Complex-phase steels

The classical steel with tensile strengths of up to 1200 MPa and superb bending properties

Complex-phase steels are part of the ahss classic product line of voestalpine in the field of ultralights. Complex-phase steels were specially developed for roll-profiling, bending and edging processes. These steels have proven themselves in large-scale serial production and are recommended in innovative light-weight automotive applications such as stiffeners, sills, door impact bars, seat mounting rails and auto chassis components. A fine microstructure consisting of high-strength constituents leads to high yield strength and high resistance to edge cracking while maintaining excellent bending properties. As a result of this balanced property profile, complex-phase steels are predestined for applications containing crash components with a high potential for light-weight design.

Convincing advantages

- Available with minimum tensile strengths of 780, 980 and 1180 MPa
- High ratio of yield to tensile strength
- High yield strength, even in non-formed zones
- Best formability of punched edges based on high resistance to edge cracking
- Achievement of very narrow bending radii
- High crash energy absorption
- Good weldability
- Corrosion resistance based on ZE/EG, Z/GI, ZF/GA or ZM coatings

Chemical composition:

Heat analysis in % by mass

Steel grade	C max.	Si max.	Mn max.	P max.	S max.	Al $_{total}$	Cr + Mo max.	Ti + Nb max.	V max.	B max.
Pursuant to EN 10346 and/or EN 10338										
HCT780C	0.18	1.00	2.50	0.080	0.015	0.015 – 2.0	1.00	0.15	0.20	0.005
HCT980C	0.23	1.00	2.70	0.080	0.015	0.015 – 2.0	1.00	0.15	0.22	0.005
HDT750C	0.18	0.80	2.20	0.080	0.015	0.015 – 2.0	1.00	0.15	0.20	0.005
HDT760C	0.18	1.00	2.50	0.080	0.015	0.015 – 2.0	1.00	0.25	0.20	0.005

Steel grade	Standard	C max.	Si max.	Mn max.	P max.	S max.	Al	Cr + Mo max.	Ti + Nb max.	B max.	Cu max.
Pursuant to VDA 239-100 and voestalpine special grades											
CR570Y780T-CP	VDA 239-100	0.18	1.00	2.50	0.050	0.010	0.015 – 1.0	1.00	0.15	0.005	0.20
CR660Y780T-CP	voestalpine	0.18	1.00	2.50	0.050	0.010	0.015 – 1.0	1.00	0.15	0.005	0.20
CR680Y780T-CP	voestalpine	0.18	1.00	2.50	0.050	0.010	0.015 – 1.0	1.00	0.15	0.005	0.20
CR780Y980T-CP	VDA 239-100	0.23	1.00	2.70	0.050	0.010	0.015 – 1.0	1.00	0.15	0.005	0.20
CR800Y1180T-CP	voestalpine	0.23	1.00	2.90	0.050	0.010	0.015 – 1.0	1.00	0.15	0.005	0.20
CR900Y1180T-CP	VDA 239-100	0.23	1.00	2.90	0.050	0.010	0.015 – 1.0	1.00	0.15	0.005	0.20
HR660Y760T-CP	VDA 239-100	0.18	1.00	2.20	0.050	0.010	0.015 – 1.2	1.00	0.25	0.005	0.20

Mechanical properties: Tensile test

Steel grade	Test direction	0.2 % yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m min. [MPa]	Total elongation A_{80} min. [1] [%]	n-value $n_{10\text{-}UE}$ min.	BH_2-value BH_2 min. [MPa]
Pursuant to EN 10346 and/or EN 10338						
HCT780C	Longitudinal	570 – 720	780	10	-	30
HCT980C	Longitudinal	780 – 950	980	6	-	30
HDT750C	Longitudinal	620 – 760	750	10	-	-
HDT760C	Longitudinal	660 – 830	760	10	-	-

Steel grade	Standard	Test direction	0.2 % yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Total elongation A_{80} min. [1] [%]	n-value $n_{10\text{-}20/Ag}$ min.	BH_2-value BH_2 min. [MPa]
Pursuant to VDA 239-100 and voestalpine special grades							
CR570Y780T-CP	VDA 239-100	Longitudinal	570 – 720	780 – 920	10	-	30
CR660Y780T-CP	voestalpine	Longitudinal	660 – 820	780 – 960	10	-	30
CR680Y780T-CP	voestalpine	Transverse	680 – 830	780 – 980	10	-	30
CR780Y980T-CP	VDA 239-100	Longitudinal	780 – 950	980 – 1140	6	-	30
CR800Y1180T-CP	voestalpine	Longitudinal	800 – 1050	1180 – 1350	6	-	30
CR900Y1180T-CP	VDA 239-100	Longitudinal	900 – 1100	1180 – 1350	5	-	30
HR660Y760T-CP	VDA 239-100	Longitudinal	660 – 820	760 – 960	10	-	30

[1] Restrictions based on thicknesses and coatings pursuant to EN 10346, EN 10338, VDA 239-100 and special voestalpine grades.

Coatings and available dimensions:

Available thicknesses [mm] per coating

Steel grade	Uncoated	ZE	Z	ZF	ZM
Pursuant to EN 10346 and/or EN 10338					
HCT780C	0.8 – 1.7	0.8 – 1.7	0.8 – 2.0	Under development	Upon request
HCT980C	0.8 – 1.7	0.8 – 1.7	0.9 – 2.0	Under development	Under development
HDT750C	Not available	Not available	2.0 – 3.0	Not available	Not available
HDT760C	2.0 – 6.0	Not available	2.0 – 3.0	Not available	Not available

Steel grade	Standard	UC	EG	GI	GA	ZM
Pursuant to VDA 239-100 and voestalpine special grades						
CR570Y780T-CP	VDA 239-100	0.8 – 1.7	0.8 – 1.7	0.8 – 2.0	Under development	Upon request
CR660Y780T-CP	voestalpine	0.8 – 1.7	0.8 – 1.7	0.8 – 2.0	Under development	Upon request
CR680Y780T-CP	voestalpine	0.8 – 1.7	0.8 – 1.7	0.8 – 2.0	Under development	Upon request
CR780Y980T-CP	VDA 239-100	0.8 – 1.7	0.8 – 1.7	0.8 – 2.0	Under development	Under development
CR800Y1180T-CP	voestalpine	Not available	Not available	Not available	Upon request	Not available
CR900Y1180T-CP	VDA 239-100	1.0 – 1.6	1.0 – 1.6	Upon request	Not available	Under development
HR660Y760T-CP	VDA 239-100	Upon request	Not available	2.0 – 3.0	Not available	Not available

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

Please find available dimensions at www.voestalpine.com/Produktinformationsportal or contact us directly.

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voestalpine Stahl GmbH
voestalpine-Straße 3
4020 Linz, Austria
T. +43/50304/15-8018
produktmanagement@voestalpine.com
www.voestalpine.com/steel

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