

Dual-phase high-ductility steels

The benchmark for high-strength steels with exceptional drawing properties

Dual-phase high-ductility steels are an innovation of voestalpine in the field of ultralights. In contrast to classical dual-phase steels, dual-phase high-ductility steels feature significantly improved formability with respect to deep drawing. Depending on the strength class, the multiphase microstructure of dual-phase high-ductility steels consists of certain amounts of ferrite, martensite, bainite and residual austenite. This results in high resistance to edge cracking and excellent crash behavior. Similar chemical composition leads to comparable welding behaviour in classical dual-phase steels and dual-phase high-ductility steels. Dual-phase high-ductility steels make a significant contribution to light-weight design because of their extraordinary balance between strength, formability and weldability.

Convincing advantages

- » Available with minimum tensile strengths of 590, 780, 980 and 1180 MPa
- » Extraordinary cold formability
- » Good weldability comparable to that of classical dual-phase steels
- » Very low susceptibility to edge cracking
- » Excellent crash behavior
- » Corrosion resistance based on EG, GI, GA and ZM coatings

Chemical composition

Heat analysis in % by mass

Steel grade	Standard	C max.	Si max.	Mn max.	P max.	S max.	Al	Cr + Mo max.	Ti + Nb max.	B max.	Cu max.
CR330Y590T-DH	voestalpine	0.15	0.8	2.50	0.050	0.010	0.015 - 1.0	1.40	0.15	0.005	0.20
CR440Y780T-DH	VDA 239-100	0.18	0.8	2.50	0.050	0.010	0.015 - 1.0	1.40	0.15	0.005	0.20
CR700Y980T-DH	VDA 239-100	0.23	1.8	2.90	0.050	0.010	0.015 - 1.0	1.40	0.15	0.005	0.20
CR850Y1180T-DH	voestalpine	0.23	2.0	2.90	0.050	0.010	0.015 - 2.0	1.40	0.15	0.005	0.20

Mechanical properties: Tensile test

Longitudinal to rolling direction

Steel grade	Standard	0.2 % yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Total elongation A_{90} min. ¹⁾ [%]	n value n_{10-UE} min.	BH ₂ value BH ₂ min. [MPa]
CR330Y590T-DH	voestalpine	330 - 430	590 - 700	26	0.16	30
CR440Y780T-DH	VDA 239-100	440 - 550	780 - 900	18	0.13	30
CR700Y980T-DH	VDA 239-100	700 - 850	980 - 1180	13	-	30
CR850Y1180T-DH	voestalpine	850 - 1050	1180 - 1350	10/13 ²⁾	-	30

¹⁾ Restrictions based on thickness and coatings are possible

²⁾ Higher grade with improved elongation possible upon customer request

Coatings and available dimensions

Available thicknesses [mm] per coating

Steel grade	Standard	Uncoated UC	EG - ZE	GI - Z	GA - ZF	ZM - ZM
CR330Y590T-DH	voestalpine	0.8 - 1.6	0.8 - 1.6	0.8 - 2.0	Upon request	Upon request
CR440Y780T-DH	VDA 239-100	0.8 - 1.6	0.8 - 1.6	0.8 - 2.2	Upon request	Upon request
CR700Y980T-DH	VDA 239-100	1.0 - 1.6	1.0 - 1.6	Upon request	Under development	Under development
CR850Y1180T-DH	voestalpine	Upon request	Upon request	Under development	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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voestalpine Stahl GmbH

voestalpine-Straße 3

4020 Linz, Austria

T. +43/50304/15-8018

produktmanagement@voestalpine.com

www.voestalpine.com/steel

voestalpine

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