table of content

Capilla 6500 Ti
Capilla 6500 MAG
Capilla 6500 WIG
Capilla G 6500 MM (tubular wire)

Standards:

EN 14700: E Fe 3-55-st
(DIN 8555): E 6-UM-50-PST
Mat.-No.: 1.2344

Recovery: **130%**

capilla® 6500 Ti

Product description:

Rutile coated stick electrode for hardfacing and repair welding of tool steels such as 1.2307-1.2377.

The surfaces of the tool to be welded must be cleaned carefully. All cracks have to be removed before welding.

Applications:

Overlays of similar alloyed hot forming tool steels and hardfacing of tools made of low alloyed steels. Before welding, tool steels need to be preheated to 300 - 500°C (max.: tempering temperature of base material). Low alloyed steels should be preheated up to 200 - 300°C. Cooling should be carried out slowly in the furnace. To improve the toughness of the weld metal, a post weld heat treatment is recommended.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	V	Fe
Min.	**0,4**	**5**	**1,2**	**0,8**	
Max.	**0,6**	**6,5**	**1,8**	**1,2**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	approx.. 55	[HRC] as welded
	52 – 55	[HRC] annealed(550°C/2-8h)
	42 – 48	[HRC] annealed(650°C/2-8h)

Positions: all except PE and PG

Redrying: 300 - 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	80 – 110
3,25	350	90 – 150
4,0	450	160 – 220
5,0	450	190 – 260
6,0	450	220 – 290

Polarity =(+)~

also available:
find in table of content

Capilla 6500
Capilla 6500 MAG
Capilla 6500 WIG
Capilla G 6500 MM (tubular wire)

Standards:

EN 14700: E Fe 3-50-st
(DIN 8555): E 3-UM-50-T

Recovery: **140%**

capilla® 25 S

Product description:

Rutile-basic coated high-recovery stick electrode for overlay welding on hot forming tools.

The weld metal is extremely resistant to abrasion, impact and pressure.

Applications:

This electrode is used for repair welding of hot-forming tools, especially dies.
Also qualified for new production and the change of surface design of tools.
Furthermore suitable for hard-facing of cutting edges of cold shearing tools.

Typical weld metal composition:

[wt. - %]

	C	Cr	W	Co	V	Nb	Fe
Min.		**2**	**8**	**1**	**0,3**		
Max.	**0,3**	**2,5**	**9**	**1,5**	**0,6**	**0,4**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	46 – 48	[HRC] as welded
	52 – 55	[HRC] annealed(550°C/2-8h)

Positions: all except PD, PE and PG

Redrying: 300 - 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	80 – 120
3,25	350	100 – 160
4,0	450	160 – 220
5,0	450	190 – 260
6,0	450	220 – 290

Polarity =(+)~

also available:
find in table of content

Capilla G 563 MM (tubular wire)

Standards:

EN 14700: E Fe 3-55-st
(DIN 8555): E 3-UM-55-ST

Recovery: **130%**

capilla® 732

Product description:

Basic coated stick electrode for welding of heat resistant overlays on hot work tool steels.
Due to a good combination of toughness and hardness, the weld metal exhibits good resistance against pressure and abrasion.

Applications:

For overlays on cutting edges of hot shearing tools, plier heads, cutting edges of deburring tools, punching tools, continuous cast rollers.
Hardfacing of cylinders and rolls of plate levelling devices. Furthermore suitable for the repair welding and new production of hot work tools.
Service temperatures: max. 550°C.

In order to improve the toughness of weld metal and heat affected zone of the base material, a post weld heat treatment is recommended.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mn	Mo	Ti	Si	Fe
Min.		**6,0**	**1**	**2**			
Max.	**0,35**	**7,5**	**1,5**	**2,5**	**+**	**0,7**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	50 – 55	[HRC]

Positions: all except PD, PE and PG

Redrying: 300 - 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	80 – 120
3,25	350	100 – 160
4,0	450	160 – 220
5,0	450	190 – 260

Polarity =(+)~

also available:
find in table of content

Capilla 732 MAG
Capilla 732 WIG

Standards:

EN 14700: E Fe 3-50-st
(DIN 8555): E 3-UM-50-ST

Recovery: **130%**

capilla® 733

Product description:

Basic coated stick electrode for welding of heat resistant overlays on hot work tool steels.
Due to a good combination of toughness and hardness, the weld metal exhibits good resistance against pressure, abrasion and cracks.

Applications:

For overlays on cutting edges of hot shearing tools, plier heads, cutting edges of deburring tools, punching tools, continuous cast rollers.
Hardfacing of cylinders and rolls of plate levelling devices. Furthermore suitable for the repair welding and new production of hot work tools.
Service temperatures: max. 550°C.

In order to improve the toughness of weld metal and heat affected zone of the base material, a post weld heat treatment is recommended.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mn	Mo	Ti	Si	Fe
Min.		**4**		**3,0**			
Max.	**0,25**	**6**	**0,7**	**4,0**	**+**	**1,0**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	45 – 50	[HRC]

Positions: all except PD, PE and PG

Redrying: 300 - 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	80 – 120
3,25	350	100 – 160
4,0	450	160 – 220
5,0	450	190 – 260

Polarity =(+)~

also available:
find in table of content

Capilla 733 MAG
Capilla 733 WIG

Standards:

EN 14700: E Fe 3-40-st
(DIN 8555): E 3-UM-40-PT

Recovery: **130%**

capilla® 734

Product description:

Basic coated stick electrode suitable for welding of heat resistant overlays on hot forming tools. Good resistance against shock, pressure and abrasive wear. The weld metal exhibits medium hardness and is not susceptible to cracks.

Applications:

For overlays on forging dies, die casting tools, continuous cast rollers, rolls, fences of tools and machines;
New production and repair of hot forming tools;

Service temperatures: max. 550°C.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mn	Mo	Si	Fe
Min.		**6**		**3**		
Max.	**0,1**	**7**	**0,6**	**3,5**	**0,4**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	38 – 42	[HRC]

Positions: all except PD, PE and PG

Redrying: 300 - 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	60 – 90
3,25	350	95 – 150
4,0	450	140 – 190
5,0	450	190 – 250

Polarity =(+)~

also available:
find in table of content

Capilla 734 MAG
Capilla 734 WIG

Standards:

EN 14700: E Fe 8-60-gpt
(DIN 8555): E 6-UM-60

Recovery: **130%**

capilla® 5400

Product description:

Basic coated Cr-Mo-V alloyed stick electrode for extremely hard overlay welding on constructional components and machine parts, which are exposed to high levels of frictional wear and heavy impacts. Hardfacing of components of earth moving machines.

Applications:

Production of new tools and repair of worn out tools and machine parts such as rolls, baffle plates, forging, pressing and drawing tools.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	V	Fe
Min.	**0,8**	**9**	**1,5**	**1**	
Max.	**1**	**10**	**2,5**	**1,5**	**Bal.**

Mechanical properties:

(Minimum values at ambient temperature)

Hardness:	57 – 60	[HRC] as welded
	30 – 40	[HRC] 500°C
	56 – 59	[HRC] hardened 1050°C

Positions: all except PD, PE and PG

Redrying: 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]	**Polarity**
2,5	350	60 – 90	=(+)~
3,25	350	95 – 150	
4,0	450	140 – 190	
5,0	450	190 – 250	

also available:
find in table of content

Capilla 5400 MAG
Capilla 5400 WIG

Capilla G 5400 MM (tubular wire)

Standards:

EN 14700: E Fe 4-60-stp
(DIN 8555): E 4-UM-60-ST
Mat.-No.: 1.3346

Recovery: **140%**

capilla® 53

Product description:

Very thick basic coated high-recovery stick electrode for overlay welding of tool and high-speed steels.
The weld metal is resistant against abrasion, impact, pressure and temperatures up to 550°C.

Applications:

Stick electrode for the hardfacing of cutting tools, such as hot block and billet shears, coal cutting devices (mining industry), cutting, punching, forging, pressing and drawing tools.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	V	W	Fe
Min.	**0,8**	**4**	**7**	**1,2**	**1,5**	
Max.	**1**	**5**	**9**	**1,8**	**2,5**	**Bal.**

Mechanical properties:

(Minimum values at ambient temperature)

Hardness:	58 - 62	[HRC] as welded
	63 - 65	[HRC] annealed (530°C)
	250	[HB] soft annealed (810°C)
	60 - 63	[HRC] hardened 1220°C

Positions: all except PD, PE and PG

Redrying: 300°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	80 – 120
3,25	350	100 – 160
4,0	450	160 – 220
5,0	450	190 – 260

Polarity =(+)~

also available: Capilla 53 Ti, Capilla 53 MAG, Capilla 53 WIG

Standards:

EN 14700: E Fe 4-65-st
(DIN 8555): E 4-UM-65-ST
Mat.-No.: 1.3255

Recovery: **140%**

capilla® 53 N

Product description:

Very thick basic coated high-performance stick electrode for overlay welding of cutting edges at tool bodies of low alloyed or non-alloyed steels as well as for hardfacing of hot and cold cutting tools.

Applications:

Overlay and repair welding of used and broken tools made of high-speed steels. Hardfacing of cutting edges of tools made of non-alloyed and low alloyed steels. Furthermore as armour-plating of parts which are exposed to heavy frictional wear such as hot and cold burring tools, cutting, punching, pressing and drawing tools.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	V	W	Co	Fe
Min.	**0,7**	**4**	**1**	**1,5**	**17**	**4**	
Max.	**0,9**	**5**	**2**	**2**	**19**	**6**	**Bal.**

Mechanical properties:

(Minimum values at ambient temperature)

Hardness:	62 - 65	[HRC] as welded
	64 - 66	[HRC] annealed (570°C)
	62 - 65	[HRC] hardened 1290°C/Oil
	63 - 66	[HRC] hardened and tempered

Positions: PD, PE and PG

Redrying: 300 – 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	80 – 120
3,25	350	100 – 160
4,0	450	160 – 220
5,0	450	190 – 260

Polarity =(+)~

Standards:

EN 14700: E Fe 5-40-stp
(DIN 8555): E 4-UM-40 PT

Recovery: **160%**

capilla® 2709

Product description:

Basic coated high-recovery stick electrode, especially suitable for welding hard or hard/tough overlays. The weld metal is very resistant to metal-metal-friction wear.

Service temperature: max. 350°C

(Maraging steel).

Applications:

Overlays at metal shear blades, die stamps, cold extrusion tools, die casting moulds and plastic moulds.

Typical weld metal composition:

[wt. - %]

	C	Ni	Co	Mo	Mn	Si	Ti	Al	Fe
Min.		**17**	**10**	**4**					
Max.	**0,03**	**19**	**12**	**4,5**	**0,3**	**0,8**	**+**	**+**	**Bal.**

Mechanical properties:

(Minimum values at ambient temperature)

Hardness:	38 – 40	[HRC] as welded
	53 - 54	[HRC] annealed (480°C/3h)

Positions: PA, PB, (PC)

Redrying: 300 – 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]	Polarity
2,5	350	80 – 120	=(+)~
3,25	350	100 – 160	
4,0	350	160 – 220	

also available:
find in table of content

Capilla 2709 MAG
Capilla 2709 WIG

Standards:

EN 14700: not classified
(DIN 8555): special alloy

Recovery: **170%**

capilla® 93

Product description:

Rutile-basic coated stick electrode for overlay welding. The weld metal is not susceptible to cracks. Even in the first layer good hardness can be realised.
The weld metal exhibits high resistance to metal/metal friction, cavitation, corrosion and fatigue wear and provides an extremely high level of oxidation resistance when exposed to high temperatures.

Applications:

For partial or complete overlays on forging dies, die stamps, tools for hot forming in general, high-temperature pumps, rollers for continuous casting facilities, etc.

Typical weld metal composition:

[wt. - %]

	C	Cr	Co	Mo	Fe
Min.		**15**	**13**	**2,2**	
Max.	**0,15**	**16**	**14**	**2,8**	**Bal.**

Mechanical properties:

(Minimum values at ambient temperature)

Hardness:	42 – 48	[HRC] As welded

Positions: PA, PB, (PC)

Redrying: 300°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	80 – 120
3,25	350	100 – 160
4,0	450	160 – 220
5,0	450	190 – 260

Polarity =(+)~

also available: Capilla G 93 MM
find in table of content

Standards:

EN ISO 14172:	E Ni 6082 (NiCr20Mn3Nb)
EN 14700:	E Ni 2-200-ckptz
AWS A5.11:	~E Ni Cr Fe-3
Mat.-No.:	2.4648
Recovery:	**150%**

capilla® 6000

Product description:

Basic coated high-recovery stick electrode for fusion and overlay welding. The weld metal is very ductile. Welding of nickel base alloys and tough at subzero nickel steels (cryogenic applications).
Even at high temperatures, no carbon diffusion from the ferritic base metal into the fully austenitic weld metal occurs.
Good resistance to thermal shocks.

Applications:

Especially suitable for dissimilar joints at working temperatures in the range of –196°C to + 650°C.

Temperature limitations:
Scaling resistant up to 1000 °C;
in sulphurous atmosphere max. 500 °C;
fully loaded welds max. 800 °C.

Material Nos.:
1.4876, 2.4870, 2.4867, 2.4816, 1.5662, 1.4429, 1.4539, 1.4922, and joints of these materials to mild steels.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mn	Nb	Fe	Ni
Min.		**18**	**4**	**2**	**3**	
Max.	**0,15**	**21**	**6**	**2,8**	**5**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Tensile strength Rm:	620	[MPa]
Yield strength $R_{p0,2}$:	380	[MPa]
Yield strength $R_{p1,0}$:	420	[MPa]
Elongation (L=5d):	35	[%]
Impact strength:	90	[J]
	70 (-196°C)	[J]

Positions: all except PD, PE and PG

Redrying: 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,0	350	40 – 60
2,5	350	60 – 90
3,25	350	80 – 110
4,0	450	100 – 150
5,0	450	150 – 200

Polarity =(+)~

also available:
find in table of content

Capilla 6000 B
Capilla 6000 DL

Capilla 6000 MIG
Capilla 6000 WIG

Standards:

EN 14700:	E Ni 2-200-ckptz
(DIN 8555):	E 23-UM-200-CKPTZ
AWS A 5.11:	~E NiCrMo 4
Mat.-No.:	c2.4887
Recovery:	**170%**

capilla® 5200

Product description:

Overlay welding on hot forming tools. The deposited metal shows good scaling resistance and good strength at elevated temperatures.
Furthermore, corrosion resistant in oxidizing and reducing media.

Applications:

Overlays on dies, hot shearing tools, punching tools and all tools used for high temperature applications.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	W	Fe	Co	Ni
Min.		**15**	**15**	**3**	**5**	**2,5**	
Max.	**0,06**	**17**	**17**	**5**	**6**	**3,5**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Tensile strength Rm:	700	[MPa]
Yield strength $R_{p0,2}$:	400	[MPa]
Yield strength $R_{p1,0}$:	-	[MPa]
Elongation (L=5d):	25	[%]
Hardness:	220	[HB]
	>400	[HB] workhardened

Positions: PA; PB

Redrying: 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,0	350	40 – 60
2,5	350	60 – 90
3,25	350	80 – 110
4,0	450	100 – 150
5,0	450	150 – 200

Polarity =(+)~

Standards:

EN 14700:	E Ni 2-200-ckptz
(DIN 8555):	E 23-UM-200-CKPTZ
AWS A 5.11:	E NiCrMo 4
Mat.-No.:	~2.4887
Recovery:	**170%**

capilla® 5200 S

Product description:

Rutile-basic coated stick electrode for overlay welding on hot forming tools. The deposited metal exhibits good scaling resistance and good strength at elevated temperatures.
Furthermore, corrosion resistant at high temperatures in oxidizing and reducing media.

Applications:

Overlays on dies, hot shearing tools, punching tools and all tools used for high temperature applications. Furthermore, suitable for welding of corrosion resistant claddings of vessels and equipment used in the chemical industry

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	W	Fe	V	Ni
Min.		**14**	**15**	**3**	**5**		
Max.	**0,06**	**17**	**17**	**5**	**6**	**0,6**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Tensile strength Rm:	700	[MPa]
Yield strength $R_{p0,2}$:	400	[MPa]
Yield strength $R_{p1,0}$:	-	[MPa]
Elongation (L=5d):	25	[%]
Hardness:	250 >400	[HB] [HB] workhardened

Positions: PA, PB

Redrying: 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,0	350	40 – 70
2,5	350	60 – 90
3,25	350	80 – 110
4,0	450	100 – 150
5,0	450	150 – 200

Polarity =(+)~

also available:
find in table of content

Capilla 5200 MAG
Capilla 5200 WIG
Capilla G 5200 MM (tubular wire)
Capicoat 5200 S

Standards:

EN14700:	E Ni 2-200-ckptz
(DIN 8555):	E 23-UM-250 CKPTZ
EN ISO 14172:	E Ni 6625 (NiCr22Mo9Nb)
AWS A5.11:	E NiCrMo 3
Mat.-No.:	2.4621
Recovery:	**170%**

capilla® 526

Product description:

Thick coated special stick electrode for repair and maintenance of highly temperature resistant hot working tools which are heavy loaded by impact and thermal shock.

Applications:

Stick electrode suitable for hardfacing of hot shearing tools, hot deburring tools, punches, hot extrusion dies etc.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	Nb	Fe	Ni
Min.		**20**	**8**	**3**	**2,5**	
Max.	**0,06**	**22**	**10**	**4**	**3,5**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Tensile strength R_m:	750	[MPa]
Yield strength $R_{p0,2}$:	480	[MPa]
Yield strength $R_{p1,0}$:	-	[MPa]
Elongation (L=5d):	35	[%]
Impact strength (ISO-V):	70	[J]

Positions: PA, PB

Redrying: 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	60 – 90
3,25	350	80 – 110
4,0	350	100 – 150
5,0	450	150 – 200

Polarity =(+)~

also available:
find in table of content

Capilla 526 MAG
Capilla 526 WIG

Standards:

EN 14700:	E Ni2-200-ckptz
EN ISO 14172:	E Ni6617(NiCr22Co12Mo)
AWS A5.11:	E NiCrCoMo 1
Mat.-No.:	2.4628
Recovery:	**170%**

capilla® 533

Product description:

Stick electrode for cladding and fusion welding of Ni-Cr-Co-Mo-alloys and for fusion welding of these materials with steels.
Fusion welding of dissimilar heat resistant Ni-base-alloys.
The weld metal is creep-resistant and scaling resistant at service temperatures up to 1100°C.

Applications:

Chemical equipment construction, fume gas desulphurisation plants, gas turbines, booster, furnaces.

Cladding of thermally highly loaded hot forming tools.

Base materials:

2.4851 (Alloy 617), 1.4958 (Alloy 800), 2.4851 (Alloy 601), 1.4862.

Typical weld metal composition:

[wt. - %]

	C	Cr	Co	Mo	Mn	Fe	Ti	Al	Ni
Min.		**20**	**10**	**8**					
Max.	**0,05**	**22**	**14**	**10**	**0,5**	**1**	**1**	**0,3**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Tensile strength Rm:	700	[MPa]
Yield strength $R_{p0,2}$:	400	[MPa]
Yield strength $R_{p1,0}$:	-	[MPa]
Elongation (L=5d):	30	[%]
Impact strength:	60	[J]

Positions: PA, PB, (PC)

Redrying: 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	60 – 90
3,25	350	80 – 110
4,0	450	100 – 150
5,0	450	150 – 200

Polarity =(+)~

also available:
find in table of content

Capilla 533 MAG
Capilla 533 WIG

Standards:

EN14700:	E Ni 2-200-ckptz
(DIN 8555):	E 23-UM-250 CKPTZ
EN ISO 14172:	E Ni 6625 (NiCr22Mo9Nb)
AWS A5.11:	E NiCrMo 3
Mat.-No.:	2.4621
Recovery:	**170%**

capilla® 625

Product description:

High corrosion resistance in several media, also against stress corrosion cracking.
Scale resistant at service temperatures up to 1100°C, good mechanical properties up to 1000°C and down to –196°C;

Max.service temperature in sulphurous media: 500°C.

Applications:

Joints and claddings of similar materials and steels. Fusion welding of CrNi(N) steels for cryogenic applications and heat treatable nickel steels.

Appropriate base metals:
Alloy 800, 1.4876, 2.4856, 1.4539

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	Nb	Fe	Ni
Min.		**19**	**8**	**2**	**2,5**	
Max.	**0,06**	**21**	**11**	**4**	**3,5**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	220	[HB]
	400	[MPa]

Positions: PA, PB

Redrying: 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	60 – 90
3,25	350	80 – 110
4,0	350	100 – 150
5,0	450	150 – 200

Polarity =(+)~

also available:
find in table of content

Capilla 625 K
Capilla 625 MIG

Capilla 625 WIG

Standards:

EN 14700:	E Co 3
(DIN 8555):	E 20-UM-55 CTZ
AWS:	~E Co Cr-C
Recovery:	**170%**

capilla® 501 EHL

Product description:

Synthetic high recovery stick electrode for overlays on sealing surfaces exposed to high pressure and elevated temperatures. The weld metal has excellent sliding properties on steels and a good cavitation resistance.

Applications:

Qualified for wear and heat resistant overlays on non-, low and high alloyed steels and steel cast which are heat-, rust- and acid-resisting. The weld metal stands out due to its very good coefficient of friction in case of metal to metal wear and its capability to be highly polished. The weld metal is scaling resistant.

Machining: grinding

Typical weld metal composition:

[wt. - %]

	C	Cr	W	Co
Min.	**2,2**	**2,8**	**12**	
Max.	**2,6**	**32**	**14**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	53 – 57	[HRC]
	43 – 47	[HRC] at 600°C

Positions: PA, PB

Redrying: 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	70 – 100
3,25	350	100 – 140
4,0	450	140 – 180
5,0	450	180 – 220

Polarity =(+)~

also available:
find in table of content

Capilla 501 K
Capilla 501 WIG

Capilla G 501 MM (tubular wire)
Capidur 501

Standards:

EN 14700: E Co-3-55-tzcs
(DIN 8555): E 20-UM-55 CTZ
AWS: ~E CoCr-C

Recovery: **130%**

capilla® 501 K

Product description:

Core wire alloyed stick electrode for overlays on sealing surfaces exposed to high pressure at elevated temperatures. The weld metal has excellent sliding properties on steels and a good cavitation resistance.

Applications:

Qualified for wear and heat resistant overlays on non-, low and high alloyed steels and steel cast which are heat-, rust- and acid-resisting. The weld metal stands out due to its very good coefficient of friction in case of metal to metal wear and its capability to be highly polished. The weld metal is scaling resistant.

Machining: grinding

Typical weld metal composition:

[wt. - %]

	C	Cr	W	Co
Min.	**2,2**	**28**	**12**	
Max.	**2,6**	**32**	**14**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	53 – 57	[HRC]
	43 – 47	[HRC] at 600°C

Positions: PA; PB; PC

Redrying: 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]	**Polarity**
2,5	350	70 – 100	=(+)~
3,25	350	90 – 120	
4,0	350	120 - 155	
5,0	350	150 - 190	

also available:
find in table of content

Capilla 501 EHL
Capilla 501 WIG
Capilla G 501 MM (tubular wire)
Capidur 501

Standards:

EN 14700:	E Co 2
(DIN 8555):	E 20-UM-45 CTZ
AWS:	E Co Cr-A
Recovery:	**170%**

capilla® 506 EHL

Product description:

Core wire alloyed stick electrode for overlays on working surfaces stressed by heavy impact and shock and simultaneously exposed to elevated temperatures. The weld metal has a good resistance against cavitation and erosion. Welded surfaces have good sliding properties (metal to metal) and are resistant to thermal shocks.

Microstructure: Cr- and W-carbides embedded in austenitic Co-base matrix

Applications:

For overlays on sealing surfaces of steam-, gas-, water- and acid-fittings, valve seats of combustion engines.
Also suitable for hardfacing of edges of billet shears, hot extruder nozzles, sawteeth (wood processing) etc.

Typical weld metal composition:

[wt. - %]

	C	Cr	W	Co
Min.	**1,2**	**26**	**4**	
Max.	**1,4**	**30**	**6**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	42	[HRC]

Positions: PA, PB

Redrying: 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]	Polarity
2,5	350	70 – 110	=(+)~
3,25	350	100 – 140	
4,0	450	140 – 180	
5,0	450	180 – 220	

also available:
find in table of content

Capilla 506 K
Capilla 506 WIG

Capilla G 506 MM (tubular wire)
Capidur 506

Standards:

EN 14700: E Co 2-40-ctz
(DIN 8555): E 20-UM-40 CTZ
AWS: E Co Cr-A

Recovery: **130%**

capilla® 506 K

Product description:

Core wire alloyed stick electrode for overlays on working surfaces stressed by heavy impact and shock and simultaneously exposed to elevated temperatures. The weld metal has a good resistance against cavitation and erosion. Welded surfaces have good sliding properties (metal to metal) and are resistant to thermal shocks.

Microstructure: Cr- and W-carbides embedded in austenitic Co-base matrix

Applications:

For overlays on sealing surfaces of steam-, gas-, water- and acid-fittings, valve seats of combustion engines.
Also suitable for hardfacing of edges of billet shears, hot extruder nozzles, sawteeth (wood processing) etc.

Typical weld metal composition:

[wt. - %]

	C	Cr	W	Co
Min.	**1,2**	**26**	**4**	
Max.	**1,4**	**30**	**6**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	42	[HRC]

Positions: PA, PB, PC

Redrying: 300 – 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	70 – 100
3,25	350	90 – 120
4,0	350	120 - 155
5,0	350	150 - 190

Polarity =(+)~

also available:
find in table of content

Capilla 506 EHL
Capilla 506 WIG

Capilla G 506 MM (tubular wire)
Capidur 506

Standards:

EN 14700:	E Co 2
(DIN 8555):	E 20-UM-50 CTZ
AWS:	E Co Cr-B
Recovery:	**170%**

capilla® 512 EHL

Product description:

Synthetic high recovery stick electrode for overlays on working surfaces stressed by heavy impact and shock and simultaneously exposed to elevated temperatures. The weld metal has a good resistance against cavitation and erosion. Welded surfaces have good sliding properties (metal to metal) and are resistant to thermal shocks.

Microstructure: Cr- and W-carbides embedded in austenitic Co-base matrix

Applications:

For overlays on sealing surfaces of steam-, gas-, water- and acid-fittings, valve seats of combustion engines.
Also suitable for hardfacing of edges of billet shears, hot extruder nozzles, sawteeth (wood processing) etc.

Typical weld metal composition:

[wt. - %]

	C	Cr	W	Co
Min.	**1,2**	**26**	**9**	
Max.	**1,4**	**30**	**11**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	46 – 58	[HRC]
	36 – 42	[HRC] at 600°C

Positions: PA, PB

Redrying: 300 - 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	70 – 110
3,25	350	100 – 140
4,0	450	140 – 180
5,0	450	180 – 220

Polarity =(+)~

also available:
find in table of content

Capilla 512 K
Capilla 512 WIG
Capilla G 512 MM (tubular wire)
Capidur 512

Standards:

EN 14700: E Co 2-55-cstz
(DIN 8555): E 20-UM-50 CTZ
AWS: E Co Cr-B

Recovery: **130%**

capilla® 512 K

Product description:

Core wire alloyed stick electrode for overlays on working surfaces stressed by heavy impact and shock and simultaneously exposed to elevated temperatures. The weld metal has a good resistance against cavitation and erosion. Welded surfaces have good sliding properties (metal to metal) and are resistant to thermal shocks.

Microstructure: Cr- and W-carbides embedded in austenitic Co-base matrix

Applications:

For overlays on sealing surfaces of steam-, gas-, water- and acid-fittings, valve seats of combustion engines.
Also suitable for hardfacing of edges of billet shears, hot extruder nozzles, sawteeth (wood processing) etc.

Typical weld metal composition:

[wt. - %]

	C	Cr	W	Co
Min.	**1,2**	**26**	**9**	
Max.	**1,4**	**30**	**11**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	46 – 58	[HRC]
	36 – 42	[HRC] at 600°C

Positions: PA, PB, PC

Redrying: 300 – 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	70 – 100
3,25	350	90 – 120
4,0	350	120 - 155
5,0	350	150 - 190

Polarity =(+)~

also available:
find in table of content

Capilla 512 EHL
Capilla 512 WIG

Capilla G 512 MM (tubular wire)
Capidur 512

Standards:

EN 14700: E Co 1
(DIN 8555): E 20-UM-250 CKTZ

Recovery: **170%**

capilla® 516 EHL

Product description:

High recovery stick electrode suitable for welding of wear resistant and corrosion resistant overlay clads on un-, low and high alloyed steels and steel casts. Due to the very good coefficient of friction (metal to metal) the deposits show an outstanding resistance to sliding wear.
The weld metal has no susceptibility to cracks. The wear resistance of the cladding can be improved by strain hardening.

Max.service temperatures:
Long term duty: up to 800 °C,
Short term duty: up to 1100 °C.

Applications:

Highly heat resistant special alloy for platings which are exposed to thermal shock and impact e.g. cladding of hot working tools such as dies, punches and hot deburring tools.

If attention is paid to the strain hardening characteristic of the alloy, machining by chipping technology is feasible.

Typical weld metal composition:

[wt. - %]

	C	Cr	W	Ni	Fe	Co
Min.		**17**	**11**	**8**	**1,5**	
Max.	**0,1**	**19**	**13**	**10**	**3**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	240	[HB]
	>300	[HB] workhardened

Positions: PA, PB

Redrying: 300 - 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]	**Polarity**
2,5	350	70 – 100	=(+)~
3,25	350	100 – 140	
4,0	450	140 – 180	
5,0	450	180 – 220	

also available:
find in table of content

Capilla G 516 MM (tubular wire)
Capdur 516

Standards:

EN 14700: E Co 1
(DIN 8555): E 20-UM-300 CTZ
AWS: E CoCr-E

Recovery: **170%**

capilla® 521 EHL

Product description:

High recovery stick electrode for hardfacing of unalloyed, low alloyed and high alloyed steels. The weld metal is heat resistant and shows a good resistance to corrosive media.
In the case of friction and sliding wear the alloy has a low friction coefficient to steels.

Max. service temperatures: 800°C.

Applications:

High heat resistant special alloy with good high temperature strength. The weld metal shows an excellent resistance to mechanical shock.
This electrode is standardly used for the hardfacing of forging dies, punches and hot cutting tools.
Furthermore suitable for the cladding of sealing surface of valves used in power plants and chemical industry.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	Ni	Co
Min.	**0,15**	**30**	**4,5**	**3**	
Max.	**0,3**	**33**	**5,5**	**4**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	27 – 31	[HRC]

Positions: PA, PB

Redrying: 300 - 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	70 – 100
3,25	350	100 – 140
4,0	450	140 – 180
5,0	450	180 – 220

Polarity =(+)~

also available:
find in table of content

Capilla 521 K
Capilla 521 WIG

Capilla G 521 MM (tubular wire)
Capidur 521

Standards:

EN 14700:	E Co 1
(DIN 8555):	E 20-UM-300 CTZ
AWS:	E CoCr-E
Recovery:	**130%**

capilla® 521 K

Product description:

Core wire alloyed stick electrode for the hardfacing of unalloyed, low alloyed and high alloyed steels. The weld metal is heat resistant and shows a good resistance to corrosive media.
In the case of friction and sliding wear the alloy has a low friction coefficient to steels.

Max. service temperatures: 800°C.

Applications:

High heat resistant special alloy with good high temperature strength. The weld metal shows an excellent resistance to mechanical shock.
This electrode is standardly used for the hardfacing of forging dies, punches and hot cutting tools. Furthermore suitable for the cladding of sealing surface of valves used in power plants and chemical industry

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	Ni	Co
Min.	**0,15**	**30**	**4,5**	**3**	
Max.	**0,3**	**33**	**5,5**	**4**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	27 – 31	[HRC]

Positions: PA, PB, PC

Redrying: 300 – 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	70 – 100
3,25	350	90 – 120
4,0	350	120 - 155
5,0	350	150 - 190

Polarity =(+)~

also available:
find in table of content

Capilla 521 EHL
Capilla 521 WIG

Capilla G 521 MM (tubular wire)
Capidur 521

Standards:

EN 14700: E Co 1
(DIN 8555): E 20-UM-350 CTZ

Recovery: **170%**

capilla® 523 EHL

Product description:

High recovery stick electrode for the hardfacing of non-alloyed, low alloyed and high alloyed steels. The weld metal is heat resistant and shows a good resistance against corrosive media.
In the case of friction and sliding wear the alloy has a low friction coefficient against steels.
Service temperatures up to 800°C.

Slightly harder than Capilla 521

Applications:

High heat resistant special alloy with good high temperature strength. The weld metal shows an excellent resistance to mechanical shock.
This electrode is used for hardfacing of forging dies, punches and hot cutting tools.
Furthermore suitable for the cladding of sealing surface of valves used in power plants and chemical industry.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	Ni	Nb	W	Fe	Co
Min.	**0,3**	**24**	**4,5**	**5**	**6**	**2**		
Max.	**0,4**	**26**	**5,5**	**6**	**7**	**3**	**3**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	35 – 37	[HRC]

Positions: PA, PB

Redrying: 300 – 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]
2,5	350	70 – 110
3,25	350	100 – 140
4,0	450	140 – 180
5,0	450	180 – 220

Polarity =(+)~

Standards:

EN 14700: E Co 1
(DIN 8555): E 20-UM-300 CTZ

Recovery: **170%**

capilla® 524 EHL

Product description:

High recovery stick electrode for the hardfacing of unalloyed, low alloyed and high alloyed steels. The weld metal is heat resistant and shows a good resistance against corrosive media.
In the case of friction and sliding wear the alloy has a low friction coefficient against steels.
Service temperatures up to 800°C.
Good resistance against heat checking cracks (thermal fatigue).

Applications:

High heat resistant special alloy with good high temperature strength. The weld metal shows an excellent resistance to mechanical shock.
This electrode is standardly used for the hardfacing of forging dies, punches and hot cutting tools.
Furthermore suitable for the cladding of sealing surface of valves used in power plants and chemical industry.

Typical weld metal composition:

[wt. - %]

	C	Cr	Mo	Ni	W	Fe	Co
Min.		**25**	**4,5**	**10**	**2**		
Max.	**0,1**	**27**	**6,0**	**11**	**3**	**3**	**Bal.**

Mechanical properties:

(without heat treatment; minimum values at ambient temperature)

Hardness:	320	[HB]

Positions: PA, PB

Redrying: 300 – 320°C/2h

Dimension:

Ø [mm]	Length [mm]	Welding current [A]	**Polarity**
2,5	350	70 – 110	=(+)~
3,25	350	100 – 140	
4,0	450	140 – 180	
5,0	450	180 – 220	

4.2 Wire electrodes for welding of tool steels

4.2.1 Solid wires for gas shielded arc welding of tool steels

Designation	Standard	Weld Metal Analysis [Wt.%]											
capilla®	EN 14700 (DIN 8555):	C	Mn	Si	Cr	Ni	Mo	Nb	Co	Others	Fe	SG	Hardness*)
4914 MAG	S Fe 8 (MSG 6-GZ-350 PRT)	0,25	0,5	0,5	17	1	-	-	-	-	Bal.	M21	350 HB
64 MAG	S Fe 1 (MSG 1-GZ-300 T)	0,1	1,2	0,5	1,1	-	0,5	-	-	-	Bal.	M21	300 HB
64 MAG-S	S Fe 1 (MSG 1-GZ-250)	0,3	1,2	0,5	1,2	-					Bal.	M21	240 HB
65 MAG	S Fe 3 (MSG 3-GZ-45 T)	0,2	0,4	0,35	2,5	-	-	-	-	W=4,5 V= 0,7	Bal.	M21	43 HRC
6500 MAG	S Fe 3 (MSG 6-GZ-50 T)	0,4	0,5	1	6	-	1,6	-	-	V= 1	Bal.	M21	52 HRC
732 MAG	S Fe 3 (MSG 6-GZ-55 ST)	0,35	1,3	0,4	7	-	2,2	-	-	Ti+	Bal.	M21	56 HRC
733 MAG	S Fe 3 (MSG 6-GZ-50 ST)	0,3	0,6	0,7	5	-	4	-	-	-	Bal.	M21	48 HRC
734 MAG	S Fe 3 (MSG 3-GZ-40 ST)	0,1	0,6	0,6	6,5	-	3,5	-	-	-	Bal.	M21	40 HRC
5400 MAG	S Fe 8 (MSG 6-GZ-60 T)	0,9	0,5	0,3	10	-	2	-	-	-	Bal.	M21	60 HRC
2709 MAG	not classified (no standard)	0,03	0,8	0,3	-	18	5	-	12	Ti+; Al+	Bal.	M12	40 HRC**
53 MAG	S Fe 4 (MSG 4-GZ-60 ST)	1	0,7	0,4	4,5	-	8	-	-	W=2; V=1,5	Bal.	M21	60 HRC
650 MAG	S Fe 8 (MSG 6-GZ-350 RPT)	0,2	0,5	0,5	17	0,8	1	-	-	-	Bal.	M21	350 HB

***) Min. values at AT / no heat treatment; shielding gas (SG) acc. EN ISO 14175;**
****) strain hardening;**
*****) strain and precipitation hardening;**
Dimensions: Ø 1,0; 1,2; 1,6; [mm]; Spools: K 300; other dimensions and packing units on demand

4.2.1 Solid wires for gas shielded arc welding of tool steels (continued)

Designation	Standard	Weld Metal Analysis [Wt.%]											
capilla®	EN 14700 (DIN 8555):	C	Mn	Si	Cr	Ni	Mo	Nb	Co	Others	Fe	SG	Hardness*
526 MAG	S Ni 2 (MSG 23-GZ-300 CKTZ)	<0,06	0,5	0,23	21	Bal.	8	3,5	-	-	<3	I1	300 HB **
5200 MAG	S Ni 2 (MSG 23-GZ-250 KPTZ)	0,05	1	0,2	17	Bal.	17	-	-	W=5	<1	I1	240 HB**
533 MAG	S Ni 2 (MSG 23-GT-200 CPRTZ)	0,03	1	0,1	19	Bal.	5	1	11	W= 1; Tl+; Al+	-	I1	200 HB***
6000 MIG	S Ni 2 (MSG 23-GZ-300 CKPTZ)	0,02	2,8	0,2	19	Bal.	-	2,5	-	-	<2	I1	290 HB**
625 N MAG	S Ni 2 (MSG 23-GZ-300 CKPTZ)	<0,03	0,3	0,25	22	Bal.	9	3	-	-	<1,5	I1	290 HB**
838 MAG	S Ni 2 (MSG 23-GZ-300 CKTZ)	<0,04	0,2	0,25	23	Bal.	8,5	3,7	-	-	2	I1	310 HB**

***) Min. values at AT / no heat treatment; shielding gas (SG) acc. EN ISO 14175;**
****) strain hardening;**
*****) strain and precipitation hardening;**
Dimensions: Ø 1,6; 2,0; 2,4 [mm]; Spools: K 300; other dimensions and packing units on demand

4.2.2 Welding rods for tungsten inert gas welding of tool steels

Designation	Standard	Weld Metal Analysis [Wt.%]											
capilla®	EN 14700/ (DIN 8555):	C	Mn	Si	Cr	Ni	Mo	Nb	Co	Others	Fe	SG	Hardness*)
4914 WIG	S Fe 8 (WSG 6-GZ-350 PRT)	0,25	0,5	0,5	17	1	-	-	-	-	Bal.	I1	350 HB
64 WIG	S Fe 1 (WSG 1-GZ-250)	0,3	1,2	0,5	3	-	-	-	-	-	Bal.	I1	250 HB
64 WIG-S	S Fe 1 (WSG 1-GZ-300 T)	0,1	1,2	0,5	1,1	-	0,5				Bal.	I1	300 HB

***) Min. values at AT / no heat treatment; shielding gas (SG) acc. EN ISO 14175;**
Dimensions: Ø 1,0; 1,6; 2,0; 2,4 [mm]; Length: 1000 [mm]; other dimensions on demand

4.2.2 Welding rods for tungsten inert gas welding of tool steels (continued)

Designation	Standard	Weld Metal Analysis [Wt.%]											
capilla®	EN 14700/ (DIN 8555):	C	Mn	Si	Cr	Ni	Mo	Nb	Co	Others	Fe	SG	Hardness*
65 WIG	S Fe 3 (WSG 3-GZ-45 T)	0,2	0,4	0,35	2,5	-	-	-	-	W=4,5, V= 0,7	Bal.	I1	43 HRC
6500 WIG	S Fe 3 (WSG 6-GZ-50 T)	0,4	0,5	1	6	-	1,6	-	-	V= 1	Bal.	I1	52 HRC
732 WIG	S Fe 3 (WSG 6-GZ-55 ST)	0,35	1,3	0,4	7	-	2,2	-	-	Ti+	Bal.	I1	56 HRC
733 WIG	S Fe 3 (WSG 6-GZ-50 ST)	0,3	0,6	0,7	5	-	4	-	-	-	Bal.	I1	48 HRC
734 WIG	S Fe 3 (WSG 3-GZ-40 ST)	0,1	0,6	0,6	6,5	-	3,5	-	-	-	Bal.	I1	40 HRC
5400 WIG	S Fe 8 (WSG 6-GZ-60 T)	0,9	0,5	0,3	10	-	2	-	-	-	Bal.	I1	60 HRC
2709 WIG	(no standard)	0,03	0,8	0,3	-	18	5	-	12	Ti+; Al+	Bal.	I1	40 HRC**
53 WIG	S Fe 4 (WSG 4-GZ-60 ST)	1	0,7	0,4	4,5	-	8	-	-	W=2; V=1,5	Bal.	I1	60 HRC
650 WIG	S Fe 8 (WSG 6-GZ-350 RPT)	0,2	0,5	0,5	17	0,8	1	-	-	-	Bal.	I1	350 HB
526 WIG	S Ni 2 (WSG 23-GZ-300 CKTZ)	<0,06	0,5	0,23	21	Bal.	8	3,5	-	-	<3	I1	300 HB **
5200 WIG	S Ni 2 (WSG 23-GZ-250 KPTZ)	0,05	1	0,2	17	Bal.	17	-	-	W=5	<1	I1	240 HB**
533 WIG	~S Ni 2 (WSG 23-GT-200 CPRTZ)	0,03	1	0,1	19	Bal.	5	1	11	W= 1; Ti+; Al+	-	I1	200 HB***
6000 WIG	S Ni 2 (WSG 23-GZ-300 CKPTZ)	0,02	2,8	0,2	19	Bal.	-	2,5	-	-	<2	I1	290 HB**
625 N WIG	S Ni 2 (WSG 23-GZ-300 CKPTZ)	<0,03	0,3	0,25	22	Bal.	9	3	-	-	<1,5	I1	290 HB**
838 WIG	S Ni 2 (WSG 23-GZ-300 CKTZ)	<0,04	0,2	0,25	23	Bal.	8,5	3,7	-	-	2	I1	310 HB**

***) Min. values at AT / no heat treatment; shielding gas (SG) acc. EN ISO 14175;**
****) strain hardening;**
*****) strain and precipitation hardening;**
Dimensions: Ø 1,0; 1,6; 2,0; 2,4 [mm]; Length: 1000 [mm]; other dimensions on demand

4.2.2 Welding rods for tungsten inert gas welding of tool steels (continued)

Designation	Standard	Weld Metal Analysis [Wt.%]											
capilla®	EN 14700/ (DIN 8555):	C	Mn	Si	Cr	Ni	Mo	Nb	Co	Others	Fe	SG	Hardness*
501 WIG	S Co 3 (WSG 20-GG-55 CKTZ)	2	1,5	1,5	26	-	-	-	Bal.	W = 11	3	I1	53 HRC
506 WIG	S Co 2 (WSG 20-GG-40 CKTZ)	0,9	1,5	1,5	27	-	-	-	Bal.	W = 5	3	I1	40HRC
512 WIG	S Co 2 (WSG 20-GG-45 CKTZ)	1,3	1	1	27	-	-	-	Bal.	W = 7,5	3	I1	46HRC
516 WIG	S Co 1 (WSG 20-GG-250 CKTZ)	0,1	1	1	18	9	-	-	Bal.	W = 12	2,5	I1	250HB**
521 WIG	S Co 1 (WSG 20-GG-300 CKTZ)	0,3	1,5	1	27,5	2,5	4,2	-	Bal.	-	3	I1	32HRC**

***) Min. values at AT / no heat treatment; shielding gas (SG) acc. EN ISO 14175;**
****) strain hardening;**
*****) strain and precipitation hardening;**
Dimensions: Ø 2,5; 3,2; 4,0; 5,0 [mm]; Length: 1000 [mm]; other dimensions on demand

4.2.3 Tubular wires for gas shielded arc welding of tool steels

Designation	Standard	Weld Metal Analysis [Wt.%]											
capilla®	EN 14700/ (DIN 8555):	C	Mn	Si	Cr	Ni	Mo	Nb	Co	Others	Fe	SG	Hardness*
G 135 MM	T Fe 8 (MF 3-GF-40 CT)	0,05	0,8	1,1	13,5	4	0,8	-	-	-	Bal.	I1/M21	40 HRC
G 370 MM	T Fe 6 (MF 5-GF-350 CT)	0,07	0,3	0,5	9	1,7	2,5	-	-	Ti+	Bal.	I1/M21	350 HB
G 654 MM	T Fe 3 (MF 6-GF-55 G)	0,5	1,5	0,8	5,5	-	1,2	-	-	W = 1,2	Bal.	I1/M21	55 HRC
G 654 N MM	T Fe 3 (MF 6-GF-45 GP)	0,25	1,5	1	6	-	-	1,5	-	-	Bal.	I1/M21	45 HRC
G 5400 MM	T Fe 8 (MF 6-GF-55 GP)	0,4	1	2,5	9	-	-	-	-	-	Bal.	I1/M21	55 HRC
G 64 MM	T Fe 1 (MF 3-GF-300 GP)	0,15	1	0,5	0,5	-	0,4	-	-	-	Bal.	M21	300 HB
G 105 MM	T Fe 1 (MF 3-GF-350 GP)	0,06	1	0,6	2,2	1,2	1	-	-	-	Bal.	M21	340 HB
G 65 MM	T Fe 3 (MF 3-GF-40 PST)	0,1	1	0,5	2,2	-	-	-	-	W= 3,5; V = 0,7	Bal.	M21	40 HRC
G 93 MM	not classified (MF 5-GF-50 CRST)	0,15	0,25	0,4	15,5	-	2,5	-	13,5	-	Bal.	I1/M12	48 HRC
G 5200 MM	T Ni 2 (MF 23-GF-200 CKT)	0,05	0,5	0,5	16	Bal.	16	-	-	W = 4	4	I1/M12	200 HB**
G 530 MM	~T Ni 2 (MF 23-GF-200 CKTZ)	0,05	0,2	<0,1	18,5	Bal.	4,5	-	11,5	Ti+/Al+	-	I1/M12	220HB***
G 501 MM	T Co 3 (MF 20-GF-55 CKTZ)	2	1,5	1,5	26	-	-	-	Bal.	W = 11	3	I1/M12	53 HRC

*) Min. values at AT / no heat treatment; shielding gas (SG) acc. EN ISO 14175;
**) strain hardening;
***) strain and precipitation hardening;
Dimensions: Ø 1,6; 2,0; 2,4 [mm]; Spools: K 300; other dimensions and packing units on demand

4.2.3 Tubular wires for gas shielded arc welding of tool steels (continued)

Designation	Standard	Weld Metal Analysis [Wt.%]											
capilla®	EN 14700/ (DIN 8555):	C	Mn	Si	Cr	Ni	Mo	Nb	Co	Others	Fe	SG	Hardness*
G 506 MM	T Co 2 (MF 20-GF-40 CKTZ)	0,9	1,5	1,5	27	-	-	-	Bal.	W = 5	3	I1/M12	40HRC
G 512 MM	T Co 2 (MF 20-GF-45 CKTZ)	1,3	1	1	27	-	-	-	Bal.	W = 7,5	3	I1/M12	46HRC
G 516 MM	T Co 1 (MF 20-GF-250 CKTZ)	0,1	1	1	18	9	-	-	Bal.	W = 12	2,5	I1/M12	250HB**
G 521MM	T Co 1 (MF 20-GF-300 CKTZ)	0,3	1,5	1	27,5	2,5	4,2	-	Bal.	-	3	I1/M12	32HRC**
G 563 MM	T Fe 3 (MF 3-GF-50 T)	0,35	1	1	1,8	-	0,5	-	2	W = 9	Bal.	M21	48HRC****
G 569 MM	T Fe 3 (MF 6-GF-55 T)	0,25	0,8	1	9	2,2	2,5	-	-	W+; V+	Bal.	M21	55HRC
G 7940 MM	T Fe 3 (MF3-GF-40 ST)	0,17	0,7	0,4	6,5	0,25	2,5	-	-	Ti = 0,1	Bal.	M21	40 HRC
G 7945 MM	T Fe 3 (MF 3-GF-50 ST)	0,25	0,8	0,5	6	-	3,5	-	-	Ti = 0,25	Bal.	M21	50 HRC
G 7950 MM	T Fe 3 (MF 3-GF-55 ST)	0,3	0,95	0,5	6,5	-	2,1	-	-	Ti = 0,3	Bal.	M21	55 HRC
G 2040 RM	TZ Fe 3 (MF 3-GF-40-PT)	0,09	0,7	0,6	9,5	1,3	3	-	-	Ti = 0,2	Bal.	M21	40 HRC
G 2045 RM	TZ Fe 3 (MF 3-GF-45-PT)	0,15	0,7	0,6	9,5	1,3	3	-	-	Ti=2,5	Bal.	M21	45 HRC
G 2048 RM	TZ Fe 3 (MF 3-GF-45-PT	0,2	0,7	0,6	5,8	-	2,2	-	-	V=0,6, W=2	Bal.	M21	45 HRC
G 2050 RM	TZ Fe 3 (MF 3-GF-50-PT	0,25	0,7	0,5	5,8	-	2,2	-	-	V=0,7, W=2	Bal.	M21	50 HRC
G 2055 RM	TZ Fe 3 (MF 3-GF-55-PT	0,3	0,7	0,5	5,8	-	3	-	-	V=0,7, W=2	Bal.	M21	55 HRC
G 53 MM	S Fe 4 (MSG 4-GZ-60 ST)	1	0,7	0,4	4,5	-	8	-	-	W=2; V=1,5	Bal.	M21	60 HRC

***) Min. values at AT / no heat treatment; shielding gas (SG) acc. EN ISO 14175;**
****) strain hardening; ***) strain and precipitation hardening; ****) precipitation hardening**
Dimensions: Ø 1,6; 2,0; 2,4 [mm]; Spools: K 300; other dimensions and packing units on demand

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