Complex-phase high-ductility steels

The benchmark for high-strength steels with exceptional bending properties

Complex-phase high-ductility steels are an innovation of voestalpine in the field of ultralights. They are characterized by substantially improved forming properties when compared to classical complex-phase steels. The precisely defined, very fine and high-strength microstructure leads to high yield strength, high resistance to edge cracking, improved deep-drawing characteristics and unique bending properties. The microstructure consists of bainite, martensite, tempered martensite and residual austenite. The similar chemical composition of classical complex-phase steels and high-ductility complex-phase steels yields comparable welding performance. Based on their unique properties, complex-phase high-ductility steels make a substantial contribution to innovative light-weight design in safety-related and crash-relevant components.

Convincing advantages

- Available with minimum tensile strengths from 980 to 1370 MPa
- Unique bending properties at high yield strengths
- Best forming properties of punched edges based on high resistance to edge cracking
- Good weldability comparable to that of classical complex-phase steels
- High crash energy absorption
- Corrosion resistance based on EG and GI coatings

Chemical composition

Heat analysis in % by mass

Steel grade	C max.	Si max.	Mn max.	P max.	S max.	Al	Cr + Mo max.	Ti + Nb max.	B max.	Cu max.
CR780Y980T-CH	0.23	1.8	3.00	0.050	0.010	0.015 – 1.0	1.0	0.15	0.005	0.2
CR900Y1180T-CH	0.23	2.0	3.00	0.050	0.010	0.015 – 2.0	1.0	0.15	0.005	0.2
CR1000Y1370T-CH	0.23	2.0	3.00	0.050	0.010	0.015 – 2.0	1.0	0.15	0.005	0.2

Mechanical properties: Tensile test

Longitudinal to rolling direction

Steel grade	0.2 % yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Total elongation A_{80} min.[1)] [%]	n value $n_{10\text{ - UE}}$ min.	BH_2 min. [MPa]
CR780Y980T-CH	780 – 950	980 – 1140	10	-	30
CR900Y1180T-CH	900 – 1150	1180 – 1350	7	-	30
CR1000Y1370T-CH	1000 – 1250	1370 – 1550	5	-	30

[1)] Restrictions based on thickness and coatings are possible

Coatings and available dimensions

Available thicknesses [mm] per coating

Steel grade	Uncoated UC	EG - ZE	GI - Z	GA - ZF
CR780Y980T-CH	0.8 – 1.7	0.8 – 1.7	Upon request	Under development
CR900Y1180T-CH	1.0 – 1.9	1.0 – 1.75	Under development	Under development
CR1000Y1370T-CH	1.0 – 1.4	1.0 – 1.4	Under development	Under development

The above named ahss steel grades are not available with MA, NA or RA surface finishes.

Available dimensions upon request.

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