

HABA Steel plates overview

Product overview, formats

K52, Planstahl, EC80, CK45,
C-Stahl, Toolox33 , Toolox44,
INOX V2A, INOX V4A, 2316-S

Mechanical engineering

Plant construction

Apparatus construction

Jig manufacturing

Toolmaking



Product overview

Steel plates

HABA product designation	K52	Planstahl	EC80
Material no.	1.0577	1.0577	1.7131
Steel quality	Engineering steel	Engineering steel	Case-hardened steel
DIN/EN designation	S355J2+N (old ST52-3N)	S355J2+N (old ST52-3N)	16MnCr5
Surface	grinded	grinded	grinded
HABA standard tolerance			
Quality of finish	≤Ra1.6 (N7)	≤Ra1.6 (N7)	≤Ra1.6 (N7)
Thickness tolerance (mm)	+0.25/0	+0.3/0	+0.4/+0.3
Parallelism (mm)	≤0.05	≤0.1	≤0.05
Evenness (mm)	≤0.2	≤0.3	≤0.15
Length and width tolerance (mm)	+1/0	+1/0	+0.8/+0.3
Customer-specific tolerance (mm)	within a tolerance of 0.4 mm	within a tolerance of 0.4 mm	within a tolerance of 0.4 mm
Mechanical properties			
Machinability	very good	good	very good
Dimensional stability	very good	good	very good
Tensile strength R_m (N/mm ²)	470-630	470-630	ca. 700
Elastic limit $R_{eH}/R_{p0.2}$ (N/mm ²)	295-355	295-355	ca. 550
Breaking strain A_5	17-22 %	17-22 %	9-11 %
Hardness HBW	-	-	138-187
Hardness HRC	-	-	-
Density (kg/dm ³)	7.85	7.85	7.85
E-module (kN/mm ²)	~210	~210	~210
Thermal conductivity coefficient (W/mK)	35-45	35-45	35-45
Thermal expansion coefficient (10 ⁻⁶ / K)	11-14	11-14	11-14
Chemical composition			
Carbon	C ≤0.20 %	≤0.20 %	0.14-0.19 %
Silicium	Si ≤0.55 %	≤0.55 %	≤0.40 %
Manganese	Mn ≤1.60 %	≤1.60 %	1.0-1.3 %
Phosphor	P ≤0.035 %	≤0.035 %	≤0.035 %
Sulfur	S ≤0.035 %	≤0.035 %	≤0.035 %
Chromium	Cr -	-	0.8-1.1 %
Molybdenum	Mo -	-	-
Nickel	Ni -	-	-
	Cr+Mo+Ni -	-	-
Vanadium	V -	-	-
Nitrogen	N -	-	-
Weldability	good	good	good
CEIW	-	-	-
CET	-	-	-
Comments / comparisons			
	Extremely low-tension engineering steel which is specially low-tension annealed at HABA and is easy to weld. It is used for intensively processed machine components of all kinds where a high degree of dimensional stability is required.	Normal heat-treated steel well suited for welding and for basic machine components. Planstahl comes mainly into use in mechanical engineering, vehicle and tool construction.	Normalised and additionally low-tension annealed case-hardened steel with excellent machinability and high dimensional stability. Suitable for mechanical engineering parts such as gear wheels and gear parts with a hard, wear-resistant surface and a tough core.

CK45	C-Stahl	Toolox33	Toolox33
1.1191 Unalloyed tempering steel C45E+N	1.1191 Unalloyed tempering steel C45E+N	- pre-hardened steel -	- pre-hardened steel -
grinded	milled	grinded	as-rolled
≤Ra1.6 (N7) +0.3/+0.2 ≤0.03 ≤0.1 +0.8/+0.3 within a tolerance of 0.4 mm	Ra3.2 (N8) +/-0.2 ≤0.1 ≤0.3 +/-0.3 within a tolerance of 0.5 mm	≤Ra1.6 (N7) +0.2/+0.1 ≤0.05 ≤0.20 +0.8/+0.3 within a tolerance of 0.4 mm	- EN 10 029 Klasse C EN 10 029 ≤0.5 +0.8/+0.3 within a tolerance of 0.4 mm
very good very good	good good	very good very good	very good very good
560-620 275-340 14-16 %	560-620 275-340 14-16 %	1080 950 ≥16 %	1080 950 ≥16 %
175-210 -	175-210 -	310 29	310 29
7.85 ~210 35-45 11-14	7.85 ~210 35-45 11-14	7.85 ~210 11-14	7.85 ~210 11-14
0.42-0.5 % ≤0.40 % 0.50-0.80 % ≤0.035 % ≤0.035 % ≤0.40 % ≤0.10 % ≤0.40 % ≤0.63 % - -	0.42-0.50 % ≤0.40 % 0.50-0.80 % ≤0.035 % ≤0.035 % ≤0.40 % ≤0.10 % ≤0.40 % ≤0.63 % - -	0.22-0.24 % 0.6-1.1 % 0.8 % ≤0.01 % ≤0.003 % 1.0-1.2 % 0.30 % ≤1 % - 0.10-0.11 % -	0.22-0.24 % 0.6-1.1 % 0.8 % ≤0.01 % ≤0.003 % 1.0-1.2 % 0.30 % ≤1 % - 0.10-0.11 % -
limited - -	limited - -	- 0.62-0.71 0.40-0.44	- 0.62-0.71 0.40-0.44
Heat-treated and stress relieved steel by HABA with excellent machinability and high dimensional stability. Suitable for intensively processed components, for medium stress in mechanical engineering, toolmaking and vehicle construction.	Normalized heat-treated steel with good machinability, surface-hardenable and weldable within limits. Suitable for basic steel components, in mechanical engineering, vehicle construction and toolmaking which are exposed to medium stress.	Toolox33 is a steel with outstanding dimensional stability. The high impact toughness and wear resistance are exceptional. It is used in mechanical engineering and toolmaking.	Toolox33 is a steel with outstanding dimensional stability. The high impact toughness and wear resistance are exceptional. It is used in mechanical engineering and toolmaking.

Product overview

Steel plates

HABA product designation	Toolox44	Toolox44	INOX V2A
Material no.	-	-	1.4301
Steel quality	pre-hardened steel	pre-hardened steel	stainless steel
DIN/EN designation	-	-	X5CrNi 18-10
Surface	grinded	as-rolled	grinded
HABA standard tolerance			
Quality of finish	Ra1.6 (N7)	-	Ra1.6 (N7)
Thickness tolerance (mm)	+0.2/+0.1	DIN/EN 10029 class C	+/-0.1
Parallelism (mm)	≤0.05	DIN/EN 10029	≤0.1
Evenness (mm)	≤0.20	≤0.5	≤0.20
Length and width tolerance (mm)	+0.8/+0.3	+0.8/+0.3	+0.8/+0.3
Customer-specific tolerance (mm)	within a tolerance of 0.4 mm	within a tolerance of 0.4 mm	within a tolerance of 0.4 mm
Mechanical properties			
Machinability	moderate	moderate	moderate
Dimensional stability	good	good	moderate
Tensile strength R_m (N/mm ²)	1450	1450	500-700
Elastic limit $R_{eH}/R_{p0.2}$ (N/mm ²)	1300	1300	190
Breaking strain A_5	≥13 %	≥13 %	-
Lengthways	-	-	≥45 %
Crosswise	-	-	≥35 %
Hardness HBW	450	450	≤215
Hardness HRC	45	45	-
Density (kg/dm ³)	7.85	7.85	7.85
E-module (kN/mm ²)	~210	~210	~210
Thermal conductivity coefficient (W/mK)			
Thermal expansion coefficient (10 ⁻⁶ / K)	11-14	11-14	11-14
Chemical composition			
Carbon	C 0.32 %	0.32 %	≤0.07 %
Silicium	Si 0.6-1.1 %	0.6-1.1 %	≤1.00 %
Manganese	Mn 0.8 %	0.8 %	≤ 2.00 %
Phosphor	P ≤0.010 %	≤0.010 %	≤0.045 %
Sulfur	S ≤0.003 %	≤0.003 %	≤0.015 %
Chromium	Cr 1.35 %	1.35 %	17-19.5 %
Molybdenum	Mo 0.80 %	0.80 %	-
Nickel	Ni ≤1 %	≤1 %	8.0-10.5 %
	Cr+Mo+Ni -	-	-
Vanadium	V 0.14 %	0.14 %	-
Nitrogen	N		≤0.11 %
Weldability	-	-	good
CEIW	0.92-0.96	0.92-0.96	-
CET	0.55-0.57	0.55-0.57	-
Comments / comparisons			
	Toolox44 is a pre-hardened steel with a hardness of 45 HRC and a yield strength of 1300 N/mm ² . It is easy to work with suitable tools. Because of the low levels of internal stress, large selections may be machined without movement and stress relieving is neither necessary nor recommended. This steel, which is used in mechanical engineering and toolmaking, may be polished and etched with excellent results.	Toolox44 is a pre-hardened steel with a hardness of 45 HRC and a yield strength of 1300 N/mm ² . It is easy to work with suitable tools. Because of the low levels of internal stress, large selections may be machined without movement and stress relieving is neither necessary nor recommended. This steel, which is used in mechanical engineering and toolmaking, may be polished and etched with excellent results.	Corrosion-resistant austenitic steel which is used mainly in equipment manufacturing, mechanical engineering, food industry and in the medical field. 1.4301 is easy to weld, very easy to polish and wear-resistant.

INOX V2A	INOX V4A	INOX V4A	2316-S
1.4301 stainless steel X5CrNi 18-10	1.4404 stainless steel X2CrNiMo 17-12-2	1.4404 stainless steel X2CrNiMo 17-12-2	1.2085 plastic mould steel X33CrS16
as-rolled	grinded	as-rolled	grinded
-	Ra1.6 (N7)	-	Ra1.6 (N7)
DIN/EN 10029 class B	+/-0.1	DIN/EN 10029 class B	+/-0.1
DIN/EN 10029	≤0.1	DIN/EN 10029	≤0.05
Surface ≤1 m ² : ≤1 mm	≤0.30	Surface ≤1 m ² : ≤1 mm	≤0.2
+0.8/+0.3	+0.8/+0.3	+0.8/+0.3	+0.8/+0.3
within a tolerance of 0.4 mm	within a tolerance of 0.4 mm	within a tolerance of 0.4 mm	within a tolerance of 0.4 mm
moderate	moderate	moderate	very good
moderate	moderate	moderate	good
500-700	500-700	500-700	950-1100
190	200	190	750-950
-	-	-	≥5 %
≥45 %	≥40 %	≥40 %	-
≥35 %	≥30 %	≥30 %	-
≤215	≤215	≤215	280-325
-	-	-	-
7.85	7.85	7.85	7.85
~210	~210	~210	~210
			35-45
11-14	11-14	11-14	10.5-12
≤0.07 %	≤0.03 %	≤0.03 %	0.28-0.38
≤1.00 %	≤1.00 %	≤1.00 %	≤1.00 %
≤2.00 %	≤2.00 %	≤2.00 %	≤1.40 %
≤0.045 %	≤0.45 %	≤0.45 %	≤0.03 %
≤0.015 %	≤0.015 %	≤0.015 %	0.05-0.10 %
17-19.5 %	16.5-18.5 %	16.5-18.5 %	15.0-17.0 %
-	2-2.5 %	2-2.5 %	-
8.0-10.5 %	10-13 %	10-13 %	≤1.00 %
-	-	-	-
-	-	-	-
≤0.11 %	≤0.11 %	≤0.11 %	-
good	good	good	-
-	-	-	-
-	-	-	-
Corrosion-resistant austenitic steel which is used mainly in equipment manufacturing, mechanical engineering, food industry and in the medical field. 1.4301 is easy to weld, very easy to polish and wear-resistant.	1.4404 is a non-corroding and acid-resistant austenitic steel. It is used in the field of medical, chemical and food industries.	1.4404 is a non-corroding and acid-resistant austenitic steel. It is used in the field of medical, chemical and food industries.	Tempered, corrosion-resistant plastic mould steel with good machinability and dimensional stability. It is used as pattern plates in plastic injection dies and also for corrosion-resistant components for mechanical engineering.

HABA storage formats

	K52	Planstahl	EC80	CK45	C-Stahl	Toolox33	Toolox33
Standard format in mm Max format in mm	1000 x 1230 2000 x 3000	1000 x 1230 2000 x 3000	1000 x 1230 2000 x 3000	1000 x 1230 2000 x 3000	1000 x 1230 2000 x 3000	1000 x 3000 2000 x 3000	1000 x 3000 2000 x 3000
Thickness in mm	grinded	grinded	grinded	grinded	milled	grinded	as-rolled
5 6 7	◆ ◆	◆ ◆	◆ ◆	◆ ◆		◆ ◆	◆
8 9 10	◆ ◆	◆ ◆	◆ ◆	◆ ◆	◆	◆ ◆	◆ ◆
11 12 13	◆	◆	◆	◆	◆	◆	◆
14 15 16	◆	◆	◆	◆ ◆ ◆	◆	◆	◆
17 18 19				◆ ◆			◆
20 21 22	◆	◆	◆	◆ ◆	◆	◆	◆ ◆
23 24 25	◆	◆	◆	◆	◆	◆	◆
26 27 28				◆			◆
29 30 32	◆	◆	◆	◆ ◆	◆	◆	◆
35 36 38	◆	◆	◆	◆ ◆	◆	◆	◆
40 45 46	◆ ◆	◆ ◆	◆ ◆	◆ ◆ ◆	◆ ◆	◆ ◆	43 ◆
50 56 60	◆ ◆	◆ ◆	◆ ◆	◆ ◆ ◆	◆ ◆	◆ ◆	53 ◆ 65 ◆
63 70 76	◆	◆	◆	◆ ◆ ◆	◆	◆	
80 90 96	◆ ◆	◆ ◆	◆ ◆	◆ ◆ ◆	◆ ◆	◆ ◆	85 ◆
100 110 120	◆ ◆ ◆	◆ ◆ ◆	◆	◆ ◆ ◆	◆ ◆ ◆	◆	105 ◆
130 140 150	◆ ◆ ◆	◆ ◆ ◆		◆ ◆ ◆	◆ ◆ ◆		

◆ 1-3 days delivery
 3-5 days delivery for special thickness and special tolerances

Subject to changes in stocks

	Toolox44	Toolox44	INOX V2A	INOX V2A	INOX V4A	INOX V4A	2316-S
Standard format in mm Max format in mm	1000 x 3000 2000 x 3000	1000 x 3000 2000 x 3000	1000 x 3000 2000 x 3000	1000 x 3000 2000 x 3000	1000 x 3000 2000 x 3000	1000 x 3000 2000 x 3000	1000 x 3000
Thickness in mm	grinded	as-rolled	grinded	as-rolled	grinded	as-rolled	grinded
5 6 7	◆ ◆	◆	◆ ◆	◆ ◆	◆ ◆	◆	
8 9 10	◆ ◆	◆ ◆	◆ ◆	◆ ◆	◆ ◆	◆ ◆	◆ ◆
11 12 13	◆	◆	◆	◆	◆	◆	◆
14 15 16	◆	◆	◆	◆	◆	◆	◆
17 18 19		◆					
20 21 22	◆	◆ ◆	◆	◆	◆	◆	◆
23 24 25	◆	◆	◆	◆	◆	◆	◆
26 27 28		◆					
29 30 32	◆	◆	◆	◆	◆	◆	◆
35 36 38	◆	◆	◆	◆	◆	◆	◆
40 45 46	◆ ◆	43 ◆	◆ ◆	◆ ◆	◆ ◆	◆ ◆	◆ ◆
50 56 60	◆ ◆	53 ◆ 65 ◆	◆ ◆	◆ ◆	◆ ◆	◆ ◆	◆
63 70 76	◆						
80 90 96	◆ ◆	85 ◆					
100 110 120	◆	105 ◆					
130 140 150							

◆ 1-3 days delivery
 3-5 days delivery for special thickness and special tolerances

Subject to changes in stocks

Our brand promise

Maximum availability and tailor-made production possibilities with high-quality steel and aluminium plates give ambitious customers certainty and confidence.

Flexible solutions and consistently high quality makes HABA to the right partner for mechanical- and plant-engineering.

HABA brand equity / value

Flexible and fast solutions
100% reliability, no surprises
Experienced and qualified consultation
Maximum availability
Persistence and constancy

HABA quality guarantee

HABA material from the best pre-material quality
HABA products on request with specially tested material
HABA material with 3.1 certificate available
HABA quality management according to ISO 9001
HABA products on request with complete traceability
HABA tailor-made solutions in dimension and tolerance



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