

MATERIAL NUMBER 1.1221 · CLASS 1.1

F.511

Material no. 1.1221

also listed as C60E

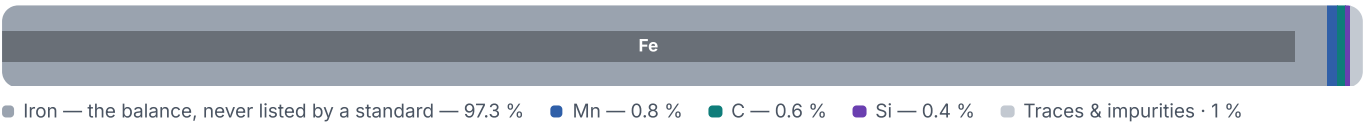
Chemical composition, mechanical and physical property values, and 38 standard designations from 18 regions.

DENSITY 7.85 g/cm ³	OTHER DESIGNATIONS 38 in 18 regions	PROPERTY VALUES 16 on file
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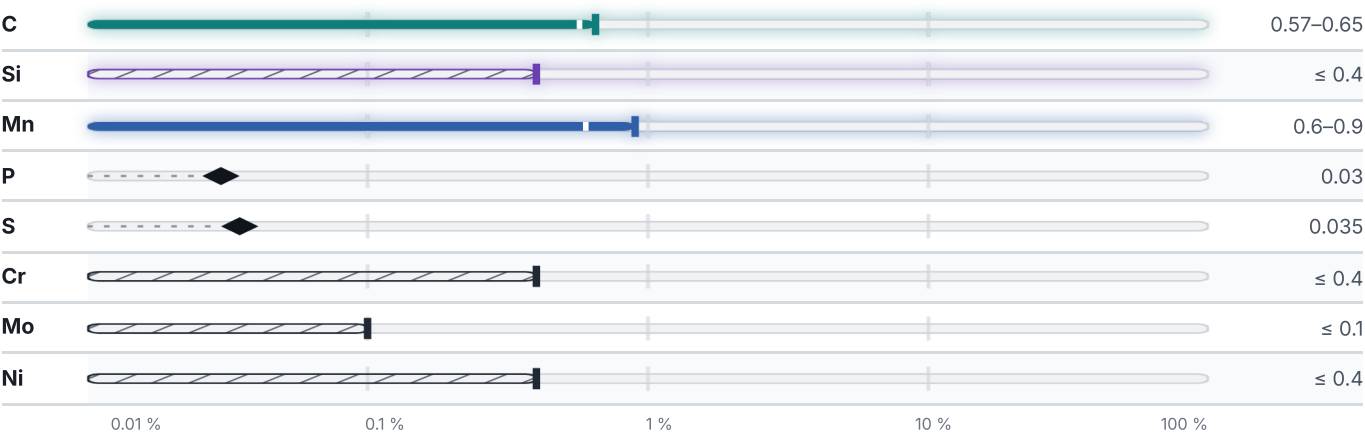
Chemical composition

Mass fraction in %

What this alloy is



Logarithmic scale, 0.01 % to 100 % — every value here compares directly, decade by decade.



The scale is logarithmic, not the element's raw share of the alloy — the only honest way to fit 0.01 % and 100 % in one picture, and it means every value here can be compared with every other.

Predicted transformation temperatures

This grade's composition falls outside the published model's validated range (a low-alloy composition window), so no transformation temperature is predicted here.

Mechanical properties

52 values across 13 conditions

NORMALIZED		RM N/mm ²	A %		
≤ 16		710	10		
16 – 100		670	11		
100 – 250		650	11		
250 – 500		630	–		
500 – 1000		620	–		
QUENCHED AND TEMPERED		REH N/mm ²	RM N/mm ²	A %	
0.3 – 3		–	1150–1750	–	
≤ 8		580	850	11	
8 – 20		520	800	13	
20 – 50		450	750	14	
50 – 80		420	710	14	
COLD DRAWN / HARD		RM N/mm ²		A %	
5 – 10		800–1150		5	
10 – 16		780–1130		5	
16 – 40		730–1100		6	
CONDITION · DIMENSION		RM N/mm ²	A5 %	HB	
Band annealed , GOST 2284-79		440–740	10	–	
Band cold-worked , GOST 2284-79		740–1130	–	–	
Rolled stock GOST 1050-88		–	–	255	
SOFT ANNEALED		RM N/mm ²	A80 %		
0.3 – 3		620	17		
NORMALIZING		RM N/mm ²	RE N/mm ²	A5 %	Z %
to 80		680	400	12	35
CONDITION · DIMENSION		RM N/mm ²	RE N/mm ²	A5 %	Z %
Steel		700	510	17	60

QUENCHING 780 - 830°C, OIL, DRAWING 560°C	RM N/mm²	RE N/mm²	A5 %	Z %	KCU kJ/m²
30	920	590	19	50	240
TREATED TO IMPROVE SHEARABILITY					HB
Treated to improve shearability					255
SOFT ANNEALED		HB			HV
Soft annealed		241			195
AS ROLLED AND TURNED					HB
As rolled and turned					198–278
COLD ROLLED					HV
Cold rolled					305
QUENCHED AND TEMPERED					HV
Quenched and tempered					345–530

Physical properties

8 values

CONDITION · DIMENSION	RHO g/cm ³	E GPa	ALPHA 10 ⁻⁶ /K	LAMBDA W/(m·K)	CP J/(kg·K)
20	7.8	204	–	–	–
100	–	–	11	68	483
200	–	208	11.9	53	487
300	–	189	–	–	–
400	–	174	13.9	36	529
500	–	–	14.6	–	–
600	–	–	–	–	567
PROPERTY	VALUE		UNIT		
Density	7.85		g/cm ³		
Transformation point Ac1	725		°C		
Transformation point Ac3	750		°C		
Transformation point Ar3	745		°C		
Transformation point Ar1	690		°C		

Technological properties

PROPERTY	VALUE	UNIT
Weldability	is not used.	
Flake sensitivity	weakly predisposed	
Temper brittleness	not predisposed	

Heat treatment

2 regimes

STEP	TEMPERATURE	MEDIUM
source joins the operations with + / procedural order		
Annealing	Temperature not stated	—
Annealing	Temperature not stated	—
Tempering	Temperature not stated	—
Normalizing	Temperature not stated	—
Tempering	Temperature not stated	—
Normalizing	Temperature not stated	—

Designations across standards

38 designations · 6 documented as identical

United States	6	France	3
G10550	uns	2C60	afnor
G10600 This grade's own name	uns	C60E	afnor
G10640 This grade's own name	uns	XC60	afnor
1055	aisi-sae		
1060 This grade's own name	aisi-sae	Spain	3
1064 This grade's own name	aisi-sae	C55k	une
		F.511	une
		F.512	une
United Kingdom	6		
060A62	bs		
070M60	bs	China	2
080A62	bs	60	gb
43D	bs	60Mn	gb
CS60	bs		
EN43D	bs	Russia / CIS	2
		60	gost
Europe	3	60G	gost
1.1221	din-en		
C60E This grade's own name	din-en	Sweden	2
Ck 60 This grade's own name	din-en	1665	ss
		1678	ss

Poland	2	Brazil	1
55	pn	1060	abnt
60	pn		
International	1	Slovakia	1
C60E4	iso	12 061	stn
Japan	1	Croatia	1
S58C	jis	Č.1731	hrn
Italy	1	Türkiye	1
C60	uni	Ç 1060	mke
Czechia	1	Hungary	1
12061	csn	C 60	msz

Note on use. The data is compiled to the best of our knowledge from publicly available standards and manufacturer documentation. It replaces neither material testing nor an inspection document to EN 10204. Please request a mill certificate to EN 10204 2.1, 3.1 or 3.2 together with your enquiry. The standard in its current valid edition always prevails.

Enquiry about F.511

Quotation, availability, mill certificate or a technical question — directly on the material page.

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ISSUED

Aug 20, 2026