

Quality	C16E
According to standards	EN 10084: 2008
Number	1.1148

Chemical composition

C%	Si% max	Mn%	P% max	S% max	Deviations allowed for analysis product
0,12-0,18	0,40	0,60-0,90	0,035	0,035	
± 0.02	+ 0.03	± 0.04	+ 0.005	+ 0.005	

C 16R n° 1.1208 S% 0.020-0.040 product deviation ± 0.005%

C16 n° 1.0407 P% - S% max 0.045

C16Pb Pb = 0.15- 0.35

Temperature °C

Hot-forming	Normalizing	Core hardening	Carbonitriding	Carburizing	Hardening carburizing surf.	Tempering
1150-850	890-920 air (HB 100–155)	880-920 water	740-930 gas	880-980	780-820 water	150 200
Soft annealing	Isothermal annealing	Hardening on specimen Ø 25 mm		Pre-eating wldg	Stress-relieving after welding	
650-700 air (HB max 156)	910 furnace cooling to 650, then (HB 120-148)	900 water (HRC ~ 42)		welding must be carried out on the annealed state and before carburizing 100 Ac1	725 Ac3	slow cooling Ms * core ** carburizing surface 450* 230**

Mechanical and physical properties

Hot-rolled values obtained on test blanks after core hardening + stress-relieving UNI 5331: 1964. Use only as reference

size mm test blanks	Testing at room temperature (longitudinal)					
	R	Rp 0.2	A%	C%	Kcu	HB
25	N/mm ² 700-1100	N/mm ² min. 450	min. 7	min.	J min. 44	for inform. 213-331

C16R 1.1208

Cold drawn +C EN 10277-4: 2008 ^{c)}						Hot-rolled + peeled-reeled +SH			
size mm		Testing at room temperature (longitudinal)				Testing at room temperature (longitudinal)			
from	to	R ^{a)}	R _{p 0.2} ^{a)}	A%	HB	R	R _{p 0.2}	A%	HB
		N/mm ²	N/mm ² min	min		N/mm ²	N/mm ² min	min	
5 ^{b)}	10	520-820	400	7	154-247				
10	16	500-800	360	8	152-240				
16	40	450-750	300	9	135-228	350-620			105-184
40	63	400-690	260	11	119-210	350-620			105-184
63	100	360-620	235	12	106-210	350-620			105-184
size mm		Soft annealing +A +SH Peeled-reeled, ground +SL				Soft annealing +A +C Cold-drawn			
from	to	HB max				HB max			
5 ^{b)}	10					242			
10	16					238			
16	40	156				222			
40	63	156				204			
63	100	156				184			

^{a)} for flats and special sections, yield point can be - 10% and tensile strenght can be ± 10%

^{b)} for thickness < 5 mm, mechanical properties should be agreed before order placement

^{c)} values valid also for +C+SL and +SH+SL

Forged values obtained on test blanks after core hardening + stress-relieving UNI 5331: 1964. Use only as reference

size mm		Testing at room temperature (longitudinal)							HB
test blanks		R	R _{p 0.2}	A% L	A% T	A% Q	K _{cu} L	K _v L	
		N/mm ²	N/mm ² min	min	min	min	J min	J min	for inform.
25		700-1100	450	7			44		213-331

Jominy test HRC

mm distance from quenched extremity

1.5 3 5 7 9 11 13 15 20 25 30 35 40 45 50

min No indications from reference standards

max

Temperature Testing at °C	Mod. of elasticity GPa		Thermal expansion 10 ⁻⁶ • K ⁻¹
	E long.	G tang.	
20	210	80	
100			11.1
200			12.1
300			12.9
400			13.5
500			13.9
600			14.1

Specific heat capacity J/(Kg•K)	Density Kg/dm ³	Thermal conductivity W/(m•K)	Specific electric resist. Ohm•mm ² /m	Electrical conductivity Siemens•m/mm ²
460	7.85	58	0.11	9.09

EUROPE EN	ITALY UNI	CHINA GB	GERMANY DIN	FRANCE AFNOR	U.K. B.S.	RUSSIA GOST	USA AISI/SAE
C16E	C15			XC18	080M15		1015