

Mo and Cr-Mo steels for high temperature applications

The main use is in the chemical and petrochemical industry at temperatures between 350° C - 600° C.

Properties

For this sector, national and international standards, require basic steel with Mo and Cr-Mo contents equivalent among different qualities.

Mechanical properties at normal temperature

ASME	ReH <i>N / m m² min.</i>	Rm <i>N / m m²</i>	Al % <i>min</i>
SA204 gr. C	255	450-585	19
SA387 gr. 2 cl. 2	230	380-550	18
SA387 gr. 5 cl. 2	205	415-585	18
SA387 gr. 11 cl. 2	240	415-585	19
SA387 gr. 12 cl. 2	230	380-550	18
SA387 gr. 22 cl. 2	205	415-585	18
EN10028-2 16M03	275	440-590	24

Chemical composition - %

ASME	C <i>max</i>	Mn	P <i>max</i>	S <i>max</i>	Si	Mo	Cr
SA204 gr. C	0.23	0.90 <i>max</i>	0.035	0.035	0.15÷0.40	0.45÷0.60	-
SA387 gr. 2 cl. 2	0.21	0.55÷0.80	0.035	0.040	0.15÷0.40	0.45÷0.60	0.50÷0.80
SA387 gr. 5 cl. 2	0.15	0.30÷0.60	0.035	0.030	0.50 <i>max</i>	0.45÷0.65	4.00÷6.00
SA387 gr. 11 cl. 2	0.17	0.40÷0.65	0.035	0.035	0.50÷0.80	0.45÷0.65	1.00÷1.50
SA387 gr. 12 cl. 2	0.17	0.40÷0.65	0.035	0.035	0.15÷0.40	0.45÷0.60	0.80÷1.15
SA387 gr. 22 cl. 2	0.15	0.30÷0.60	0.035	0.035	0.50 <i>max</i>	0.90÷1.10	2.00÷2.50
EN10028-2 16M03	0.20	0.40÷0.90	0.025	0.010	0.35 <i>max</i>	0.25÷0.35	0.30 <i>max</i>

Available thickness

ALL 6 mm - 60 mm

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Properties

The most important characteristics of Mo and Cr-Mo are:

- The addition of Mo improves the mechanical properties at high temperatures while the Cr contents improve the resistance of steel in high temperatures applications;
- MN permits to raise the resistance value to all temperatures.

Comparative standards

ASME	EN 10028-2	UNI 5869	DIN 17155	AFNOR
SA204 gr. C	-	16 MO 5	16 MO 5	-
SA387 gr. 2 cl. 2	-	-	-	15 CD 2.05
SA387 gr. 5 cl. 2	-	-	12 CRMO 195	210 CD 5.05
SA387 gr. 11 cl. 2	13 CRMO 4.5	14 CRMO 4.5	-	-
SA387 gr. 12 cl. 2	13 CRMO 4.5	14 CRMO 4.5	13 CRMO 4.4	15 CD 4.05
SA387 gr. 22 cl. 2	10 CRMO 9.10	12 CRMO 9.10	10 CRMO 9.10	10 CD 9.10