HABA STEEL PLATES OVERVIEW

PRODUCT OVERVIEW

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

MECHANICAL ENGINEERING
PLANT CONSTRUCTION
APPARATUS CONSTRUCTION
JIG MANUFACTURING
TOOLMAKING

HABA
Solutions in plates

PRODUCT OVERVIEW

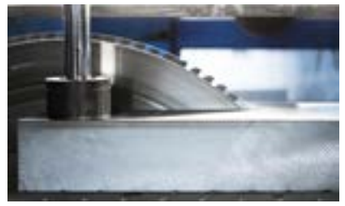
STEEL PLATES

HABA product designation	K52 (Konstrukta 52)	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 stregth R_m (N/mm²)	470-630	470-630	ca. 700
Elastic limit R_{eH}/R_{p02} (N/mm²)	295-355	295-355	ca. 550
Breaking strain A_5	17-22 %	17-22 %	9-11 %
Hardness			
(HBW)	-	-	138-187
(HRC)	-	-	-
Density (kg/dm³)	7.85	7.85	7.85
E-module (kN/mm²)	~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
Weldability	good	good	good
Chemical composition			
Carbon C	≤0.2 %	≤0.2 %	0.14-0.19 %
Silicium Si	≤0.55 %	≤0.55 %	≤0.4 %
Manganese Mn	≤1.6 %	≤1.6 %	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	-	-	-
CEIIW	-	-	-
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	1.1191	-	-
Unalloyed tempering steel	Unalloyed tempering steel	pre-hardened steel	pre-hardened steel
C45E+N	C45E+N	-	-
grinded	milled	grinded	as-rolled
Ra1.6 (N7)	Ra3.2 (N8)	Ra1.6 (N7)	-
+0.3/+0.2	+/-0.2	+0.2/+0.1	DIN/EN 10029 class C
≤0.03	≤0.1	≤0.05	DIN/EN 10029
≤0.1	≤0.3	≤0.2	≤0.5
+0.8/+0.3	+/-0.3	+0.8/+0.3	+0.8/+0.3
within a tolerance of 0.4 mm	within a tolerance of 0.5 mm	within a tolerance of 0.4 mm	within a tolerance of 0.4 mm
very good	good	very good	very good
very good	good	very good	very good
560-620	560-620	980	980
275-340	275-340	850	850
14-16 %	14-16 %	≥16 %	≥16 %
175-210	175-210	310	310
-	-	29	29
7.85	7.85	7.85	7.85
~210	~210		
35-45	35-45		
11-14	11-14	11-14	11-14
limited	limited	-	-
0.42-0.5 %	0.42-0.5 %	0.22-0.24 %	0.22-0.24 %
≤0.4 %	≤0.4 %	0.6-1.1 %	0.6-1.1 %
0.5-0.8 %	0.5-0.8 %	0.8 %	0.8 %
≤0.035 %	≤0.035 %	≤0.01 %	≤0.01 %
≤0.035 %	≤0.035 %	≤0.002 %	≤0.002 %
≤0.4 %	≤0.4 %	1.0-1.2 %	1.0-1.2 %
≤0.1 %	≤0.1 %	0.30 %	0.30 %
≤0.4 %	≤0.4 %	≤1.0 %	≤1.0 %
≤0.63 %	≤0.63 %	-	-
-	-	0.10-0.11 %	0.10-0.11%
-	-	-	-
-	-	0.62-0.71	0.62-0.71
-	-	0.40-0.44	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 thoughness and wear resistance are exeptional. It is used in mechanical engineering and toolmaking.	Toolox33 is a steel with outstanding dimensional stability. The high impact thoughness and wear resistance are exeptional. It is used in mechanical engineering and toolmaking.

PRODUCT OVERVIEW

STEEL PLATES



HABA product designation	Toolox44	Toolox44	INOX V2A	INOX V2A	INOX V4A	INOX V4A	2316-S
Material no.	-	-	1.4301 / 1.4307	1.4301 / 1.4307	1.4404 / 1.4401	1.4404 / 1.4401	1.2085
Steel quality	pre-hardened steel	pre-hardened steel	stainless steel	stainless steel	stainless steel	stainless steel	plastic mould steel
DIN/EN designation	-	-	X5CrNi 18-10	X5CrNi 18-10	X2CrNiMo 17-12-2	X2CrNiMo 17-12-2	X33CrS16
Surface	grinded	as-rolled	grinded	as-rolled	grinded	as-rolled	grinded
HABA standard tolerance							
Quality of finish	Ra1.6 (N7)	-	Ra1.6 (N7)	-	Ra1.6 (N7)	-	Ra1.6 (N7)
Thickness tolerance (mm)	+0.2/+0.1	DIN/EN 10029 class C	+/-0.1	DIN/EN 10029 class B	+/-0.1	DIN/EN 10029 class B	+/-0.1
Parallelism (mm)	≤0.05	DIN/EN 10029	≤0.1	DIN/EN 10029	≤0.1	DIN/EN 10029	≤0.05
Evenness (mm)	≤0.2	≤0.5	≤0.2	Surface ≤1 m²: ≤1 mm	≤0.3	Surface ≤1 m²: ≤1 mm	≤0.2
Length and width tolerance (mm)	+0.8/+0.3	+0.8/+0.3	+0.8/+0.3	+0.8/+0.3	+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	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
Machinability							
Dimensional stability	moderate	moderate	moderate	moderate	moderate	moderate	very good
Formstabilität	good	good	moderate	moderate	moderate	moderate	good
Tensile stregth R_m (N/mm²)	1450	1450	500-700	500-700	500-700	500-700	950-1100
Elastic limit R_{eH}/$R_{p0.2}$ (N/mm²)	1300	1300	190	190	200	190	≥750-950
Breaking strain A_5	≥13 %	≥13 %	-	-	-	-	≥5 %
Lengthways	-	-	≥45 %	≥45 %	≥40 %	≥40 %	-
Crosswise	-	-	≥35 %	≥35 %	≥30 %	≥30 %	-
Hardness							
(HBW)	450	450	≤215	≤215	≤215	≤215	280-325
(HRC)	45	45	-	-	-	-	-
Density (kg/dm³)	7.85	7.85	7.9	7.9	8.0	8.0	7.85
E-module (kN/mm²)			~200	~200	~200	~200	~214
Thermal conductivity coefficient (W/mK)							35-45
Thermal expansion coefficient (10^{-6} / K)	11-14	11-14	11-14	11-14	11-14	11-14	10.5-12
Weldability	-	-	gut	good	good	good	-
Chemische Zusammensetzung							
Carbon C	0.32 %	0.32 %	≤0.07 %	≤0.07 %	≤0.03 %	≤0.03 %	0.28-0.38
Silicium Si	0.6-1.1 %	0.6-1.1 %	≤1.0 %	≤1.0 %	≤1.0 %	≤1.0 %	≤1.0 %
Manganese Mn	0.8 %	0.8 %	≤ 2.0 %	≤ 2.0 %	≤2.0 %	≤2.0 %	≤1.4 %
Phosphor P	≤0.01 %	≤0.01 %	≤0.045 %	≤0.045 %	≤0.45 %	≤0.45 %	≤0.03 %
Sulfur S	≤0.002 %	≤0.002 %	≤0.015 %	≤0.015 %	≤0.015 %	≤0.015 %	0.05-0.10 %
Chromium Cr	1.35 %	1.35 %	17.5-19.5 %	17.5-19.5 %	16.5-18.5 %	16.5-18.5 %	15.0-17.0 %
Molybdenum Mo	0.8 %	0.8 %	-	-	2.0-2.5 %	2.0-2.5 %	-
Nickel Ni	≤1.0 %	≤1.0 %	8.0-10.5 %	8.0-10.5 %	10.0-13.0 %	10.0-13.0 %	≤1.0 %
Cr+Mo+Ni	-	-	-	-	-	-	-
Vanadium V	0.14 %	0.14 %	-	-	-	-	-
Nitrogen N			≤0.1 %	≤0.1 %	≤0.11 %	≤0.11 %	-
CEIIW	0.94-0.98	0.94-0.98	-	-	-	-	-
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/mm². 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/mm². 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. 1.4301/1.4307 is easy to weld, very easy to polish and wear-resistant.	Corrosion-resistant austenitic steel which is used mainly in equipment manufacturing, mechanical engineering, food industry and in the medical field. 1.4301/1.4307 is easy to weld, very easy to polish and wear-resistant.	1.4404/1.4401 is a non-corroding and acid-resistant austenitic steel. It is used in the field of medical, chemical and food industries.	1.4404/1.4401 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

STEEL PLATES

	K52	Planstahl	EC80	CK45	C-Stahl	Consteel	Toolox33	
Standard format in mm	1000 x 1230	1000 x 1230	1000 x 1230	1000 x 1230	1000 x 1230	1000 x 1230	1000 x 3000	
Max format in mm	2000 x 3000	2000 x 3000	2000 x 3000	2000 x 3000	2000 x 3000	1230 x 3000	2000 x 3000	
Thickness in mm	grinded	grinded	grinded	grinded	milled	milled	grinded	as-rolled
5	o	o	o	•			o	
6	o	o	o	•			o	o
8	o	o	o	•			o	o
10	o	o	o	•	•	•	o	o
12	o	o	o	•	•	•	o	o
14				•				o
15	o	o	o	•	•	•	o	
16				•				o
17				•				
18				•				o
20	o	o	o	•	•	•	o	o
22				•				o
24								
25	o	o	o	•	•	•	o	o
27				•				
28								o
30	o	o	o	•	•	•	o	o
32				•				
35	o	o	o	•	•		o	o
36				•				
40	o	o	o	•	•	•	o	
45	o	o	o	•	•		o	o
46				•				
50	o	o	o	•	•		o	
55								o
56				•				
60	o	o	o	•	•		o	
63				•				
65								o
70	o	o	o	o	o		o	
76				o				
80	o	o	o	o	o		o	
85								o
90	o	o	o	o	o		o	
96				o				
100	o	o	o	o	o		o	
105								o
110	o	o		o	o			
120	o	o		o	o			
130	o	o		o	o			
140	o	o		o	o			
150	o	o		o	o			

- • 1-3 days delivery
- o 6-8 days delivery for special thickness and special tolerances

On request we can also produce special thicknesses and special tolerances
Subject to changes in stocks

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

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On request we can also produce special thicknesses and special tolerances
Subject to changes in stocks

V. 08.04.2021

SWITZERLAND

HABA AG – Administration

Gewerbestrasse 6
6330 Cham / ZG
Tel. +41 41 748 88 88
info@haba.ch
www.haba.ch

HABA AG – Production

Speckstrasse 19
8330 Pfäffikon / ZH
Tel. +41 44 950 40 00
info@haba.ch
www.haba.ch

GERMANY

HABA PlattenService GmbH
Hertzstrasse 16 (Administration)
Ohmstrasse 9 (Production)
71083 Herrenberg
Tel. +49 7032 9757 0
info@haba-gmbh.de
www.haba-gmbh.de

ITALY

HABA ServizioPiastre s.r.l.

Via Emilia 27/29
24052 Azzano San Paolo (BG)
Tel. +39 035 899 190
info@haba.it
www.haba.it

AUSTRIA

HABA GmbH

IZ NÖ-Süd, Straße 2a
Objekt M40
2355 Wiener Neudorf
Tel. +43 722 867 488
info@haba-gmbh.at
www.haba-gmbh.at

CZECH REPUBLIC

HABA s.r.o.

Ulice HABA, č.p. 553
696 66 Sudoměřice
Tel. +420 515 225 121
info@haba-sro.cz
www.haba-sro.cz

Certified Management System SQS EN 9100

Aerospace certified according to EN 9100

HABA
Solutions in plates