TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.
Technical and Test Institute for Construction Prague
Akreditovaná zkušební laboratoř, Autorizovaná osoba, Notifikovaná osoba, Oznámený subjekt, Subjekt pro technické posuzování, Certifikační orgán, Inspekční orgán / Accredited Testing Laboratory, Authorized Body, Notified Body, Technical Assessment Body, Certification Body, Inspection Body. Prosecká 811/76a, 190 00 Praha 9 - Prosek, Czech Republic

ATTESTATION

No. 010-035713

It has been stated that for the construction product:

HS easy chipboard screws

Type / variations: Φ3; 3,5; 4; 4,5; 5; 6

placed on the market by:
Hermann Schwerter Iserlohn, DE.

Langer Brauck 11, Iserlohn DE

Notified Body 1020

Technical and Test Institute for Construction Prague, branch 0100 Prague

has performed

according to Regulation (EU) 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), Art. 1.4 of the Annex V (system 3)

assessment of performance

for the following characteristics given in Annex ZA of the standard **EN 14592:2008+A1:2012** with obtained following characteristic values:

Characteristic / screw		3x45	3,5x50	4x70	4,5x45	5x70	6x90
Geometry		TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
yield moment	[kNm]	1,69	2,70	3,80	3,61	5,60	10,08
withdrawal parameter	[MPa]	27,89	28,21	11,95	17,55	17,6	27,54
head pull through parameter	[MPa]		36	31	9,80	25,0	20,0
tensile capacity	[MPa]		4,43	5,00	5,76	7,88	11,31
torsional resistance	[kNm]	0,47	0,58	1,36	0,95	1,59	2,11
torsion capacity	[kNm]	1,12	1,43	2,34	2,89	4,55	7,40
torsional ration	[-]	2,47	3,30	2,04	3,44	3,42	4,24
Durability corrosion protection		TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

Test results are contained in Report on the assessment of performance No. 1020-CPR-010-035571 from 14. 11. 2015 issued by Technical and Test Institute for Construction Prague.

Stamp of TZÚS Praha, s.p.

Prague November 14th. 2015

Technický a zkušební ústav stavební Praha, s.p. pobočka Praha

Ing. Iveta Jiroutová
Deputy Manager of branch 0100 Praha
the Technical and Test Institue for Construction Prague

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Notified Body 1020
Branch 0100 – Praha

REPORT

on the assessment of performance

according to the Regulation (EU) 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), Art. 1.4 of the Annex V (system 3)

No. 1020-CPR-010-035571

Trade name:
HS easy chipboard screws;
type / variation: Φ3,0; 3,5; 4,0; 4,5; 5,0; 6,0

Manufacturer:
Hermann Schwerter Iserlohn, DE.

INo:	4001221000004
Address:	Langer Brauck 11, Iserlohn DE
Plant:	Taipei 10467
Address:	TAIWAN
Order:	Z010150210

Number of report pages including title page: 11 Number of Annexes: 0

The person taking responsibility for the content of this report:

Ing. Václav Kučera
Head Assessor

The person taking responsibility for the correctness of this report:

Stamp of the Notified Body 1020

Prague, November 14th, 2015

Ing. Iveta Jiroutová
Deputy Manager of the Notified Body 1020

1. Specification of tested subject

Description and intended use of the product:

The self-tapping screws are used for connections in timber constructions e.g. timber/timber, chipboard, wood panel.

Technical specification: EN 14592

Manufacturer: Hermann Schwerter Iserlohn

Plant: Taipei 10467, Taiwan

Material: hardened steel

Surface treatment: CR6+YZ 3U SST 48H

Dimensions are given in Table 1

Table 1:

No.	Mark	Φ [mm]	Length [mm]	Head diameter [mm]
1	6,0x90	6,0	90,0	11,30 - 12,0
2	5,0x70	5,0	70,0	9,40 - 10,0
3	4,5x45	4,5	45	8,40 - 9,0
4	4,0x70	4,0	70,0	4,40 - 8,0
5	3,5x50	3,5	50,0	6,40 - 7,0
6	3,0x45	3,0	45,0	5,50 - 6,0

2. Sampling

Date of sampling: ---

Place of sampling: deposit of manufacturer

Sampler: manufacturer

Sampling method: ISO 3534-1

Transport mode: by the manufacturer

Date of the taking over: 18.9.2015

Sample Registration number: VZ10150267

3. Test results

3.1 Geometrical parameter

Determination according to the test method: EN 14592
Test was carried out by: Ing. Václav Kučera
Date of the test ending: 8. 10. 2015
Test result: Table 2

Table 2: Geometry parameters

screw 5,0x70										
Sample No	1	2	3	4	5	mean				
l mm	69,20	68,88	68,94	69,10	68,88	69,00	70,00	68,50	71,50	TRUE
S mm	42	41,76	41,39	42,98	42,42	42,11	42,00	40,75	43,25	TRUE
d mm	4,98	4,99	5,03	4,97	4,90	4,97	5,00	4,88	5,13	TRUE
A mm	9,99	9,7	9,88	9,55	9,67	9,76	9,40-10,0			TRUE

screw 6,0x90										
Sample No	1	2	3	4	5	mean				
l mm	90,41	90,33	90,67	90,36	90,48	90,45	90,00	88,25	91,75	TRUE
S mm	59,75	58,94	60,1	59,26	59,19	59,45	60,00	58,50	61,50	TRUE
d mm	5,87	5,88	5,87	5,84	5,93	5,88	6,00	5,85	6,15	TRUE
A mm	11,86	11,41	11,47	11,44	11,94	11,62	11,30-12,0			TRUE

screw 4,0x70										
č.vzorku	1	2	3	4	5	mean				
l mm	69,40	69,83	69,45	68,76	69,18	69,32	70,00	68,50	71,50	TRUE
S mm	42,12	42,05	42,11	41,60	41,84	41,94	42,00	40,75	43,25	TRUE
d mm	3,95	3,99	3,96	3,96	3,97	3,97	4,00	3,90	4,10	TRUE
A mm	7,79	7,71	7,74	7,79	7,74	7,75	8,00	7,80	8,20	TRUE

screw 4,5x45										
Sample No	1	2	3	4	5	mean				
l mm	44,52	44,54	45,06	44,84	44,56	44,70	45,00	58,01	60,99	TRUE
S mm	30	29,27	29,96	29,26	30	29,70	30,00	45,83	48,18	TRUE
d mm	4,37	4,34	4,34	4,31	4,32	4,34	4,50	4,20	4,50	TRUE
A mm	8,86	8,85	8,81	8,78	8,86	8,83	8,4 - 9,0	8,78	9,23	TRUE

screw 3,5x50										
Sample No	1	2	3	4	5	mean				
l mm	50,65	50,30	50,56	49,86	49,49	50,17	50,00	48,75	51,25	TRUE
S mm	29,00	30,72	29,37	29,73	29,60	29,68	30,00	28,95	31,05	TRUE
d mm	3,32	3,32	3,44	3,44	3,39	3,38	3,50	3,20	3,50	TRUE
A mm	6,73	6,79	6,68	6,74	6,84	6,76	6,4 - 7,0	6,83	7,18	TRUE

screw 3,0x45										
Sample No	1	2	3	4	5	mean				
l mm	43,93	44,34	43,81	44,16	44,09	44,07	44,00	42,90	45,10	TRUE
S mm	35,80	36,37	33,93	35,34	36,31	35,55	36,50	35,59	37,41	TRUE
d mm	2,86	2,87	2,91	2,81	2,88	2,87	3,00	2,93	3,08	TRUE
A mm	5,84	5,85	5,80	5,77	5,72	5,80	6,00	5,85	6,15	TRUE

3.2 Characteristic yield moment

Determination according to the test method: EN 14592
Test was carried out by: Ing. Václav Kučera
Date of the test ending: 13. 10. 2015
Test result: Table 3

Table 3: Characteristic yield moment

screw 6,0x90		angle
No	Nm	12,83827
		30
1	11,11	
2	11,69	
3	10,39	
4	11,31	
5	11,14	
6	10,43	
7	11,06	
8	11,52	
9	12,19	
10	11,67	
nean	11,25	
stdev	0,56	
var1	0,05	
var2	0,05	
stdev2	0,31	
My,k =	**10,08**	

screw5,0x70		angle
No	Nm	14,58591
		20
1	6,69	
2	5,78	
3	6,76	
4	6,71	
5	6,92	
6	6,55	
7	6,01	
8	5,96	
9	6,83	
10	7,01	
nean	6,52	
stdev	0,44	
var1	0,07	
var2	0,05	
stdev2	0,31	
My,k =	**5,60**	

screw 4,5x45		angle
No	Nm	15,70232
		20
1	4,10	
2	4,36	
3	4,15	
4	3,75	
5	4,24	
6	3,89	
7	4,57	
8	4,69	
9	4,69	
10	4,33	
nean	4,28	
stdev	0,32	
var1	0,07	
var2	0,05	
stdev2	0,31	
My,k =	**3,61**	

screw 4,5x70		angle
No	Nm	15,70232
		20
1	4,28	
2	4,46	
3	4,36	
4	4,43	
5	4,09	
6	4,39	
7	4,26	
8	3,85	
9	4,08	
10	4,67	
nean	4,29	
stdev	0,23	
var1	0,05	
var2	0,05	
stdev2	0,31	
My,k =	**3,80**	

Table 3 continue

screw 3,0x45		angle
No	Nm	20,85584
		20
1	1,83	
2	2,03	
3	1,96	
4	1,69	
5	1,94	
6	1,96	
7	2,02	
8	1,87	
9	1,91	
10	2,07	
nean	1,93	
stdev	0,11	
var1	0,06	
var2	0,05	
stdev2	0,11	
My,k =	**1,69**	

screw 3,5x50		angle
No	Nm	18,72254
		20
1	3,03	
2	3,18	
3	3,27	
4	2,92	
5	2,84	
6	3,01	
7	2,98	
8	3,03	
9	2,79	
10	2,97	
nean	3,00	
stdev	0,14	
var1	0,05	
var2	0,05	
stdev2	0,14	
My,k =	**2,70**	

3.3 Characteristic withdrawal parameter

Determination according to the test method: EN 13822
Test was carried out by: Vlastimil Valeš
Date of the test ending 15.10.2015
Test result: Table 4

Table 4: Characteristic withdrawal parameter

screw	3,0×45			
No	N			Mpa
1	2107,2	7,653096	mean	7,6290224
2	1777,1	7,482744	var	0,0750366
3	1999,1	7,600437		
4	2120,4	7,659346	ln5%	7,4714456
5	1969,2	7,585372	5%	1757,1451
6	2031,4	7,616466		
7	1985	7,593349	d=	3,00
8	2208,3	7,699978	l=	21,00
9	2357,3	7,765272		
10	2067,6	7,634163	$f_{ax,k}$ =	**27,89**

screw	3,5×50			
No	N			Mpa
1	2769	7,926162	mean	7,952086
2	2930	7,982645	var	0,067085
3	2764	7,924554		
4	2839	7,951063	ln5%	7,811207
5	2859	7,958329	5%	2468,107
6	2681	7,893897		
7	3138	8,051392	d=	3,50
8	3176	8,063349	l=	25,00
9	2768	7,925963		
10	2549	7,843503	$f_{ax,k}$ =	**28,21**

screw	4,5×45			
No	N			Mpa
1	2677,2	7,892527	mean	7,9487222
2	2929,7	7,982645	var	0,0693348
3	2764,3	7,924554		
4	2838,6	7,951063	ln5%	7,8031191
5	2859,3	7,958329	5%	2448,2263
6	2680,9	7,893897		
7	3138,2	8,051392	d=	4,50
8	3175,9	8,063349	l=	31,00
9	2768,2	7,925963		
10	2549,1	7,843503	$f_{ax,k}$ =	**17,55**

screw	4,0×70			
No	N			Mpa
1	3700	8,216185	mean	7,981088
2	2930	7,982645	var	0,106024
3	2764	7,924554		
4	2839	7,951063	ln5%	7,758439
5	2859	7,958329	5%	2341,246
6	2681	7,893897		
7	3138	8,051392	d=	4,00
8	3176	8,063349	l=	49,00
9	2768	7,925963		
10	2549	7,843503	$f_{ax,k}$ =	**11,95**

screw	5,0×70			
No	N			Mpa
1	3700,4	8,216185	mean	8,1591572
2	3564,7	8,178846	var	0,0602636
3	3479,3	8,154586		
4	3135,3	8,050483	ln5%	8,0326035
5	3280,6	8,095779	5%	3079,7494
6	3270,1	8,092573		
7	3594	8,187018	d=	5,00
8	3593,4	8,186851	l=	35,00
9	3781	8,237731		

screw	6,0×90			
No	N			Mpa
1	7406	8,910046	mean	8,886208
2	7345	8,901775	var	0,019599
3	7275	8,892199		
4	7150	8,874868	ln5%	8,84505
5	7050	8,860783	5%	6939,954
6	7456	8,916774		
7	7130	8,872067	d=	6,00
8	7061	8,862342	l=	42,00
9	7286	8,89371		

3.4 Characteristic head pull through parameter

Determination according to the test method: EN 13822
Test was carried out by: Ing. Václav Kučera
Date of the test ending: 23. 10. 2015
Test result: Table 5

Table 5: Characteristic head pull through parameter

screw	3,5x50	A_h	6,76	mm
tension	N			N
1	1827,4	7,510655	mean	7,504628
2	1882,3	7,540223	var	0,050897
3	1923,5	7,561902		
4	1907,5	7,553549	ln5%	7,397745
5	1830,8	7,51253	5%	1632,299
6	1661,4	7,41541		
7	1915,8	7,55787	f_{head}	**36**
8	1719,2	7,449626		**Mpa**
9	1782,3	7,485666		
10	1735,2	7,458849		

screw	4,5×45	A_h	8,79	mm
tension	N			
1	2254,5	7,720661	mean	7,628266
2	2009,9	7,605845	var	0,089878
3	1960,8	7,581123		
4	1932,6	7,566606	ln5%	7,439521
5	2364,3	7,768233	5%	1701,936
6	2093,6	7,646631		
7	2249,9	7,718654	f_{head}	**22**
8	2106,7	7,652869		**Mpa**
9	1779,7	7,484178		
10	1877,8	7,537856		

screw	4,0x70	A_h	7,84	mm
tension	N			
1	2109	7,654121	mean	7,690907
2	2184	7,689115	var	0,062398
3	2167	7,681099		
4	2395	7,781293	ln5%	7,559872
5	2163	7,67945	5%	1919,599
6	2308	7,743994		
7	2382	7,775498	f_{head}	**31**
8	1944	7,572518		**Mpa**
9	2123	7,660684		
10	2146	7,671296		

screw	5,0x70	A_h	9,76	
tension	N			
1	2645	7,880536	mean	7,867921
2	2615	7,868882	var	0,045372
3	2770	7,926592		
4	2681	7,893885	ln5%	7,77264
5	2775	7,928291	5%	2374,732
6	2536	7,838497		
7	2615	7,869061	f_{head}	**25**
8	2457	7,806871		**Mpa**
9	2418	7,790783		
10	2633	7,875815		

screw	6,0x90	A_h	11,62	mm
tension	N			
1	2945,4	7,98801	mean	8,02049
2	3147,5	8,054364	var	0,048973
3	3183,7	8,065799		
4	2937,1	7,985178	ln5%	7,917646
5	3186	8,066525	5%	2745,302
6	2967	7,9953		
7	3306,1	8,103528	f_{head}	**20**
8	3026,8	8,015258		**Mpa**
9	2841,8	7,952189		
10	2918,3	7,978753		

3.5 Characteristic tensile capacity

Determination according to the test method: EN 13823
Test was carried out by: Vlastimil Valeš
Date of the test ending: 3. 11. 2015
Test result: Table 6

Table 6: Characteristic tensile capacity

screw	3,5x50	Φ=	2,5	mm
1	4667	8,448272	mean	8,500943
2	5141	8,545003	stdev	0,049417
3	4752	8,466321		
4	4888	8,494539	ln5%	8,397166
5	4986	8,514389	5%	4434,482
6	5105	8,537976		
7	5269	8,569596	$f_{tens,k}$ =	**4434**
8	4727	8,461046		**N**
9	5158	8,548304		F
10	4555	8,423981		

screw	4,0x70	Φ=	2,8	mm
1	5343	8,583543	mean	8,616952
2	5057	8,528529	stdev	0,047014
3	5292	8,573952		
4	5450	8,603371	ln5%	8,518223
5	5650	8,639411	5%	5005
6	5627	8,635332		
7	5590	8,628735	$f_{tens,k}$ =	**5005**
8	5980	8,696176		**N**
9	5559	8,623174		
10	5752	8,657303		

screw	4,5x45	Φ=	3	mm
1	6253	8,740817	mean	8,802788
2	6399	8,763897	stdev	0,068687
3	7945	8,980298		
4	6905	8,840001	ln5%	8,658546
5	6494	8,778634	5%	5759,155
6	6641	8,801018		
7	6388	8,762177	$f_{tens,k}$ =	**5759**
8	6429	8,768574		**N**
9	6485	8,777247		
10	6736	8,815222		

screw	5,0x70	Φ=	3	mm
1	8547	9,053347	mean	9,05958
2	9015	9,106689	stdev	0,041541
3	9285	9,136181		
4	8407	9,036832	ln5%	8,972345
5	8224	9,014805	5%	7882,062
6	8856	9,088859		
7	8656	9,066047	$f_{tens,k}$ =	**7882**
8	8301	9,024173		**N**
9	8617	9,0615		
10	8163	9,007368		

screw	6,0x90	Φ=	3,7	mm
1	13731	9,527411	mean	9,51225
2	14731	9,597709	stdev	0,050522
3	12830	9,459541		
4	12811	9,458059	ln5%	9,406154
5	14009	9,547455	5%	12163
6	13317	9,496797		
7	13013	9,473704	$f_{tens,k}$ =	**1131**
8	12800	9,4572		**N**
9	14306	9,568434		
10	13852	9,536185		

3.6 Characteristic torsional capacity

Determination according to the test method: EN 15737
Test was carried out by: Vratislav Trávníček
Date of the test ending: 4.11.2015
Test result: Table 7

Table 7: Characteristic torsion capacity

screw	6,0×90			
No	kNm	LN		
1	2,42	0,883768	mean	0,886425
2	2,56	0,940007	stdev	0,065461
3	2,4	0,875469		
4	2,43	0,887891	ln5%	0,748956
5	2,47	0,904218	$R_{tor,k}$ =	**2115**
6	2,07	0,727549		**Nm**
7	2,4	0,875469		
8	2,53	0,928219		
9	2,38	0,8671		
10	2,65	0,97456		

screw	5,0×70			
No	kNm	LN		
1	1,73	0,548121	mean	0,594312
2	1,9	0,641854	stdev	0,062571
3	2	0,693147		
4	1,76	0,565314	ln5%	0,462912
5	1,72	0,542324	$R_{tor,k}$ =	**1589**
6	1,9	0,641854		**Nm**
7	1,73	0,548121		
8	1,67	0,512824		
9	1,78	0,576613		
10	1,96	0,672944		

screw	4,5x45			
No	kNm	LN		
1	0,96	-0,04082	mean	0,104523
2	1,14	0,131028	stdev	0,075257
3	1,05	0,04879		
4	1,27	0,239017	ln5%	-0,05352
5	1,16	0,14842	$R_{tor,k}$ =	**948**
6	1,1	0,09531		**Nm**
7	1,12	0,113329		
8	1,17	0,157004		
9	1,05	0,04879		
10	1,11	0,10436		

screw	4,0×70			
No	kNm	LN		
1	1,60	0,47	mean	0,45
2	1,38	0,32	stdev	0,07
3	1,53	0,43		
4	1,61	0,48	ln5%	0,31
5	1,51	0,41	$R_{tor,k}$ =	**1363**
6	1,55	0,44		**Nm**
7	1,52	0,42		
8	1,67	0,51		
9	1,78	0,58		
10	1,58	0,46		

screw	3,5×50			
No	kNm	LN		
1	0,66	-0,41552	mean	-0,43038
2	0,64	-0,44629	stdev	0,050121
3	0,62	-0,47804		
4	0,63	-0,46204	ln5%	-0,53563
5	0,65	-0,43078	$R_{tor,k}$ =	**585**
6	0,64	-0,44629		**Nm**
7	0,67	-0,40048		
8	0,6	-0,51083		
9	0,69	-0,37106		
10	0,71	-0,34249		

screw	3,0×45			
č	kNm	LN		
1	0,49	-0,71335	mean	-0,68181
2	0,5	-0,69315	stdev	0,036171
3	0,49	-0,71335		
4	0,53	-0,63488	ln5%	-0,75777
5	0,53	-0,63488	$R_{tor,k}$ =	**469**
6	0,5	-0,69315		**Nm**
7	0,5	-0,69315		
8	0,48	-0,73397		
9	0,53	-0,63488		
10	0,51	-0,67334		

3.7 Characteristic torsional resistance

Determination according to the test method: EN ISO 10666
Test was carried out by: Vratislav Trávníček
Date of the test ending: 6. 11. 2015
Test result: Table 8

Table 8: Characteristic torsion resistance:

screw	6,0x90			
No	kNm	LN		
1	10,56	2,357073	mean	2,223453
2	10,68	2,368373	stdev	0,105816
3	9,61	2,262804		
4	9,39	2,239645	ln5%	2,001238
5	10,34	2,33602	$f_{tor,k}$ =	**7398**
6	8,44	2,132982		**Nm**
7	8,05	2,085672		
8	8,8	2,174752		
9	8,85	2,180417		
10	8,14	2,09679		

screw	5,0x70			
No	kNm	LN		
1	4,86	1,581038	mean	1,608538
2	5,1	1,629241	stdev	0,044732
3	4,88	1,585145		
4	5,3	1,667707	ln5%	1,514601
5	4,9	1,589235	$f_{tor,k}$ =	**4548**
6	5,02	1,61343		**Nm**
7	5,05	1,619388		
8	5,37	1,680828		
9	4,6	1,526056		
10	4,92	1,593309		

screw	4,5x45			
No	kNm	LN		
1	3,6	1,280934	mean	1,199821
2	3,28	1,187843	stdev	0,065946
3	3,45	1,238374		
4	3,66	1,297463	ln5%	1,061335
5	3,43	1,23256	$f_{tor,k}$ =	**2890**
6	3,28	1,187843		**Nm**
7	2,96	1,085189		
8	3,07	1,121678		
9	3,22	1,169381		
10	3,31	1,196948		

screw	4,0×70			
No	kNm	LN		
1	2,60	0,96	mean	0,95
2	2,74	1,01	stdev	0,05
3	2,55	0,94		
4	2,49	0,91	ln5%	0,85
5	2,54	0,93	$f_{tor,k}$ =	**2336**
6	2,66	0,98		**Nm**
7	2,74	1,01		
8	2,54	0,93		
9	2,34	0,85		
10	2,68	0,99		

screw	3,5x50			
No	kNm	LN		
1	1,68	0,518794	mean	0,483923
2	1,68	0,518794	stdev	0,059638
3	1,48	0,392042		
4	1,57	0,451076	ln5%	0,358683
5	1,76	0,565314	$f_{tor,k}$ =	**1431**
6	1,62	0,482426		**Nm**
7	1,65	0,500775		
8	1,47	0,385262		
9	1,72	0,542324		
10	1,62	0,482426		

screw	3,0x45			
č	kNm	LN		
1	1,31	0,270027	mean	0,340649
2	1,44	0,364643	stdev	0,105878
3	1,46	0,378436		
4	1,28	0,24686	ln5%	0,118306
5	1,29	0,254642	$f_{tor,k}$ =	**1126**
6	1,58	0,457425		**Nm**
7	1,33	0,285179		
8	1,62	0,482426		
9	1,21	0,19062		
10	1,61	0,476234		