

ultralights by voestalpine

Let your
ideas
fly!

ahss classic
CR440Y780T-DP

ahss high-ductility
CR440Y780T-DH

voestalpine Performance facts | Page 1/6 | Version September 2022

PERFORMANCE FACTS

Two varieties of high-performance dual-phase steels are supplied by voestalpine: classic and high ductility.

We have taken a look at how the two products compare in the areas of:

- » forming
- » welding
- » crash behavior

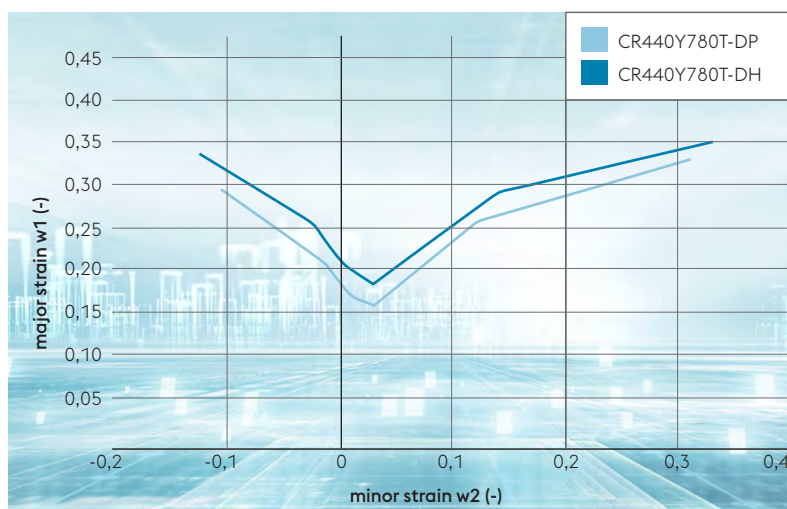
The voestalpine steel experts compared the two materials.



PREMIUM QUALITY
WITH REDUCED
CARBON FOOTPRINT

FORMING PROPERTIES

The classic dual-phase steels feature high strength, very good cold formability, a balanced relationship between deep drawing properties and high resistance to edge cracking. High-ductility dual-phase steels exceed this property profile and are thus best suitable for complex structural components.



Forming limit curves of CR440Y780-DP and CR440Y780-DH

THE HIGHER FORMING POTENTIAL OF HIGH-DUCTILITY STEELS ALLOWS MORE COMPLEX GEOMETRIES OR ADDITIONAL WEIGHT SAVINGS

The forming limit curve characterizes the material and allows selection of the correct material. The significantly improved forming properties of CR440Y780-DH as compared to CR440Y780-DP can be clearly seen in the diagram.

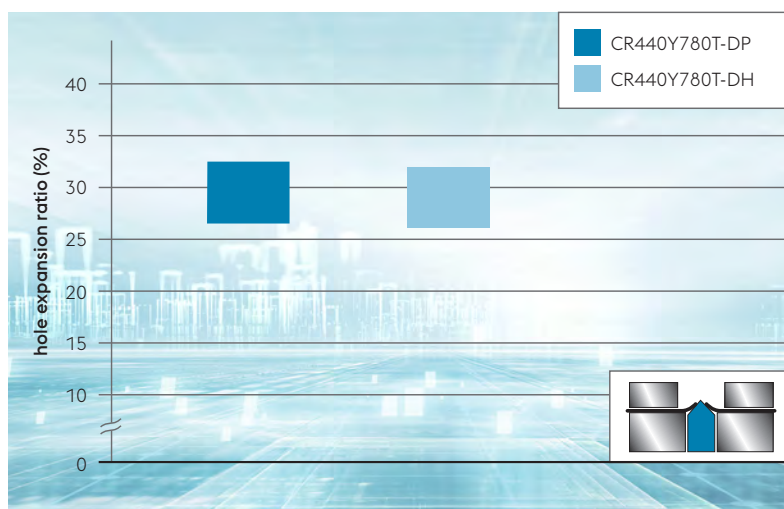


More freedom of design

The high forming potential of dual-phase high-ductility steel grades makes it possible to achieve complex components and thus offers more freedom of design.

New potential in light-weight design

The improved forming properties in high-ductility steels permit processing of a higher strength class and thus the reduction of component wall thicknesses. The resulting weight reduction opens new pathways in light-weight design.



Hole expansion test pursuant to ISO 16630, typical values

HIGH DAMAGE TOLERANCE AND HIGH RESISTANCE TO EDGE CRACKING

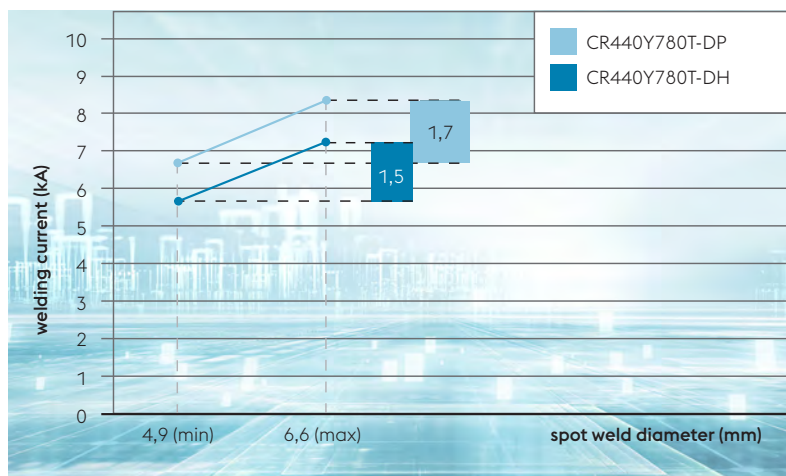
The resistance to edge cracking in CR440Y780T-DP and CR440Y780T-DH are in a comparable range.

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WELDABILITY

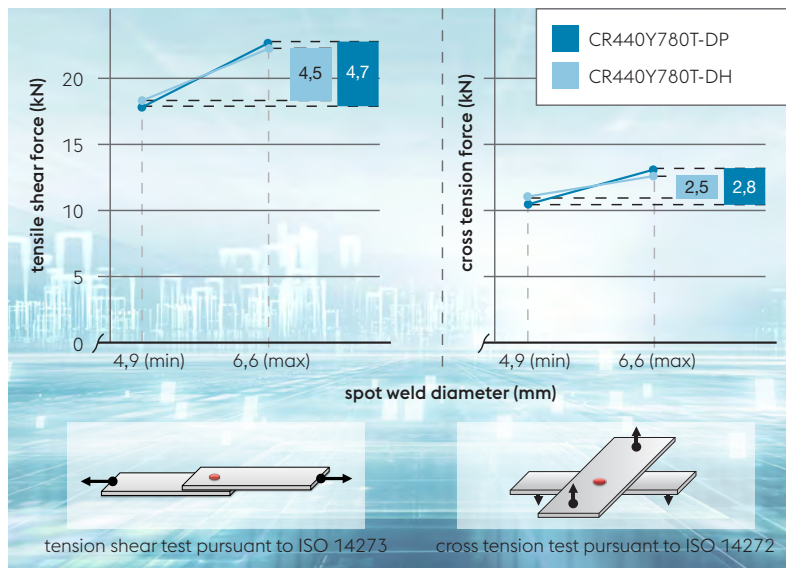
The weldability of a steel grade is a material prop-erty with high technological significance. Resistance spot welding continues to be the sustainable method of joining parts in car body manufacturing. The further processing of high-ductility dual-phase steels does not pose any problems because of their excellent weldability.



Welding parameters pursuant to ISO 18278-1: MFDC 1 impulse, sheet thickness: 1.5 mm

PROCESS RELIABILITY BASED ON BROAD WELDING RANGE

CR440Y780T-DP and CR440Y780T-DH share a comparable range with respect to resistance spot welding.



Each value is the arithmetic mean of five parallel samples, sheet thickness: 1.5 mm

SAME HIGH LEVEL OF TOUGHNESS IN SHEAR AND CROSS-TENSION TESTS

Spot welds in high-ductility dual-phase steels exhibit the same high breaking loads of CR440Y780T-DP and thus allow the production of crash-resistance structural components.

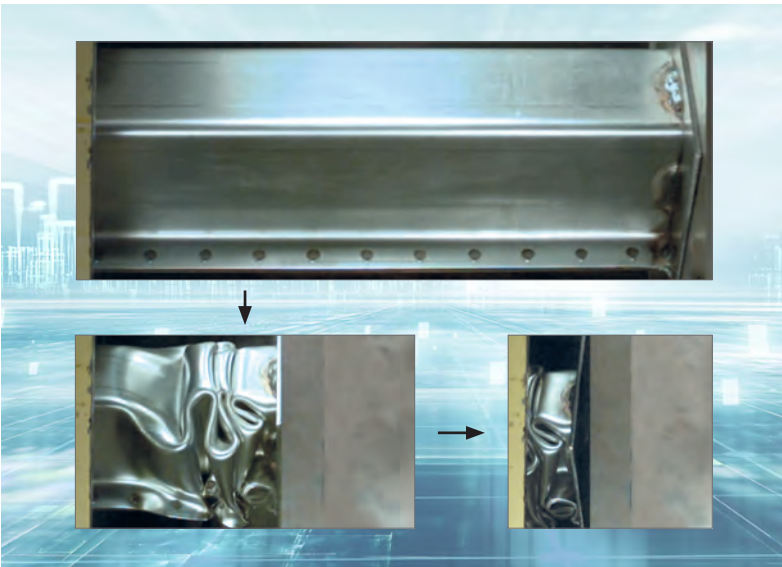
CRASH BEHAVIOR

Tested in the voestalpine crash simulator

Crash test results provide important information for materials development and users. The tests are performed on high-strength automotive steels up to the limits of their ductility in order to guarantee their suitability in highly demanding applications.



**EXCELLENT BUCKLING
PROPERTIES OF CR440Y780T-DH**



**AXIAL CRASH OF
LONGITUDINAL MEMBER**

Both CR440Y780T-DP and CR440Y780T-DH are characterized by excellent crash behavior. Both steel grades demonstrate comparable buckling behavior and energy absorption in axial crashes.



Please find further information at:
www.voestalpine.at/ultralights

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OUR PATH TO A GREENER FUTURE

Premium products in the greentec steel Edition

With greentec steel, voestalpine is pursuing an ambitious step-by-step plan in the long-term decarbonization of steel production. The declared objective is to achieve carbon-neutral production by 2050, and the initial steps have already been taken. Process-optimized production operations already prevent up to 10% of the direct CO₂ emissions at the Linz site. The material and processing properties of the steel are not affected in any way in this production route. Each voestalpine steel strip product is available in premium quality in the greentec steel Edition with a reduced carbon footprint and unique benefits.



Premium quality with reduced carbon footprint

Cold-rolled steel strip – greentec steel edition

Max. carbon footprint 2.15 kg CO₂e per kg of steel ¹⁾

Hot-dip galvanized steel strip – greentec steel edition

Max. carbon footprint 2.30 kg CO₂e per kg of steel ¹⁾

Electrogalvanized steel strip – greentec steel edition

Max. carbon footprint 2.30 kg CO₂e per kg of steel ¹⁾

¹⁾ per EN 15804+A2 (EPD methodology) cradle to gate

All products, dimensions and steel grades listed in each voestalpine supply range are available as greentec steel Edition.



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