



quada

ART OF LASER

Products
for the laser industry

Content

Data sheet overview

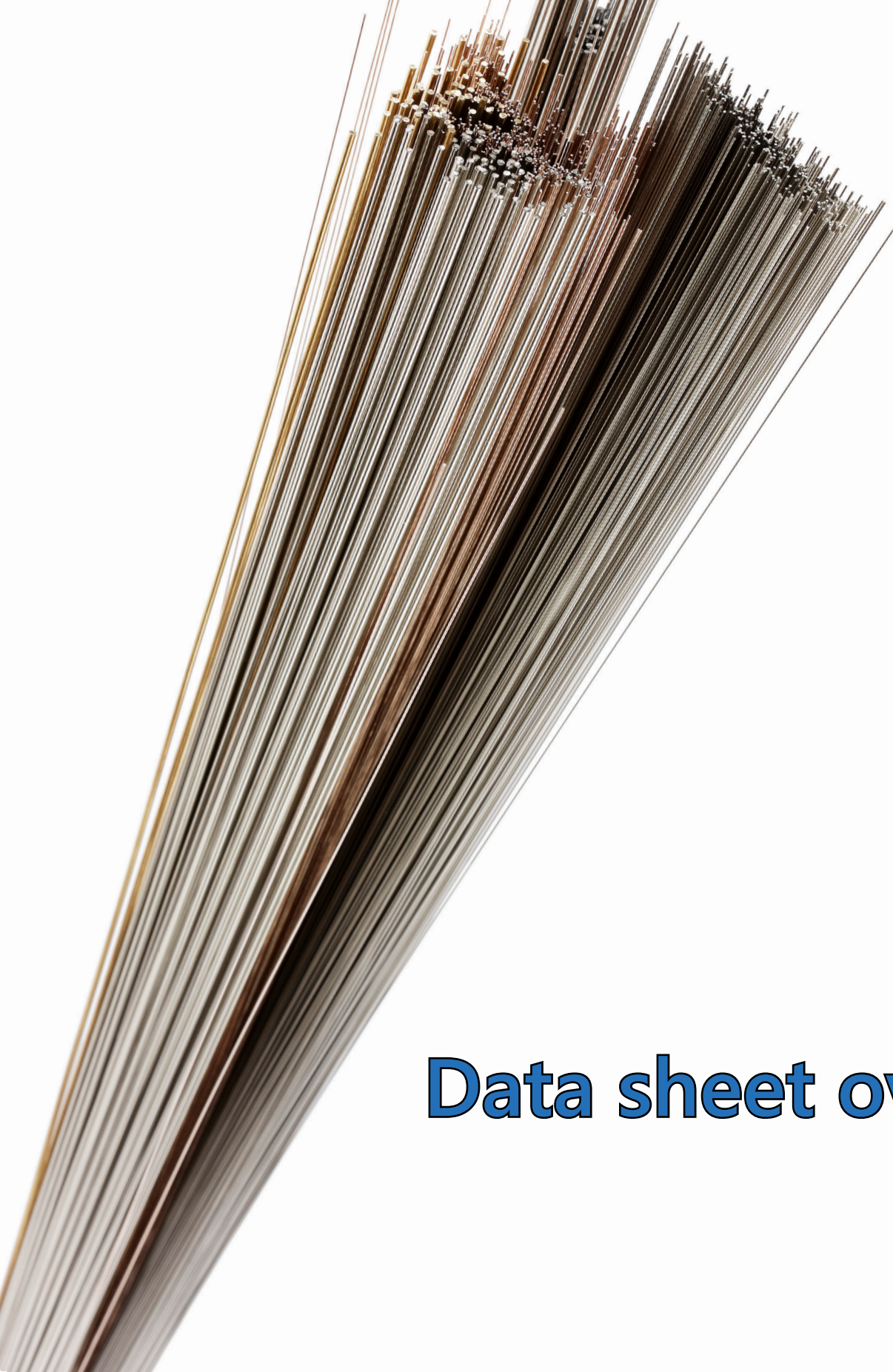
Application overview

Data sheets

Conversion tables

**Conversion tables for
hardness & strength**

quada
ART OF LASER



Data sheet overview

QUADA	W.-No.	Identification according to DIN / EN	Identification acc. to AISI/UNS	Identification acc. to AWS/ASTM/ASME	chemical analysis (%)											indicative value				Application / statement
					C	Si	Mn	Cr	Ni	Mo	Nb	Fe	other elements							
QuFe10	1.5424	SG Mo		ER-70S-A1	0,10	0,60	1,10	-	-	0,50	-	Rest						1.2311, 1.2312, 1.2162, 1.2738, 1.2764 and 1.2767 - Changes and repairs on mold cavities - joint welding on fine grain steels - Rework: erodible, structurable, polishable, etchable, nitridable, heat treatable und hardenable; Hardness between 28 - 37 HRC		
QuFe10Cr	1.7339	SG Cr Mo 1	P20	ER-80S-B2	0,10	0,50	1,20	-	0,50	-	Rest						1.2311, 1.2312, 1.2162, 1.2738, 1.2764 and 1.2767 - Changes and repairs on mold cavities - joint welding on fine grain steels - Rework: erodible, structurable, polishable, etchable, nitridable, heat treatable und hardenable; Hardness between 27 - 38 HRC			
QuFe10NiMo	special	Mn3Ni1CrMo		ER-100S-G	0,10	0,60	1,60	0,40	1,40	0,30	-	Rest	V 0,10				1.2311, 1.2312, 1.2162, 1.2738, 1.2764 and 1.2767 - Changes and repairs on mold cavities - joint welding on fine grain steels - Rework: erodible, structurable, polishable, etchable, nitridable, heat treatable und hardenable; Hardness between 27 - 38 HRC			
QuFe11	special	MSG 3-GZ-40T			0,10	0,40	0,60	6,50	-	3,30	-	Rest					1.2343, 1.2344, 1.2367-1.2606, 1.2764 - 1.2767 - Approx. 38 - 42 HRC - Rework: heat treatable, nitridable, chrome-plated, polishable and machined			
QuFe12	1.2567	X 30 W Cr V 5 - 3	AISI H21		0,30	0,30	0,30	2,30	-	-	-	Rest	V 0,50	W 4,00			1.2343, 1.2344, 1.2367-1.2606, 1.2764 - 1.2767 high heat resistance and high wear resistance by "W", approx. 42 - 48 HRC - Rework: heat treatable, nitridable, chrome-plated, polishable and machined			
QuFe13	special	MSG 3-GZ-45T	H13		0,25	0,50	0,70	5,00	-	4,00	-	Rest	Ti 0,60				1.2343, -44, extremely versatile, also at unknown WA-steels, approx. 42 - 46 HRC (conditionally hardenable) - Rework: polishable, heat treatable, nitridable, chrome-plated, CVD-coated and machined			
QuFe13 blank	special	MSG 3-GZ-45T Non-copper-plated	H13 blank		0,25	0,50	0,70	5,00	-	4,00	-	Rest	Ti 0,60				1.2343, -44, extremely versatile, also at unknown WA-steels, approx. 42 - 46 HRC (conditionally hardenable) - Rework: polishable, heat treatable, nitridable, chrome-plated, CVD-coated and machined			
QuFe14	1.7373	CrMo5Si		ER-80S-B6	0,06	0,40	0,30	5,30	-	0,50	-	Rest					1.2343, -44, extremely versatile, also at unknown WA-steels, approx. 42 - 46 HRC (NOT hardenable), operating temperature up to 600°C Rework: polishable, heat treatable, nitridable, chrome-plated, CVD-coated and machined			
QuFe15	1.7384	CrMo2Si		ER-80S-B3	0,10	0,60	1,00	2,20	-	0,95	-	Rest					1.2311, 1.2312, 1.2162, 1.2738, 1.2764 and 1.2767 - Changes and repairs on mold cavities - joint welding on fine grain steels - Rework: erodible, structurable, polishable, etchable, nitridable, heat treatable und hardenable			
QuFe17	special			ER-110-SG	0,10	0,70	1,70	0,30	2,20	0,50	-	Rest					joint welding, as well as refitments on high-strength heat treatable fine grain steels with a minimum yield strength of 890 MPA			
QuFe18	~1.4009	14343-A G/W (13)		A5.9: ER 410	0,08	0,90	0,65	14,00	0,40	-	-	-					The material is suitable for deposition welding on construction parts in water-, gas- and steam- atmosphere and similar 13% martensitic Cr-steels, where a good corrosion resistance is needed. The weld is good polishable. Applications on non- and low alloyed steels for temperature up to 450°C.			
QuFe19	1.4937				0,21	0,40	11,10	0,60	0,90	-	-	-	V 0,30	W 0,45			Is preferred for changes and repairs on heat resistant and heat treatable 12% Cr-steels (similar). For operating temperatures up to 650°C. For material 1.4922, 1.4935, 1.4923, 1.4926, 1.4913, 1.4931			
QuFe20	special	MSG 3-GZ55-ST	H13 hard		0,35	0,30	1,20	7,00	-	2,20	-	Rest	Ti 0,30				approx. 53 - 58 HRC, different hot and cold work steels, hard facings, alloys			
QuFe21	special	MSG 3-GZ55-ST Non-copper-plated	H13 hard blank		0,35	0,30	1,20	7,00	-	2,20	-	Rest	Ti 0,30				approx. 53 - 58 HRC, different hot and cold work steels, hard facings, alloys WITHOUT COPPER COATING			
QuNi22	2.4635	NiCr21Mo13Fe4W3	N06022	ER NiCrMo-10	<0,01	<0,1	<0,5	21,00	Rest	13,00	-	3,00	V <0,2	W 3,00	Cu <0,2	Co <2,5	For high-corrosion-resistant build-up welding on low-alloyed steels. Joint-welding of similar base materials. Good corrosion-resistance to acetic acid or contaminated sulphuric acid.			
QuFe23	1.2343	MSG3-55-T	H11		0,38	1,00	0,40	5,00	-	1,10	-	Rest	V 0,45				is used for wear-resistant coatings on hot working steels and heat resistant tools for operating temperatures up to 550°C, for example for hot shear blades, bottom dies, die casting molds, etc.			
QuNi24	2.4831	SG-NiCr21Mo9Nb	N06625	ER-NiCrMo-3	<0,03	0,25	0,20	22,00	Basis	9,00	3,50	1,00					V/P difficult weldable steels, cooling systems, cracks, highly resistant to corrosion, cryogenic up to -196°C, austenitic structure, non convertible			
QuNi25	2.4655	SG-NiCr27Mo	N08825		<0,02	<0,3	2,50	25,50	41,00	5,00	-	Rest	Cu 2,00				1.4500, 1.4529, 1.4539, 1.4563, 2.4619, 2.4858 - highly resistant to corrosion for V + A, fully austenitic			
QuNi26	2.4806	SG-NiCr20 Nb	N06082	ER-NiCr-3	<0,02	< 0,2	3,00	20,00	Rest	-	2,70	0,80					good for black and white connections and buffering, cooling channels, heat resistant, good corrosion resistance. Cryogenic up to -269°C. The material is non convertible, used for materials like 2.4816, 2.4817, 2.4851, 1.4876, 1.6907			
QuNi27	~2.4066	Ni99,2	N02 200		<0,1	<0,1	0,35 max.	-	-	-	-	<0,4	Cu <0,25	S 0,015 max.	P 0,035 max.	Ni+Co >99,20	is suitable for the joining and layer welding of commercially available pure nickel qualities including LC nickel, nickel alloys and nickel plated steels. These types of materials are used in pressure vessels and apparatus manufacturing in the chemical industry, the food industry and in the energy industry where good corrosive and temperature characteristics as well as conductivity are required.			
QuNi29	~2.4052	Ni99,6	N02201		0,05	0,01	0,10	-	99,70	-	-	-	Cu 0,03	Mg 0,03-0,07			for repairs on pure nickel, nickel alloys and GG-alloys 2.4052, 2.4053, 2.4060, 2.4061, 2.4066, 2.4068 - It's a pure nickel-alloy in comparison to QuNi40.			
QuFe30	1.4718	S Fe 8	AISI D2		0,50	3,00	0,50	9,50	-	-	-	-					Repairs of pressing, fitter and punching tools. For 12% ledeburitic steels.			
QuFe31	1.2606	S Fe 3			0,35	1	0,4	5,25	-	1,5	-	Rest	V 0,30	W 1,30			Repairs of pressing, fitter and punching tools, which are exposed to a strong abrasion as well as impact stresses. Achievable hardness is up to 54 - 60 HRC.			
QuFe35	1.4115	SG-X20CrMo 17 1		ER-120S-G	0,22	0,70	0,70	17,50	-	1,20	-	Rest					wear resistant armor-plating on warm working tools and higher strength heat-treated steels. High wear resistance at higher temperatures. 1.2085 and similar martensitic GW			
QuNi36	1.3912	NiFe-2	UNS K93600		0,20	0,50	0,60	0,50	35-38	-	1,00	Rest	P 0,025	S 0,025	Ti 0,50		welding additive for INVAR - qualities (NiLO36). Excels by an extreme low coefficient of expansion between -250°C and 200°C while good ductility and toughness.			
QuCu38	2.1211	SG-CuAg		ERCu	-	-	0,20	-	0,30	-	-	-	Cu Base	Ag 1,00			for repairs of copper- and AMPCOLOY- alloys			
QuNi40	2.4155	SG-NiTi 4		ER-Ni-1	0,02	0,30	0,30	-	Basis	-	-	0,10	Ti 3,30				for repairs of pure nickel, nickel alloys and GG-alloys			
QuNi41	~2.4560	MSG-NiFe-2		ER-NiFe-Cl	0,10	-	3,50	-	55,00	-	-	Rest	Ti +				Build-up and joint welding of ferritic and austenitic ductile cast iron as well as mixtures of mild steel and high-alloyed steel, copper and nickel alloys. Build-up welding on cast iron is also possible. The special field of usage are tools, fittings, pumps and corrosion resistant cladding.			
QuNi43	2.4360	NiCu30Fe	UNS N04400	AMS4544	0,15	0,50	2,00	-	63,00	-	-	1,75	Cu 30,00	S 0,01	Al 0,30		is a copper-nickel-alloy with excellent mechanic characteristics up to 600°C and a high corrosion resistance against seawater, hydrogen fluoride, acid sulfur as well as bases.			
QuFe44	1.4430	X2 CrNiMo19-12	AISI316LSi	ER-316LSi	0,02	0,85	1,80	18,50	12,50	2,60	-	-					The material is suitable for joining stainless steel and heat resistant steels, non-corrosive build-up welding for e.g. apparatus and components for the food industry, chemical industry, textile and fuel industry.			
QuFe47	special				0,30	0,80	3,40	-	1,90	-	-	Rest					is mainly used for the repairing and building up of cast iron containing spheroidal graphite. The weld is crack resistant even after multilayer welding. Resistant against impact loading on edges and corners. The weld can be worked without having a buffer layer. The attainable hardness in the 2 layer is around 55 HRC.			
QuFe50	1.4576	X5CrNiMoNb19-12	AISI318	ER-318Si	0,03	0,40	1,50	19,00	12,00	3,00	0,55	Rest					for GW: 1.4571, 1.4583 ("Mo-alloyed stainless steels V4A") and similar. Stabilized with Nb. Fabric: austenite with ferrite content, used for operating temperatures from -196° till +400°C			
QuFe51	special	S Fe 2			1,10	0,50	2,00	1,90	-	-	-	-					is preferably used for repairing and building-up tasks. The welding material is abrasion-resistant and also when layer-welding, free from cracks. The achievable hardness is approx. 50-53-HRC. This is dependent upon the treatment and number of layers.			
QuFe52	1.4332	X2 CrNi 24-12	AISI309L	ER-309LSi	0,02	0,40	1,80	23,00	13,50	-	-	Rest					For black-and-white-connections, fabric: austenite with increased ferrite content, good for hard-to-weld steels. For operating temperatures till 350°C.			
QuFe53	1.4122	W Z17MoH/GZ17MoH		ER430 mod.	0,40	0,50	0,45	16,50	0,50	1,10	-	-					The material is suitable for joining and building-up repairs to the same or similar stainless chrome steels and cast steels. It is also suitable for application to sealing surfaces on gas, water and steam fittings made of non-alloyed steels and up to a working temperature of 450 deg. C			
QuFe54	1.4316	G 19 9 L Si / W 19 9 L Si		ER 308LSi	0,02	0,85	1,75	19,00	9,50	-	-	-					The material is suitable for producing corrosion-resistant joints and building-up repairs to the same low-carbon and stabilized 18/8-CrNi(N)-steels/cast steels as well as the same or similar low-temperature austenite CrNi steels/cast steels. The material is tough up to -196 deg C. Stainless. IK resistant. (Wet corrosion up to 350 deg C. The worked-on material is used for parts or equipment in the medical branch, the food industry, the oil, soap, synthetic fibres, film and photo industry.			
QuFe55	1.4551	W 19 9 Nb Si / G 19 9 Nb Si		ER347Si	≤0,06	0,90	1,30	20,00	9,50	-	12xC	-					The material is suitable for corrosion resistant joining and building-up welds on same or similar stainless heat-resistant steels as well as austenite CrNi steels / cast steels. Stainless. IK resistant (wet corrosion up to 400 deg C). The worked-on material is used for parts or equipment in the medical branch, the food industry, the oil, soap, synthetic fibres, film and photo industry.			
QuFe60	1.3348	S Fe 4			1,00	0,30	0,40	4,00	-	8,30	-	Rest	W 1,90	V 1,80			HSS-alloy for highest hardness (~ 60 HRC), preheating: 250 - 450°C depending on GW recommended urgently!			
QuFe65	1.4337	NiCr29	AISI312	ER-312	0,10	0,40	0,80	29,00	9,00	-	-	Rest					Fabric: austenite/ ferrite. Difficult connections of different steels, stainless (wet corrosion till 300 °C). Good toughness at high yield strength.			
QuFe66	1.4014	EN ISO 14343-A G/W (17)		A5.9: ~ER 430	0,08	0,75	0,70	17,50	0,20	-	-	-					The material is suitable for build-up welding on construction parts in water, gas and steam atmospheres and similar 17 % martensitic chrome steels where corrosion resistance is required. The weld can be easily polished. The material can be applied to non-alloy and low-alloyed steels up to a temperature of 450°C.			
QuNi71	2.4667	S Ni 7718 (NiCr19Fe19Nb5Mo3)	N07718	A5.14 ER NiFeCr-2	0,06	0,10	0,25	18,50	53,00	3,00	5,00	Rest	Al 0,50	Ti 1,00			The NiCrCoMo-alloyed welding wire is used for joint welding of heat-resistant Ni-base alloys, austenites and normal cast material. Alloy 718,W.No.: 2.4668			
QuFe72	1.6356				0,02	0,03	0,02	-	18,00	4,00	-	Rest	Co 12,00	Al 0,10			Additive that contains cobalt for highly-stressed cold and warm working tools. Well suited at nitrided surfaces! Hardness 32 - 35 HRC untreated, 50 - 54 HRC artificially 3-4 h/480°C			
QuNi76	2.4886	NiMo16Cr15W	Hastelloy C276	ASTM B575	0,01	0,07	0,90	15,50	Rest	16,00	-	5,80	C 0,01	Co 2,00	W 3,70	V 0,20	P 0,02	S 0,01	Hastelloy 276, high stability against a large number of corrosions in oxidized and reducing media. Good stability against acids.	
QuNi77	2.4377	DIN 1736 SG NiCu 30 Mn Ti / EN ISO 18274: S Ni 4060 (NiCu30Mn3Ti)		A5.14 ER-NiCu-7	0,02	0,20	3,30	-	Base	-	-	1,00					Nickel-Copper alloy for joint welding and build-up welding of the same as well as similar cladding material. Also for joining Steel to Nickel-Copper alloys and Copper alloys, (Red and White joints). Usable up to temperatures of +425°C.			
QuCu80	21.367			ER-CuMnNiAl	-	-	13,00	-	2,50	-	-	2,50	Cu Rest	Al 7,50			W.-No. 2.1367 Multialloy bronze with a high share of Mn: Build-ups on complex mold inserts of Ampco- and Ampcoloyalloys.			

QUADA	W.-No.	Identification according to DIN / EN	Identification acc. to AISI/UNS	Identification acc. to AWS/ASTM/ASME	chemical analysis (%)											indicative value					Application / statement
					C	Si	Mn	Cr	Ni	Mo	Nb	Fe	other elements								
													Cu	Al	Rest	Sn	Zn	Cu			
QuCu81	2.0922	CuAl8Ni2			-	0,20	2,20	-	2,20	-	-	-	2,00	Cu	Al					Joint and build up welding on CuAl multialloy bronzes, planting on normal cast material and steel material.	
QuCu82	2.1461	CuSi3Mn1		ERCuSi-A	-	3,00	-	1,00	-	-	-	0,07	0,10	0,10	Rest					CuSi 3 ; joint and build up welding on copper, low alloyed copper alloys, copper-zinc alloys and silicon bronzes. Build up weldings on non- and low alloyed steels and cast iron.	
QuCu83	2.0923	CuAl8Ni6			-	<0,10	0,6-3,5	-	4,0-5,5	-	-	3,0-5,0	Zn	Pb	Al	Cu				Is an additive used for build-up welding on Al-Bronze, steels and multiple alloys, and can be used for Cu-Al-Ni alloys, cast and Ni-Al-bronze forged parts. The material is resistant to salt water and has a high resistance to abrasion and wear. It is used for valves, pumps, bearings etc.	
QuCu84	special	CuSi2Mn1			-	1,8	1,00	-	-	-	-	-	Sn	P	Cu					Is used for joint and build-up welding on copper, low alloyed copper base alloy, copper-zinc alloy as well as silicium bronze. It's also applicable for build-up welding on unalloyed and low alloyed steels and on cast iron.	
QuCu85	2.1056	SG-CuSn13			-	-	-	-	-	-	-	-	Cu	Sn	P	others				Is used for joint and build-up welding on copper-tin, CuZn-alloys and CuSnZnPb-cast alloys (Rg5,Rg6) Seawater and corrosion resistant surfacing on cast-iron	
QuCu87	2.0837	S/G-Cu 7158 CuNi30		A5.7 ErCuNi	-	-	1,00	-	30,00	-	-	0,55	Ti	Cu					Is used for heavy-duty, corrosion resistant joint welding and build-up welding. Fields of application are: Chemical apparatus construction, offshore techniques as well as sea water desalination plants and ship building. Sea water and high corrosion resistant		
QuCu88	2.1006	DIN EN ISO 24373 S Cu 1898; DIN 1733 SG-CuSn		A5.7: ~ER Cu	-	0,30	0,30	-	-	-	-	-	Cu	Sn					Build-up, repair and joint welding of pure copper. Viscous weld metal.		
QuCu89	2.1022	DIN EN ISO 24373 S Cu5180; DIN 1733 SG-CuSn6P		A5.7: ~ERCuSn-A	-	-	-	-	-	-	-	-	Cu	Sn	P	others				Build-up, repair and joint welding on copper / tin and copper / zinc alloys. Good sliding properties, build-up and joint welding of these alloys with cast iron, steels and nickel materials.	
QuBeCu25	CuBe25				-	0,05	-	-	0,02	-	-	0,06	Be	Co	Al	Cu				is used for repair and build up welding in the tool and mould-making industry. Beryllium copper is used, where high sliding properties, rapid heat transport and a high electrical conductivity in conjunction is needed!	
QuAlX10	3.2585	AlSi10Cu4			-	10,00	0,15	-	-	-	-	< 0,8	Al	Cu	Mg					cold-setting, good melting properties, high tensile strength, high elongation. For highly resistant wrought alloys in particular.Good polishability.	
QuAl99,5	3.0259	Al99,5		ER1100	-	max. 0,4	-	-	-	-	-	max. 0,30	AL							Used for the welding of pure aluminium and Al 99,5	
QuAlCu6	special	AlCu6MnZrTi		ER2319	-	0,15	0,30	-	-	-	-	-	Cu	Zr	Ti	V	Zn	Al		Is an aluminium alloy used for applications on high tensile aluminium materials especially in the aircraft industry. QuCuAl6 can be hardened.	
QuAlSi5	3.2245	AlSi5		ER4043	-	5,00	0,20	-	-	-	-	0,40	Al							Joints and build ups on AlSi-alloys till 5 % Si.	
QuAlSi7	3.2371	AlSi7			-	6,5-7,5	-	-	-	-	-	0,20	Ti	Mg	Al					is suitable for joint and build-up welding on Aluminium-silicon alloys of up to 7% Si	
QuAlSi10	3.2383	AlSi10			-	9,0-11,0	max. 0,40	-	-	-	-	max. 0,50	Mg	Al						is suitable for joint and build-up welding on Aluminium-silicon alloys of up to 10% Si	
QuAlSi12	3.2585	AlSi12		ER4047	-	12,00	-	-	-	-	-	0,20	Al							Joints and build ups on AlSi-alloys till 12 % Si. Vacuum-tight - Helium gas leakage tested.	
QuAlMg3	3.3536	AlMg3		~ER5554	-	0,30	0,35	-	-	-	-	-	Cu	Mg	Ti	Zn	Al			is suitable for the welding of Aluminium-Magnesium-Alloy.	
QuAlMg4,5Mn	3.3548	AlMg4,5		ER5183	-	0,35	0,90	0,15	-	-	-	0,40	Cu	Mg	Zn	Ti	Al			AlMg2,7Mn; AlMg3; AlMg4,5Mn; AlMg5; AlMg50,7; AlMg51; AlMgSiCu; AlZn4,5Mg1; G-AlMg3; G-AlMg5 - is suitable for the welding of aluminum-magnesium-alloys	
QuAlMg5	3.3556	AlMg5Cr(A)		ER5356	-	0,20	0,15	-	-	-	-	<0,4	Cu	Mg	Ti	Al				is suitable for the welding of Aluminium-Magnesium-Alloy.	
QuAlMgZr	3.3546	EN ISO 18273 (AlMg4,5MnZr)			-	0,25	0,90	0,15	-	-	-	0,40	Cu	Mg	Zr	Ti	Zn	Al		is suitable for welding aluminium-magnesium alloys. Good corrosion resistance against salt water and atmospheric conditions. Due to the addition of zircon, the tendency for hot cracking is subdued.	
QuTi02	3.7035	Titan		R56400	max. 0,08	-	-	-	-	-	-	max. 0,3	Ti	O	N	H				Unalloyed titan with good mechanical properties and high corrosion resistance. Very good stability against saltwater/ sea atmosphere and against different corrosive media < 350°.	
QuTi05	3.7164/3.7165	TiAl6V4		R56400	max. 0,08	-	-	-	-	-	-	max. 0,4	Ti	O	N	H	AL	V		Most used titan alloy. Good hot formability and weldability. Resistant against saltwater/ sea atmosphere and against different corrosive media <300 °. Titan Grade 5 linked a high strength with good toughness by low density.	
QuMed4009	~ 1.4009	DIN 8556: SG - X8 CR 14		AISI410	~ER-410	0,08	0,60	0,65	13,00	0,40	-	-	Rest							Fabric: Martensite (with ferrite content), heat treatable GW: 1.4008, 1.4006 and similar 13 % martensiticCr-steels, good polishability on 1.2083, 1.2085 and specific applications.	
QuMed4115	1.4115	DIN 8555: MSG 6-45-RZ				0,22	0,70	0,70	17,50	0,30	1,20	-	Rest							Weldings on corrosion and scale resistant hexavalent chromiums with ferritic and martensitic structure. High resistance against abrasion; adhesion and cavitation as well as combined wear mechanisms. Hardness of the pure weld metal approx. 40 HRC	
QuMed4122	1.4122	X35CrMo17-1				0,40	-	-	16,50	0,50	1,10	-	-							Joint and build up welding on non rusting surface seals of gas, water and steam fittings of unalloyed steel as well as machine components with a high heat resistance used for operative temperatures up to 450° C. For 1.4122and other similar 17% Cr-steels	
QuMed4310	1.4310	X10CrNi18-8		AISI301		0,10	2,00	2,00	17,50	8,50	0,80	-	Rest							No recommendation as welding additive in accordance with the steel key.	
QuMed4316	1.4316	X2 CrNi 19-9		AISI308L	ER-308LSi	0,02	0,85	1,75	19,00	9,50	-	-	Rest							low carbon V2A-additive for 1.4301, 1.4306, 1. 4541 and other. Fabric: Austenite with ferrite content, cryogenic up to -196°C. IK-resistant.(wet corrosion up to +350° C.)	
QuMed4337	1.4337	NiCr29		AISI312	ER-312	0,12	0,40	1,80	30,00	9,00	-	-	Rest							Fabric: austenite / ferrite. Difficult connections of different steels, stainless (wet corrosion up to 300 °C). Good toughness by a high yield strength.	
QuMed4430	1.4430	X2 CrNiMo19-12		AISI316LSi	ER-316LSi	0,02	0,85	1,80	18,50	12,50	2,60	-	Rest							Lowcarbon V4A-additive for 1.4571, 1.4583 , 1.4404 and other. Fabric: austenite with ferrite content	
QuMed4455	1.4455	X2CrNiMnMoN20.16				0,03	0,60	7,50	20,50	15,50	3,00	-	Rest	N						Fabric: austenite, free of ferrite! for GW: 1.4429, 1.4404, 1.4435 - Special at lowest defined ferrite content!	
QuMed4551	1.4551	X5CrNiNb19-9		AISI347	ER-347Si	0,06	0,90	1,30	20,00	9,50	-	-	Rest	Nb						1.4301, 1.4306, 1.4541, 1.4310, for corrosion resistente joint and build up weldings of similar stainless and heat resistente steels as well as austenitic CrNi-steels or cast steels. Stainless. IK-resistant (intergranular corrosion resistant) (wet corrosion up to 400°C).	
QuMed4571	1.4571	X6CrNiMoTi17-12-2		AISI316Ti	ER-316Ti	0,08	1,00	2,00	17,50	12,00	2,30	-	Rest	Ti						1.4401, 1.4404, 1.4571 The material is suitable for joint welding of stainless and heat resistant steels. Corrosion resistant build ups for apparatus and components of the food industry, chemical industry, textile and fuel industry.	
QuMed4576	1.4576	X5CrNiMoNb 19-12		AISI318	ER-318	0,06	0,40	1,50	19,00	12,00	2,60	0,60	Rest							Used for joint and build up weldings on stabilized, similar, chemically resistant CrNiMo-steels in chemical apparatus and tank building for operating temperatures from -196° till +400° C. 1.4571, 1.4573, 1.4580, 1.4581, 1.4583	
Qu4351	1.4351	G13 4		AISI410 NiMo	ER 410 NiMo	0,03	0,30	0,40	13,00	4,00	0,50	-	-							The welding is suitable for joint and build-up weldings of similar 13% Cr and CrNi steels. Resistant to corrosion similar to 13% Cr (Ni) steels and cast steel.	
Qu4370	1.4370	X15CrNiMn18-8		AISI307	ER-307Si	0,08	max. 0,95	7,00	18,00	8,00	-	-	-	S	P					For joint and build up welding on similar steels, high-manganese steels, defence steels and heat treatable Cr- and CrNi-steels (for example exhaust system engineering) as well as austenite-ferrite-connections (black-white-connections) at operative temperatures till 300°C. The workpiece is scale resistant to around 850°C. No sufficient resistance against high sulphur gas at temperatures over 500°C. Resistant against sea water and diluted acid. The workpiece is workhardened and wear-resistant; good for buffering and build ups. Hardness: untreated approx. 180 HB, approx. 41 HRC after work-hardening.	
Qu4435	1.4435	X2CrNiMo18-14-3		S31603/AISI316L	ER-316L	max. 0,03	max. 1,0	max. 2,0	18,00	13,00	2,75	-	-	P	Cu					1.4435 weldable with all procedures.The maximum interpass temperature while welding is around 150°C. There is no heat treatment needed after welding, because even thick dimensions are resistant against intergranular corrosion arising from a low carbon content after welding. Seams and loose scale, caused by welding or hightemperature treatments, must be cleaned mechanically or chemically, followed by a suitable passivation to restoring the corrosion resistance.	
Qu4462	1.4462	X2CrNiMoN22-5-3		AISI318LN	ER-2205	max. 0,03	-	-	22,00	6,00	3,00	-	-	N						Joint and build up weldings of ferritic-austenitic duplex steels like 1.4417 or 1.4462 . Mixed connections with non and low alloyed steels as well as NiCr- / NiCrMo-steels like 1.4301; 1.4306; 1.4308; 1.4401; 1.4404; 1.4435; 1.4571	
Qu4519	1.4519	X2CrNiMoCu20-25		AISI904L	ER-385L	max. 0,02	0,70	2,00	20,00	25,00	4,50	-	-	Cu						Joint and build up weldings on similar steels. Corrosion resistant in non-oxidising media (till 90% sulfuric acid, phosphoric acid and organic mediums. Pitting resistant till 1000°C (air)) Permissible operating temperature from -10°C up to +350°C.	
Qu4541	1.4541	X6CrNiTi18-10		AISI321	ER-321	max. 0,08	1,00	2,00	18,00	10,50	-	-	-	Ti						1.4541 is weldable with all kinds of welding processes also without welding additives. If a welding additive is needed, it's recommended to use 1.4316 and 1.4551. There is no heat treatment needed after welding. The maximum interpass temperature for welding is 200°C. Seams and loose scale, caused by welding or hightemperature treatments, must be cleaned mechanically or chemically, followed by a suitable passivation to restoring the corrosion resistance.	

QUADA	W.-No.	Identification according to DIN / EN	Identification acc. to AISI/UNS	Identification acc. to AWS/ASTM/ASME	chemical analysis (%)										indicative value					Application / statement
					C	Si	Mn	Cr	Ni	Mo	Nb	Fe	other elements							
Qu4550	1.4550	X6CrNiNb18-10	AISI347	ER-347	0,06	0,80	1,50	18,00	10,50	-	0,80	-							Easily weldable after all kind of processes (except gas welding). Maximum operating temperature (interpass temperature): 200°C. There is no heat treatment needed after welding. Material and filler material are authorised for pressure vessel building.	
Qu4842	1.4842		AISI310	ER-310	0,12	0,50	1,75	25,00	20,00	-	-	Rest							for similar, heat resistant rolled, formed and cast steels. Completely austenitic workpiece. Preferred by attacks of oxidizing, nitrogen as well as low-oxygen gases. Scale resistant up to 1200°C. Cryogenic up to -196°C. The temperature range between 650° - 900°C should be avoided, because of the danger of brittleness. Basic material: 1.4841; 1.4845; 1.4828; 1.4840; 1.4846; 1.4826	
QU17-4PH	~ 1.4542		S17400	ASTM A564	0,04	0,25	0,40	15,30	4,50	-	0,30	Rest	Cu 3,25						Stainless, precipitation hardened Cr-NiCu-steel with a high strength and toughness. Product strengthening could be made by cold forming with subsequent aging. The material is used in the aerospace industry, engineering sector, energy technology and testing and control technologies. Achievable hardness 37-40 HRC depending on processing and layers.	
Qu7734 (15CDV6)	1.7734	15CrMoV6-9			0,15	max. 0,20	1,00	1,40	-	0,90	-	Rest	P max. 0,020	S max. 0,015	V 0,25			The material (data sheet 1.7734) shows a high yield strength and an excellent weldability. The material 1.7734 is weldable without subsequent thermal treatment in both conditions (4/5). Without subsequent compensating, high strength of the weld seam!		
QuCoCr	special	CoCr			<0,15	<0,4	<0,8	27,00	-	5,30	-	<0,2	Co Rest							
QuSG2	1.5125	EN ISO 14341: G 42 4 M G3Si1		SFA5.18:ER 70S-6	0,10	0,80	1,40	-	-	-	-	Rest	-					Low alloy laser filler wire for connecting and building-up on low alloy steels in vehicles, containers, machine tools and boiler construction. The weld is also crack resistant even by multi-layer welding.		
QuStellite6	special			AWS: A5.21 ASME: SFA5.21 ERCoCr-A	1,00	2,00	1,00	30,00	-	-	-	3,00						This is a cobalt-based alloy with integrated complex carbides. Very good durability against wear, abrasion and corrosion even at higher temperatures of up to 500 deg. C. Achievable hardness lies between 40 – 46 HRC, and is dependent upon the processing, basic material and welding layers. The weld is only workable using hard metal tools.		
QuSuperduplex	~ 1.4410			AWS A5.9: ER 2594 ~1.4410	0,02	0,50	0,80	25,00	9,00	3,70	-	-	N 0,20					For welding in offshore areas. Stainless, IK resistant material which because of its high CrMo(N) content, has a high resistance to pitting and stress corrosion cracking.		
Qu819	special	14700 S Fe 3			0,35	0,30	0,45	1,70	3,70	0,25	-	Rest						Build-up welding on resin moulds, drop-forging tools and dies. The material has a high accuracy in dimension whilst having a high hardness and stability.		
QuP20	~ 1.2311		P20		0,36	0,50	0,80	1,70	-	0,40	-	Rest						Is recommended for changes and repairs to heavy duty mould cavities made of tempered materials 1.2311, 1.2312, 1.2162, 1.2738, 1.2764 und 1.2767. The Cr. content in the filler metal increases the tensile strength, edge retention and wearresistance. Applicable for long term working at temperatures up to 570°C.		
Nimax					0,10	0,30	2,50	3,00	1,00	0,30	-	Rest						Plastic mould steel with a low carbon content. Easily polishable and photo-etchible and excellent grindability. Easily weldable also without preheating. High impact and breaking strength.		
Stavax					0,38	0,90	0,50	13,60	-	-	-	Rest	V 0,30					Chrome-alloyed, corrosion-resistant tool steel with good polishability and good grindability. Wear-resistant and with a good stability while hardening.		
Dievar					0,35	0,20	0,50	5,00	-	2,30	-	-	V 0,60					Special Cr-Mo-V alloyed cast steel alloy for hot working tools with good high heat resistance and good toughness, hardenability and stability during the heat treatment or coating. Good resistance against heat checking cracks.		
QuAz31					-	max. 0,02	0,2 - 1,0	-	max. 0,001	-	-	max. 0,002	Mg Base	Al 2,5 - 3,6	Zn 0,7 - 1,3	Cu max. 0,002	others max. 0,3	QuMgAz31 is a wrought magnesium alloy with good strength and ductility at room temperature, combined with good weldability. QuMgAz31 is used in automotive engineering, in the aerospace industry and everywhere where weight savings coupled with good workability are required.		
QuAz91					-	max. 0,05	0,17 - 0,4	-	max. 0,001	-	-	max. 0,004	Mg Base	Al 8,5 - 9,5	Zn 0,45 - 0,9	Cu max. 0,025	others 0,01	QuMgAz91 is a wrought magnesium alloy with good strength and ductility at room temperature, combined with good weldability. QuMgAz91 is used in automotive engineering, in the aerospace industry and everywhere where weight savings coupled with good workability are required.		
QuZnAl4					-	-	-	-	-	-	-	-	Zn Base	Al 4,00				QuZnAl4 is a zinc-based alloy with aluminium elements. QuZnAl4 is used for the repair of zamak alloys.		
QuHaynes25			UNS R30605	AMS 5769	0,10	0,40	1,50	20,00	10,00	1,00	-	3,00	S 0,03	W 15,00	Co Base			Non-magnetic cobalt-based superalloy with excellent temperature resistance. Very good abrasion resistance. Oxidation resistance to 980°C and good strength to 1175°C. Resistant to marine environments, acids and body fluids.		
QuHaynes188					0,10	0,40	1,25	22,00	22,00	-	-	3,00	LA 0,07	B 0,02	W 14,50	Co Base		Cobalt-based superalloy with excellent temperature resistance at high temperatures. Also excellent resistance to oxidising environments. Good resistance to hot corrosion due to sulphate deposition. Very good weldability. Joint welds with cobalt, nickel and iron-based alloys.		
QuHaynes282			UNS No07208		0,06	0,10	0,20	20,00	Rest	8,50	-	1,00	Ti 2,10	Mo 8,50	Al 1,50	Co 10,00		Precipitation hardenable nickel-chromium-cobalt alloy with good thermal stability. Very good weldability.		
QuAMS5817			UNS S41800 AISI615		0,15	max. 0,5	max. 0,5	13,00	2,00	0,50	-	Base	W 3,00	Cu max. 0,5	Al max. 0,15			Hardenable martensitic Cr-Ni-W alloy for temperatures up to up to 650°C in higher stressed components. Can be used for welding steam turbine parts such as blades or bases and compressor parts of gas turbines		
QuHastelloyX	~2.4665	274 : S Ni 6002 - NiCr22Fe18N		AWS A 5.14: ER90s-B9	0,10	max. 1,0	max. 1,0	22,00	47,00	9,00	-	18,00	W 0,60	CoL 1,50	B max. 0,008			Hastelloy X is a nickel base superalloy with excellent resistance to reducing and carburizing atmospheres, making it suitable for furnace components. Oxidation resistance trough 2000°F. Good high temperature strength		
Qu4903	1.4903	DIN EN ISO 12070		AWS A5.28-05: ER90s-B9	0,12	0,30	0,80	9,00	0,60	0,90	-	-	V 0,20					Is preferred for changes and repairs on highly heat resisting heat treatable 9 - 12% Cr steels, especially for T91/P91 For operating temperatures up to 650°C.		
QuEISI	Special Alloy				1,00	-	-	4,00	-	8,00	-	Rest						QuEISI is a special alloy that is characterised by the exceptionally high hardness that can be achieved. QuEISI can be used for repair and build-up, especially on high-performance tool steels. Crack-proof build-up welding on many ferrous materials is possible. Achievable hardness values are 62 - 66 HRC, depending on machining and welding layers.		



quada
ART OF LASER

Application overview

Application overview Aluminum

Material number	Material designation	AlMg3 (QuAlMg3)	AlMg5 (QuAlMg5)	AlMg4,5Mn (QuAlMg4,5Mn)	AlMg4,5MZr (QuAlMg4,5Mn)	Al99,5Ti (QuAl99,5)	Al99,8	AlSi5 (QuAlSi5)	AlSi12 (QuAlSi12)
3.0185	Al98					•		•	
3.0205	Al99					•		•	
3.0255	Al99,5					•	•	•	
3.0275	Al99,7					•	•	•	
3.0285	Al99,8					•	•	•	
3.0305	Al99,9					•	•	•	
3.0385	Al99,98R						•	•	
3.0515	AlMn	•	•	•	•	•		•	
3.1255	AlCuSiMn			•	•			•	
3.1325	AlCuMg1			•	•			•	
3.1355	AlCuMg2			•	•			•	
3.1371	G-AlCu4TiMg			•	•			•	
3.1841	G-AlCu4Ti			•	•			•	
3.2151	G-AlSi6Cu4			•	•			•	•
3.2161	G-AlSi8Cu3			•	•	•	•	•	•
3.2305	E-AlMgSi	•	•					•	
3.2315	AlMgSi1	•	•	•	•			•	
3.2341	G-AlSi5Mg							•	•
3.2345	AlSi5							•	
3.2381	G-AlSi10Mg							•	•
3.2383	G-AlSi10Mn(Cu)							•	•
3.2581	G-AlSi12							•	•
3.2583	G-AlSi12(Cu)							•	•
3.3206	AlMgSi0,5	•	•	•	•			•	
3.3207	E-AlMgSi0,5	•	•			•	•	•	
3.3208	Al99,9MgSi					•	•	•	
3.3241	G-AlMg3Si	•		•	•				
3.3261	G-AlMg5Si			•	•				
3.3308	Al99,9Mg0,5					•	•	•	
3.3309	AlRMg0,5					•	•		
3.3315	AlMg1	•						•	
3.3318	Al99,9Mg1	•				•	•	•	
3.3319	AlRMg1	•				•	•		
3.3325	AlMg2	•							
3.3328	Al99,9Mg2	•				•	•	•	
3.3329	AlRMg2	•				•	•		
3.3527	AlMgMn	•	•	•	•				
3.3535	AlMg3	•	•	•	•				
3.3541	G-AlMg3	•	•	•	•				
3.3543	G-AlMg3(Cu)	•	•	•	•				
3.3547	AlMg4,5Mn	•	•	•	•				
3.3555	AlMg5	•	•	•	•				
3.3561	G-AlMg5	•	•	•	•				
3.3591	G-AlMg10		•	•	•				
3.4335	AlZnMg1		•	•	•			•	
3.4338	Al99,9ZnMg		•	•	•	•		•	
3.4345	AlZnMgCu0,5		•	•	•			•	
3.4365	AlZnMgCu1,5		•	•	•			•	

• addition is suitable without limitation

• addition is suitable, unless the strength of the fastening is adequate

Application overview tool steel - cast iron



Material	quada - alloy	Achievable Hardness	possible post treatment
GJL- / GG / GGL grey cast iron with lamellar graphite	QuNi40 QuNi41	180-220 HB 180-220 HB	
GJS- / GGG grey cast iron with spheroidal graphite	QuNi40 QuNi41 QuFe47	180-220 HB 180-220 HB 45 - 50 HRC	
1.2082 / 1.2083 / 1.2085 Böhler M310; M314; M315; M333	QuFe35 QuFe53 QuFe30	40 HRC /1.layer 52HRC 50 HRC 55-58 HRC	
1.2101 / 62SiMnCr4	QuFe11 QuFe13 QuFe20/21/23	38 - 42 HRC 42 - 46 HRC 53 - 58 HRC	
1.2311/1.2312 /1.2162	QuFe10Cr / QuFe15 QuFe10NiMo / QuFe10	up to 38 HRC up to 37 HRC	etching; polishing etching; polishing
	QuP20	38 - 42 HRC	etching; polishing
1.2316	QuFe35 QuFe53	40 HRC /1.layer 52 HRC 50 HRC	
1.2343 / 1.2344	QuFe11 QuFe13 QuFe20/21/23 QuFe14 QuFe19	38 - 42 HRC 42 - 46 HRC 53 - 58 HRC 43 HRC 50 HRC	eroding
1.2363	QuFe20/21/23 QuFe31 QuFe30	55 - 58 HRC 55 - 58 HRC approx. 55 HRC	
1.2365 / 1.2367 1.2358 / 1.2382	QuFe11 QuFe13 QuFe20/21/23 QuFe60	38 - 42 HRC 42 - 46 HRC 53 - 58 HRC 60 - 62 HRC	
1.2436	QuFe19 QuFe30 QuFe31	50 HRC 54 - 60 HRC 54 - 60 HRC	
1.2510 ; 1.2250 ; 1.2842	QuFe11 QuFe13 QuFe20/21/23	38 - 42 HRC 42 - 46 HRC 53 - 58 HRC	
1.2601	QuFe30 QuFe31	54 - 60 HRC 54 - 60 HRC	
1.2606	QuFe12 QuFe13 QuFe14 QuFe31	42 - 48 HRC 42 - 46 HRC 43 HRC 53 - 58 HRC	
1.2711 /1.2714/ 1.2721	QuFe11 Qu819 QuFe10NiMo	38 - 42 HRC up to 48 HRC up to 37 HRC	etching; polishing etching; polishing
1.2738	QuFe11 QuFe13 QuFe20/21/23 QuFe10Cr / QuFe15 QuFe10NiMo / QuFe10	38 - 42 HRC 42 - 46 HRC 53 - 58 HRC up to 38 HRC up to 37 HRC	etching; polishing etching; polishing
	QuFe11 QuFe12 QuFe20/21/23 QuFe31 QuFe72 QuFe15 QuFe10NiMo / QuFe10 QuP20 Qu819	38 - 42 HRC 42 - 48 HRC 53 - 58 HRC 54 - 60 HRC 34 HRC / up to 50 HRC hardenable by warm aging up to 38 HRC up to 37 HRC 38 - 46 HRC up to 48 HRC	etching; polishing etching; polishing etching; polishing
1.2764 - 1.2767	QuFe11 QuFe12 QuFe20/21/23 QuFe31 QuFe72 QuFe15 QuFe10NiMo / QuFe10 QuP20 Qu819	38 - 42 HRC 42 - 48 HRC 53 - 58 HRC 54 - 60 HRC 34 HRC / up to 50 HRC hardenable by warm aging up to 38 HRC up to 37 HRC 38 - 46 HRC up to 48 HRC	etching; polishing etching; polishing etching; polishing
1.2885 / 1.2709 / 1.6356 Maraging steels	QuFe72	34 HRC / up to 50 HRC hardenable by warm aging	
1.3244; 1.3343; 1.3243 Böhler K890; S790; S690; S590 ;S390	QuFe60	approx. 60 - 62 HRC	
1.7225 42CrMo4	QuFe10Cr	27 - 38 HRC	
1.7218 25CrMo4	QuP20	38 - 46 HRC	

This application overview serves as a guide and does not claim to be complete.

All entries are based on our own experience and that of our customers.

We cannot guarantee the correctness.

quada

ART OF LASER



Data sheets

Green

1. Rework etching and texture

QuFe10	QuFe10 Cr	QuFe10 NiMo	QuFe15	QuFe17
QuSG2	QuP20			

Orange

2. Build-up wire

QuFe11	QuFe12	QuFe13	QuFe13 blank	QuFe14
QuFe19	QuFe20	QuFe21	QuFe23	QuFe30
QuFe31	QuFe47	QuFe51	QuFe60	QuFe72
Qu7734	Qu819	QuEISI		

Light Blue

3. Stainless

QuFe18	QuFe35	QuFe44	QuFe50	QuFe52
QuFe53	QuFe54	QuFe55	QuFe65	QuFe66
Qu4351	Qu4370	Qu4435	Qu4462	Qu4519
Qu4541	Qu4550	Qu4842		
Qu17-4PH	QuSuperduplex			

Black

4. Nickel-base-wire

QuNi22	QuNi24	QuNi25	QuNi26	QuNi27	QuNi29
QuNi36	QuNi40	QuNi41	QuNi43	QuNi71	QuNi76
QuNi77					

White

5. Aluminum-base-wire

QuAlX10	QuAl99,5	QuAlCu6	QuAlSi5	QuAlSi7	QuAlSi10
QuAlSi12	QuAlMg3	QuAlMg4,5Mn	QuAlMg5	QuAlMgZr	

Red

6. Copper-base-wire

QuCu38	QuCu80	QuCu81	QuCu82	QuCu83	QuCu84
QuCu85	QuCu87	QuCu88	QuCu89	QuBeCu25	

Blue

7. Titanium-base-wire

QuTi02	QuTi05
--------	--------

Yellow

8. Med-wire

QuMed4009	QuMed4115	QuMed4122	QuMed4310	QuMed4316	QuMed4337
QuMed4430	QuMed4455	QuMed4551	QuMed4571	QuMed4576	

9. Special alloy (without color assignment)

QuCoCr	QuStellite6				
QuMgAz31	QuMgAz91	QuZnAl4			
QuHaynes25	QuHaynes188	QuHaynes282	QuAMS5817	QuHastelloyX	Qu4903

Rework etching and texture

Colour Assignment: green Tri-q packs[®]

QuFe10

QuFe10Cr

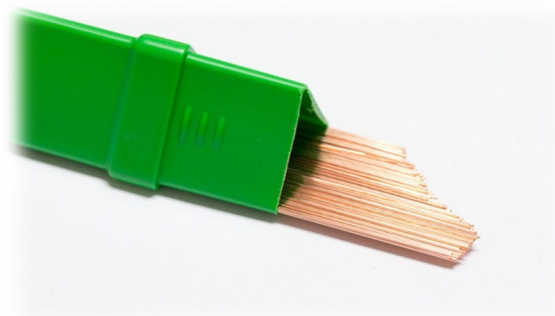
QuFe10NiMo

QuFe15

QuFe17

QuSG2

QuP20



QuFe10

DIN EN ISO 21952-A: G/W MoSi ; AWS A5.28: ER70S-A1 (M.-No.1.5424)

is chosen for changing and repairing shaped cavities in hardened materials 1.2311, 1.2312, 1.2162, 1.2738, 1.2764 and 1.2767.

Possible Hardness: 28 – 37 HRC.
Dependent on layers and hardness of the base material

Recommendation for basic materials

1.2311, 1.2312, 1.2162, 1.2738, 1.2764, 1.2767
15Mo3, 16Mo3, 19Mn6, 17 Mn 14, WStE255 bis WStE460, HI, HII, GS-22 Mo 4
AWS5.28: ER80S-D2

Rework

The weld can be eroded, structured, polished, chrome-plated, etched, nitrated, annealed and hardened.

Material analysis in %

C	Si	Mo	Mn	Fe
0,1	0,6	0,5	1,1	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	>460
Tensile strength Rm	N/mm ²	>530
Elongation A (Lo = 5do)	%	>20
Hardness untreated	HRC	28 - 37

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm
spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe10Cr

EN ISO 21952-A G/W CrMo1Si; AWS A5.28: ~ER80-SB2 /ER80 S-G (M.-No. 1.7339)

is preferred for changes to and repairs of mould cavities made from tempered materials 1.2311, 1.2312, 1.2162, 1.2738, 1.2764 and 1.2767.

The Cr-content in the weld increases the tensile strength, cutting edge quality and the resistance to wear. Can be used in the long-term range for operating temperatures up to 570°C.

Possible Hardness: 28 – 37 HRC.
Dependent on layers and hardness of the base material

Recommendation for

1.2311, 1.2312, 1.2162, 1.2738, 1.2764; 1.2767
25CrMo4, 13CrMo 4 4, GS-17 CrMo5 5, 42CrMo4,
AIS4130, AISI4140

Rework

The weld can be eroded, structured, polished, chrome-plated, etched, nitrated, annealed and hardened.

Material analysis in %

C	Si	Mo	Mn	Cr	Fe
0,1	0,5	0,5	0,8	1,2	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	>480
Tensile strength Rm	N/mm ²	>570
Elongation A (Lo = 5do)	%	>22
Hardness untreated	HRC	27 - 38

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe10NiMo

EN ISO 16834-A: G/S 69 4 M21 Mn3Ni1CrMo, AWS A5.28 ER100S-G; (M.-No.: special alloy)
EN12534 G 3 CrNi1 Mo

is selected for changes to and repairs of cavities. Besides the optimized corrosion resistance and functional hardness the weld is suited for joint welding on coated fine grain steels.

Possible Hardness: 27 – 38 HRC.
Dependent on layers and hardness of the base material

Recommendation for

1.2311, 1.2312, 1.2162, 1.2738, 1.2764, 1.2767
St.50 – St.70, S550QL1-S690QL1; (N-A-XTRA 56; 63; 70); S700MC

Rework

The weld can be eroded, structured, polished, chrome-plated, etched, nitrated, annealed and hardened.

Material analysis in %

C	Si	Mn	Ni	Mo	Cr	V	Fe
0,1	0,6	1,6	1,4	0,3	0,3	0,1	Rest

(test certificates upon request)

Standard/Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	>690
Tensile strength Rm	N/mm ²	>750
Elongation A (Lo = 5do)	%	>21
Hardness untreated	HRC	27 - 38

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm
spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe15

EN ISO 21952-A G/W CrMo 2 Si; AWS SFA-5.28 ER90 S-B3; (M.-No.: 1.7384)

is preferred for changes to and repairs of mould cavities made of tempered materials 1.2311, 1.2312, 1.2162, 1.2738, 1.2764 and 1.2767. It is option to Fe10/Fe10Cr/Fe10NiMo because of different reactions to etching medium/acids.

Possible Hardness: 28 - 37 HRC.
According to working.

Recommendation for

1.2311, 1.2312, 1.2162, 1.2738, 1.2764, 1.2767
10 CrMo 9 10, GS – 12 CrMo 9 10 and similar

Rework

The weld can be eroded, structured, polished, chrome-plated, etched, nitrated, heat-treated and hardened.

Material analysis in %

C	Si	Cr	Mn	Mo	Fe
0,1	0,6	2,2	1,0	0,95	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	460
Tensile strength Rm	N/mm ²	640
Elongation A (Lo = 5do)	%	22
Hardness untreated	HRC	28 - 37

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm
spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe17

EN ISO 16834-A G/W 89 4 M21 Mn4Ni2CrMo ; AWS-A5.28: ER 110S-G

is used for joint welds as well as corrections on high-strength, tempered fine grained steels with a minimum tensile strength of 890 MPA.

Recommendation for

High-strength fine grained steel as XABO 90, S890Q, OS 1002 ASTM A709 Gr. 100 type B, E, F, H, Q, Weldom 900 E; N-A-TRA 55-70

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	Mo	Cr	Ni	Fe
0,10	0,7	1,7	0,50	0,30	2,20	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	880
Tensile strength Rm	N/mm ²	940
Elongation A (Lo = 5do)	%	16
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuSG2

EN ISO 14341-A G 42 4 C/M 3Si1; AWS/ASME sfa-5.18 ER70S-6, DIB 8559 SG2; M.-No. 1.5125

Low alloy laser filler wire for connecting and building-up on low alloy steels in vehicles, containers, machine tools and boiler construction. The weld is also crack resistant even by multi-layer welding.

The achievable hardness lies between 200 and 250 HB and is dependent on the processing and welding layers.

Recommended basis materials

S235JRG2 – S355J2 P235GH P265GH P295GH; fine grain up to S420N
St 35 - St 55, St 35.4 - St 55.4; StE255 - StE 380
GS 38 - GS 52 HI - HII, 17Mn 4, 19Mn

Material analysis in %

C	Si	Mn	Fe
0,10	0,8	1,40	Rest

(Test certificates upon request.)

Standard / Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	430
Tensile strength Rm	MPa	500
Elongation A (Lo = 5do)	%	22
Hardness untreated	HRC	

Following standard:

Laser welding wire

Rod: 333 mm / 1.000 mm special lengths upon request

Spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral laboratory. We cannot guarantee for the accuracy.

QuP20

AISI P20; M.-No.~1.2311

Is recommended for changes and repairs to heavy duty mould cavities made of materials 1.2311, 1.2312, 1.2162, 1.2738, 1.2764 und 1.2767

The Cr. content in the filler metal increases the tensile strength, edge retention and wear-resistance. Applicable for long term working at temperatures up to 570°C.

Reachable hardness between 38 - 46 HRC.

Dependent upon reworking and welding layers.

Recommended for base materials

1.2311, 1.2312, 1.2162, 1.2738, 1.2764; 1.2767
25CrMo4, 13CrMo 4 4, GS-17 CrMo5 5, 42CrMo4,
AISI4130, AISI4140

Reworking

The weld can be eroded, structured, polished, chrome-plated, etched, nitrated, tempered and hardened.

Material analysis in %

C	Si	Mo	Mn	Cr	Fe
0,36	0,50	0,40	0,80	1,70	Rest

(test certificates upon request.)

Standard / Mechanical Values

Inert gas	Argon	Value of the pure weld
Temperature	20°C	
Yield point Re	N/mm ²	>480
Tensile strength Rm	N/mm ²	>570
Elongation A (Lo = 5do)	%	>22
Untreated hardness	HRC	38 - 46

Following standard:

Laser welding wires

Rod: 333 mm / 1.000 mm

Spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

Build-up wire

Colour assignment: orange Tri-q packs[®]

QuFe11

QuFe12

QuFe13 / QuFe13 blank

QuFe14

QuFe19

QuFe20

QuFe21

QuFe23

QuFe30

QuFe31

QuFe47

QuFe51

QuFe60

QuFe72

Qu7734

Qu819

QuEISI



QuFe11

(M.-No. special alloy); DIN EN 14700 S Fe 13

is due to its excellent hot wear resistance and toughness used for tough, hot wear resistant build-ups on hot working tools and structural parts, which are subjected to impact, compression and abrasion at elevated temperatures, such as forging dies and hammers, die cast moulds, hot cutting knives, guides, vacuum chambers, continuous casting rolls.

Possible Hardness: 38 – 42 HRC.
Dependent on layers and hardness of the base material

Recommendation for

1.2343, 1.2344, 1.2367, 1.2606, 1.2764 – 1.2767

Rework

The weld can be eroded, structured, polished, chrome-plated, etched, nitrated, annealed and hardened.

Material analysis in %

C	Si	Mn	Cr	Mo	Fe
0,1	0,4	0,6	6,5	3,3	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	
Tensile strength Rm	N/mm ²	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	38 - 42

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe12

EN 14700: S Fe 3; DIN 8555 M/WSG3-Gz-45-T (M.-No. 1.2567)

is suitable for layer welding of and repairs to warm-working tools made from low-alloyed and non-alloyed steels. The weld is stable at temperatures, has a high wear resistance and annealing durability.

The microstructure of the un-annealed weld is martensitic with remains of austenite and carbides.

Possible Hardness: 42 - 48 HRC.
Dependent on layers and hardness of the base material.

Recommendation for

1.2343, 1.2344, 1.2367 - 1.2606, 1.2764 – 1.2767

Rework

The weld can be heat treatable, nitrated, chrome-plated, polishable and machined.

Material analysis in %

C	Si	Mn	Cr	V	W	Fe
0,3	0,3	0,3	2,3	0,5	4,0	Rest

(test certificates upon request.)

Standard/Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	
Tensile strength Rm	N/mm ²	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	42 - 48

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe13

EN 14700: S Fe 8; (M.-No. special alloy)

is due to the excellent hot wear resistance and toughness used for highly stressed hot working tools, which are simultaneously subjected to high mechanical, thermal and abrasive loads, such as aluminum die casting moulds and resin molds. These alloys guarantee a good resistance against corrosive acting plastic. Also when multi-layer welding, the weld is free of cracks. Machined with carbide tools.

Possible Hardness: 42 – 46 HRC.
Dependent on layers and hardness of the base material.
Only under certain conditions can it be hardened.

Recommendation for basic materials

1.2343, 1.2344, 1.2082, 1.2083, 1.2367, 1.2606

Rework

The weld metal can be polished and heat treated.
It can be nitrated, chrome-plated, CVD coated, and machined.

Material analysis in %

C	Si	Mn	Cr	Mo	Ti	Fe
0,25	0,5	0,7	5,0	4,0	0,6	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	
Tensile strength Rm	N/mm ²	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	42 - 46

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe13 blank

EN 14700: S Fe 8; (M.-No. special alloy)

is due to the excellent hot wear resistance and toughness used for highly stressed hot working tools, which are simultaneously subjected to high mechanical, thermal and abrasive loads, such as forging dies and hammers. This alloy guarantees good stability besides corrosive processing plastic. Also free of cracks when multilayer welding.

Workable using carbide tools.

Achievable hardness is up to 42 – 46 HRC according to development and layer.

Can be hardened under certain conditions.

The weld is non copper-coated.

Recommendation for basic materials

1.2343, 1.2344, 1.2082, 1.2083, 1.2367, 1.2606

Rework

The weld can be polished, heat treated, nitrated, chrome-plated, CVD coated and machined.

Material analysis in %

C	Si	Mn	Cr	Mo	Ti	Fe
0,25	0,5	0,7	5,0	4,0	0,6	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	
Tensile strength Rm	N/mm ²	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	42 - 46

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe14

DIN EN ISO 21952-A: G/W CrMo5Si; AWS 5.9 ER502; A.28-96:ER80S-B6; M.-No.: 1.7373

is suitable for build-up and joint welding and repairs to warm working tools made from non-alloy or low-alloy steels. The weld can be used up to temperatures of 600°C. High resistance to corrosive mediums. A suitable alternative to Fe13 when a lower C-content and a higher Cr-content, is required. First layer hardness up to approx. 43 HRC, according to working.

Recommendation for

1.2082, 1.2083, 1.2343, 1.2344, 1.2367, 1.2606, 12 CrMo 19 5

Rework

The weld can be annealed, nitrated, chrome-plated, CVD plated, polished and machined.

Material analysis in %

C	Si	Mn	Mo	Cr	Fe
0,06	0,4	0,3	0,5	5,3	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	500
Tensile strength Rm	N/mm ²	600
Elongation A (Lo = 5do)	%	>18
Hardness untreated	HRC	33 - 43

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuFe19

DIN EN ISO 21952-A: G/W CrMoWV12Si, AWS A5.9: ~ER505; M.-No. 1.4937

is preferred for changes and repairs on highly heat resisting, heat treatable 12% Cr-steels (similar and related). For operating temperatures up to 650°C.

Recommended for basic materials

1.4922, 1.4935, 1.4923, 1.4926, 1.4913, 1.4931

Rework

The weld can be structured, polished, chrome-plated, nitrated, heat treated, and hardened.

Material analysis in %

C	Si	Cr	Mn	Mo	V	W
0,21	0,4	11,1	0,6	0,90	0,3	0,45

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	590
Tensile strength Rm	N/mm ²	700
Elongation A (Lo = 5do)	%	15
Hardness untreated	HRC	45 - 48

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuFe20

(M.-No. special alloy) DIN EN 14700 S Fe 6

is used for highly wear resistant build-ups on machine parts and tools, subject to heavy abrasion and compression combined with moderate impact at elevated temperatures, such as slide, guide and sealing surfaces. Low wear when using fiber-glass re-enforced plastics.

Possible Hardness: 53 - 58 HRC.
Dependent on layers and hardness of the base material

Recommendation for basic materials

1.2082, 1.2083, 1.2311, 1.2312, 1.2343, 1.2344, 1.2367, 2606, 1.2764 – 2767, 1.2842
1.2738, on multilayer coatings, cache coating with **QuFe65** / **QuNi26**

Rework

The weld can be heat treated, nitrated, chrome-plated, CVD coated, polished and machined.

Material analysis in %

C	Si	Mn	Cr	Mo	Ti	Fe
0,35	0,3	1,2	7,0	2,2	0,3	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	
Tensile strength Rm	N/mm ²	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	53 - 58

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe21

(M.- No.: special alloy) DIN EN 14700 S Fe 6

is 100 % comparable to the QuFe20. But the QuFe21 has no copper coating. In this case there are advantages for highly polished moulds. Furthermore it is used for highly wear resistant build-ups on machine parts and tools which are subject to heavy abrasion and compression combined with moderate impact at elevated temperatures, such as slide, guide and sealing surfaces.

Low wear when using fiber-glass re-enforced plastics.

Possible Hardness: 53 - 58 HRC.

Dependent on layers and hardness of the base material

Recommendation for

1.2082, 1.2083, 1.2311, 1.2312, 1.2343, 1.2344, 1.2367, 2606, 1.2764 – 2767, 1.2842

On multilayer coatings, cache coating with **QuFe65** / **QuNi26**

Rework

The weld can be polished, heat treatable, nitrated, chrome-plated, CVD-coated and machined.

Material analysis in %

C	Si	Mn	Cr	Mo	Ti	Fe
0,35	0,3	1,2	7,0	2,0	0,3	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	
Tensile strength Rm	N/mm ²	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	53 - 58

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe23

DIN EN 17400: S Fe 3; DIN 8555 MSG 3-55 T (M.- No.: 1.2343)

is used for wear-resistant coatings on hot working steels and heat resistant tools for operating temperatures up to 550°C, for example for hot shear blades, bottom dies, die casting molds, etc.

Achievable hardness is up to 53 – 58 HRC depending on treatment and layer.

Recommendation for

1.2082, 1.2083, 1.2311, 1.2312, 1.2343, 1.2344, 1.2358, 1.2367, 2606, 1.2764 – 2767, 1.2842
1.2738, on multilayer coatings, cache coating with **QuFe65** / **QuNi26**

Rework

The welding can be polished, heat treated, nitrated, chrome-plated, CVD-plated and machined.

Material analysis in %

C	Si	Mn	Cr	Mo	V	Fe
0,38	1,0	0,4	5,0	1,1	0,45	Rest

(test certificates upon request)

Standard/ Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	
Tensile strength Rm	N/mm ²	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	53 - 58

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe30

EN 14700: S Fe 8; DIN 8555: MWSG 6-GZ-60; M.- No.: 1.4718

is especially applicable for the repairing of compression molds, blanking and cutting tools. The hard and tough weld is resistant against high edge load and shows excellent edge retention. Also applicable for multi layer welding.

Possible Hardness: 54 - 60 HRC.
Dependent on conditioning and layers.

Recommendation for:

1.2080, 1.2379, 1.2436, 1.2601 and similar

Rework

The weld can be heat treated, nitrated, case-hardenable, chrome-plated, CVD coated

Material analysis in %

C	Si	Mn	Cr
0,5	3,0	0,5	9,5

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	54 - 60

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe31

EN 14700 : S Fe 3; DIN 8555: W/MSG 3-GZ-60 ; M.- No.: 1.2606

is used for reparings and hardfacings on cold and warm working tools, which need to hold the high hardness and abrasion resistance. In comparison with **QuFe30**, this laser welding wire is more resistant against abrasive wear.

High edge stability during dynamic stress.

Also used for resin molds with increased edge wear.

Possible Hardness: 54 - 60 HRC

Dependent on layers and hardness of the base material

Recommendation for

1.2080, 1.2363, 1.2379, 1.2436, 1.2601, 1.2767, 1.2343 and similar

Rework

Mechanical grinding possible, polish able, limited chrome-plated, heat-treatable. NON-etchible.

Material analysis in %

C	Si	Mn	Cr	Mo	V	W	Fe
0,35	1,0	0,4	5,25	1,5	0,3	1,3	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	54 - 60

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm special length on request

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

Data sheet

QuFe47

(Special material)

is mainly used for the repairing and building up of cast iron containing spheroidal graphite.

The weld is crack resistant even after multilayer welding. Resistant against impact loading on edges and corners. The weld can be worked without having a buffer layer.

The attainable hardness in the 2 layer is around 55 HRC.

Hardness values lie between 54 - 57 HRC.
Depending upon the working and welding layers.

Recommendation for basic materials

Nodular graphite cast iron

Material analysis in %

C	Si	Mn	Ni	Fe
0,3	0,8	3,4	1,9	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	54 - 57

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe51

EN 14700: S Fe 2; DiN 8555: MSG 2-GZ-500

is preferably used for repairing and building-up tasks. The welding material is abrasion-resistant and also when layer-welding, free from cracks.

The achievable hardness is approx. 50-53 HRC.
This is dependent upon the treatment and number of layers.

Recommendation for base materials:

Nitridable steel, case-hardened-steel, low and medium-alloyed heat-treatable-steel

Rework

Heat-treatable, nitridable, chrome-plateable

Material analysis in %

C	Si	Mn	Cr
1,1	0,5	2,0	1,9

(test certificates upon request.)

Standard / Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	50 - 53

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe60

DIN EN 14700: S Fe 4; AWS(AISI J438b) : M7 ; DIN 855: MSG4 –60 – S; M.- No.: 1.3348

is used for build-up and repair welding on new parts and repairs of cutting tools, e.g. drills, milling tools, reamers, lathe chisels and cutting tools. Furthermore suitable for hard-facing on tool parts and edges vulnerable to wear. Pre-heating is recommended, the first layer is free from cracks even on critical steels.

Possible Hardness: 58 - 63 HRC
Dependent on layers and adaption

Recommendation for

Specially suitable for 1.3316, 1.3333, 1.3344, 1.3346

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	Cr	Mo	W	V	Fe
1,00	0,30	0,4	4,00	8,30	1,90	1,80	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	
Elongation A (Lo = 5do)	%	
Hardness untreated	HB	58 - 63

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe72

EN14700 S ZFe5; DIN 8556; W/MSG 3-GZ-350-T; M.-No.: 1.6356

is used for repair, preventive maintenance and production of highly stressed cold and hot working tools, such as punching tools, cold shears for thick materials, drawing-, stamping- and trimming tools, hot cutting tools, Al-die cast moulds, plastic moulds, cold forging tools. The weld deposit is, in as-welded condition, easily machinable and the subsequent age hardening optimizes the resistance to wear and alternating temperatures.

Hardness of the pure weld metal

Untreated: 32 - 35 HRC
After age hardening 3 - 4 h / 480° C 50 - 54 HRC

Recommendation for

Cold- and warm working steel with high stress

Rework

The weld can be age hardened, nitrated, chrome-plated, CVD-coated, polished and machined

Material analysis in %

C	Mo	Ni	Co	Ti	Al	Fe
0,02	4,0	18,0	12,0	1,6	0,1	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	885
Tensile strength Rm	MPa	980
Elongation A (Lo = 5do)	%	20
Hardness untreated	HB	See above

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm
spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

Qu7734

(M.-No. 1.7734)

The weld offers a high ductility and an excellent weldability.

Material analysis in %

C	Si	Mn	P	S	Cr	Mo	V	Fe
0,15	0,20	1,00	0,020	0,015	1,40	0,90	0,25	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	750
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

Qu819

EN ISO 14700 S Fe 3, 819BS, 35NCD16

Build-up welding on resin moulds, drop-forging tools and dies.
The material has a high accuracy in dimension whilst having a high hardness and stability.

Recommended base materials

35NCD16; 45NiCr-Mo18; 60NiCrMo11 and similar
1.2767; 1.2721

Reworking

Typical for the material

Material analysis in %

C	Si	Mn	Mo	Cr	Ni	Fe
0,35	0,30	0,45	0,25	1,7	3,7	Rest

(test certificates upon request.)

Standard / Mechanical Values

Inert gas	Argon	Value of the pure weld
Temperature	20°C	
Yield point Re	N/mm ²	
Tensile strength Rm	N/mm ²	
Elongation A (Lo = 5do)	%	12 - 19
Untreated hardness	HRC	46 - 48

Following standard:

Laser welding wires

Rod: 333 mm / 1.000 mm special lengths upon request

Spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

(Special material) patent protected

QuEISI is a special alloy that is characterised by the exceptionally high hardness that can be achieved. **QuEISI** can be used for repair and build-up, especially on high-performance tool steels. Crack-proof build-up welding on many ferrous materials is possible.

Achievable hardness values are 62 - 66 HRC, depending on machining and welding layers.

Recommendation for base material

High performance tool steels, low to high alloy steels
Good experience on 1.3343 - 1.3348, as well as on PM steels and GJS cast iron

Rework

Chrome-plated

Material analysis in %

C	Cr	Mo	V	Fe
1,0	4,0	8,0	2,0	Rest

(test certificates are available on request at any time)

Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	
Tensile strength Rm	N/mm ²	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	62 - 66

Form of supply

Rod: 333 mm / 1.000 mm - Special lengths on request
Bobbin: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

Stainless

Colour assignment: light blue Tri-q packs[®]

QuFe18

QuFe35

QuFe44

QuFe50

QuFe52

QuFe53

QuFe54

QuFe55

QuFe65

QuFe66

Qu4351

Qu4370

Qu4435

Qu4462

Qu4519

Qu4541

Qu4550

Qu4842

Qu17-4PH

QuSuperduplex



QuFe18

EN ISO 14343-A G/W (13) AWS A5.9: ER 410; M.-No. ~1.4009

is suitable for build-up welding on structural parts in water, gas and steam atmosphere and similar 13% martensite Cr-steels where a high corrosion resistance is needed. The weld deposit is polish able. Coatings on unalloyed and low-alloyed steels up to temperatures till 450° C.

Recommendation for

1.4000 – 1.4006, 1.4008, AISi 410, 420 building-ups on steels like 1.2083, 1.2085

Rework

The weld can be polished and machined.

Material analysis in %

C	Si	Mn	Ni	Cr
0,08	0,8	0,65	0,4	12,5

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	380
Tensile strength Rm	N/mm ²	550
Elongation A (Lo = 5do)	%	15
Hardness untreated	HB	150 - 225

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe35

EN 12072: G Z 17Mo; EN 14700: S ZFe7; EN ISO 14343-A: G/W 17Mo ; AWS A5.9: ~ER430; M.- No.: 1.4115

is used for wear-resistant cladding on hot working and high-tensile steels.
The martensitic weld deposit is wear resistant also at elevated temperatures.

Recommendation for

1.2085 and similar martensitic GW

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	Cr	Mo	Fe
0,22	0,7	0,7	17,5	1,2	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	490
Tensile strength Rm	MPa	690
Elongation A (Lo = 5do)	%	15
Hardness untreated	HRC	39 - 45

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe44

EN ISO 14343-A G/W 19 12 3 I(Si); AWS A-5.9 ER316L(Si) M.- No.: 1.4430

The material is suitable for joining stainless steel and heat resistant steels, non-corrosive build-up welding for e.g. apparatus and components for the food industry, chemical industry, textile and fuel industry.

Recommendation for:

1.4401, 1.4404, 1.4571, 1.4580, 1.4583

Material analysis

C	Si	Mn	Cr	Ni	Mo
0,02	0,85	1,8	18,5	12,5	2,6

(Test certificate upon request)

Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	175
Tensile strength Rm	MPa	450
Elongation A (Lo = 5do)	%	30
Hardness untreated	HRC	

Following standard:

Laser welding wires

Rods: 333 mm / 1.000 mm special lengths upon request

Spools: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe50

EN ISO 14343-A: GW 19 12 3 Nb Si; ASTM/AWS/SFA-5.9: ER 318 Si; M.- No.: 1.4576

is used for joint and build-up welding on stabilized, similar type chemical resistant CrNiMo-steels, found in chemical vessels and apparatus constructions for uses at temperatures between -196°C and +400°C

Recommendation for

1.4401, 1.4404, 1.4435, 1.4436, 1.4571, 1.4573, 1.4580, 1.4581, 1.4583

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	Cr	Ni	Mo	Nb	Fe
0,03	0,4	1,5	19,0	12,0	3,0	0,55	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	450
Tensile strength Rm	MPa	640
Elongation A (Lo = 5do)	%	30
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuFe52

EN ISO 14343-A: W/G 23 12 L Si; AWS SFA-A5.9 ER 309 L (Si); M.- No.: 1.4332

is used for joint and build-up welding in chemical apparatus and vessel constructions with working temperatures of up to 350°C. Cladding on non- and low-alloyed base steels and dissimilar joints.

Recommendation for

1.4306, 1.4401, 1.4404, 1.4541, 1.4550, 1.4571, 1.4580 with carbon steels

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	Cr	Ni	Fe
0,02	0,4	1,8	23,0	13,5	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	430
Tensile strength Rm	MPa	600
Elongation A (Lo = 5do)	%	31
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuFe53

EN ISO 14343-A W Z17MoH/GZ17MoH AWS A5.9 ER430 mod; M.- No.: 1.4122

The material is suitable for joining and building-up repairs to the same or similar stainless chrome steels and cast steels.

It is also suitable for application to sealing surfaces on gas, water and steam fittings made of non-alloyed steels and up to a working temperature of 450°C

Recommendation for

1.4122 and other similar 17% Chrome-Steels

Material analysis

C	Si	Mn	Mo	Cr	Ni
0,40	0,50	0,45	1,1	16,5	0,5

(Test certificates upon request)

Standard mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	550 after heat treatment 760° / 2h
Tensile strength Rm	MPa	750 after heat treatment
Elongation A (Lo = 5do)	%	12 after heat treatment
Hardness untreated	HRC	47 - 52

Following standard:

Laser welding wires

Rods: 333 mm / 1.000 mm special lengths upon request

Spools: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe54

EN ISO 14343-A: G 19 9 L Si / W 19 9 L Si AWS/SFA-5.9: ER 308LSi ; M.- No.: 1.4316

The material is suitable for producing corrosion-resistant joints and building-up repairs to the same low-carbon and stabilized 18/8-CrNi(N)-steels/cast steels as well as the same or similar low-temperature austenite CrNi steels/cast steels.

The material is tough up to -196°C. Stainless.

IK resistant. (Wet corrosion up to 350°C)

The worked-on material is used for parts or equipment in the medical branch, the food industry, the oil, soap, synthetic fibres, film and photo industry.

Recommendation for:

1.4301, 1.4306, 1.4550, 1.4319, 1.4541, 1.4311, 1.4551, 1.4552

Material analysis

C	Si	Mn	Cr	Ni
0,02	0,85	1,75	19,0	9,5

(Test certificates upon request)

Standard mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	315
Tensile strength Rm	MPa	540
Elongation A (Lo = 5do)	%	35
Hardness untreated	HB	

Following standard:

Laser welding wires

Rods: 333 mm / 1.000 mm special lengths upon request

Spools: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe55

EN ISO 14343-A W 19 9 Nb Si / G 19 9 Nb Si AWS A5.9 ER347Si ; M.- No.: 1.4551

The material is suitable for corrosion resistant joining and building-up welds on same or similar stainless heat-resistant steels as well as austenite CrNi steels / cast steels. Stainless. IK resistant (wet corrosion up to 400°C)

The worked-on material is used for parts or equipment in the medical branch, the food industry, the oil, soap, synthetic fibres, film and photo industry.

Recommendation for:

1.4301, 1.4306, 1.4541, 1.4310, 1.4550, 1.4552, 1.4319, 1.4303

Material analysis

C	Si	Mn	Cr	Ni	Nb
≤0,06	0,90	1,3	20,0	9,5	12xC

(Test certificates upon request)

Standard mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	390
Tensile strength Rm	MPa	590
Elongation A (Lo = 5do)	%	30
Hardness untreated	HB	

Following standard:

Laser welding wires

Rods: 333 mm / 1.000 mm special lengths upon request

Spools: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuFe65

WN ISO 143434-A W/G 29 9; AWS A5.9 : ER312; M.- No.: 1.4337

is used for joint and build-up welding of steels of difficult weld ability, cushioning layers and joining of cold and hot working steels. Scale resistant up to 1.150°C, stainless (wet corrosion up to 300°C). High, warm crack-resistance; good toughness at high elastic limit. Tough joint between dissimilar materials.

Recommendation for

Joining of dissimilar material;
Austenitic – ferrite – crack resistant - corrosion-resistant

Rework

The weld can be warm and cold hardened, chrome-plated, polished and machined

Material analysis in %

C	Si	Mn	Cr	Ni	Fe
0,10	0,4	1,80	29,0	9,0	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	600
Tensile strength Rm	MPa	800
Elongation A (Lo = 5do)	%	20
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuFe66

EN ISO 14343-A G/W (17) AWS A5.9: ~ER 430; W.-Nr. 1.4015

The material is suitable for build-up welding on construction parts in water, gas and steam atmospheres and similar 17 % martensitic chrome steels where corrosion resistance is required. The weld can be easily polished. The material can be applied to non-alloy and low-alloyed steels up to a temperature of 450°C.

Recommended for:

1.4057, 1.4059; 1.4740; 14742, AISI 430 Application to steels like 1.2083, 1.2085

Re-working

The weld is easily polished and worked on.

Material analysis

C	Si	Mn	Ni	Cr
0,08	0,75	0,70	0,20	17,5

(test certificates upon request.)

Standard / Mechanical Values

Protective gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield point Re	N/mm ²	300
Tensile strength Rm	N/mm ²	450
Elongation A (Lo = 5do)	%	15
Untreated hardness	HB	175

Following standard:

Laser welding wires

Rod: 333 mm / 1.000 mm special lengths upon request

Spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

Qu4351

DIN EN ISO 14343-A: G/W 13 4; ISO 14343-B SS410NiMo; AWS/SFA5.9 ER 410 NiMo; M.-No. 1.4351

The welding is suitable for joint and build-up weldings of similar 13% Cr and CrNi steels. Resistant to corrosion similar to 13% Cr (Ni) steels and cast steel. Also suitable for build-up welding on non-alloy steels. (please check the mixture).

Recommended for:

1.4002, 1.4313, 1.4317; 1.4414 and other 13%Cr-steels

Material analysis in %

C	Si	Mn	Cr	Ni	Mo
0,03	0,30	0,40	13,0	4,0	0,5

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	600
Tensile strength Rm	N/mm ²	800
Elongation A (Lo = 5do)	%	15
Hardness untreated	HB	250

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm special lengths upon request

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory determined. For the accuracy we cannot guarantee.

Qu4370

En Iso 14343-A; G/W 18 8 Mn, ISO 14343-B: ~SS307; AWS/SFA-5.9: ER307 M.- No.: 1.4370

The welding is suitable for joint and build-up weldings of similar steels, austenitic manganese steels, defence technology steels and heat-resistant Cr- and CrNi-steels (for example construction of exhaust systems) as well as gamma iron-ferrite-compounds (black-white-compounds) with operating temperatures up to 300°C. The weld is resistant to scaling up to approx. 850°C. There is no adequate resistance against sulfur-containing gases by temperatures over 500°C. Resistant against seawater and dilute acids. The weld is work-hardened and wear-resistant, good for cache layers and build-ups. Weld metal hardness: untreated approx. 180 HB, approx. 41 HRC after cold work hardening.

Material analysis in %

C	Si	Mn	P	S	Cr	Ni
0,08	0,95	7,0	0,035	0,020	18,0	8,0

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	400
Tensile strength Rm	MPa	650
Elongation A (Lo = 5do)	%	35
Hardness untreated	HB	180

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

Qu4435

M.- No.: 1.4435 ; DIN EN 10028-7; X2 CrNiMo 18-14-3

The welding is a non-rusting, austenitic chrome-nickel-molybdenum-steel and is distinguished by a higher resistance against all kinds of corrosion and in addition by it's excellent condition of surface.

Recommendation for

1.4435

Material analysis in %

C	Si	Mn	P	S	Cr	Mo	Ni
0,030	1,0	2,00	0,045	0,015	17,0-19,0	2,50-3,00	12,5-15,0

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	220
Tensile strength Rm	MPa	670
Elongation A (Lo = 5do)	%	15
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

Qu4462

EN ISO 14343-A G/W 22 9 3 ML; AWS/ASME SFA-5.9; M.- No.: 1.4462

The welding is suitable for joint weldings of nonrusting and ferretic-austenitic duplex steels.

IK-constant (Wetcorrosion up to 250°C)

It has a good resistance against localised corrosion and corrosion susceptibility by stress cracking at chloric and sulfur-containing media.

Recommended for:

1.4347, 1.4462, 1.4417, 1.4460, 1.4582

Material analysis in %

C	Si	Mn	P	S	Cr	Mo	Ni
0,03	1,00	2,00	0,035	0,015	22,00	3,00	9,00

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	480
Tensile strength Rm	MPa	680
Elongation A (Lo = 5do)	%	25
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

Qu4519

EN ISO 14343-A: GW 20 25 5 Cu L; AWS7ASME SFA-5.9: ~ER 385 M.- No.: 1.4519

Joint and build-up welding on similar steels. Corrosion resistant on non-oxidated media (up to 90% sulfuric acid, phosphoric acid and organic media. Resistant against pitting corrosion up to 1000°C (air)).

Acceptable operating temperature from -10°C up to +350°C

Recommended for:

1.4500, 1.4536, 1.4539, 1.4505, 1.4506

Material analysis in %

C	Si	Mn	P	S	Cr	Mo	Ni	Cu
0,02	0,70	2,00	0,025	0,020	20,0	5,00	25,0	1,50

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	320
Tensile strength Rm	MPa	510
Elongation A (Lo = 5do)	%	25
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

Qu4541

DIN EN 10088-3/5 1.4541 X6CrNiTi18-10; AISI 321; M.- No.: 1.4541

Instruments and building elements of the food industry, luxury food, film and photo industry as well as articles of daily use and power station construction.

The resistance against intercrystalline corrosion also in welded form is pretty good by the Ti-alloy.

Recommended for

1.4541

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	P	S	Cr	Ni	Ti
0,08	1,00	2,00	0,045	0,015	18,0	10,5	0,40

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	190
Tensile strength Rm	MPa	500
Elongation A (Lo = 5do)	%	30
Hardness untreated	HRC	215

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

Qu4550

DIN EN 10028-7 X6CrNiNb 18-10; AISI 347; M.- No.:1.4550

The material shows of a good resistance against intercrystalline corrosion also in welded form.

Material analysis in %

C	Si	Mn	P	S	Cr	Ni	Nb
0,08	0,80	1,50	0,045	0,015	18,0	10,5	0,80

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	205
Tensile strength Rm	MPa	520
Elongation A (Lo = 5do)	%	35
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

Qu4842

EN ISO 14343-A: G/W 25 20 ; AWS/ASME SFA5.9; ER310; M.- No.: 1.4842

The weld is suitable for similar, heat-resistant rolled, forged and cast steels. Full austenitic deposit metal. Preferred material against attacks of oxidized, azotic as well as gases with a low oxygen content. Joint welding on heat-resistant Cr-Si-Al-steels which are subject to sulphurous gases. Resistant to scaling up to 1.200°C. Tough at sub-zero temperature up to -196°C. The temperature range between 605° and 900°C should be avoided because of the danger of brittleness.

Recommended for

1.4841, 1.4845, 1.4828, 1.4840, 1.4846, 1.4826

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	Cr	Ni	Fe
0,12	0,50	1,75	25,0	20,0	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	315
Tensile strength Rm	MPa	490
Elongation A (Lo = 5do)	%	25
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory determined. For the accuracy we cannot guarantee.

Qu17-4PH

EN ISO 14343-B: 630 17-4Ph; AWS/SFA 5.9 : ER630 (17-4PH), M.- No.: ~1.4542

is a non-rusting martensitic precipitation hardening Cr-Ni-Cu-steel with a high tensile strength and toughness. Through cold forming and subsequent aging, the tensile strength can be increased. The basic material is used in the aerospace industry, machine building industry, power engineering and measuring & control technology.

Reachable hardness can be 37-40 HRC, depends on the rework and welding layers.

Recommended for:

1.4540 GX4CrNiCuNb16-4, 1.4542 X5CrNiCuNb16-4, 1.4548 X5CrNiCuNb17-4-4

Rework

Material-typical treatment

Material analysis

C	Si	Mn	Cr	Ni	Cu	Nb	Fe
0,04	0,25	0,4	15,30	4,50	3,25	0,30	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	850
Tensile strength Rm	MPa	900
Elongation A (Lo = 5do)	%	10
Hardness untreated	HB	320

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuSuperduplex

ISO 14343-A : G/W 25 9 4 N L / AWS A5.9: ER 2594 ~1.4410

For welding in offshore areas.

Stainless, IK resistant material which because of its high CrMo(N) content, has a high resistance to pitting and stress corrosion cracking.

Recommended for:

1.4410; 1.4515; 1.4517; 1.4576; 1.4593; 1.4501

25% Cr. Superduplexsteel Zeron 100; Falc 100; SAF 25/07

Material analysis

C	Si	Mn	N	Mo	Cr	Ni
0,02	0,50	0,80	0,2	3,7	25,0	9,0

(Test certificates upon request.)

Standard / Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	670
Tensile strength Rm	MPa	850
Elongation A (Lo = 5do)	%	25
Hardness untreated	HRC	

Following standard:

Laser welding wire

Rod: 333 mm / 1.000 mm special lengths upon request

Spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

Nickel-Base-Wire

Colour assignment: black Tri-q packs[®]

QuNi22

QuNi24

QuNi25

QuNi26

QuNi27

QuNi29

QuNi36

QuNi40

QuNi41

QuNi43

QuNi71

QuNi76

QuNi77



QuNi22

EN ISO 18274 Ni 6022; AWS A5.14 ERNiCrMo-10 ; DIN 1736: SG-NiCr22Mo14W ; (M.- No. 2.4635)

For high-corrosion-resistant build-up welding on low-alloyed steels.
Joint-welding of similar base materials.
Good corrosion-resistance to acetic acid or contaminated sulphuric acid.

Recommendation for

2.4602 or similar; ASTM, F574, B619, B622 and B626,
Incoloy825, Hastelloy C4, C22 and C-276

Rework

Material- typical treatment

Material analysis in %

C	Si	Mn	Cr	Mo	Fe	Ni	V	W	Cu	Co
<0,01	<0,1	<0,5	21,0	13,0	3,0	Rest	<0,2	3,0	<0,2	<2,5

(test certificates upon request.)

Standard / Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	500
Tensile strength Rm	N/mm ²	740
Elongation A (Lo = 5do)	%	44
Hardness untreated	HV	220

Following standard:

Laser welding wires

Rod: 333 mm / 1.000 mm special lengths upon request

Spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuNi24

EN ISO 18274 S Ni 6625; AWS/ASME SFA-%.14 ER-NiCrMo-3; Din 1736 SG NiCr 21 Mo 9 Nb
M. -No. 2.4831, ~Inconel625

is suitable for welding similar high strength, high corrosion resistant nickel based alloys. It is possible to join ferrite and austenitic steels and to build up steels. This alloy is used in ranges of aerospace and chemical industry. The weld is characterized by good long term working life, corrosion resistance, clink and heat crack guaranty. It shows a high stability and toughness, also at temperatures up to 1100°C. Tough at sub-zero temperature up to -196°C. An extraordinary durability is achievable through the alloy elements Mo and Nb in the NiCr-matrix. Austenitic structure is non-convertible.

Recommendation for

1.4529, 1.4539, 2.4856, 2.4858, ISO 20172: NiCr22Mo9Nb with group 1.1/ 1.2

Rework

material-typical treatment

Material analysis in %

C	Si	Mn	Cr	Mo	Nb	Fe	Ni
<0,03	0,25	0,20	22,0	9,0	3,5	1,0	Basis

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	500
Tensile strength Rm	N/mm ²	760
Elongation A (Lo = 5do)	%	35
Hardness untreated		

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuNi25

DIN EN ISO 17274 S Ni 8065; M.-No. ~2.4858 AWS A 5.14 ERNiFeCR-; M.-No. ~2.4655

is used for joint and build-up welding of corrosion resistant steels as well as mixed connections. Application at fluid load of sulfuric acid and phosphoric acid dilution. Titanium stabilized

Ni25 is a full austenitic weld with high resistance against corrosion susceptibility by stress cracking and localized corrosion in chloric media. The weld is non-corroding in seawater.

Recommendation for

1.4500, 1.4529, 1.4539, 1.4563, 2.4619, 2.4858

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	Cr	Ni	Mo	Cu	Fe	Ti
<0,02	<0,5	0,9	21,5	42,0	3,0	2,0	Rest	1,0

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	
Tensile strength Rm	N/mm ²	~ 550
Elongation A (Lo = 5do)	%	~ 30
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuNi26

EN ISO 18274 : S Ni 6082 – NiCr20Mn3Nb, AWS 5.14 ERCrNi-3, M.- No.: 2.4806

for viscous connections and coatings on heat resistant Cr- and CrNi-steels and Ni-nickel-base alloy. Non-rusting, heat resistant, highly heat resisting, tough at sub-zero temperatures up to -269°C, adequate for austenite-ferrite-connections. Austenitic. Microstructure is nonconvertible.

Recommendation for:

2.4816, 2.4817, 2.4851, 1.4876, 1.4958; 1.6907
Incoloy 800; Incoloy 800H; Incoloy 800HT; UNS N06600; UNS N06601; UNS N06075;
UNS N10665; UNS N08800

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	Cr	Nb	Fe	Ni
<0,02	<0,2	3,0	20,0	2,7	0,8	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
0,2 % Yield strength Rp	N/mm ²	420
Tensile strength Rm	N/mm ²	660
Elongation A (Lo = 5do)	%	40
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuNi27

M.- No.: ~2.4066; UNS ~2200

is suitable for the joining and layer welding of commercially available pure nickel qualities including LC nickel, nickel alloys and nickel plated steels.

These types of materials are used in pressure vessels and apparatus manufacturing in the chemical industry, the food industry and in the energy industry where good corrosive and temperature characteristics as well as conductivity are required.

Here we have a pure nickel alloy Ni99,2 when compared with **QuNi40**.

Recommendation for base materials

2.4052, 2.4053, 2.4060, 2.4061, 2.4066, 2.4068

Reworking

Material-typical treatment

Material analysis in %

C	Si	Mn	Cu	Fe	S	P	Ni + Co
<0,1	<1,0	0,35 max.	<0,25	<0,4	0,015 max.	0,035 max.	>99,20

(test certificates upon request.)

Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	125
Tensile strength Rm	MPa	370
Elongation A (Lo = 5do)	%	40
Hardness untreated	HRC	

Delivery form:

Laser welding wire

rods: 333 mm / 1.000 mm special lengths upon request

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuNi29

(M.-No. ~2.4052)

is used for joint and build-up welding of commercial pure nickel qualities including LC-nickel, nickel alloy and nickel-clad steels. These kind of materials are especially used in pressure vessels and apparatus construction in the chemical industry, food processing industry and energy industry, where it's required that materials have a high corrosion and temperature performance, as well a good conductivity.

In comparison with **QuNi40** this is a pure nickel alloy Ni99.7Mg.

Recommendation for:

2.4052, 2.4053, 2.4060, 2.4061, 2.4066, 2.4068

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	Cu	Fe	Mg	Ni
0,05	0,01	0,10	0,03	0,07	0,03 - 0,07	99,70

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuNi36

M.-No.: 1.3990; ~1.3912; ~INVAR36®; UNS K93600

The weld is a binary iron-nickel-alloy with an extremely low coefficient of thermal expansion. The content of carbon and manganese by simultaneous absence of other impurities has a great influence on this characteristic. By cold forming the material, the thermal expansion can be lowered. A step by step thermo treatment of the material generates a man-made aging, by which the coefficient of thermal expansion can be stabilized within a specific temperature range. The basic material 1.3912 is distinguished by an extremely low coefficient of expansion between -250°C and 200°C and at the same time, good ductility and toughness.

Recommendation for

Tester and check instruments (e.g. thermostat), constructions for the production, storage and transport of liquide gases, connectors for bolted assemblies for metals with different characteristics, forms of the production of CFK-parts (aircraft industry), frames, attachments and boxes for controll units at the construction of satellites

NILO36, Invar - qualities

Material analysis in %

C	Si	Mn	Ti	Cr	P	S	Nb	Ni	Fe
0,2	0,5	0,6	0,5	0,5	0,025	0,025	1,0	35,0 - 38,0	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	490
Elongation A (Lo = 5do)	%	<20
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuNi40

EN ISO 18274: S Ni 2061 (NiTi3); AWS A5.14: ERNi-1; M.-No.: 2.4155

is suitable for joint and build-up welding on commercial pure nickel grades, including LC-nickel, nickel alloys and nickel clad steels. Such materials are employed primarily in the construction of pressed vessels and attachments, the chemical industry, in the food industry and for power generation, where good behavior under corrosion and temperature is demanded.

Repairs on GG-alloys conditionally possible.

Recommendation for

2.4060, 2.4061, 2.4066, 2.4068, mixed connections Nickel-Steel, cast iron (GG-GJL)

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	Fe	Ti	Ni
0,02	0,3	0,3	0,1	3,3	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	300
Tensile strength Rm	MPa	450
Elongation A (Lo = 5do)	%	25
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuNi41

EN ISO 1071: S C NiFe, M.- No.: ~2.4560

is suitable for joint and build-up welding of ferrite and austenitic nodular cast iron as well as mixtures of non-alloy and high alloy steel, copper and nickel alloys.

Build-ups on grey cast iron qualities are also possible. Special applications are tools, GGG fittings and pumps and corrosion-resistant cladding.

Recommendation for

GJL (GG) and GJS (GGG) – Materials, other normal cast iron sorts

Rework

The weld can be chrome-plated, polished and machined. The weld is cold work hardened.

Material analysis in %

C	Mn	Ni	Fe	Si
0,1	1,00	59,0	Rest	0,1

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	300
Tensile strength Rm	MPa	500
Elongation A (Lo = 5do)	%	25
Hardness untreated	HB	200

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuNi43

EN S/W-NiCu30Fe, M.- No.: 2.4360 – Alloy400

is a copper-nickel-alloy with excellent mechanic characteristics up to 600°C and a high corrosion resistance against seawater, hydrogen fluoride, acid sulfur as well as bases.

Recommendation for:

2.4360/ Monel400

Material analysis in %

C	Si	Mn	S	Fe	Ti	Cu	Ni
0,15	0,50	2,00	0,020	1,75	0,30	30,0	63,0

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	175
Tensile strength Rm	MPa	450
Elongation A (Lo = 5do)	%	30
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuNi71

DIN EN ISO 18274: S Ni 7718 (NiCr19Fe19Nb5Mo3); AWS A5.14 ER NiFeCr-2; M.-No. 24667

The NiCrMo-alloyed welding wire is used for joint welding of heat-resistant and highly heat resisting Ni-base alloy, gamma iron and cast material.

Recommendation for

Alloy 718, 2.4668, Inconel 706 and X750

Rework

Material-typical treatment

Material analysis in %

C	Si	Mn	Cr	Ni	Mo	Fe	Nb	Al	Ti
0,06	0,10	0,25	18,5	53,0	3,0	Rest	5,00	0,5	1,0

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	600
Tensile strength Rm	MPa	800
Elongation A (Lo = 5do)	%	25
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuNi76

DIN EN ISO18274 S Ni 6276; AWS A.14 ERNiCrMo-4; Hasteloy276; M.-No. 2.4886

The basic material offers a high durability against a multiplicity of corrossions in oxidized and reduced media. In addition it shows a good durability against acid.

Application

2.4819 NiMo16Cr15W; Ni-Mo-Cr-W alloy; connection with non-, low- and high-alloyed steel/cast iron

Material analysis in %

C	Si	Mn	P	S	Cr	Mo	Ni	V	Fe	W
0,010	0,07	0,90	0,020	0,015	15,50	16,0	Rest	0,30	6,0	3,5

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	470
Tensile strength Rm	MPa	780
Elongation A (Lo = 5do)	%	35
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuNi77

EN ISO 18274: S Ni 4060 (NiCu30Mn3Ti); W.-Nr. 2.4377; AWS A5.14 ER-NiCu-7;
DIN 1736 SG NiCu 30 Mn Ti

Nickel-Copper alloy for joint welding and build-up welding of the same as well as similar cladding material. Also for joining Steel to Nickel-Copper alloys and Copper alloys, (Red and White joints). Usable up to temperatures of +425°C.

Recommended for:

2.4360 / Monel400 ; NiCu30AL (2.4375)

Material analysis

C	Si	Mn	S	Fe	Ti	Cu	Ni
0,02	0,20	3,30	0,020	1,00	2,00	30,0	Basis

(test certificates upon request.)

Standard / Mechanical Values

Protective gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield point Re	MPa	175
Tensile strength Rm	MPa	450
Elongation A (Lo = 5do)	%	30
Untreated hardness	HRC	

Following standard:

Laser welding wires

Rod: 333 mm / 1.000 mm special lengths upon request

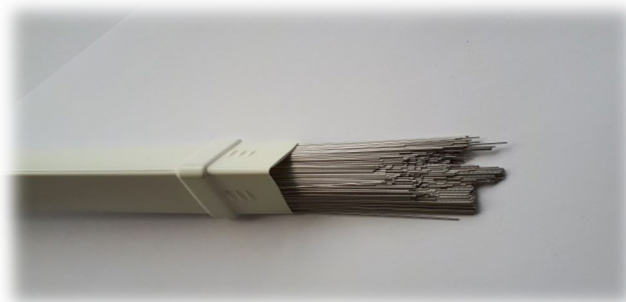
Spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

Aluminum-Base-Wire

Colour assingment: white Tri-q packs[®]

QuAlX10
QuAl99,5
QuAlCu6
QuAlSi5
QuAlSi7
QuAlSi10
QuAlSi12
QuAlMg3
QuAlMg4,5Mn
QuAlMg5
QuAlMgZr



QuAIX10

SFA/AWSA5.10: AL4145; EN ISO 18273 AL4145 (AlSi10Cu4); M.-No.3.2585

is a cold hardening alloy AlSi(X) with a low melting point and good flow properties. Bright weld, low level of unburned carbon. The weld is easy to polish with a high tensile strength and crack resistance.

Recommendation for basic materials

Joint and build-up welding of forgeable alloys: AlMgCuZn..., cast alloys: AlSiMg..., AlSiCu...

Rework

Material-typical treatment

Material analysis in %

Si	Fe	Cu	Mn	Mg	Cr	Zn	Al
10,0	0,8	4,0	0,15	0,15	0,15	0,2	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	
Tensile strength Rm	N/mm ²	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuAl99,5

EN ISO 18273; S AL 1070 (AL99,7); AWS./SFA A5.10: ER1070 ; M.- No.: 3.0259

Pure aluminium for semi-finished parts. Because of its high purity the material possess a high chemical resistance. The material is soft in its cast form. Its tensile strength can be increased considerably by cold processing.

Recommendation for basic materials

Pure aluminum, Al99,5, Al99,7 and similar

Material analysis

Si	Fe	Al
0,05	0,11	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	20
Tensile strength Rm	N/mm ²	65
Elongation A (Lo = 5do)	%	35
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuAlCu6

EN ISO 18273 S AL 2319 (AlCu6MnZrTi); AWS /SFA A 5-10 ER2319

is an aluminium alloy used for applications on high tensile aluminium materials especially in the aircraft industry. QuCuAl6 can be hardened.

Recommendation for:

AL 2219, AL 2014; AlCu-cast-alloy
not suitable for 5xxx -AL alloys

Reworking

Material- typical treatment

Material analysis in %

Cu	Mn	Zr	Ti	V	Si	Zn	Al
6,3	0,30	0,15	0,15	0,10	0,15	0,2	Rest

(test certificates upon request.)

Standard / Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	150
Tensile strength Rm	N/mm ²	240
Elongation A (Lo = 5do)	%	12
Hardness untreated	HRC	

Following standard:

Laser welding wires

Rod: 333 mm / 1.000 mm Special lengths upon request

Spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuAlSi5

EN ISO 18273 S AL 4043A (AlSi5 (A)); AWS/SFA A5.10: ER4043; M.- No.: 3.2245

is suitable for joining and applications on AlSi-alloys up to 5 % Si, as well as dissimilar types of aluminium alloys.

Recommendation for basic materials

Aluminium – Silicon – alloys up to 7 % Si, dissimilar Al-alloys

Rework

Material-typical treatment

Material analysis in %

Si	Mn	Fe	Al
5,0	< 0,2	< 0,4	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	40
Tensile strength Rm	N/mm ²	120
Elongation A (Lo = 5do)	%	8
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuAlSi7

EN ISO 18273; S AL 40104018 (AlSi7Mg) : AWS/SFA A 5.10 ER40104018; M.- No.: ~3.2371

is suitable for joint and build-up welding on Aluminium-silicon alloys of up to 7% Si.

Recommended for basic materials

For joints and build ups on aluminum – silicon – alloys up to 7 % Si

Rework

Material-typical treatment

Material analysis in %

Si	Fe	Ti	Mg	Al
6,5 - 7,5	0,20	0,20	0,50 - 0,80	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	40
Tensile strength Rm	N/mm ²	120
Elongation A (Lo = 5do)	%	8
Hardness untreated	HRC	

Following standard:

Laser welding wires special lengths upon request

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory determined.
We cannot guarantee for the accuracy.

QuAlSi10

EN ISO 18273: S AlSi10 (S AlSi10Mg) M.- No.: 3.2383

is suitable for joint and build-up welding on Aluminium-silicon alloys of up to 10% Si.

Recommendation for basic materials

Aluminium – Silicon – alloys up to 10 % Si, dissimilar Al-alloys

Rework

Material-typical treatment

Material analysis in %

Si	Fe	Mn	Mg	Al
9,0 - 11,0	max. 0,50	max. 0,40	0,20 - 0,50	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	70
Tensile strength Rm	N/mm ²	140
Elongation A (Lo = 5do)	%	4
Hardness untreated	HRC	

Following standard:

Laser welding wires special lengths upon request

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory determined.
We cannot guarantee for the accuracy.

QuAlSi12

EN ISO 18273 : S Al4047A (AlSi12(A)); AWS/SFA 5.10 ER4047A; M.- No.: 3.2585

is suitable for joint and build-up welding on Aluminium-silicon alloys of up to 12% Si, as well as dissimilar types of aluminium alloys.

Recommendation for basic materials

Aluminium – Silicon – alloys up to 12 % Si, dissimilar Al-alloys

Rework

Material-typical treatment

Material analysis in %

Si	Fe	Al
12,0	0,2	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	60
Tensile strength Rm	N/mm ²	130
Elongation A (Lo = 5do)	%	6
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuAlMg3

EN ISO 18273 S Al 5754: (AlMg3); AWS/SFA-5.10: ER5754 (mod.); M.- No.: 3.3536

is suitable for the welding of Aluminium-Magnesium-Alloy.
The weld is salt water resistant. It is suitable for approximate ton-in-ton welds on anodal, oxidable (anodised) materials.

Recommendation for basic materials

E-AlMgSi; AlMgSi0,8; AlMg1; AlMg5; AlMgSi0,7; AlMgSi1; AlMg1SiCu;
AlMg1,5; G-AlMg3; G-AlMg5; G-AlMg10; AlMg1,8; AlMg4,5; AlMg2Mn0,3

Rework

Material-typical treatment

Material analysis in %

Si	Cu	Mg	Mn	Ti	Zn	Al
0,3	0,05	3,0	0,35	0,10	<0,2	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	150
Tensile strength Rm	N/mm ²	240
Elongation A (Lo = 5do)	%	12
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm special lengths upon request

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuAlMg4,5Mn

EN ISO 18273: S AL 5183 (AlMg4,5Mn); AWS/SFA A5.10: ER5183 ; M.- No.: 3.3548

is suitable for the welding of Aluminium-Magnesium-Alloy.

Recommendation for basic materials

AlMg2,7Mn; AlMg3; AlMg4,5Mn; AlMg5; AlMgSi0,7; AlMgSi1; AlMgSiCu; AlZn4,5Mg1;
G-AlMg3; G-AlMg5

Rework

Material-typical treatment

Material analysis in %

Si	Fe	Cu	Mg	Mn	Cr	Ti	Zn	Al
0,35	0,40	0,05	4,80	0,90	0,15	0,15	0,25	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	130
Tensile strength Rm	N/mm ²	180
Elongation A (Lo = 5do)	%	18
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuAlMg5

EN ISO 18273 S Al 5356 (AIMG5); AWS/SFA5.10 ER5356; M-No. 3.3556

is suitable for the welding of Aluminium-Magnesium-Alloy.
The weld is salt water resistant. It is suitable for approximate ton-in-ton welds on anodal, oxidable (anodised) materials.

Recommendation for basic materials

E-AlMgSi; AlMgSi0,8; AlMg1; AlMg5; AlMgSi0,7; AlMgSi1; AlMg1SiCu;
AlMg1,5; G-AlMg3; G-AlMg5; G-AlMg10; AlMg1,8; AlMg4,5; AlMg2Mn0,3

Rework

Material-typical treatment

Material analysis in %

Si	Cu	Mg	Mn	Ti	Fe	Al
0,2	0,05	5,0	0,15	0,10	<0,4	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	110
Tensile strength Rm	N/mm ²	250
Elongation A (Lo = 5do)	%	18
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm special lengths upon request
spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuAlMgZr

EN ISO 18273: S AL 5087 (AlMg4,5MnZr); AWS/SFA A 5.10: ER5087; M.-No. 3.3546

is suitable for welding aluminium-magnesium alloys.
Good corrosion resistance against salt water and atmospheric conditions.
Due to the addition of zircon, the tendency for hot cracking is subdued.

Recommendation for:

AlMg2,7Mn; AlMg3; AlMg4,5Mn; AlMg5; AlMgSi0,7; AlMgSi1; AlMg1SiCu;
AlZn4,5Mg1; G-AlMg3; G-AlMg5

Reworking

Material- typical treatment

Material analysis in %

Si	Fe	Cu	Mg	Mn	Cr	Zr	Ti	Zn	Al
0,25	0,40	0,05	4,80	0,90	0,15	0,15	0,15	0,25	Rest

(test certificates upon request.)

Standard / Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	130
Tensile strength Rm	N/mm ²	280
Elongation A (Lo = 5do)	%	18
Hardness untreated	HRC	

Following standard:

Laser welding wires

Rod: 333 mm / 1.000 mm Special lengths upon request

Spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

Copper-Base-Wire

Colour assignment: red Tri-q packs[®]

QuCu38

QuCu80

QuCu81

QuCu82

QuCu83

QuCu84

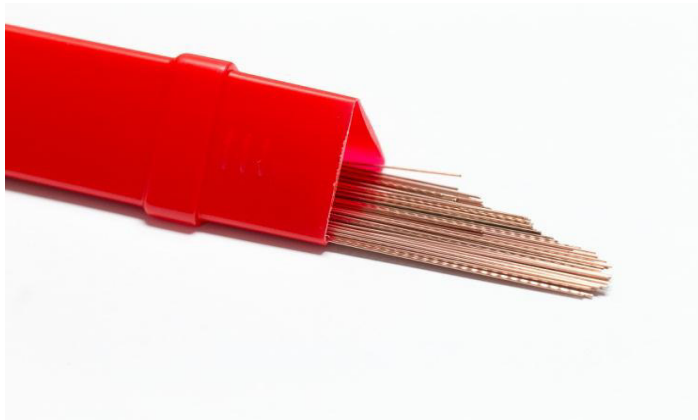
QuCu85

QuCu87

QuCu88

QuCu89

QuBeCu25



QuCu38

EN ISO 24373 S-CU 1897 (CuAg1); AWS A 5.7 : ERCu ; M.- No.: 2.1211

is used for build-up and repair welding of copper and Ampcoloy-alloys. Very suitable for repairs to spark-eroding electrodes. Ductile weld, close-grained structure and high electrical conductivity. The usable hardness is increased by cold storing.

Recommendation for

Pure copper (eroding electrodes)
Ampcoloy-alloys

Rework

Material-typical treatment

Material analysis in %

Ag	Mn	Ni	Cu
1,0	0,2	0,3	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	80
Tensile strength Rm	MPa	230
Elongation A (Lo = 5do)	%	18
Hardness untreated	HB	60

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuCu80

EN ISO 24373; S Cu 6338 (CuMn13Al8Fe3Ni2); AWS-A5.7: ER CuMnNiAl; DIN8555 MSG 31 GZ 200
M.- No.: 2.1367

is used for the build-up, crack and joint welding of mould inserts from AMPCO bronzes Ampcoloy alloys. Cladding on GGG alloys (e.g. drawing tools). Cladding on tool steels or cast. Good gliding properties, sea water resistant, pitting resistant.

Recommendation for

Cu-Al complex aluminum bronzes, surfacing of steel and cast iron.

Rework

Material-typical treatment

Material analysis in %

Al	Mn	Fe	Ni	Cu
7,5	13,0	2,5	2,5	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	400
Tensile strength Rm	MPa	800650
Elongation A (Lo = 5do)	%	10
Hardness untreated	HB	250

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuCu81

EN ISO 24373: S Cu 6327 (CuAl8Ni2Fe2Mn2); M.- No.: 2.0922

is used for joining and plating of CuAl-bronzes, joining CuAl-bronzes with steel, as well as welding different materials together. Plating of steels or cast iron materials.
Good sliding qualities, sea water and cavitations resistance.

Recommendation for

Cu-Al bronzes, plating cast and steel materials, as well as joining different materials.

Rework

Material- typical treatment

Material analysis in %

Mn	AL	Fe	Ni	Cu
1,80	8,70	1,30	2,30	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	270
Tensile strength Rm	MPa	530
Elongation A (Lo = 5do)	%	30
Hardness untreated	HB	140

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuCu82

EN ISO 24373 S-Cu 6560 (CuSi3Mn1); AWS A-5.7: ErCuSi-A; M.- No.: 2.1461

is used for joint and build-up welding on copper, low alloyed copper base alloy, copper-zinc alloy as well as silicium bronze. It's also applicable for build-up welding on unalloyed and low alloyed steels and on cast iron.

Recommendation for

Cu-; CuZn-alloy

Rework

Material- typical treatment

Material analysis in %

Si	Mn	Sn	Zn	Fe	Cu
3,0	1,00	0,10	0,10	0,07	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	120
Tensile strength Rm	MPa	803500
Elongation A (Lo = 5do)	%	40
Hardness untreated	HB	80

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuCu83

EN ISO 24373: S-Cu 6328 (CuAl9Ni5); AWS A.5-7 ERCuNiAl ; M.- No.: 2.0923

Is an additive used for build-up welding on Al-Bronze, steels and multiple alloys. And can be used for Cu-Al-Ni alloys, cast and Ni-Al-bronze forged parts. The material is resistant to salt water and has a high resistance to abrasion and wear. It is used for valves, pumps, bearings etc.

Recommendation for

CuAl11Ni6Fe5; CuAl10Ni5Fe4; in general for copper-aluminium-nickel alloys.

Rework

Material- typical treatment

Material analysis in %

Mn	Si	Fe	Zn	Pb	Ni	Al	Cu
0,6-3,5	<0,10	3,0-5,0	<0,10	<0,02	4,0-5,5	8,5-9,5	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	600
Elongation A (Lo = 5do)	%	16
Hardness untreated	HB	200

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuCu84

EN ISO 24373 S/G-Cu6511 (CuSi2Mn1); AWS A-5.7; ERCuSi-A

is used for joint and build-up welding on copper, low alloyed copper base alloy, copper-zinc alloy as well as silicium bronze. It's also applicable for build-up welding on unalloyed and low alloyed steels and on cast iron.

Recommendation for

Cu-; CuZn-alloy like CuZn5; CuZn10, CuZn15

Rework

Material- typical treatment

Material analysis in %

Si	Mn	Sn	P	Cu
1,8	1,00	0,20	0,010	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	285
Tensile strength Rm	MPa	530
Elongation A (Lo = 5do)	%	45
Hardness untreated	HB	62

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuCu85

DIN EN ISO 24373 S Cu5410; DIN 1733 SG-CuSn13; M.- No.:2.1056

is used for joint and build-up welding on copper-tin, CuZn-alloys and CuSnZnPb-cast alloys(Rg5,Rg6) Seawater and corrosion resistant surfacing on cast-iron.

Recommendation for

Copper-tin alloy e.g. Bronze with 12% Sn Copper-Zink alloy.
Build up welding on cast iron, copper-tin-zink-lead alloys
(Red bronze Rg5, Rg7)

Rework

Material- typical treatment

Material analysis in %

Cu	Sn	P	others
Rest	12,0 - 13,0	0,15 - 0,25	max. 0,5

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	200
Tensile strength Rm	MPa	350
Elongation A (Lo = 5do)	%	15
Hardness untreated	HB	120

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuCu87

EN ISO 24373 S/G-Cu 7158 CuNi30, M.-No. 2.0837, AWS A5.7 ErCuNi

Is used for heavy-duty, corrosion resistant joint welding and build-up welding. Fields of application are: Chemical apparatus construction, offshore techniques as well as sea water desalination plants and ship building. Sea water and high corrosion resistant.

Recommendation for:

Copper-Nickel alloys with up to 30% Nickel, eg: CuNi30Fe (2.0882), CuNi20Fe (2.0878)

Reworking

Material- typical treatment

Material analysis in %

Ni	Mn	Fe	Ti	Cu
30,0	1,00	0,55	0,50	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld
Test temperature	20°	
Heat treatment	untreated	
Tensile strength Rm	[MPA]	380
0,2%-Yield point Rp0,2	[MPA]	210
Elongation A	%	30
Brinell hardness	HB	115

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuCu88

DIN EN ISO 24373 S Cu 1898; DIN 1733 SG-CuSn ; W.- Nr.:2.1006; AWS A5.7: ~ER Cu

Build-up, repair and joint welding of pure copper.
Viscous weld metal.

Recommendation for

SE-Cu (2.0070); SW-Cu (2.0076); SF-Cu (2.0090); OF-Cu (2.0040)

Rework

material-typical treatment

Material analysis in %

Cu	Sn	Si	Mn
Rest	0,80	0,30	0,30

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	
Tensile strength Rm	N/mm ²	220
Elongation A (Lo = 5do)	%	30
Hardness untreated	HB	60

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuCu89

DIN EN ISO 24373 S Cu5180; DIN 1733 SG-CuSn6P; W.- Nr.:2.1022; AWS A5.7: ~ERCuSn-A

Build-up, repair and joint welding on copper / tin and copper / zinc alloys. Good sliding properties, build-up and joint welding of these alloys with cast iron, steels and nickel materials.

Recommended for:

Copper/Tin alloys e.g. Bronze with up to 8 % Sn, Copper/Zinc alloys.
Build-up welding on cast iron, copper/tin/zinc/lead cast alloys

Reworking

Material- typical treatment

Material analysis in %

Cu	Sn	P	other
Rest	6,00	0,20	max. 0,50

(test certificates upon request.)

Standard/Mechanical Values

Protective gas	Argon	Values of the pure weld
Temperature	20°C	
Yield point Re	N/mm ²	150
Tensile strength Rm	N/mm ²	300
Elongation A (Lo = 5do)	%	25
Brinell hardness	HB	90

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm special lengths upon request
spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuBeCu25

DIN EN 1654 – CW101C; (M.- No. old 2.1247) BeCu25/CuBe2

is used for build-up and repair welding in the mould and die industry. Beryllium copper mainly used, where gliding properties, fast heat transmission and high conductance are required in combination.

Recommendation for basic materials

Beryllium copper

Rework

material-typical treatment

Special information

PLEASE NOTE SAFETY DATA SHEET

Material analysis in %

Be	Co	Ni	Fe	Si	Al	Cu
1,9	0,2	0,02	0,06	0,05	0,03	Rest

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	820 – 1100
Tensile strength Rm	MPa	950 – 1150
Elongation A (Lo = 5do)	%	
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

Titanium-Base-Wire

Colour assignment: blue Tri-q packs[®]

QuTi02

QuTi05



QuTi02

EN ISO 24034: S Ti 0120 (Ti99,6); AWS/ASME SFA-5.16 ERTi2; M.- No.: 3.7035

QuTi02 is used for joint and build-up welding of pure titan. Titan is characterized by excellent corrosion and erosion features. A high strength at a low density gives the basic material a narrow range of application. This material is weldable and it could be machined and formed.

Recommendation for

Titan

Material analysis in %

C	N	Fe	O	H	Ti
0,08	0,05	0,025	0,18	0,013	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	295
Tensile strength Rm	N/mm ²	500
Elongation A (Lo = 5do)	%	20
Hardness untreated	HB	180

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuTi05

EN ISO 24034: Ti6402; AWS-SFA : 5.16 ERTi5 (Titanium Al 6 V4); M.- No.: 3.7164/3.7165

is used for weldings on base material *Titan Grade 5*.

This alloy is characterized by a low density, strength and a very high corrosion resistance against oxidizing acidity and mixed acid as well as chloride dissolution.

Recommended for

Used for joint and build up welding of elements in the aerospace industry and medicine technology

Titan Grade 5

Rework

Material-typical treatment

Material analysis in %

C	H	O	N	Fe	V	Al	Ti
0,08	<0,015	0,20	0,05	0,25	3,5 - 4,5	5,5 - 6,7	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	>825
Tensile strength Rm	N/mm ²	>890
Elongation A (Lo = 5do)	%	10
Hardness untreated	HB	90

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

Med-Wire

Colour assignment: yellow Tri-q packs[®]

QuMed4009

QuMed4115

QuMed4122

QuMed4310

QuMed4316

QuMed4337

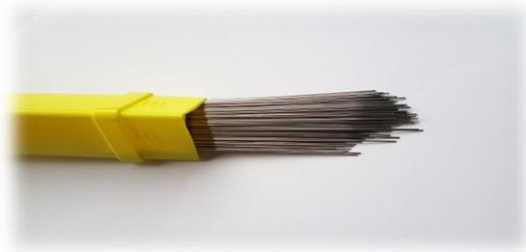
QuMed4430

QuMed4455

QuMed4551

QuMed4571

QuMed4576



QuMed4009

EN ISO 14343-A G/W (13) AWS A5.9: ER 410; M.-No. ~1.4009

is suitable for build-up welding on structural parts in water, gas and steam atmosphere and similar 13% martensite Cr-steels where a high corrosion resistance is needed. The weld is polishable.

Applications on non- and low-alloyed steels for temperatures up to 450°C.

Recommended for

1.4000 – 1.4006; 1.4008; building-up on 1.2083; 1.2085; AISi 410; 420

Rework

The weld can be polished and machined.

Material analysis in %

C	Si	Mn	Ni	Cr
0,08	0,6	0,65	0,4	13,0

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	380
Tensile strength Rm	N/mm ²	550
Elongation A (Lo = 5do)	%	15
Hardness untreated	HB	150 - 225

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuMed4115

EN 12072: G Z 17Mo; EN ISO 14343-A: GW 17Mo; AWS A5.9: ~ER430; M.- No.: 1.4115

The basic material is suitable for wear-resistant hard-facings on components out of unalloyed and low alloyed steels and different kinds of cast steels, heat resistant steels as well as high alloyed steels and kinds of cast steels, particularly for one-layer-welding. The martensitic weld shows a good durability against water, seawater, steam and thinned organic acid. High heat-resistance.

The hardness of the pure weld is aprox. 40 HRC.

Recommended for

1.2085; 1.4057 and similar martensitic GW

Material analysis in %

C	Si	Mn	Mo	Cr	Ni	Fe
0,22	0,7	0,7	1,2	17,5	0,30	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	490
Tensile strength Rm	N/mm ²	690
Elongation A (Lo = 5do)	%	15
Hardness untreated	HRC	39-45

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuMed4122

EN ISO 14343-A W Z17MoH/GZ17MoH AWS A5.9 ER430 mod; M.- No.: 1.4122

The basic material is suitable for joint and build-up welding on similar non-rusting Cr-steels and kind of cast steels.

Build-ups on mating surfaces of gas, water and steam braces out of unalloyed steels for operating temperature up to 450°C.

Recommended for

1.4122 and other similar 17% chrome-steels

Material analysis in %

C	Si	Mn	Mo	Cr	Ni
0,40	0,50	0,45	1,1	16,5	0,5

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	550 after heat treatment 760°/ 2h
Tensile strength Rm	N/mm ²	750 after heat treatment
Elongation A (Lo = 5do)	%	12 after heat treatment
Hardness untreated	HRC	47 - 52

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuMed4310

DIN EN 10088 1.4310 X10CrNi18-8 ; M.- No.: 1.4310

Polishable austenite chromium-nickel alloy.
The material is used for the manufacture of springs.
Easy to weld.

Recommended basis material

1.4301

Material analysis in %

C	Si	Mn	P	S	Cr	Mo	Ni
0,10	2,00	2,00	0,045	0,015	17,50	0,80	8,50

(test certificates upon request)

Standard mechanical values

Inert gas	Argon	Value of the pure weld
Temperature	20°C	
Yield point Re	MPa	400
Tensile strength Rm	MPa	710
Elongation A (Lo = 5do)	%	45
Untreated hardness	HRC	

Following standard:

Laser welding wires

Rod: 333 mm / 1.000 mm special lengths upon request

Spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuMed4316

EN ISO 14343-A: G 19 9 L Si / W 19 9 L Si AWS/SFA-5.9: ER 308LSi ; M.- No.: 1.4316

The welding material is used for non-corroding joint and build-up weldings of similar low-carbon and stabilized 18/8-CrNi(N)-steels / cast steels as well as on low-temperated similar austenitic CrNi-steels / cast steels.

Tough at sub-zero temperature up to -196°C.

Nonrusting. IK-resistant (Intergranular corrosion resistant). (Wetcorrosin up to 350°C)

The machined materials are used as components and tools in the medical technology, food, oil, soap, synthetic rubber, film and photo industry.

Recommended for

1.4301, 1.4306, 1.4550, 1.4319, 1.4541, 1.4311, 1.4551, 1.4552

Material analysis in %

C	Si	Mn	Cr	Ni
0,02	0,85	1,75	19,0	9,5

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	315
Tensile strength Rm	N/mm ²	540
Elongation A (Lo = 5do)	%	35
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory determined. For the accuracy we cannot guarantee.

QuMed4337

WN ISO 143434-A W/G 29 9; AWS A5.9: ER312; M.- No.: 1.4337

The welding is suitable for joint welding of noncorroding similar steels as well as cast steel and hard weldable steel.

Repair welding and wear resistant coatings.

Resistant to scaling up to 1100°C.

Recommended for:

1.4762, 1.4085

Material analysis in %

C	Si	Mn	Cr	Ni	Fe
0,12	0,4	1,8	30,0	9,0	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	600
Tensile strength Rm	MPa	800
Elongation A (Lo = 5do)	%	20
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuMed4430

EN ISO 14343-A: GW 19 12 3 LSi ; ASTM/AWS/SFA-5.9: ER316LSi ; M.- No.: 1.4430

The weld is suitable for joint welding of nonrusting and heat resistant steels. Corrosion-resistant joint weldings for instruments and building elements of the food industry, chemical industry, textile and fuel industry. For operating temperatures from -196°C up to +400°C.

Recommended for

1.4401, 1.4404, 1.4571, 1.4580, 1.4583

Material analysis in %

C	Si	Mn	Cr	Ni	Mo
0,02	0,85	1,8	18,5	12,5	2,6

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	430
Tensile strength Rm	MPa	650
Elongation A (Lo = 5do)	%	32
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuMed4455

EN ISO 14343-A: G7W 20 16 3 Mn L M.- No.: 1.4455

Alloy for connections on low-carboned, corrosion-resistant, non-magnetizable and tough at sub-zero temperature steels. Good resistance against azotic acid (carbamide synthesis)
For operation temperatures from -196°C up to +400°C.

Recommended for

1.3948, 1.3952, 1.3964, 1.4429, 1.4438, 1.4583

Material analysis in %

C	Si	Mn	P	S	Cr	Mo	Ni
0,03	0,60	7,50	0,035	0,020	20,5	3,00	15,5

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	400
Tensile strength Rm	N/mm ²	600
Elongation A (Lo = 5do)	%	30
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory determined.
For the accuracy we cannot guarantee.

QuMed4551

EN ISO 14343-A W 19 9 Nb Si / G 19 9 Nb Si AWS A5.9 ER347Si; M.- No.: 1.4551

The welding is suitable for corrosion resistant joint and build-up weldings of similar, non-rusting and heat-resistant steels as well as austenitic CrNi-steels or rather kind of cast steels.

Non-rusting. IK-constant (Wetcorrosion up to 400°C).

The machined materials are used as components and tools in the medical technology, food, oil, soap, synthetic rubber, film and photo industry.

Recommended for

1.4301, 1.4306, 1.4541, 1.4310, 1.4550, 1.4552, 1.4319, 1.4303

Material analysis in %

C	Si	Mn	Cr	Ni	Nb
≤0,06	0,90	1,3	20,0	9,5	12xC

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	590
Elongation A (Lo = 5do)	%	30
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuMed4571

DIN EN 10888-3: X6CrNiMoTi17-12-2; AISI 316 Ti; M.- No.: 1.4571

The welding is suitable for joint welding on non-rusting and heat-resistant steels. Corrosion-resistant build-up weldings for instruments and building elements of the food industry, chemical industry, textile and fuel industry. It is suitable for temperatures up to 400°C. From 401°C up to 850°C the danger of intercrystalline corrosion also known as knife edge corrosion exists.

Recommended for

1.4401, 1.4404, 1.4571

Material analysis in %

C	Si	Mn	Cr	Ni	Mo	Ti
0,08	1,0	2,0	16,5-18,5	10,5-13,5	2,0-2,5	5xC

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	205
Tensile strength Rm	N/mm ²	515
Elongation A (Lo = 5do)	%	35
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuMed4576

EN ISO 14343-A: G/W 19 12 3 Nb Si; ASTM/AWS/SFA-5.9: ER 318 Si; M.-No.: 1.4576

Is used for joining and build-up welds on stabilized, similar chemically resistant CrNiMo steels in chemical apparatus and vessels with working temperatures of -120°C to +400°C. Austenite with iron component.

Recommended basis material

1.4401, 1.4404, 1.4435, 1.4436, 1.4571, 1.4573, 1.4580, 1.4581, 1.4583

Reworking

Typical for the material type

Material analysis in %

C	Si	Mn	Cr	Ni	Mo	Nb	Fe
0,03	0,4	1,5	19,0	12,0	3,0	0,55	Rest

(test certificates upon request)

Standard mechanical values

Inert gas	Argon	Value of the pure weld
Temperature	20°C	
Yield point Re	MPa	450
Tensile strength Rm	MPa	640
Elongation A (Lo = 5do)	%	30
Untreated hardness	HB	

Following standard:

Laser welding wires

Rod: 333 mm / 1.000 mm special lengths upon request

Spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

Special Alloy

without colour assignment

QuCoCr

QuStellite6

QuMgAz31

QuMgAz91

QuZnAl4

QuHaynes25

QuHaynes188

QuHaynes282

QuAMS5817

QuHastelloyX

Qu4903



QuCoCr

(According to DIN EN ISO 22674)

1. General description

The laser welding wire CoCr is an alloy according to DIN EN ISO 6871-1 "dental cast alloy free of precious metals, Part 1: Cobalt-based-alloys" in wire form.

The alloy is used in dentists' labs to assist in the welding of dental prostheses made of cobalt-chrome-based-alloys.

2. Chemical components and material properties

The chemical components and material properties of the laser welding wires CoCr are according to DIN EN ISO 6871-1 "dental cast alloy free of precious metals, Part 1: Cobalt-based-alloys"

Material analysis

Co	Cr	Mo	Mn	Si	C	Fe
Rest	27	5,3	<0,8	<0,4	< 0,15	< 0,2

(test certificates upon request.)

3. Specified normal usage

Specified normal usage as a laser welding additive for dental work.

4. Classification of the product

Custom-made products manufactured from dental alloys and laser welding wires CoCr are invasive products intended for long-term application to the roof of the mouth and throat. [Medical product-directives 93/42/EWG, appendix IX, rule 5].

Classification: class IIa

Following standard:

Spool: 2 meters

Ø: 0,25 / 0,35 / 0,50 mm

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuStellite6

(Special alloy) AWS/SFA 5.21 ERCCoCr-A

This is a cobalt-based alloy with integrated complex carbides.
Very good durability against wear, abrasion and corrosion even at higher temperatures of up to 500°C
Achievable hardness lies between 40 – 46 HRC, and is dependent upon the processing, basic material and welding layers.
The weld is only workable using hard metal tools.

Material analysis in %

C	Si	Mn	Fe	W	Cr	Co
1,00	2,00	1,00	3,00	5,0	30,0	Rest

(Test certificates upon request.)

Standard / Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	36 – 45

Following standard:

Laser welding wire

Rod: 914/457 mm

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuAz31

QuMgAz31 is a wrought magnesium alloy with good strength and ductility at room temperature, combined with good weldability.

QuMgAz31 is used in automotive engineering, in the aerospace industry and everywhere where weight savings coupled with good workability are required.

Recommended for basic materials

Magnesium alloys

Material analysis in %

Mg	Al	Zn	Mn	Si	Ni	Cu	Fe	Others together
Basis	2,50 – 3,60	0,70 – 1,30	0,20 – 1,00	max. 0,02	max. 0,001	max. 0,002	max. 0,002	max. 0,3

(test certificates upon request.)

Standard / Mechanical values

Inert gas		Values of the pure weld metal
Temperature		
Yield strength Re		
Tensile strength Rm		
Elongation A (Lo = 5do)		
Hardness untreated		

Following standard:

Laser welding wires

Bobbin: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuAz91

QuMgAz91 is a wrought magnesium alloy with good strength and ductility at room temperature, combined with good weldability.

QuMgAz91 is used in automotive engineering, in the aerospace industry and everywhere where weight savings coupled with good workability are required.

Recommended for basic materials

Magnesium alloys

Material analysis in %

Mg	Al	Zn	Mn	Si	Ni	Cu	Fe	Others together
Basis	8,50 – 9,50	0,45 – 0,90	0,17 – 0,40	max. 0,05	max. 0,001	max. 0,025	max. 0,004	0,01

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	240
Tensile strength Rm	MPa	160
Elongation A (Lo = 5do)	%	6
Hardness untreated	HRC	

Following standard:

Laser welding wires

Bobbin: K80 / K125 / K250 / SH253 / MA125

Lieferbare Durchmesser

1,20 mm und 0,60 mm

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuZnAl4

QuZnAl4 is a zinc-based alloy with aluminium elements.
QuZnAl4 is used for the repair of zamak alloys.

Recommendation for

Zamak-alloys like ZnAl4

Material analysis in %

Zn	Al
Base	4,0

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	30 - 110
Tensile strength Rm	N/mm ²	60 - 150
Elongation A (Lo = 5do)	%	min. 60
Hardness untreated	HB	

Values depending on diameter

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuHaynes25®

Haynes 25® (L605, Stellite 25, UNS R30605, AMS 5769)

Non-magnetic cobalt-based superalloy with excellent temperature resistance. Very good abrasion resistance.

Oxidation resistance to 980°C and good strength to 1175°C.

Resistant to marine environments, acids and body fluids.

Recommendation for

Repair of combustion chambers and afterburners of gas turbine engines, ball bearings and bearing races exposed to high temperature.

Material analysis in %

C	Si	Mn	Fe	Cr	Mo	S	W	Ni	Co
0,1	0,4	1,5	3,0	20,0	1,0	0,030	15,00	10,0	Basis

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	ca. 1000
Tensile strength Rm	MPa	
Elongation A (Lo = 5do)	%	30
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuHaynes188®

Haynes 188®.

Cobalt-based superalloy with excellent temperature resistance at high temperatures. Also excellent resistance to oxidising environments. Good resistance to hot corrosion due to sulphate deposition.

Very good weldability. Joint welds with cobalt, nickel and iron-based alloys.

Recommendation for

Repair of combustion chamber barrels for gas turbine engines, afterburner linings, flame holders and spray bars

Material analysis in %

C	Si	Mn	Fe	Cr	LA	B	W	Ni	Co
0,1	0,4	1,25	3,0	22	0,07	0,015	14,5	22,0	Basis

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory. We cannot guarantee for the accuracy.

QuHaynes282®

Haynes 282®, UNS No07208

Precipitation hardenable nickel-chromium-cobalt alloy with good thermal stability.
Very good weldability.

Material analysis in %

C	Si	Mn	Fe	Cr	Ti	Mo	Al	Co	Ni
0,06	0,1	0,2	1,0	20,0	2,1	8,5	1,5	10,0	Rest

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	586
Tensile strength Rm	MPa	860
Elongation A (Lo = 5do)	%	40
Hardness untreated	HRC	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuAMS5817

AMS5817 Aerospace material, Alloy Greek Ascoloy USWC 5817; UNS S41800 AISI615;

Hardenable martensitic Cr-Ni-W alloy for temperatures up to 650°C in higher stressed components.

Can be used for welding steam turbine parts such as blades or bases and compressor parts of gas turbines

Recommendation for

Same type 12% Cr high-strength materials

Rework

Material typical

Material analysis in %

C	Si	Mn	Cr	Ni	Mo	Fe	W	Cu	Al
0,15	max. 0,50	max. 0,50	13,0	2,00	0,50	Basis	3,0	max. 0,50	max. 0,15

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	660
Elongation A (Lo = 5do)	%	
Hardness untreated	HRC	45

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

QuHastelloyX

UNS Ni 6002; ASME SFA-5.14 ERNiCrMo-2: W-No. 2.4665

Hastelloy X is a nickel base superalloy with excellent resistance to reducing and carburizing atmospheres, making it suitable for furnace components.

Oxydation resistance trough 2000°F. Good high temperature strength

Application

Hastelloy X

Material analysis in %

C	Si	Mn	P	S	Cr	Mo	Ni	Co	Fe	W	Al	Ti
0,5- 0,15	1,00	1,00	0,04	0,03	20,5 23,5	8,0- 10,0	bal	0,5- 2,5	17,0- 20,0	0,2- 1,0	0,5	0,1 5

(test certificates upon request.)

Standard/Mechanical Values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	MPa	
Tensile strength Rm	MPa	
Elongation A (Lo = 5do)	%	
Hardness untreated	HB	

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

Qu4903

DIN EN ISO 12070; G/W CrMo91, AWS A5.28-05: ER90s-B9 M.-No. 1.4903

s preferred for changes and repairs on highly heat resisting, heat treatable 9-12% Cr-steels, especially for T91/P91 For operating temperatures up to 650°C.

Recommended for basic materials

1.4903 X10CrMoVNb9-1; ASTM A199 Gr- T91: A335 Gr, P91; A213/213M Gr- T91

Rework

The weld can be structured, polished, chrome-plated, nitrated, heat treated, and hardened.

Material analysis in %

C	Si	Cr	Mn	Mo	V	Ni
0,12	0,3	9,0	0.800	0,90	0,2	0,45

(test certificates upon request.)

Standard / Mechanical values

Inert gas	Argon	Values of the pure weld metal
Temperature	20°C	
Yield strength Re	N/mm ²	660
Tensile strength Rm	N/mm ²	750
Elongation A (Lo = 5do)	%	16
Hardness untreated	HRC	approx. 40

Following standard:

Laser welding wires

rods: 333 mm / 1.000 mm

spool: K80 / K125 / K250 / SH253 / MA125

The reported values were determined by the manufacturer and / or by a neutral Laboratory.
We cannot guarantee for the accuracy.

EN KOMPETENZ ZU
INDIVIDUELL SERVICE

quada

ART OF LASER



SERVICE INDIVIDUE
EN KOMPETENZ ZU
INDIVIDUELL SERVICE

Conversion tables

conversion table steel

statement							result	result
length		Ø	Ø	area	volume	specific weight	mass	mass
m	dm	mm	dm	dm ²	dm ³	kg/dm ³	kg	g
1	10	0,2	0,002	0,00000314	0,000	7,85	0,00	0,25
1	10	0,25	0,0025	4,90625E-06	0,000	7,85	0,00	0,39
1	10	0,3	0,003	0,000007065	0,000	7,85	0,00	0,55
1	10	0,4	0,004	0,00001256	0,000	7,85	0,00	0,99
1	10	0,5	0,005	0,000019625	0,000	7,85	0,00	1,54
1	10	0,6	0,006	0,00002826	0,000	7,85	0,00	2,22
1	10	0,8	0,008	0,00005024	0,001	7,85	0,00	3,94
1	10	1	0,01	0,0000785	0,001	7,85	0,01	6,16

statement						result
g	Ø	Ø	area	specific weight	volume	length
	mm	dm	dm ²	kg/dm ³	dm ³	m
1	0,2	0,002	0,0000031400	7,85	0,000127389	4,06
1	0,25	0,0025	0,0000049063	7,85	0,000127389	2,60
1	0,3	0,003	0,0000070650	7,85	0,000127389	1,80
1	0,4	0,004	0,0000125600	7,85	0,000127389	1,01
1	0,5	0,005	0,0000196250	7,85	0,000127389	0,65
1	0,6	0,006	0,0000282600	7,85	0,000127389	0,45
1	0,8	0,008	0,0000502400	7,85	0,000127389	0,25
1	1	0,01	0,0000785000	7,85	0,000127389	0,16

conversion table copper

statement							result	result
length		∅	∅	area	volume	specific weight	mass	mass
m	dm	mm	dm	dm ²	dm ³	kg/dm ³	kg	g
1	10	0,2	0,002	0,00000314	0,000	8,96	0,00	0,28
1	10	0,3	0,003	0,000007065	0,000	8,96	0,00	0,63
1	10	0,4	0,004	0,00001256	0,000	8,96	0,00	1,13
1	10	0,5	0,005	0,000019625	0,000	8,96	0,00	1,76
1	10	0,6	0,006	0,00002826	0,000	8,96	0,00	2,53
1	10	0,8	0,008	0,00005024	0,001	8,96	0,00	4,50
1	10	1	0,01	0,0000785	0,001	8,96	0,01	7,03

statement						result
g	∅	∅	area	specific weight	volume	length
	mm	dm	dm ²	kg/dm ³	dm ³	m
1	0,2	0,002	0,0000031400	8,96	0,000111607	3,55
1	0,3	0,003	0,0000070650	8,96	0,000111607	1,58
1	0,25	0,0025	0,0000049060	8,96	0,000111607	
1	0,4	0,004	0,0000125600	8,96	0,000111607	0,89
1	0,5	0,005	0,0000196250	8,96	0,000111607	0,57
1	0,6	0,006	0,0000282600	8,96	0,000111607	0,39
1	0,8	0,008	0,0000502400	8,96	0,000111607	0,22
1	1	0,01	0,0000785000	8,96	0,000111607	0,14

conversion table titan

statement							result	result
length	Ø	Ø	area	volume	specific weight	mass	mass	mass
m	dm	mm	dm	dm ²	dm ³	kg/dm ³	kg	g
1	10	0,2	0,002	0,00000314	0,000	4,51	0,00	0,14
1	10	0,3	0,003	0,000007065	0,000	4,51	0,00	0,32
1	10	0,4	0,004	0,00001256	0,000	4,51	0,00	0,57
1	10	0,5	0,005	0,000019625	0,000	4,51	0,00	0,89
1	10	0,6	0,006	0,00002826	0,000	4,51	0,00	1,27
1	10	0,8	0,008	0,00005024	0,001	4,51	0,00	2,27
1	10	1	0,01	0,0000785	0,001	4,51	0,00	3,54

statement					result	
g	Ø	Ø	area	specific weight	volume	
	mm	dm	dm ²	kg/dm ³	dm ³	
1	0,2	0,002	0,0000031400	4,51	0,000221729	7,06
1	0,25	0,0025	0,0000049060	4,51	0,000221729	5,64
1	0,3	0,003	0,0000070650	4,51	0,000221729	3,14
1	0,4	0,004	0,0000125600	4,51	0,000221729	1,77
1	0,5	0,005	0,0000196250	4,51	0,000221729	1,13
1	0,6	0,006	0,0000282600	4,51	0,000221729	0,78
1	0,8	0,008	0,0000502400	4,51	0,000221729	0,44
1	1	0,01	0,0000785000	4,51	0,000221729	0,28

conversion table nickel

statement							result	result
length		∅	∅	area	volume	specific weight	mass	mass
m	dm	mm	dm	dm ²	dm ³	kg/dm ³	kg	g
1	10	0,2	0,002	0,00000314	0,000	8,9	0,00	0,28
1	10	0,3	0,003	0,000007065	0,000	8,9	0,00	0,63
1	10	0,4	0,004	0,00001256	0,000	8,9	0,00	1,12
33	330	0,5	0,005	0,000019625	0,006	8,9	0,06	57,64
1	10	0,6	0,006	0,00002826	0,000	8,9	0,00	2,52
1	10	0,8	0,008	0,00005024	0,001	8,9	0,00	4,47
1	10	1	0,01	0,0000785	0,001	8,9	0,01	6,99

statement						result
g	∅	∅	area	specific weight	volume	length
	mm	dm	dm ²	kg/dm ³	dm ³	m
1	0,2	0,002	0,0000031400	8,9	0,00011236	3,58
1	0,3	0,003	0,0000070650	8,9	0,00011236	1,59
1	0,4	0,004	0,0000125600	8,9	0,00011236	0,89
1	0,5	0,005	0,0000196250	8,9	0,00011236	0,57
1	0,6	0,006	0,0000282600	8,9	0,00011236	0,40
1	0,8	0,008	0,0000502400	8,9	0,00011236	0,22
1	1	0,01	0,0000785000	8,9	0,00011236	0,14

conversion table aluminum

statement							result	result
length		Ø	Ø	area	volume	specific weight	mass	mass
m	dm	mm	dm	dm ²	dm ³	kg/dm ³	kg	g
1	10	0,2	0,002	0,00000314	0,000	2,7	0,00	0,08
1	10	0,3	0,003	0,000007065	0,000	2,7	0,00	0,19
1	10	0,4	0,004	0,00001256	0,000	2,7	0,00	0,34
1	10	0,5	0,005	0,000019625	0,000	2,7	0,00	0,53
1	10	0,6	0,006	0,00002826	0,000	2,7	0,00	0,76
1	10	0,8	0,008	0,00005024	0,001	2,7	0,00	1,36
1	10	1	0,01	0,0000785	0,001	2,7	0,00	2,12

statement						result
g	Ø	Ø	area	specific weight	volume	length
	mm	dm	dm ²	kg/dm ³	dm ³	m
1	0,2	0,002	0,0000031400	2,7	0,00037037	11,80
1	0,3	0,003	0,0000070650	2,7	0,00037037	5,24
1	0,4	0,004	0,0000125600	2,7	0,00037037	2,95
1	0,5	0,005	0,0000196250	2,7	0,00037037	1,89
1	0,6	0,006	0,0000282600	2,7	0,00037037	1,31
1	0,8	0,008	0,0000502400	2,7	0,00037037	0,74
1	1	0,01	0,0000785000	2,7	0,00037037	0,47

conversion table BeCu25

statement							result	result
length		∅	∅	area	volume	specific weight	mass	mass
m	dm	mm	dm	dm ²	dm ³	kg/dm ³	kg	g
1	10	0,2	0,002	0,00000314	0,000	8,3	0,00	0,26
1	10	0,3	0,003	0,000007065	0,000	8,3	0,00	0,59
1	10	0,4	0,004	0,00001256	0,000	8,3	0,00	1,04
1	10	0,5	0,005	0,000019625	0,000	8,3	0,00	1,63
1	10	0,6	0,006	0,00002826	0,000	8,3	0,00	2,35
1	10	0,8	0,008	0,00005024	0,001	8,3	0,00	4,17
1	10	1	0,01	0,0000785	0,001	8,3	0,01	6,52

statement						result
g	∅	∅	area	specific weight	volume	length
	mm	dm	dm ²	kg/dm ³	dm ³	m
1	0,2	0,002	0,0000031400	8,3	0,000120482	3,84
1	0,3	0,003	0,0000070650	8,3	0,000120482	1,71
1	0,4	0,004	0,0000125600	8,3	0,000120482	0,96
1	0,5	0,005	0,0000196250	8,3	0,000120482	0,61
1	0,6	0,006	0,0000282600	8,3	0,000120482	0,43
1	0,8	0,008	0,0000502400	8,3	0,000120482	0,24
1	1	0,01	0,0000785000	8,3	0,000120482	0,15

conversion table tantalum

statement							result	result
length	∅	∅	∅	area	volume	specific weight	mass	mass
m	dm	mm	dm	dm ²	dm ³	kg/dm ³	kg	g
1	10	0,2	0,002	0,00000314	0,000	16,68	0,00	0,52
1	10	0,25	0,0025	4,90625E-06	0,000	16,68	0,00	0,82
1	10	0,3	0,003	0,000007065	0,000	16,68	0,00	1,18
1	10	0,4	0,004	0,00001256	0,000	16,68	0,00	2,10
1	10	0,5	0,005	0,000019625	0,000	16,68	0,00	3,27
1	10	0,6	0,006	0,00002826	0,000	16,68	0,00	4,71
1	10	0,8	0,008	0,00005024	0,001	16,68	0,01	8,38
1	10	1	0,01	0,0000785	0,001	16,68	0,01	13,09

statement						result
g	∅	∅	area	specific weight	volume	length
	mm	dm	dm ²	kg/dm ³	dm ³	m
1	0,2	0,002	0,0000031400	16,68	5,9952E-05	1,91
1	0,25	0,0025	0,0000049063	16,68	5,9952E-05	1,22
1	0,3	0,003	0,0000070650	16,68	5,9952E-05	0,85
1	0,4	0,004	0,0000125600	16,68	5,9952E-05	0,48
1	0,5	0,005	0,0000196250	16,68	5,9952E-05	0,31
1	0,6	0,006	0,0000282600	16,68	5,9952E-05	0,21
1	0,8	0,008	0,0000502400	16,68	5,9952E-05	0,12
1	1	0,01	0,0000785000	16,68	5,9952E-05	0,08

conversion table CoCr

statement							result	result
length	Ø	Ø	area	volume	specific weight	mass	mass	
m	dm	mm	dm	dm ²	dm ³	kg/dm ³	kg	g
1	10	0,2	0,002	0,00000314	0,000	8,5	0,00	0,27
1	10	0,25	0,0025	4,90625E-06	0,000	8,5	0,00	0,42
1	10	0,3	0,003	0,000007065	0,000	8,5	0,00	0,60
1	10	0,4	0,004	0,00001256	0,000	8,5	0,00	1,07
1	10	0,5	0,005	0,000019625	0,000	8,5	0,00	1,67
1	10	0,6	0,006	0,00002826	0,000	8,5	0,00	2,40
1	10	0,8	0,008	0,00005024	0,001	8,5	0,00	4,27
1	10	1	0,01	0,0000785	0,001	8,5	0,01	6,67

statement						result
g	Ø	Ø	area	specific weight	volume	length
	mm	dm	dm ²	kg/dm ³	dm ³	m
1	0,2	0,002	0,0000031400	8,5	0,000117647	3,75
1	0,25	0,0025	0,0000049063	8,5	0,000117647	2,40
1	0,3	0,003	0,0000070650	8,5	0,000117647	1,67
1	0,4	0,004	0,0000125600	8,5	0,000117647	0,94
1	0,5	0,005	0,0000196250	8,5	0,000117647	0,60
1	0,6	0,006	0,0000282600	8,5	0,000117647	0,42
1	0,8	0,008	0,0000502400	8,5	0,000117647	0,23
1	1	0,01	0,0000785000	8,5	0,000117647	0,15

quada

ART OF LASER



Hardness & Strength

Hardness and strength

conversion table for hardness and strength

Comparison of strength , Vickers , Brinell
and Rockwell

N / mm ²	HV	HB	HRc
	900		67
	890		66,7
	880		66,4
	870		66,2
	860		65,9
	850		65,6
	840		65,3
	830		65
	820		64,7
	810		64,3
	800		64
	790		63,7
	780		63,3
	770		62,9
	760		62,5
	750		62,2
	740		61,8
	730		61,4
	720		61
	710		60,5
	700		60,1
	690		59,7
	680		59,2
	670		58,8
2200	660	620	58,3
2180	650	618	57,8
2145	640	608	57,3
2105	630	599	56,8
2070	620	589	56,3
2030	610	580	55,7
1995	600	570	55,2
1955	590	561	54,7
1920	580	551	54,1
1880	570	542	53,6
1845	560	532	53
1810	550	523	52,3
1775	540	513	51,7

N / mm²	HV	HB	HRc
1740	530	504	51,1
1700	520	494	50,5
1665	510	485	49,8
1630	500	475	49,1
1595	490	466	48,4
1555	480	456	47,7
1520	470	447	46,9
1485	460	437	46,1
1455	450	428	45,3
1420	440	418	44,5
1385	430	409	43,6
1350	420	399	42,7
1320	410	390	41,8
1290	400	380	40,8
1255	390	371	39,8
1220	380	361	38,8
1190	370	352	37,7
1155	360	342	36,6
1125	350	333	35,5
1095	340	323	34,4
1060	330	314	33,3
1030	320	304	32,2
995	310	295	31
965	300	285	29,8
930	290	276	28,5
900	280	266	27,1
865	270	257	25,6
835	260	247	24
800	250	238	22,2
770	240	228	20,3
740	230	219	
705	220	209	
675	210	200	
640	200	190	
610	190	181	
575	180	171	
545	170	162	
510	160	152	
480	150	143	
450	140	133	
415	130	124	
385	120	114	
350	110	105	
320	100	95	



If you have any further questions about our products or services, please contact us.

For each problem we provide an *appropriate solution!*

quada V+F® Laserschweißdraht GmbH
Hellestraße 40
58675 Hemer
Germany

Tel. + 49 23 72 – 55 64 1 – 0
Fax + 49 23 72 – 55 64 1 – 10
info@quada-office.com
www.quada-office.com

