

Lasting Connections

# EMK ULTRA – ENGINEERED FOR SPEED AND PRECISION





# EMK ULTRA - ENGINEERED FOR SPEED AND PRECISION - CREATE YOUR PERFECT WELD SEAM

The EMK Ultra portfolio represents the latest development of coppered solid wires for joining of non- and low alloyed steels. It offers solid benefits in manual and fully automatic welding processes like excellent feedability on long liners, high deposition rates, less spatter and silicates.



**CST Technology:** During wire drawing, the metal undergoes significant plastic deformation, and CST is proprietary technology that ensures the wire maintains an optimal surface finish to create the Perfect Weld Seam. A CST treated surface ensures better welding performance and good conductivity. In the case of copper-coated wires, CST helps in maintaining uniformity in the copper coating, preventing oxidation and ensuring excellent feeding. This technology plays a role in improving the overall quality, consistency, and longevity of the wires in all applications, guaranteeing perfect arc stability and consequently a perfect weld seam.

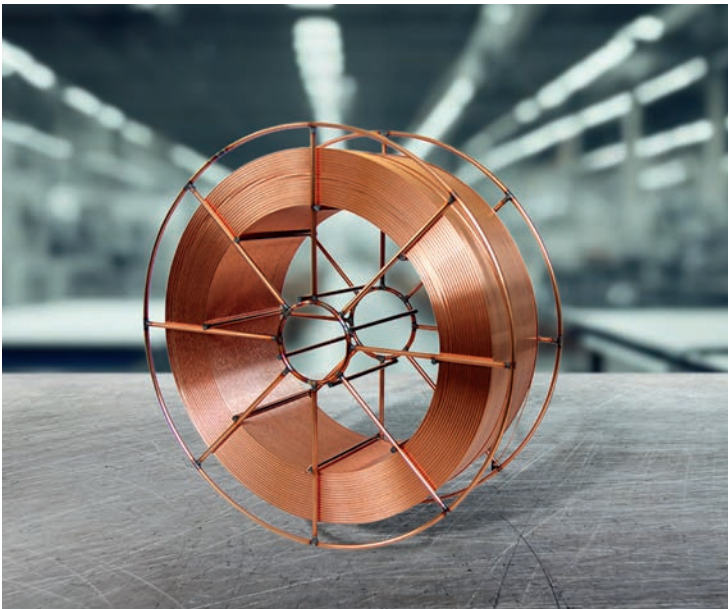
**Excellent wire feeding:** Thanks to the innovative Controlled Surface Treatment Process (CST), highly reliable feeding of the wire is guaranteed. This improves process reliability by avoiding disruptions such as irregularities clogging and flaking in the wire feeding process.

**EMK Ultra** is available in the BÖHLER Welding drum systems with different fill ratios of 250 kg and 500 kg, and on S200 5 kg spools as well as on the BS300 wire basket spool (15kg and 18kg)– the most reliable and most stable spool body ever, with no adapter needed and with extremely reliable handling.

For mechanized and robotic welding, the BÖHLER Welding Drum Systems are the best choice for maximum productivity. They represent the most advanced and dependable pay-off systems to date.

The Böhler Welding Drum Systems come with a full range of accessories for efficient handling, installation and wire feeding; such as engineered lifting bars and trolleys, de-coiling hoods and „click & go“ liners for short distance installations.

LD Glide liner systems and LD Feed booster systems are available for the most demanding installations of > 40 m distance between drum and main feeder.



## Lasting Connections

As a pioneer in innovative welding consumables, Böhler Welding offers a unique product portfolio for welding worldwide. More than 2000 products are adapted continuously to the current industry specifications and customer requirements, certified by well-respected institutes and thus approved for the most demanding welding applications.

As a reliable partner for customers, “lasting connections” are the brand’s philosophy in terms of both welding and people.

### Our clients benefit from a partner with

- » the highest expertise in joining, rendering the best application support globally available
- » specialized and best in class product solutions for their local and global challenges
- » an absolute focus on customer needs and their success
- » a worldwide presence through factories, offices and distributors



Fields of Application



**Böhler EMK 4-Ultra**  
Moderate Si and Mn, Good weldability for mild steel. Light construction, maintenance, repair, metal furniture, light machinery. Suited for welding before zinc and aluminum plating and for welding of zinc or aluminum plated material. The lower deoxidant content makes it better for cleaner polished surfaces and can increase more slag formation and porosity when used on rusty surfaces. It results in a higher oxygen concentration in the weld pool and depending on the combination of shield gas that can affect penetration and bead width. Optimized chemistry and strictly controlled raw material, combined with advanced production technologies, BÖHLER EMK 4-Ultra guarantees excellent wire feeding characteristics and arc stability for trouble free welding and less post weld cleaning.  
**Base Materials: Steel with a yield Strength <= 420 MPa.**



**Böhler EMK 6-Ultra**  
Higher Si and Mn, Good weldability for mild steel. Ideal for a large range of welding applications, especially those in industries such as construction, automotive, shipbuilding and heavy machinery. The mechanical properties of this wire guarantee a good elongation. Optimized chemistry, minimize CO formation and porosity. Strictly controlled raw material, combined with advanced production technologies, BÖHLER EMK 6-Ultra guarantees excellent wire feeding characteristics and arc stability for trouble free welding and less post weld cleaning.  
**Base Materials: Steel with a yield Strength <= 420 MPa.**



**Böhler EMK 7-Ultra**  
Lower Si than the Böhler EMK 6-Ultra, it presents an excellent weldability for mild steel. Ideal for a large range of welding applications, especially those in industries such as construction, automotive, shipbuilding and heavy machinery. The optimized chemistry yields less silicates on the weld and has good Charpy values at -50°C. Strictly controlled raw material, combined with advanced production technologies, BÖHLER EMK 7-Ultra guarantees excellent wire feeding characteristics and arc stability for trouble free welding and less post weld cleaning. It is mostly used for procedures where a 3Si1 wire is required, and where lower temperature and higher strength are needed.  
**Base Materials: Steels with Yield Strength <= 460 MPa.**



**Böhler EMK 8-Ultra**  
Higher C, Si, Mn contents for steels up to 460Mpa, it presents an excellent weldability for mild steel. Ideal for a large range of welding applications, especially those in industries such as general construction, automotive, shipbuilding and heavy machinery. The optimized chemistry yields less silicates on the weld and has good Charpy values at -50°C. Strictly controlled raw material, combined with advanced production technologies, BÖHLER EMK 8-Ultra guarantees excellent wire feeding characteristics and arc stability for trouble free welding and less post weld cleaning.  
**Base Materials: Steels with a Yield Strength <= 460 MPa.**

Product Name	EN ISO	Classification	AWS	Classification
BÖHLER EMK 4-Ultra	14341-A	G 42 4 M21 2Si	A5.18	ER 70S-3
BÖHLER EMK 6-Ultra	14341-A	G 42 4 M21 3Si1 G 42 4 C1 3Si1	A5.18	ER 70S-6
BÖHLER EMK 7-Ultra	14341-A	G 42 5 M21 3Si1 G 42 5 C1 3Si1	A5.18	ER 70S-6
BÖHLER EMK 8-Ultra	14341-A	G 46 4 M21 4Si1 G 46 4 C1 4Si1	A5.18	ER 70S-6

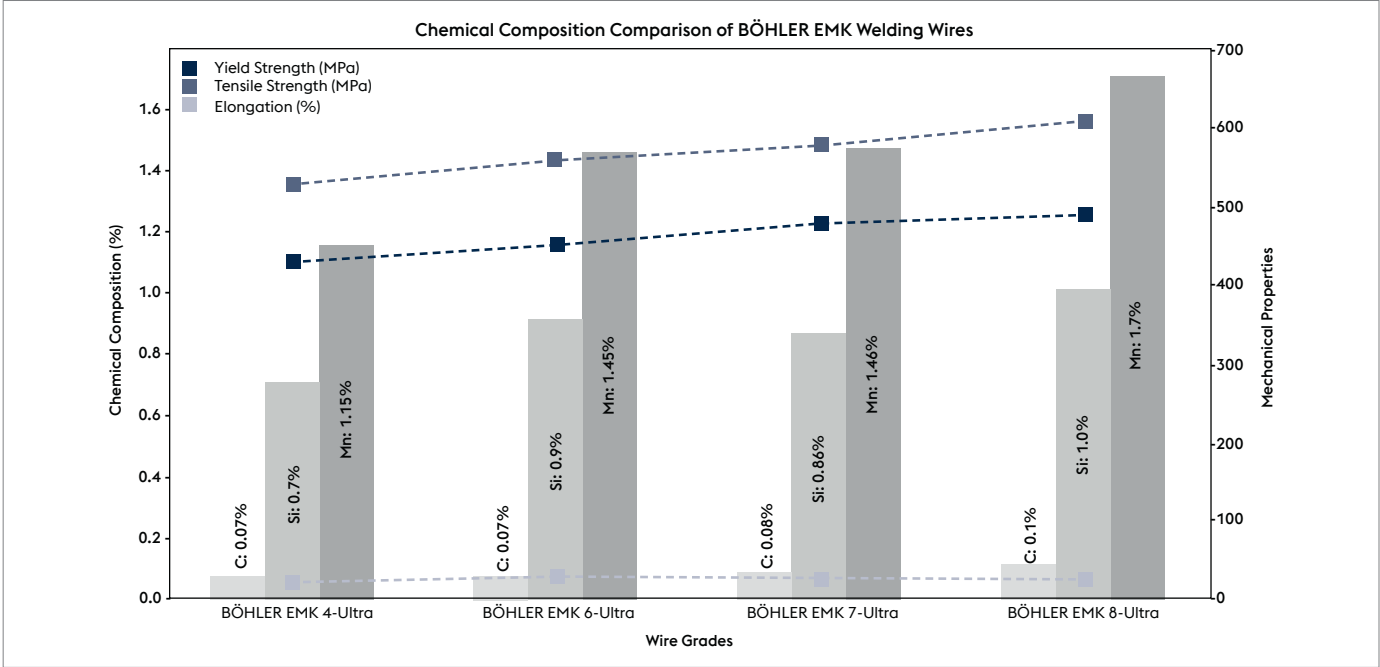
Product Features	User Benefits
Soft arc ignition	» No start spatter » Dependable performance in short beads such as tack and seam welds
Very stable arc with a large operating range	» Easy, time-saving parameter setting » Excellent weld pool control » Very low spatter level » Reduced post weld cleaning
Consistent wire feeding properties	» Problem-free welding » Allows productive welding at high current settings
Stable BS300 wire basket spool	» Reliable pay-off » Easy to handle, less risk of deformation
BASEdrum MEGAdrum	» Large volume welding with our drum solutions from 250 kg up to 450 kg weight » Maximum productivity for mechanized and robotic welding

Typical chemical composition wire (wt %)			
	C	Si	Mn
BÖHLER EMK 4-Ultra	0.07	0.70	1.15
BÖHLER EMK 6-Ultra	0.07	0.90	1.45
BÖHLER EMK 7-Ultra	0.08	0.86	1.46
BÖHLER EMK 8-Ultra	0.10	1.0	1.7

Approvals	
BÖHLER EMK 4-Ultra	CWB
BÖHLER EMK 6-Ultra	TÜV (20297), DB (42.132.98), CWB, DNV, LR, RINA, CE
BÖHLER EMK 7-Ultra	-
BÖHLER EMK 8-Ultra	TÜV (20298), DB (42.132.99), CWB, DNV, RINA, CE

Mechanical properties, all weld metal (single values typical)						
Shielding gas	Shielding gas EN ISO 14175	Yield strength R <sub>p0.2%</sub> MPa	Tensile strength R <sub>m</sub> MPa	Elongation A <sub>5</sub> %	CVN Impact toughness ISO-V / J - 40 °C      - 50 °C	
BÖHLER EMK 4-Ultra	M21	430 (≥ 420)	530 (440 – 570)	24 (≥20)	120 (≥ 75)	
BÖHLER EMK 6-Ultra	M21	450 (≥ 420)	560 (≥ 500 - 640)	30 (≥20)	120 (≥ 75)	
	C1	440 (≥ 420)	540 (≥ 500 - 640)	29 (≥20)	120 (≥ 75)	
BÖHLER EMK 7-Ultra	M21	480 (≥ 420)	580 (≥ 500 - 640)	25 (≥20)		75 (≥ 47)
	C1	470 (≥ 420)	560 (≥ 500 - 640)	24 (≥20)		50 (≥ 47)
BÖHLER EMK 8-Ultra	M21	490 (≥ 460)	610 (≥ 530 - 680)	26 (≥20)		115 (≥ 75)
	C1	480 (≥ 460)	580 (≥ 530 - 680)	28 (≥20)		115 (≥ 75)

Comparison of Chemical Composition and Mechanical Properties



Spool	Weight	Dia	EMK 4-Ultra	EMK 6-Ultra	EMK 7-Ultra	EMK 8-Ultra
S200	5 kg	0,8 mm	89099	89108	89090	89120
		1,0 mm	89098	89106	89088	89115
BS300	15 kg	0,8 mm	89100	89153	89091	89142
		1,0 mm		89107		89119
		1,2 mm		89105		89117
		1,6 mm		89101		89116
BS300	18 kg	1,0 mm	89096	89151	89089	89137
		1,2 mm	89095	89148	89087	89136
		1,6 mm	89097	89103	89082	89113

Drum	Weight	Dia	EMK 4-Ultra	EMK 6-Ultra	EMK 7-Ultra	EMK 8-Ultra
BASEdrum R52	250 kg	0,8 mm		89152	89241	89141
		1,0 mm	89160	89150	89610	89139
		1,2 mm	89158	89147	89240	89132
		1,6 mm		89102		89114
ECOdrum	250 kg	1,0 mm		89208		89500
		1,2 mm		89104		89499
MEGAdrum R65	500 kg	1,0 mm		89149		89138
		1,2 mm		89146		89134
		1,6 mm		89140		89131

Packaging Overview











## JOIN! We connect Metals and People

As a leader in the world of welding and part of the voestalpine steel and technology group, we are close to you with more than 100 years of experience, 50 subsidiaries and 4,000 sales partners worldwide. Thanks to our comprehensive product portfolio, welding expertise and global orientation, we know your needs and, as a total solution provider, ensure the best results for your most demanding challenges. Perfectly interlinked and as unique as your business.



**Lasting Connections** – Perfect alignment of welding machines, consumables and technologies combined with our renowned application and process know-how provide the best result for your requirements: A true and proven connection between people, products and technologies. The result is what we promise: The Perfect Weld Seam for Lasting Connections.



**Tailor-Made Protectivity™** – Proven under the toughest conditions: Our products protect metal surfaces from wear and corrosion. With over 70 years of experience and the broadest product portfolio in the industry, we are your preferred partner for Surface Protection solutions. We deliver what we promise: Surface Protection tailored to your needs.



**In-Depth Know-How** – As a manufacturer of soldering and brazing consumables, we offer proven solutions based on 60 years of industrial experience, tested processes and methods, made-in-Germany. This in-depth know-how makes us the internationally preferred partner to meet your soldering and brazing challenge through innovative solutions. The result is what we promise: Innovation based on in-depth know-how.

The Management System of voestalpine Böhler Welding Group GmbH, Peter-Mueller-Strasse 14-14a, 40469 Duesseldorf, Germany has been approved by Lloyd's Register Quality Assurance to: ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007, applicable to: Development, Manufacturing and Supply of Welding and Brazing Consumables. More information: [www.voestalpine.com/welding](http://www.voestalpine.com/welding)



