



# Hot Roll Ferrite-Bainite Steels

## Grade Availability

	Bare	HDG
HR 540 FB	U	
HR 590 FB	U	U
HR 780 FB	U	U

U Unexposed, commercially available

I In development

## Product Characteristics

This family of hot roll steels includes products combining high tensile strength (UTS) with excellent formability and hole expansion (stretch flangeability) based on their largely ferrite-bainite microstructure.

The primary advantage of ferrite-bainite steels over HSLA and Dual Phase steels is the improved stretchability of sheared edges as measured by the hole expansion test. Compared to HSLA steels with the same level of tensile strength, ferrite-bainite steels generally also have a higher strain hardening exponent (n-value) and increased total elongation.

## Applications

These steels are suitable for cold drawing with edge stretch or hole expansion requirements.

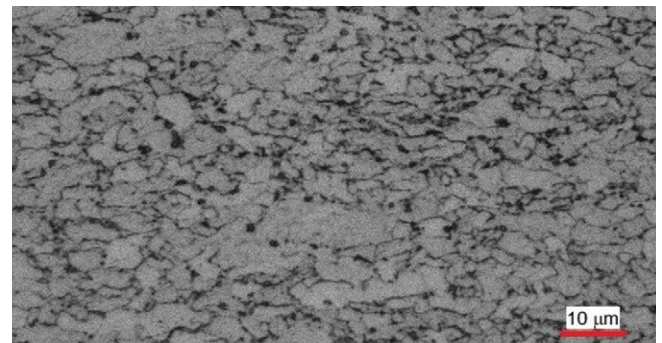
Main applications are:

- Structural parts (longitudinal beams, cross members, chassis and suspension systems components)
- Wheels
- Mechanical parts (suspension system components, gear box components, etc.)

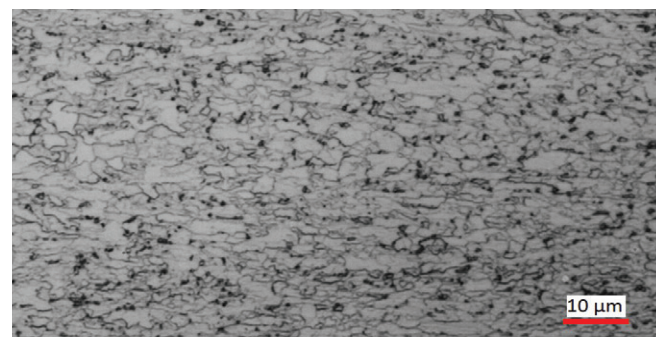


## Metallography

HR 540 / 590 FB – approximately 85 percent ferrite and 15 percent bainite



HR 780 FB – predominantly bainite with finely dispersed martensite/austenite islands and small amounts of polygonal ferrite



## Chemistry - Typical

	C	Mn	Si	Other
HR 540 FB	0.085	1.25	0.65	
HR 590 FB Bare/HDG	0.065	1.5	0.30	Ti, Nb
HR 780 FB Bare	0.04	1.5	0.55	Cr, Nb, Ti
HR 780 FB HDG	0.05	1.5	0.20	Cr, Mo, Nb, Ti

