

# Docol Hardenable Steel - Case Hardening Steel

## Cold rolled sheet for case hardening

### PRODUCT

Docol case hardening steels have a relatively low carbon content, and are intended for carburising or carbonitriding and subsequent hardening. The steels are comparable to the standard EN 10132-2.

### APPLICATION

The steels are used in applications where a high hardness surface layer and a tough core are required. Examples are wear parts, gear wheels etc

### DIMENSION RANGE

Docol case hardening steels are delivered in the following dimensions in the cold rolled and annealed condition.

Thickness (mm)	Width (mm)	
0.70 - 0.79	600 - 625	800 - 1350
0.80 - 0.89	600 - 700	800 - 1400
0.90 - 2.00	600 - 750	800 - 1500
2.01 - 3.00		800 - 1500

### CHEMICAL COMPOSITION

Steel grade	C (%) min - max	Si (%) min - max	Mn (%) min - max	P (%) max	S (%) max	Cr (%) min - max
Docol C10	0.07 - 0.13	0.15 - 0.35	0.30 - 0.60	0.025	0.025	max 0.40
Docol C15	0.12 - 0.18	0.15 - 0.35	0.30 - 0.60	0.025	0.025	max 0.40
Docol 17Cr3	0.14 - 0.20	0.15 - 0.35	0.60 - 0.90	0.025	0.025	0.70 - 1.00
Docol 16MnCr5	0.14 - 0.19	0.15 - 0.35	1.00 - 1.30	0.025	0.025	0.80 - 1.00

## MECHANICAL PROPERTIES

(Approximative values)

Steel grade	Condition	Yield strength $R_{p0.2}$ (Mpa)	Tensile strength $R_m$ (Mpa)	Elongation $A_{80}$ (%)	Hardness HRC	Quenching Temperature (°C)
Docol C10	Annealed	220	360	36		
	Water quenched		-		-	
	Oil quenched		-		-	
Docol C15	Annealed	235	380	35		
	Water quenched		-		-	
	Oil quenched		-		-	
Docol 17Cr3	Annealed	300	450	30		
	Water quenched		1315		42	900
	Oil quenched		1230		39	860
Docol 16MnCr5	Annealed	380	540	26		
	Water quenched		1295		41	900
	Oil quenched		1195		38	860

## BENDABILITY

	Nominal thickness, t $0.7 \text{ mm} \leq t \leq 3.0 \text{ mm}$
Min. recommended bending radius ( $\leq 90^\circ$ )	1.0 x t

## RECOMMENDED FILLER METALS

Manual metal arc welding (MMA)	Gas metal arc welding (GMAW)
AWS: A5.1 E7018	AWS: A5.18 ER 70S-X

## WELDING

Recommended fusion welding methods for Docol case hardening steels include manual metal arc welding (MMA) and gas metal arc welding (GMAW). It is recommended that welding is carried out before case hardening. All steels can be welded without preheating. For manual metal arc welding basic electrodes should be used.

If the welding has to be carried out after case hardening please contact the customer service department at SSAB Tunnlåt.

The particulars in this data sheet are correct at the time of going to print and are intended to give general guidance for the use of the product. Subject to changes arising from continual product development. The information and data must not be regarded as guaranteed values, unless specially confirmed in writing.



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