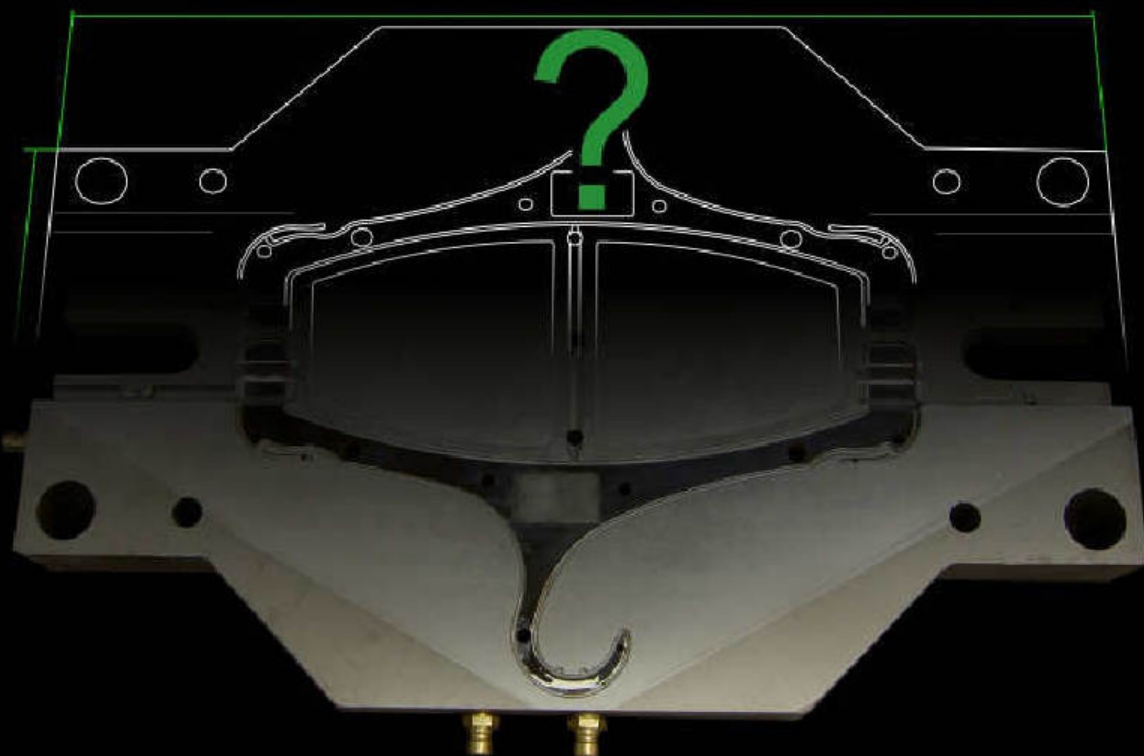


# SUCCESSFULLY WELDING TOOLS

## PRODUCT GROUP 7

welding filler metals for WIG/MAG/electrode



# CRONITEX

# WHY WELD TOOLS

Due to increasing output figures, cutting tools, top and bottom tools, embossing dies, metal forming tools and casting moulds are inevitably subject to higher wear. Demands on the finished product concerning security and fatigue strength are becoming higher and higher. Tools are subject to highest strain in fully and partly automatic sequences of operations. Wear or notches are more or less natural and can therefore be foreseen.

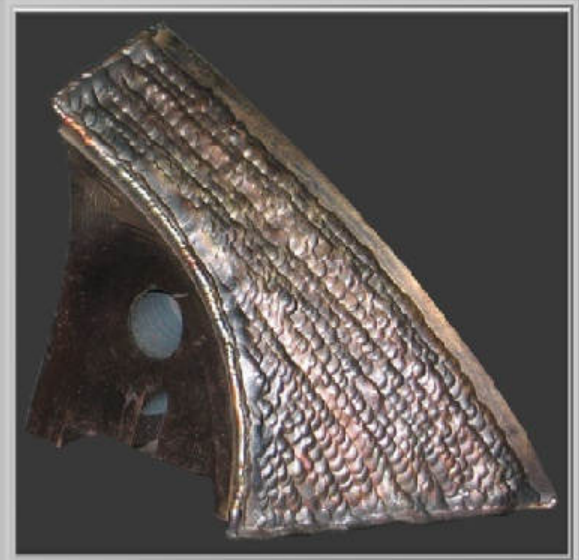
Metal diecasting moulds, plastic, injection and blowing moulds, embossed or etched, often suffer cavitation or mechanical damage. Cracks develop in the cooling channels. Alterations become necessary before or after using the moulds.

This is a case for optimum welding technology. The correct welding process and the suitable filler material help to deal with these defects or alterations quickly and reliably.

With an over 40 years experience CRONITEX impact successful tool-welding technology.

CRONITEX has developed its own welding alloys with synchronous structural treatment and endurance improvement which can be supplied for all cases of defects and alterations of tools and moulds.

CRONITEX has developed special application oriented devices for all welding processes. Nowadays tool welding is a reliable and very economical way to reduce costs. It also gives the technician and toolmaker a prospect of an additional qualification in order to upvalue his work. The value of his products is therefore permanently maintained.



Therefore: " Weld tools successfully !"

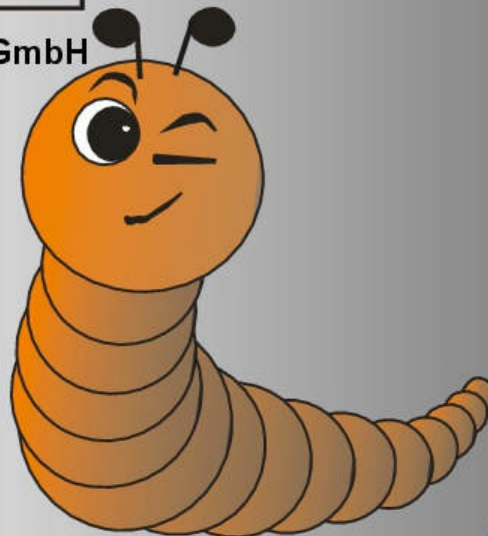
## CRONITEX

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...and it is weldable !

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### Properties-Basis

High alloy filler metal Cr-Mn-Mo-Ni-V, under 450°C there is no conversion. Tough and non temperable weld metal, can be filled, good crack resistance. Non corrosive, heat resistant up to 1350°C, through pressure and impact easy to cold harden. Cannot be chrome plated.

### Application

Connecting difficult to weld steels, ferritic and martensitic chrome steels, high speed HSS and other high alloy tool steels. When connecting 12% chrome cold work steel with less than 450°C preheating, melt with minimal dilution! Melt dilution! Ideal for buffer layers of the above mentioned steels, if here after a hardfacing of more than two layers follows.

For materials

**CRONITEX**

Medium and high-alloy chromium steels, C-steels

see catalogue table

220

Mechanical values

Tensile strength: 840 N/mm<sup>2</sup>  
Hardness: 220 HB

Hardness after Pressure hardening: 280 HB  
stretching: 25 - 33 %



### Properties-Basis

High-alloy Cr-Ni-Mn filler metal with very high elongation values. Structure thermally non transformable. Crack safe and well compatible with sulphurous steels. Cold work hardened weld metal. Cannot be chromium-plated.

### Application

Joining and buffering of medium- and low-alloy tool steels. Preferably hot-work steel and case hardening steels, machining steels, carbon steel mixed compounds.

For materials

**CRONITEX**

Medium-alloy tool steels,

machining steels and wear-steels

225

Mechanical values

Tensile strength: 720 N/mm<sup>2</sup>  
Hardness: 210 HB  
Hardness after Pressure hardening: 320 HB  
stretching: 35 - 42 %



### Properties-Basis

Highest-alloy Ni-basis filler metal with extraordinary properties. Tough at subzero temperatures up to -252°C. Heat-resisting up to 1.400°C. Stabilizing admixtures avoid hard carbide edges. Minimal contraction of all high-alloy filler metals of product group 7. Equalizing, highest strength values. Structure thermally non transformable. Cannot be chromium-plated.

### Application

Joining of nearly all high- and medium-alloy steels, without or with minimal preheating. Cast steel, alloyed high duty cast iron to ductile iron-70. Root welding of hot forming tools, diecasting moulds, cast steel body extension arms, crack joining of forging dies, buffer layers. Resistant to hydrochloric, nitric and sulphuric acid.. Resistant to chloride ions. Repair of cooling channels.

For materials

**CRONITEX**

Highest application stage!

Medium- and high-alloy steels

Cast steels-spheroidal graphite iron (cast iron) mixed joinings

252-C

Mechanical values

Tensile strength: 710 N/mm<sup>2</sup>  
Hardness: 205 HB  
0,2% proof stress: 400 N/mm<sup>2</sup>  
Notched bar impact strength (ISO-V) 125 J  
the same at -252°C 70 J



### Properties-Basis

Special Cr-Mo filler metal with a lowered C- and Si- content. Good etching and eroding properties of the structure of the buildup material also in the weld junction to the parent metal. When applying without preheating, visible rim zones can quickly be normalized with a neutral autogenous flame. As a result, the welding zone is not or only scarcely visible even after fine polishing. Can be nitrided and chromed.

### Application

Alterations and repairs of plastic moulds, injection- and blowing moulds which have to be welded with synchronous structural and treatment properties in the structural area. Avoid strong mingling with the parent metal.

For materials

**CRONITEX**

1.2311 - 2312  
1.2162 - 2738  
and similar

Mechanical values

Tensile strength: 640 N/mm<sup>2</sup>  
Hardened tensile strength: 1120 N/mm<sup>2</sup>  
Hardness with minimal mingling: 190 - 260 HB  
Stretching: 18% - 25%

130 ST



The above mentioned welding recommendations are not under our control or direct influence and therefore not liable to any warranty.

### Properties-Basis

Special Cr-Mn-Ni filler metal with a lowered C- and Si- content. Good etching and eroding properties of the structure of the built-up material also in the weld junction to the parent metal. Also resistant to alternating temperatures. When applying without preheating, visible rim zones can quickly be normalized with a neutral auto-genous flame. As a result, the welding zone is not or only scarcely visible even after fine polishing.

### Application

Alterations and repairs of nickeliferous tempering steel-plastic moulds, injection- and blowing moulds which have to be welded with synchronous structural and treatment properties in the structural area. Build-up welding of flat form forging die.

### For materials

1.2713 - 2714 - 2737  
1.2740 - 2743 - 2744  
1.2766 - 2767 - 2764

### Mechanical values

Tensile strength: 730 N/mm<sup>2</sup>  
Hardened tensile strength: 1280 N/mm<sup>2</sup>  
Hardness with minimal mingling: 210 - 290 HB  
Stretching: 12 - 22 %

**CRONITEX**

170 ST



### Properties-Basis

Special medium-alloy Cr-Mn-Mo-Ni filler metal. Heat resistant tempering up to 600°C, cold resistant up to -60°C. Fine flowing. When diluting with low and medium alloy tool steels, hardness of 1st-2nd layer max. 60HRc and 3rd-4th layer max. 50HRc.

### Application

Connecting heat resistant steels. Heat treatable and case hardening steels. Containers, pipes, and equipment from the oil industry. High strength Cr-Mo-tubes. Chrome and nitridable.

### For materials

Fine grained constr. steels, high-temperature steels, low-alloy chromium steel

### Mechanical values

Tensile strength: 890 N/mm<sup>2</sup>  
Hardened tensile strength: 1350 N/mm<sup>2</sup>  
Hardness with minimal mingling: 230 - 330 HB  
Stretching: 15 - 18 %

**CRONITEX**

190



### Properties-Basis

High-alloy filler metal with a lowered C-Cr content with good etching, embossing and eroding properties for steels with a 5-12% chromium content and with a max. carbon content of 0.6%. The welding deposit is normalizable, chromium-platable and nitrable. It's heat treatable up to the 1st layer to max. 54 HRc, in the 2nd layer to max. 42 HRc and in the 3rd layer to max. 38 HRc.

### Application

For welding repair and alteration of moulds and synthetic resin compression tools, whereby corrosive plastics like aminoplast and highly acid secreting thermoplastics are processed. Preheat the basis material to approx. 250-350°C and apply with minimal fusion. Then normalize the surface of the welding zone with an auto-genous flame.

### For materials

1.2082 - 2083 - 2606 - 2343  
1.2344 - 2360 - 2367  
and similar

### Mechanical values

### Hardness of built-up material

1st layer ca. 45 HRc  
2nd layer ca. 35 HRc  
3rd layer ca. 30 HRc

**CRONITEX**

210 ST



### Properties-Basis

Medium-alloy Cr-Mn filler metal, tenacious, still machinable built-up material. Nitrable. Can be chromium-plated.

### Application

Joint and build-up welding on low- and medium-alloy tool steels. Flat swage, hammer saddles, simple trim dies, rolling dies, casters, dies and punch.

### For materials

Case hardened, nitriding plain tempering steels

### Mechanical values

H = hardness  
H = untreated 35 HRc  
H = after tempering 52 - 54 HRc  
H = after softening 230 HB  
H = hardened 56 - 58 HRc  
Oil-hardening 820 - 850°C  
Softening 660 - 720°C

**CRONITEX**

RC 36



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**Properties-Basis**

Medium alloy filler metal Cr-Mo-V with high temperature hardness. The weld metal is slow transforming to 550°C. Dense and crack resistant structure, nitridable, air hardening. Partly chromeable.

**Application**

Build-up welding on hot forming tools. Warm cutting tools, forging dies, pressing mandrels, pressure forging dies, swages, diecasting moulds, if the parent metal requires structural synchronous or similar build-up welding. For joining preheat to approximately 450-550°C and maintain this welding temperature! For build-up welding preheat to 300-400°C!

**For materials**

1.2541 - 2550 - 2564  
1.2567 - 2581 - 2622  
till 2nd layer:  
1.2662 - 2678

**Mechanical values**

H = hardness 40 - 44 HRc  
H = untreated 52 - 56 HRc  
H = after tempering 235 HB  
H = after softening 57 - 60 HRc  
H = hardened 1050-1100°C  
Softening 770 - 820°C  
Tempering 600 - 680°C

**CRONITEX****RC 40****Properties-Basis**

Middle alloy Cr-Mo-V filler metal with good thermal stability. The weld metal is slow transforming up to 550°C. Dense and crack proof structure, nitridable, air hardening. Partly chromeable.

**Application**

Build-up welding on hot-work steels. Aluminum pressure casting mould, cylinders and pistons of cold chamber machines, press mandrels, metal strand pressing tools. Oil- or air-cooled piercing plugs. For joining preheat to approximately 500-550°C and maintain this welding temperature! For build-up welding preheat to approximately 300-400°C.

**For materials**

1.2307 - 2313 - 2341  
1.2343 - 2344 - 2362  
1.2365 - 2606  
and similar steels

**Mechanical values**

H = hardness 44 - 46 HRc  
H = untreated 50 - 55 HRc  
H = after tempering 235 HB  
H = after softening 59 - 61 HRc  
H = hardened 1020-1050°C  
Oil-hardening 770 - 790°C  
Softening 550 - 650°C  
Tempering

**CRONITEX****RC 44****Properties-Basis**

High-alloyed, heat-treatable Cr-Mo-Ni- welding filler, martensitic structure, corrosion and acid proof. Easy to polish, high resistance to abrasion through aggressive plastics.

**Application**

Repair and modification of martensitic chrome steels. Corrosion resistant injection moulds, for longer lifetime of low alloy tool steel.

**For materials**

Application on equal and similar steel with a chrome content of 13%-17%  
1.2083 - 2085 - 2316 - 4120  
1.4122

**Mechanical values**

Tensile strength: 720 N/mm<sup>2</sup>  
Hardness of weld material  
Untreated: 40 - 46 HRc  
Annealed: 240 HB

**CRONITEX****RC 46****Properties-Basis**

Special alloy for the adhesion and application of high alloy mould constructional steel. This chrome-nickel wire with special additives has excellent corrosion resistance, even at higher temperatures. The martensitic structure is very good to machine and polish. The optimized content of carbon results in very good weldability and clean flow properties. The subsequent heat treatment with temperatures of 480°C or more increases the hardness to max. 47 HRc.

**For materials**

Corrosion resistant Cr-Steel  
1.2083, 1.2085, 1.2316  
1.4115, 1.4122,

**Mechanical values**

H = as-welded cond. 24 - 30 HRc  
H = by 480°C max 47 HRc

**CRONITEX****RC 47**

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### Properties-Basis

High alloy Cr-Mn-Mo-Ti weld filler with improving characteristics on hot work steels. Partly suitable for chrome plating.

### Application

Depositions on highly stressed forge and pressdies, if a structure synchronous heat treatment of the base and welding material is needed. Deburring tool, warm cutting plates and stamps, hot shearing knives. Preheat bonds to approximately 600° C. Preheat applications to approximately 300° C. For key joints use CRONITEX 252-C!

### For materials

1.2343 - 2344 - 2362  
1.2367 - 2606  
as up to 2 layers  
1.2082 - 2083 - 2631

### Mechanical values

H = hardness  
H = untreated  
H = after tempering  
H = after softening  
H = hardened  
Oil-hardening  
tempering

42 - 44 HRc  
52 - 54 HRc  
240 HB  
56 - 59 HRc  
990 - 1030° C  
790 - 820° C

**CRONITEX**

**RC 48**



### Properties-Basis

Martensitic chrome weld filler with stabilizing additives for similar alloyed steels. Rust and wear resistant, can be tempered. The weld metal can be etched and polished. Erodible and nitrifiable. Not chrome platable!

### Application

Apply on rust and wear resistant mould structural steel. Plastic injection and blow moulds for GFK. For joint welding on cracks, fractures or coolant channels use CRONITEX 252-C! Please inquire about available components and diameters.

### For materials

1.2083 - 2316 - 4115  
1.4120 STAVAX  
and similar steels

### Mechanical values

H = hardness in  
H = untreated  
H = tempered  
Thermal treatment:  
see basis material

**CRONITEX**

**RC 50**

HRC  
45 - 50  
50 - 55



### Properties-Basis

High alloy Ni-Co-Mo filler metal. Edge stability up to approximately 400° C.

The heat treatable martensitic weld metal is in spite of its extreme hardness very tough and crack resistant. Good machinability. Not chrome platable.

### Application

The new type of alloy brings a high performance improvement welding deposit for build-up welding on highly stressed compression moulding dies, drawing dies, coining dies, folding tools, hot cutting tools, forging dies, aluminium diecasting moulds, cold shears and blanking dies for thick and tough hardened material. Preheat basic material as low as possible! Highly stressed continuous casting forging tools. One-shot channels of aluminium diecasting moulds. Remove worn material. Highest endurance.

### For materials

Hot-work steels  
1.2313 - 2343 - 2344 - 2365  
1.2367 - 2606 - 2713 - 2714  
Cold-work steels  
1.2101 - 2362 - 2363 - 2542  
1.2721 - 2631

### Mechanical values

H = state of weld. 30 - 36 HRc  
H = state of welding after  
preheating  
250-350° C 28 - 32 HRc  
H = hot aged at  
480° C / 4 h  
Furnace cooling 48 - 54 HRc

**CRONITEX**

**RC 52**



### Properties-Basis

Medium-alloy Cr-Mn-Al-Ti filler metal. The hardenable, highly nitrifiable build-up material is very abrasionproof, and crack safe even when welding multiple layers. Hard induction- and flame hardenable surfaces can be achieved. Best sliding properties against high-alloy materials. Can be chromium-plated.

### Application

Build-up welding on high duty machine parts of piston rods, valve spindles, fittings. Enduring stability at 350-500° C. Carbon and mineral press-forms, gear wheels, shafts, journals, extrusion screws out of nitriding steel, camshafts, open die forging saddles, saddles and hammers.

### For materials

Case hardening steels,  
nitriding steels, low- and  
medium-alloy tempering  
steels

### Mechanical values

H = hardness  
H = state of weld. 50 - 54 HRc  
H = softened (680-720° C) 230 HB  
H = flame-harden. 62 - 64 HRc  
H = nitrided 67 - 69 HRc  
Oil-hardening 920 - 970° C  
Tempering 600 - 650° C  
Nitration 500 - 520° C

**CRONITEX**

**RC 54**



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### Properties-Basis

High-alloy Cr-Mo-Si-V-W filler metal. The structure of the build-up material is similar to that of the thermally diffusive hot-work steels, but has a better endurance. Resistant to alternating temperatures. Partly suitable for chrome plating.

### Application

Especially suited for patching hot-forming tools with W-content, for 1-3 layers without buffering. Hot cutting tools, rolling mandrels, trimming dies and diecasting moulds. For joining preheat to at least 550°C! Also suitable for build-up welding on medium-alloy cold cutting steels.

### For materials

1-2606 - 2365 - 2603 - 2343  
1.2344 - 2311 - 2314 - 2744  
1.2547 - 2550 - 2367 - 2842

as well as medium-alloy cold-work steels

### Mechanical values

H = hardness  
H = state of weld. 54 - 58 HRc  
H = softened (760-800°C) 230 HB  
H = hardened 57 - 60 HRc  
H = flame-hardening  
Water cooling 59 - 62 HRc  
Oil-hardening 1060°C  
Tempering 400-700°C



# RC 58



### Properties-Basis

Extra weld filler metal with Cr-Mo-V and stabilizing elements for hard build up layers on cold work and forming tools with more than 5% Chrome content. After the welding process air hardening characteristics up to 61 HRc. Tough-hard, edge retaining weld material. Thermally treatable like the base material. Suitable for nitration, erosion, polishing and etching. Can be chromed and coated.

### Application

Build-up welding, repairs and modifications of quenched and tempered tools. By more than three layers the first layer should be welded thin with CRONITEX 220 as a buffer. By joints up to three layers weld with 220 before the cutting area. Last layer with CRONITEX RC 60!

### For materials

1.2379 - 2601 - 2436  
1.2080 - 2363  
and similar steels

### Mechanical values

H = Hardness HRc  
H = till 2nd layer 59  
H = multilayer 61



# RC 60



### Properties-Basis

High-alloy Cr-Mn-Si-V filler metal. The ledeburitic welding deposit is very similar to the 12% chromium-cold cutting steels. The hardness values in the state of welding differ extremely depending on the welding process. Please see indication, welding of 12% chromium steels! Slow transformation! Nitrate!

### Application

Preferrably for structural synchronous joint and build-up welding of mismatched, broken out, hard high performance cold cut steels, especially 12% chrome steels. Constructional change of the above mentioned steels. For build-up welding preheat to approximately 350°C, for joint welding preheat to approximately 600°C. Furnace cooling. Then the workpiece can be machined. Hardenable as the raw material.

### For materials

1.2601 - 2080 - 2201 - 2376  
1.2379 - 2362 - 2363 - 2436  
1.2880 - 2884  
and similar steels

### Mechanical values

H = hardness  
H = state of weld. 32 - 36 HRc  
H = hardened 1050°C / Oil 61 - 63 HRc  
H = softened (830°C / 4h - furnace) 260 HB



# RC 62



The above mentioned welding recommendations are not under our control or direct influence and therefore not liable to any warranty.

## Characteristics, with which you are confronted daily?

By wear and modification the ideal welding technology is needed.

Fast and uncomplicated repairs, also carried out on site.

Structural synchronous or also endurance improving application for all steel grades as well as elastic and crack proof repairs of leaking cooling channels, specific wear protection due to over alloy qualities for closing and separation edges.

Tools for:	Tools from Material-Nr:	Preheat and/or Welding temperatures				connect and buffer with:	welding consumables – same texture/ -similar thermally synchronous to the base materials				welding consumables – improved texture partly synchronous to the base materials					
		untempered		tempered			In WIG / MAG / electrode -process		tempered		In WIG / MAG / electrode -process		tempered			
		V connect	A apply	V connect	A apply		Material synchronous structure apply with:	Hardness in HRC after welding	Hardness in HRC after tempering	Material apply with:	HRC after welding	Material improved application with:	Hardness in HRC after welding	Hardness in HRC after tempering	Material improved application with:	Hardness in HRC after welding
<b>Cold work</b> bending - shaping - pressing - shearing - cutting - stamping - compressing - pulling	1.1520-1.1525-1.1545-1.1730	200°C		300°C	200°C	225	<b>130-ST</b>	28-35	40-44	<b>130-ST</b>	30-36	<b>Rc 36</b>	50-55	56-58	<b>Rc 62</b>	48-56
	1.2003-1.2242-1.2235-1.2328-1.2162	400°C		400°C	200°C	225	<b>170-ST</b>	30-36	42-46	<b>170-ST</b>	34-40	<b>Rc 54</b>	50-54	62-64	<b>Rc 62</b>	48-56
	1.2379-1.2436-1.2601-1.2080 (1.2842)	650°C	350°C	*1	250°C	220	<b>Rc 60</b>	55-60	60-64	<b>Rc 60</b>	57-62	<b>Rc 63</b>	56-60	60-63	<b>Rc 63</b>	57-61
	GG- legiert u. GGG- 40/50/60/70					252-C						<b>Fill GG-55</b>	200 HB	270 HB	<b>GG-Tec</b>	220 HB
	1.2080-1.2083-1.2201-1.2376	650°C	350°C	*1	250°C	220	<b>Rc 62</b>	36-44	61-63	<b>Rc 62</b>	44-52	<b>Rc 62</b>	36-44	61-63	<b>Rc 63</b>	57-61
	1.2378-1.2379-1.2436-1.2601	650°C	350°C	*1	250°C	220	<b>Rc 62</b>	36-44	61-63	<b>Rc 62</b>	44-52	<b>Rc 62</b>	36-44	61-63	<b>Rc 63</b>	57-61
	1.2320-1.2362-1.2363-1.2367-CARMO	450°C	350°C	450°C	250°C	220	<b>Uni-Car</b>	52-54	58-62	<b>Uni-Car</b>	57-59	<b>Rc 58</b>	54-58	57-62	<b>Rc 58</b>	54-58
	ASP2023-VANADIS30-S290-CPM3V	600°C	300°C	*1	500°C	252-C	specific guidance to the welding of PM-Steel see page 11				<b>PM-500</b>	58-63	62-64	<b>PM-300</b>	58-62	
	Alu- Bronze (AMPCO)					12-A-Multi	<b>12-A-Multi</b>	270 HB		<b>12-A-Multi</b>	270 HB	<b>14-Super</b>	350 HB	380 HB	<b>14-Super</b>	350 HB
	<b>Hot work</b> bending – compressing – pulling – shearing – converting – shaping – pressing – pushing – stamping – forging – cutting	1.2242-1.2248-1.2311-1.2323	400°C	300°C	450°C	250°C	252-C	<b>130-ST</b>	28-34	40-44	<b>Rc 36</b>	32-38	<b>Uni-X</b>	28-34	54-62	<b>Rc 44</b>
1.2710-1.2714-1.2744-1.2764-1.2767		400°C	300°C	450°C	250°C	252-C	<b>170-ST</b>	30-36	46-54	<b>Rc 36</b>	32-38	<b>Uni-X</b>	28-34	54-62	<b>Rc 44</b>	44-46
1.2344-1.2362-1.2365-1.2367		400°C	300°C	450°C	250°C	252-C	<b>Uni-W</b>	30-35	54-57	<b>Rc 40</b>	40-44	<b>Rc 48</b>	42-44	56-59	<b>Rc 58</b>	54-58
1.2606-1.2650-1.2667-1.2681		400°C	200°C	450°C	200°C	252-C	<b>Uni-W</b>	30-35	54-57	<b>Rc 40</b>	42-46	<b>Rc 48</b>	42-44	56-59	<b>Rc 58</b>	54-58
1.2678-1.2888-1.2889		450°C	300°C	*1	300°C	252-C						<b>Multilloy</b>	28-32	40-44	<b>Multilloy</b>	28-32
<b>Machining</b> turning - planing - milling - drilling - broaching	1.3243-1.3246-1.3255-1.3265	600°C	300°C	*1	400°C	252-C	<b>Rc 64</b>	59-63	64-66	<b>Rc 64</b>	59-63					
	1.3333-1.3342-1.3343-1.3344	600°C	300°C	*1	400°C	252-C	<b>Rc 64</b>	59-63	64-66	<b>Rc 64</b>	59-63					
	1.3346-1.3348 (1.3202)	550°C	250°C	500°C	300°C	252-C	<b>Rc 64</b>	59-63	64-66	<b>Rc 64</b>	59-63	<b>just EL- Rc 64</b>	60-62	64-66	<b>just EL- Rc 64</b>	61-63
<b>Cast metal</b> moulding - Aluminium-, Magnesium-, Zinc die-cast	Spherical graphite - C-Steel					252-C						<b>Fill GG-55</b>	200 HB		<b>Fill GG-55</b>	200 HB
	1.2885-1.2886-1.2887-1.2888	450°C	300°C	400°C	250°C	252-C						<b>Multilloy</b>	28-32	40-44	<b>Multilloy</b>	28-32
	1.2567-1.2365-1.2367	450°C	300°C	400°C	250°C	220	<b>Uni-W</b>	33-42	54-57	<b>Rc 40</b>	40-44	<b>Rc 48</b>	42-44	56-59	<b>Rc 48</b>	42-44
<b>Plastics</b> injection or blow moulding – extruding tools	1.2343-1.2344-1.2362-1.2367	550°C	350°C	450°C	350°C	252-C	<b>Uni-W</b>	33-42	54-57	<b>Rc 40</b>	40-44	<b>Rc 44</b>	44-46	59-61	<b>Rc 44</b>	44-46
	1.2311-1.2312-1.2162-1.2738	450°C	300°C	450°C	250°C	252-C	<b>130-ST</b>	28-34	40-44	<b>130-ST</b>	30-36	<b>Rc 58</b>	54-58	57-62	<b>Rc 58</b>	54-58
	1.2764-1.2766-1.2767-1.2768	400°C	250°C	400°C	250°C	252-C	<b>170-ST</b>	32-38	42-46	<b>170-ST</b>	32-38	<b>Rc 58</b>	54-58	57-62	<b>Rc 58</b>	54-58
	1.2083-1.2085-1.4120-1.2316	450°C	350°C	450°C	300°C	220	<b>Rc-46</b>	28-32	52	<b>Rc-46</b>	30-34	<b>Rc 50</b>	45-50	48-55	<b>Rc 50</b>	45-50
	1.2343-1.2344	550°C	300°C	450°C	300°C	252-C	<b>Uni-W</b>	33-42	54-57	<b>210-ST</b>	35-45	<b>Rc 44</b>	44-46	59-61	<b>Rc 58</b>	54-58
<b>Rubber</b> injecting - pressing – blowing	MOLDMAX - AMPCOLOY 83	250°C	200°C	150°C	150°C	<b>Cu-Tec</b>	<b>Cu-200</b>	25-30	30-35	<b>Cu-200</b>	25-30	<b>Cu-200</b>	25-30	30-35	<b>Cu-200</b>	25-30
	C 45 - C 60 - C 70 - 1.8550	200°C		300°C	200°C	225	<b>Uni-X</b>	28-34	54-62	<b>Rc 36</b>	32-38	<b>Rc 54</b>	50-54	62-64	<b>Rc 54</b>	50-54
	1.2714-1.2744-1.2311-1.2367	400°C	300°C	450°C	250°C	252-C	<b>170-ST</b>	30-36	42-46	<b>Rc 36</b>	32-38	<b>Uni-X</b>	28-34	54-62	<b>Rc 44</b>	44-46
<b>Glass</b> pressing - forming - blowing	Case-hardened and quenched and tempered s	300°C	200°C	400°C	250°C	220	<b>170-ST</b>	34-40	42-46	<b>170-ST</b>	32-38	<b>Rc 36</b>	32-38	56-58	<b>Rc 36</b>	32-38
	GG- alloyed, GGG-40					252-C						<b>Fill GG-55</b>	200 HB	270 HB	<b>GG-Tec</b>	220 HB
<b>Stone Ceramic</b> pressing - grinding - forming - milling - breaking	Nickel-Compound-Alubronze	400°C	300°C			12-A-Multi	<b>12-A-Multi</b>	270 HB		<b>12-A-Multi</b>	270 HB	<b>14-SUPER</b>	350 HB	380 HB	<b>14-SUPER</b>	350 HB
	Case-hardened and quenched and tempered s	300°C	200°C	400°C	250°C	220	<b>170-ST</b>	34-40	42-46	<b>170-ST</b>	32-38	<b>Rc 36</b>	42-48	56-58	<b>Rc 36</b>	32-38
	1.2080-1.2436-1.2601-1.2379	650°C	300°C	*1	300°C	220	<b>Rc 62</b>	36-44	61-63	<b>Rc 62</b>	36-44	<b>Rc 62</b>	36-44	61-63	<b>Rc 63</b>	57-61
	1.1620-1.1625-1.1645-1.1654	200°C		300°C	200°C	220	<b>Uni-X</b>	30-40	54-62	<b>Rc 36</b>	32-38	<b>Rc 54</b>	52-56	62-64	<b>Rc 62</b>	48-56
	manganese steel Mn = 6-14%					225	see catalog product group 1 - 5									

\*1 = in this condition no welding recommendation



		<b>welding consumables - SUPERPLUS</b>					
		<b>seldom</b> synchronous to the base materials					
		In WIG / MAG / electrode -process					
		<b>PLUS – structure</b>			<b>SUPERPLUS – structure</b>		
		<b>Hardness</b>			<b>Hardness</b>		
		after welding		max. Hardness	after welding		max. Hardness
<b>Tools for:</b>	<b>Tools from Material-Nr:</b>	apply with:			apply with:		
<b>Cold work</b> bending - shaping - pressing - shearing - cutting - stamping - compressing - pulling	1.1520-1.1525-1.1545-1.1730	<b>Rc 63</b>	58-61	62	<b>Rc 64</b>	60-62	64
	1.2003-1.2242-1.2235-1.2328-1.2162	<b>Rc 63</b>	58-61	62	<b>Rc 64</b>	60-62	64
	1.2379-1.2436-1.2601-1.2080 (1.2842)	<b>Rc 63</b>	57-60	62	<b>Rc 64</b>	60-62	64
	GG- legiert u. GGG- 40/50/60/70						
	1.2080-1.2083-1.2201-1.2376	<b>Rc 64</b>	59-63	64	<b>PM-4</b>	60-63	64
	1.2378-1.2379-1.2436-1.2601	<b>Rc 64</b>	59-63	64	<b>PM-4</b>	60-63	64
	1.2320-1.2362-1.2363-1.2367-CARMO	<b>Rc 64</b>	59-63	64	<b>PM-4</b>	60-63	64
	ASP2023-VANADIS30-S290-CPM3V	<b>PM-4</b>	60-63	64	<b>PM-10</b>	60-65	65
	Alu- Bronze (AMPCO)						
<b>Hot work</b> bending – compressing – pulling – shearing – converting – shaping – pressing – pushing – stamping – forging – cutting	1.2242-1.2248-1.2311-1.2323	<b>Cronilloy*</b>	28-34	42	<b>Multilloy*</b>	34-38	44
	1.2710-1.2714-1.2744-1.2764-1.2767	<b>Cronilloy*</b>	28-34	42	<b>Multilloy*</b>	34-38	44
	1.2344-1.2362-1.2365-1.2367	<b>Coballit 1088*</b>	30-36	38	<b>Coballit 1086*</b>	38-42	44
	1.2606-1.2550-1.2567-1.2581	<b>Rc 64</b>	61-63	64	<b>Rc 52*</b>	32-36	54
	1.2678-1.2888-1.2889	<b>Multilloy*</b>	28-32	48	<b>Rc 52*</b>	32-36	54
<b>Machining</b> turning - planing - milling - drilling - broaching	1.3243-1.3246-1.3255-1.3265	<b>PM-4</b>	55-60	64	<b>PM-10</b>	57-62	65
	1.3333-1.3342-1.3343-1.3344	<b>PM-4</b>	55-60	64	<b>PM-10</b>	57-62	65
	1.3346-1.3348 (1.3202)	<b>PM-4</b>	50-55	64	<b>PM-10</b>	53-58	65
<b>Cast metal</b> moulding - Aluminium-, Magnesium-, Zinc die-cast	Spherical graphite – C-Steel	<b>252-C</b>	240 HB				
	1.2885-1.2886-1.2887-1.2888	<b>Rc 52</b>	32-36	52			
	1.2567-1.2365-1.2367	<b>Multilloy*</b>	40-45	48			
	1.2343-1.2344-1.2362-1.2367	<b>Rc 52</b>	32-36	54			
<b>Plastics</b> injection or blow moulding – extruding tools	1.2311-1.2312-1.2162-1.2738						
	1.2764-1.2766-1.2767-1.2768						
	1.2083-1.2085-1.4120-1.2316						
	1.2343-1.2344						
	MOLDMAX - AMPCOLOY 83						
<b>Rubber</b> injecting - pressing – blowing	C 45 - C 60 - C 70 - 1.8550	<b>Rc 63</b>	58-60	63			
	1.2714-1.2744-1.2311-1.2367	<b>Rc 58</b>	54-58	62	<b>Multilloy*</b>	34-38	44
	Case-hardened and quenched and tempered steels	<b>Rc 63</b>	56-59	63			
<b>Glass</b> pressing - forming - blowing	GG- alloyed, GGG-40						
	Nickel-Compund-Alubronze						
	Case-hardened and quenched and tempered steels	<b>Rc 63</b>	60-62	63	<b>Rc 52</b>		54
<b>Stone Ceramic</b> pressing - grinding - forming - milling - breaking	1.2080-1.2436-1.2601-1.2379	<b>Rc 64</b>	60-62	66			
	1.1620-1.1625-1.1645-1.1654	see catalog product group 1 - 5					
	manganese steel Mn = 6-14%	see catalog product group 1 - 5					

**Properties-Basis**

High-alloy Cr-W-V filler metal. The solid solution welding deposit has a good transformation property. In the martensitic area it is still tenacious and has a very good edge retention. Nitrable!

**Application**

Prefereably for the fast repair of hardened or broken edges of 12% chrome tool steel with low preheating, which means approximately 40°C under the tempering temperature of the base material. Cutting tools, punch and dies, gate shear blades, cams, catch lug, chisels, extrusion screws, plastic moulds.

**For materials**

1.2601 - 2080 - 2201 - 2376  
1.2379 - 2362 - 2363 - 2436  
1.2880 - 2884  
and similar steels



# RC 63

**Mechanical values**

**H = hardness**  
**H = state of weld.** 59 - 62 HRc  
**H = hardenes**  
**(1070°C / Oil)** 60 - 63 HRc  
**H = softened**  
**(850°C/4h - furnace)** 260 HB

**Properties-Basis**

High-alloy Cr-Mo-W filler metal. The modified alloy corresponds to high performance high speed steel with a very high temperature hardness up to 550°C. Resistant to impact, pressure and abrasion. Crack resistant also when welding in multiple layers.

**Application**

Repair and new fabrication of chip removing tools such as milling cutters, lathe chisels, planing tools, wood working tools, broaching tools. Highly stressed hot and cold cutting tools, billet shears, metal forming tools, radial cams.

Preheating: high-speed steels = 500°C  
Chromium tool steels: = 300-400°C

**For materials**

1.3202 - 3318 - 3333 - 3342  
1.3343 - 3344 - 3346 - 3348  
1.3355



as well as on low- and medium-alloy steels

# RC 64

**Mechanical values**

**H = hardness**  
**H = state of weld.** 59 - 63 HRc  
**H = hardened**  
**1230°C furnace** 64 - 66 HRc  
**H = softened**  
**(830°C / 2 h)** 260 HB  
**Tempering 2 x 550°C**  
**30 minutes each**

**Properties-Basis**

Powder-metallurgical special Cr-Mo-W-V filler metal with very good air-hardening properties after slow furnace cooling (from 530°C to 20°C). The endurance of the structure is superior to a ledeburite or a super-speed steel. The greatest hardness of the build-up material is achieved with a constant preheating temperature of 500-540°C.

**Application**

Alterations and repair of PM-cold cutting tools, PM metal forming tools and PM-chip removing tools - heavy-duty tools containing molydenum and tungsten. Build-up welding should take place with minimal mingling with the parent metal.

**For materials**

**Powder-metallurgical blanking dies, metal forming tools and super-speed steel tools**



# PM 4

**Mechanical values**

Preheating	Hardness
530°C	61 - 64 HRc
350°C	50 - 55 HRc

**Properties-Basis**

Powder-metallurgical special Cr-Mo-Si-V filler metal with very good air-hardening properties after slow furnace cooling (from 500°C to 20°C). Very good edge stability for cold work. The greatest hardness of the build-up material is achieved with a constant preheating temperature of 480-520°C.

**Application**

Alterations and repair of powder-metallurgical steels containing Cr-V with a carbon content of 1.7-2.4%. Cold work tools, fly cutters, cutter blocks for plastics comminution, cold pressing dies.

**For materials**

**PM-steels, Cr-V with a C-content of 1,7 - 2,4 %**  
**PM-claddings on standard steels**



# PM 10

**Mechanical values**

Preheating	Hardness
500°C	62 - 65 HRc
300°C	54 - 59 HRc



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### Properties-Basis

High alloy weld filler for the repair of minor damage on metallurgical steels. CR-W-V alloy, tough and edge retaining.

### Application

High strength cutting tools, injection moulds, thermoforming and forming tool, stamping and cold form tools. For delicate and shallow applications without subsequent hardening.

### For materials

PM-steels,  
z.B.: ASP 2023, ASP 2005,  
CPM 3 V, VANADIS 4, PMD M4  
and similar steels

### Mechanical values

as-welded condi. 58 - 62 HRc  
hardened  
(1100°C) 60 - 64 HRc

**CRONITEX**

**PM 300**



### Properties-Basis

Cr-Mo-V-W alloyed special additive for high alloy PM-Steel.

### Application

For highly stressed cutting tools, forming and die stamps, wear and corrosion resistant injection moulds (DURO-PLAST).

### For materials

high alloyed PM-steels,  
z.B.: REX M4, CPM 10V,  
VANADIS 6, S690

### Mechanical values

as-welded cond. 58 - 63 HRc  
hardened  
(1180°C) 62 - 65 HRc

**CRONITEX**

**PM 500**



### Properties-Basis

High-alloy Cr-Mn-Mo-V filler metal, structure is synchronous with the new prehardened and tempered cold-work steels. The reaction hardness of the build-up material depends on the preheating altitude of the parent metal. Hardening and tempering as parent metal. Can be etched, chromium-plated and nitrided. Welding in multiple layers is possible, warm forging from 3rd layer on! The build-up material is flame-hardenable.

### Application

Joint and build-up welding on cold cutting tools and metal-forming tools of the sheet metal fabricating industry. For compensation of processing errors with followed by machining, preheat to approximately 450°C. For build-up welding on hardened tools preheat to approximately 250°C.

### For materials

1.2343 - 2344 - 2362  
1.2367 - 2606 as well  
as up to 2 layers  
1.2082 - 2083 - 2631

### Mechanical values

Hardness of build-up material  
depending on preheating temp.  
Pre. 550°C 29 - 32 HRc  
Pre. 450°C 36 - 39 HRc  
furnace cooling  
Pre. 350°C 52 - 54 HRc  
Pre. 250°C 57 - 59 HRc  
air cooling  
Hardenable to 62 HRc

**CRONITEX**

**Uni-Car**



### Properties-Basis

High-alloy Cr-Mo-Si-V(W) filler metal with synchronous or similar structure as hot-work steels. Tension compensation in the martensite range. Can be annealed, hardened and tempered with low tolerances equal to the basis material. Can be chromed.

### Application

Joint and build-up welding of high alloy hot work steels, also with good thermal conductivity. Compensation of processing errors, wear and tear, when you wish the same type of weld metal. Forging dies, hot pressing mandrels, diecasting moulds, hot forming rolls, coining dies, hot cutting tools, plastic moulds. In case of multiple layer welding preheat to 350-450°C.

### For materials

2313 - 2343  
1.2344 - 2362 - 2365  
1.2367 - 2606

### Mechanical values

Hardness of build-up  
material 33 - 42 HRc  
Harden up to 57 HRc  
Softening, hardening, temp.  
similar to the parent metal.

**CRONITEX**

**Uni-W**



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### Properties-Basis

Medium alloy filler metal Cr-Mn-Mo-Si-W which results in dilution with the basis material in same or similar handling characteristics. With 1-2 layers also suitable for hot-work steels and cold-work steels. Can be chromium-plated.

### Application

Preferrably for build-up welding and low- and medium-alloy tool steels like forging dies with low die sinking, feeding parts of follow-on tools, spindles, slide tools, cams, catching devices, etc. Cronitex Uni-X is also very suitable for joining the above mentioned steels with a preheating at approximately 200°C.

### For materials

1.1520 - 1525 - 1730 - 1740  
1.1750 - 1820 - 1830 - 1620  
1.1625 and similar steels

### Mechanical values

For C-steels till 0.8% C  
Heat treatable 54-62 HRc  
Thermal treatment like parent metals.  
Cooling:  
in the furnace, sand, ashes, in still air

**CRONITEX**

Uni-X



### Properties-Basis

High alloy filler metal Cr-Ni-Mo-Fe-W-Co. The weld metal withstands pressure, impact and high temperatures, and hardens under these influences. Acid-resistant, scale resistant up to 1250°C. Best friction characteristics of metal on metal, edge stability. Good fusing on nitride steels. Cannot be nitrated or chromed.

### Application

Build-up welding on highly stressed edges of forging dies and die sinkings, trimming dies, mandrels for drawing pipes, hot-shearing blades, forging tools. When joining compression cracks in forging dies as well as welding in multiple layers use the filler metal CRONITEX 252-C for buffering!

### For materials

1.1750 - 2307 - 2311  
1.2313 - 2343 - 2362  
1.2365 - 2367 - 2710  
1.2713 - 2714 - 2737  
1.2743 - 2744 - 2767

### Mechanical values

H = hardness HRC  
H = state of weld. 23 - 26  
H = hot aged  
450°C / 4 h 28 - 32  
H = pres. + impact 38 - 42

**CRONITEX**

Cronilloy



### Properties-Basis

High-alloy Cr-Ni-Mo-Fe-V-W-Co super filler metal. The extra-ordinary build-up material withstands extreme pressure, impact and high temperatures, and considerably takes the hardening under these circumstances. Scale-resisting up to 1300°C. Hot-work hardness at 350°C- 38-40HRc. Extremely tenacious and edge stable.

### Application

Build-up welding on highly stressed edges of forging dies. Forging tools and hot-shearing blades, on which medium- and high-alloy steels are punched and cut. Resistant to hot impact cracks and cavitation. In case of circular welding preweld with CRONITEX 252-C! Preheating: When buffering with CRONITEX 252-C = 250-300°C, when welding directly 300-400°C!

### For materials

Like CRONILLOY as well as:  
1.2567 - 2606 - 2731 - 2782  
1.2786 - 2662 - 2678 - 2889  
(1.4120)

### Mechanical values

H = state of weld. 28 - 32  
H = hot aged  
600°C / 4 h 36 - 38  
H = pressure + impact 40 - 44

**CRONITEX**

Multilloy



### Properties-Basis

High-alloy Cobalt filler metal Co-Cr-W. The stellite welding deposit with special admixtures and a lowered C-content is crack safe for circular welding and profile build-up welding (modified stellite 6). Heat resistant, tough and extremely edge stable.

### Application

Build-up welding on highly stressed forging, swaging, pressing and drawing tools, wire drawing and milling rolls. Crack free on extrusion screws, coke and slag crusher, glass shears. When welding in multiple layers buffer with CRONITEX 252-C! Preheating: for buffering 250°C, for direct build-up welding approx. 350°C!

### For materials

Tempering and hot-work steels and cast steels.

### Mechanical values

H = hardness HRC  
H = state of weld. 38 - 42  
H = at 400°C ca. 36  
H = at 600°C ca. 34  
Resistant to heat and corrosion

**CRONITEX**

1086



The above mentioned welding recommendations are not under our control or direct influence and therefore not liable to any warranty.

### Properties-Basis

High-alloy Cobalt filler metal Co-Cr-W, modified, similar to stellite 21, for best direct build-up welding possibilities on hot-work steels with minimal preheating. The build-up material is extremely tenacious, crack resistant, stable to thermal shocks, edge stable and has a good machining property.

### Application

Build-up welding on highly stressed forging dies, swages, compression moulding dies and drawing dies without buffering layers if highest endurance is already required from the 1st and 2nd layer (fast repair). The weld metal can be welded repeatedly without gouging.

For materials

Tempering and hot-work steels and cast steels.

Mechanical values

H = hardness  
H = state of weld.  
H = at 400°C  
H = at 600°C  
Resistant to heat and corrosion

HRC  
30 - 36  
ca. 33  
ca. 30

**CRONITEX**

1088



### Properties-Basis

High alloy aluminum-manganese-multicomponent bronze Al-Cu-Fe-Mn. The modified with aluminum alloyed weld metal is resistant to cavitation and seawater, dense structure, crack and abrasion proof. Best friction characteristics on metal. The weld metal can be cold tempered - deep freezing, plus approx. 20% hardness.

### Application

Reinforcement of steel, cast steel, cast iron moulds, press and deep drawing moulds, marine propellers, Pelton runner, Kaplan blades, pump impellers. Bronze and steel joints. Glass moulds out of Ni-bronze. In case of cast iron preweld one layer with CRONITEX electrode GG-55 or Fill GG-55!

For materials

Build-up welding on steels, cast steels, cast iron  
Joining of bronzes

Mechanical values

Hardness  
1st layer 270 HB  
2nd layer 250 HB

**CRONITEX**

12 A-Multi



### Properties-Basis

High-alloy aluminium bronze Al-Fe-Cu. The welding deposit is highly wear resistant, stays smooth and does not absorb pressing and drawing residues. Highest hardness with minimal heat supply and fast cooling. Corresponds to the Ampco-bronze. Can be machined with HSS super high speed steel tools. The weld metal can be cold tempered through deep freezing, plus approx. 15% hardness.

### Application

Build-up welding of compression, press and draw tools used for chrome-nickel-steel-forming to prevent grooving for longest durability. Zinc and cadmium coated sheet metal forming. In case of cast iron compressed with sulphur and grease preweld one layer with CRONITEX electrode GG-55 or Fill GG-55.

For materials

build-up welding on steels, cast steels, cast iron  
Joining of bronzes

Mechanical values

Hardness  
1st layer 350 HB  
2nd layer 300 HB

**CRONITEX**

14-Super



### Properties-Basis

Weld filler Cu with special additive Be-Fe-Ni. Excellent thermal conductivity, extreme hardness, easy to polish, wear and abrasion resistant, corrosion resistant, good machinability.

### Application

Thermally demanding injection moulds, cores and inserts for a significant improvement of the cooling compared to steel moulds. Very good weldability. For a matching color application on the "red" bronzes as described on the right, when good thermal conductivity and hardness is required.

For materials

Preferred for the application on heat treatable copper alloys, AMPCOLOY-83, -88, -940, -944, -95, -97, -972, MOLDMAX, steel and cast iron

Mechanical values

Hardness  
state of welding 25 - 30 HRc  
after ageing 30 - 35 HRc

**CRONITEX**

Cu-200



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### Properties-Basis

Special copper filler metal with contents of silver, ferrite and chrome. Toughened Cu-base weld metal with good electrical conductivity. Hardness can be increased approx. 20-30% through cold ageing (deep freezing).

### Application

Build-up welding on worn copper and erosion tools, spot- or butt welding electrodes. Connect and repair copper cooling tubes, Cu-inserts.

### For materials

Joining and build-up welding on hard and electrolytical copper.

### Mechanical values

Tens. str.: max. 340 N/mm<sup>2</sup>  
Hardness: 150 - 240 HRC



### Properties-Basis

Special Ni-Fe-Mn-Cu filler metal with excellent, notch-free melting properties on cast iron and ductile iron. The stick electrode is core wire alloyed and has a stable arc consisting of fine drops. The filler wire Fill GG-55 contains admixtures which are free of slag and can therefore excellently be TIG-welded.

### Application

Preferrably for build-up welding on cast iron- and spheroidal graphite compression moulding dies of the sheet fabricating industry. For highly-stressed drawing edges on alloyed cast iron. The build-up material is resistant to displacement and prevents drawing grooves. Hammer off from 3rd layer on! The result is a hardness increase of 15-20%. In case of sulphurous or greasy cast iron types slightly melt over the welding area with the TIG-welding arc.

### For materials

Cast iron and ductile iron, also alloyed types.

### Mechanical values

Hardness of build-up material  
1st layer 270  
2nd layer 250  
3rd layer 230  
Fill GG-55



### Properties-Basis

Superfonta- Tec Ni-Fe-Mn-Al filler metal. The welding deposit has the smallest coefficient of shrinkage of all known cast iron welding alloys. Intermediate beating out is not necessary up to the 3rd layer. Best sliding properties, edge stable.

### Application

Build-up and alteration welding on alloyed cast iron and ductile iron compression moulding dies of the sheet metal forming industry. In case of sulphurous and grease packed cast iron types groove with CRONITEX Nut-Ex, clean the channel, then preweld with electrode CRONITEX GG-Dur or TIG 252-C. Before MAG-welding preweld 1-2 layers with electrode GG-Tec!

### For materials

Build-up welding on alloyed cast iron and spheroidal graphite iron types.

### Mechanical values

H = Hardness  
El. 1st layer approx. 270  
El. 2nd layer approx. 230  
from 3rd layer on approx. 220  
H = TIG GG-Tec approx. 240



### Properties-Basis

Aluminium special alloy Al-Mg-Mn-Cu filler metal. Structural change can be achieved through artificial and natural ageing as well as warm and cold compression hardening. Strength can be influenced through the dilution with the base material.

### Application

Alteration and repair of high-strength aluminium wrought alloys such as plastic moulds and their inserts. Joining of cooling channels and threads.

### For materials

Aluminium wrought alloys  
F/G 28 - F/G 46  
qualificatory till F 53

### Mechanical values

Stretching A<sub>s</sub> 18 - 9  
Strength of the pure build-up material depending on state: 300 - 420 N/mm<sup>2</sup>



### Properties-Basis

Aluminium special alloy Al-Mg-Si filler metal, fine-flowing. Fast cooling of the weld pool results in a strength increase up to 220 N/mm<sup>2</sup>. Intermediate aging 24h at 20°C, then hot aging at 160°C till tens. str. = max. 300 N/mm<sup>2</sup>. The values depend on parent metal and layers. Aluminium alloys containing Zn and Pb need slight melting! The low melting temperature prevents strong mingling.

### Application

Repair of Al-Zn-Pb die-casting zinc alloys "Zamak" tools, Al-Si casting moulds and wrought products. Connecting cracked cooling channels, threads. Connecting very small parts of all aluminum alloys. Please observe respiratory protection regulations for Zn- and Pb-alloys!

### For materials

All mostly required Al-alloys  
F18 - F/G 30  
Please inquire!

### Mechanical values

Tensile strength:  
after hot aging at 160°C approx. 260 - 290 N/mm<sup>2</sup>



The above mentioned welding recommendations are not under our control or direct influence and therefore not liable to any warranty.



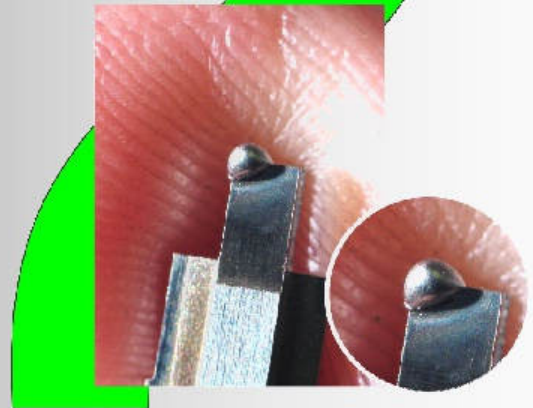
Welded with filler metal Rc 50



Worn out shear die saved through repair welding



Hot work tool repaired with CRONITEX - SUPERPLUS - for a longer structure lifetime. Filler metal Rc 60



Precise application without damaging the edges using the CRONITEX - WIG welding process

**NEW PRODUCTION**

**REPAIR**



High alloy aluminium applied using laser welding



Worn areas of the forging die are gouged, cracks are joined with CRONITEX electrode 252-C and then build-up welded with CRONITEX electrode Multiloy.

**SAMPLE IMAGES OF THE WIG TOOL REPAIR**