
CARBOFIL TENSIMAX
EXTREME WELD STRENGTH
• CARBOFIL TENSIMAX 69 • CARBOFIL TENSIMAX 79 • CARBOFIL TENSIMAX 89
FOR STEEL GRADES
UP TO 1100 MPa
YIELD STRENGTH
AND BEYOND
LINCOLN ELECTRIC

CARBOFIL **TENSIMAX - WELDING AT THE EDGE OF STEEL**

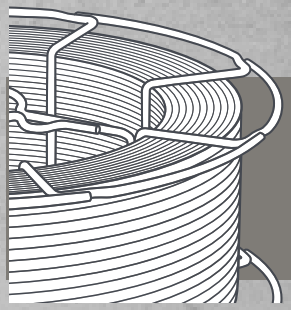
» **Premium MIG welding wires for high- and ultra-high-strength steels (690 MPa to 1300 MPa)**

» **Designed for advanced steels, among others S690QL, S770QL, S1100QL, S1300QL**

» **Built to support the most demanding structural applications**

When exceptional steels push limits

- Ultra-high-strength steels demand advanced welding solutions
- CARBOFIL TENSIMAX delivers controlled weld metal behavior
- Ensures weld joints meet the demands of modern high-performance steel structures



WHAT REALLY MATTERS

Tensile - (Yield-) Strength across the weld joint

Charpy values aligned with structural demands (base metal)

Hardness base metal heat affected zones weld

Engineered for real-world performance

- Reliable weld metal strength aligned with application requirements
- High, reproducible toughness, even in severe conditions
- Stable arc behavior and precise control for MIG and pulsed processes
- Consistent performance across realistic heat input and cooling variations
- Focus on overall weld joint performance, not on the wire's nominal strength alone.

CARBOFIL **TENSIMAX**

- **Consistent mechanical properties**
  Tight control of chemistry and wire manufacturing quality ensures predictable, repeatable weld performance.

- **Future-proof solution**
  Engineered for next-generation steels and evolving industry standards.

- **Exceptional toughness**
  Reliable performance even in severe low-temperature conditions a critical requirement for heavy-industry, and defense applications

Chemical composition, weld metal (wt. %):

	C	Mn	Si	P	S	Cr	Ni	Mo
CARBOFIL TENSIMAX 69	0.08	1.6	0.50	0.010	0.007	0.25	1.5	0.25
CARBOFIL TENSIMAX 79	0.08	1.7	0.70	0.010	0.009	1.60	0.3	0.6
CARBOFIL TENSIMAX 89	0.09	1.8	0.80	0.010	0.011	2.20	0.35	0.55

Mechanical properties, weld metal, AW:

	Yield strength (MPa)	Tensile strength (MPa)	Elongation 4d (%)	Elongation 5d (%)	Impact ISO-V (J) -40°C	Impact ISO-V (J) -50°C	Impact ISO-V (J) -60°C
CARBOFIL TENSIMAX 69	720	790	23	21	80		
CARBOFIL TENSIMAX 79	810	900	21	19		85	
CARBOFIL TENSIMAX 89	900	950	17	15			60

EXTREME WELD STRENGTH

Confidence to push design limits — without compromising safety or performance.

Nominal strength alignment is important — but not sufficient. Real weld joint performance depends on how the filler metal interacts with the base material and the heat input. CARBOFIL TENSIMAX is engineered to support this interaction where it matters most.

In high- and ultra-high-strength steels, weld properties are highly sensitive to:

- Narrow process windows, especially heat input and cooling rate
- Filler wire alloy design, which controls microstructure formation
- Small parameter variations, with major effects on strength and toughness

What truly matters is the filler wire's ability to consistently deliver the required strength and toughness under real welding conditions — not ideal laboratory tests.

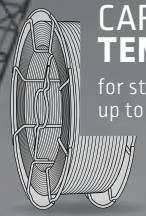
This is where CARBOFIL TENSIMAX makes the difference.

High-performance steels require more than simple chemical matching. The performance of a weld joint results from the interaction of:

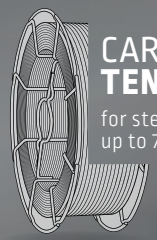
THE FILLER METAL
THE BASE MATERIAL
THE HEAT INPUT INTRODUCED DURING WELDING

As steel strength increases, these interdependencies become more critical and the tolerance windows significantly narrower.

Only premium filler metals specifically engineered for such applications can ensure metallurgical and technological integrity of the weld joint under these demanding boundary conditions.



CARBOFIL **TENSIMAX 69**
for steels
up to 690 MPa



CARBOFIL **TENSIMAX 79**
for steels
up to 790 MPa

CARBOFIL **TENSIMAX 89**
for steels
up to 1100 MPa
and beyond

FROM TOUGH TO TOUGHER

- **» Mobile Cranes**: including telescopic, crawler, and rough terrain
- **» Defence Applications**
- **» Lightweight railway freight waggons**
- **» High-strength and wear-resistant**: wheel loaders, excavator buckets
- **» Recycling**: crushers, breakers
- **» Bridge construction**
- **» Agricultural**: lightweight attachments
- **» Civilian armored** vehicles and applications

CARBOFIL **TENSIMAX**

- **Compliance with International Standards**
  AWS A5.28 and EN ISO 16834 classifications for global acceptance.
- **Available in Multiple Formats**
  BS300 spools and drums for high-volume production.

CARBOFIL TENSIMAX 69

for steels
up to 690 MPa

- Designed for high-strength steel **up to 690 MPa**
- Ideal for structural components and heavy-duty machinery
- Delivers excellent arc stability and low spatter

EN ISO 16834-A: G 69 4 M21 Mn3Ni1CrMo / AWS A5.28: ER110S-G

CARBOFIL TENSIMAX 79

for steels
up to 790 MPa

- Built for steel with yield strength **up to 790 MPa**
- Perfect for pressure vessels, cranes, and industrial frames
- Ensures deep penetration and smooth weld finish

EN ISO 16834-A: G 79 5 M21 Mn4Ni1.5CrMo / AWS A5.28: ER110S-G

CARBOFIL TENSIMAX 89

for steels
up to 1100 MPa
and beyond

- Optimized for ultra-high-strength steel **up to 1100 MPa and beyond**
- Suited for critical load-bearing applications
- Offers superior mechanical properties and impact resistance

EN ISO 16834-A: G 89 6 M21 Mn4Ni2CrMo / AWS A5.28: ER120S-G

Ordering information

	Item #	Diameter (mm)	Weight (kg)	Packaging
CARBOFIL TENSIMAX 69	C10L016PVE11	1,0	16	BS300
	C10D300EVE11	1,0	300	Drum
	C12L016PVE11	1,2	16	BS300
	C12D300EVE11	1,2	300	Drum
CARBOFIL TENSIMAX 79	C10L016PGE11	1,0	16	BS300
	C12L016PGE11	1,2	16	BS300
CARBOFIL TENSIMAX 89	580611	1,0	16	BS300
	580612	1,2	16	BS300

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