CERTIFICATE OF APPROVAL
No CF 700

This is to certify that, in accordance with
TS00 General Requirements for Certification of Fire Protection Products
The undermentioned products of

RUDOLF HENSEL GMBH

Lauenburger Landstrasse 11, Börnsen, 21039, Germany
Tel: +49 40 72106210 Fax: +49 40 72106252

Have been assessed against the requirements of the Technical Schedule(s) denoted below and are approved for use subject to the conditions appended hereto:

CERTIFIED PRODUCT	TECHNICAL SCHEDULE
HENSOTHERM® 370 KS	**TS15 Intumescent Coatings for Steelwork**

Signed and sealed for and on behalf of Warringtonfire Testing and Certification Limited

Paul Duggan
Certification Manager

Issued:	28th July 2009
Reissued:	19th July 2019
Valid to:	18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

1. This approval relates to the use of HENSOTHERM® 370 KS for the fire protection of I-shaped steel sections and hollow sections. The precise scope is given in Tables 1 to 25 which show the total dry film thickness of HENSOTHERM® 370 KS (excluding primer and top sealer) required to provide fire resistance periods in accordance with BS476: Part 21: 1987. The scope includes periods of fire resistance of 15 to 150 minutes for differing I-sections and hollow sections, section factors (A/V) and design temperatures in the range 350°C to 750°C.

2. This certification is provided to the client for their own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

3. The products are approved on the basis of:

   i) Initial type testing.
   ii) A design appraisal against TS15.
   iii) Certification of quality management system to ISO 9001: 2015.
   iv) Inspection and surveillance of factory production control.
   v) Audit testing.

4. The data referring to three-sided fire exposure of beams relate to beams supporting concrete floor slabs. Separate consideration is required where this is not the case.

5. The data shown is applicable to steel sections blast cleaned to ISO 8501-1 Sa $2^1/_2$ or equivalent and primed with a suitable and compatible primer. Specifications of surface preparations, primers and top sealers are available from Rudolf Hensel GmbH whose responsibility is to ensure that HENSOTHERM® 370 KS is compatible for use in respect of both ambient and fire conditions. The total dry film thickness of primer and top sealer together should not exceed that tested.

6. Specific data given in the tables applies to horizontal, vertical, flexural and compression members supporting loads up to the maximum design loads specified in BS 449: Part 2.

7. The approval relates to on going production. Product and/or its immediate packaging is identified with the manufacturers' name, the product name or number, the CERTIFIRE name or name and mark, together with the CERTIFIRE certificate number and application where appropriate.

8. The data shown in the tables is based on assessments which comply with the criteria for acceptability now incorporated within the CERTIFIRE scheme.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 1 HENSOTHERM® 370 KS I-Section Beams 15 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
30	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
35	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
40	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
45	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
50	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
55	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
60	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
65	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
70	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
75	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
80	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
85	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
90	0.182	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
95	0.184	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
100	0.187	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
105	0.190	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
110	0.192	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
115	0.195	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
120	0.198	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
125	0.200	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
130	0.203	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
135	0.205	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
140	0.208	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
145	0.211	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
150	0.213	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
155	0.216	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
160	0.219	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
165	0.221	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
170	0.224	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
175	0.227	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
180	0.229	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
185	0.232	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
190	0.235	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
195	0.237	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
200	0.240	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
205	0.243	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
210	0.245	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 1 HENSOTHERM® 370 KS I-Section Beams 15 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
215	0.248	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
220	0.251	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
225	0.253	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
230	0.256	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
235	0.259	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
240	0.261	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
245	0.264	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
250	0.267	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
255	0.269	0.181	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
260	0.272	0.184	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
265	0.275	0.187	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
270	0.277	0.190	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
275	0.280	0.193	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
280	0.283	0.196	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
285	0.285	0.199	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
290	0.288	0.202	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
295	0.290	0.205	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
300	0.293	0.209	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
305	0.296	0.212	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
310	0.298	0.215	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
315	0.301	0.218	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
320	0.304	0.221	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
325	0.306	0.224	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
330	0.309	0.227	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
335	0.312	0.230	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
340	0.314	0.233	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
345	0.317	0.236	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
350	0.320	0.239	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
355	0.322	0.242	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
360	0.325	0.246	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
365	0.328	0.249	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
370	0.330	0.252	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
375	0.333	0.255	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
380	0.336	0.258	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
385	0.338	0.261	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
390	0.341	0.264	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
395	0.344	0.267	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
400	0.346	0.270	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179

Thickness is intumescent only. Results apply to I section beams with 3 sides fire exposure.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 2 HENSOTHERM® 370 KS I-Section Beams 30 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
30	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
35	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
40	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
45	0.190	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
50	0.216	0.181	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
55	0.242	0.194	0.182	0.181	0.179	0.179	0.179	0.179	0.179	0.179
60	0.268	0.206	0.188	0.184	0.179	0.179	0.179	0.179	0.179	0.179
65	0.294	0.219	0.194	0.187	0.179	0.179	0.179	0.179	0.179	0.179
70	0.320	0.231	0.200	0.190	0.182	0.179	0.179	0.179	0.179	0.179
75	0.346	0.244	0.206	0.193	0.185	0.179	0.179	0.179	0.179	0.179
80	0.379	0.256	0.212	0.196	0.187	0.179	0.179	0.179	0.179	0.179
85	0.422	0.268	0.218	0.199	0.190	0.179	0.179	0.179	0.179	0.179
90	0.465	0.281	0.224	0.202	0.192	0.179	0.179	0.179	0.179	0.179
95	0.508	0.293	0.230	0.205	0.195	0.179	0.179	0.179	0.179	0.179
100	0.551	0.306	0.236	0.208	0.198	0.179	0.179	0.179	0.179	0.179
105	0.594	0.318	0.241	0.211	0.200	0.181	0.179	0.179	0.179	0.179
110	0.637	0.331	0.247	0.214	0.203	0.183	0.179	0.179	0.179	0.179
115	0.679	0.343	0.253	0.217	0.205	0.185	0.179	0.179	0.179	0.179
120	0.704	0.355	0.259	0.220	0.208	0.188	0.179	0.179	0.179	0.179
125	0.728	0.375	0.265	0.222	0.211	0.190	0.182	0.179	0.179	0.179
130	0.752	0.402	0.271	0.225	0.213	0.193	0.184	0.179	0.179	0.179
135	0.777	0.428	0.277	0.228	0.216	0.195	0.186	0.179	0.179	0.179
140	0.801	0.455	0.283	0.231	0.218	0.197	0.189	0.179	0.179	0.179
145	0.825	0.482	0.289	0.234	0.221	0.200	0.191	0.179	0.179	0.179
150	0.849	0.509	0.295	0.237	0.224	0.202	0.193	0.179	0.179	0.179
155	0.874	0.536	0.301	0.240	0.226	0.205	0.195	0.179	0.179	0.179
160	0.898	0.563	0.307	0.243	0.229	0.207	0.198	0.179	0.179	0.179
165	0.922	0.590	0.313	0.246	0.231	0.209	0.200	0.180	0.179	0.179
170	0.947	0.617	0.319	0.249	0.234	0.212	0.202	0.182	0.179	0.179
175	0.971	0.644	0.325	0.252	0.237	0.214	0.205	0.184	0.179	0.179
180	0.995	0.671	0.331	0.255	0.239	0.216	0.207	0.186	0.179	0.179
185	1.020	0.692	0.337	0.258	0.242	0.219	0.209	0.188	0.179	0.179
190	1.044	0.711	0.343	0.261	0.244	0.221	0.211	0.191	0.179	0.179
195	1.068	0.730	0.349	0.264	0.247	0.224	0.214	0.193	0.179	0.179
200	1.092	0.749	0.355	0.267	0.249	0.226	0.216	0.195	0.179	0.179
205	1.117	0.768	0.361	0.270	0.252	0.228	0.218	0.197	0.179	0.179
210	1.141	0.787	0.377	0.273	0.255	0.231	0.221	0.199	0.179	0.179

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

certifire

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 2 HENSOTHERM® 370 KS I-Section Beams 30 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
215	1.165	0.806	0.395	0.276	0.257	0.233	0.223	0.201	0.179	0.179
220	1.190	0.825	0.413	0.279	0.260	0.236	0.225	0.204	0.179	0.179
225	1.214	0.844	0.431	0.282	0.262	0.238	0.227	0.206	0.179	0.179
230	1.238	0.863	0.449	0.285	0.265	0.240	0.230	0.208	0.179	0.179
235	1.263	0.882	0.466	0.287	0.268	0.243	0.232	0.210	0.179	0.179
240	1.287	0.901	0.484	0.290	0.270	0.245	0.234	0.212	0.179	0.179
245	1.311	0.920	0.502	0.293	0.273	0.248	0.237	0.215	0.179	0.179
250	1.336	0.939	0.520	0.296	0.275	0.250	0.239	0.217	0.179	0.179
255	1.360	0.959	0.538	0.299	0.278	0.252	0.241	0.219	0.179	0.179
260	1.384	0.978	0.556	0.302	0.281	0.255	0.244	0.221	0.179	0.179
265	1.408	0.997	0.574	0.305	0.283	0.257	0.246	0.223	0.179	0.179
270	1.433	1.016	0.592	0.308	0.286	0.260	0.248	0.226	0.179	0.179
275	1.457	1.035	0.610	0.311	0.288	0.262	0.250	0.228	0.179	0.179
280	1.481	1.054	0.628	0.314	0.291	0.264	0.253	0.230	0.179	0.179
285	1.506	1.073	0.645	0.317	0.294	0.267	0.255	0.232	0.179	0.179
290	1.530	1.092	0.663	0.320	0.296	0.269	0.257	0.234	0.179	0.179
295	1.554	1.111	0.681	0.323	0.299	0.272	0.260	0.236	0.179	0.179
300	1.579	1.130	0.699	0.326	0.301	0.274	0.262	0.239	0.179	0.179
305	1.603	1.149	0.717	0.329	0.304	0.276	0.264	0.241	0.179	0.179
310	1.627	1.168	0.735	0.332	0.307	0.279	0.266	0.243	0.179	0.179
315	1.652	1.187	0.753	0.335	0.309	0.281	0.269	0.245	0.179	0.179
320	1.676	1.206	0.771	0.338	0.312	0.284	0.271	0.247	0.179	0.179
325	1.700	1.225	0.789	0.341	0.314	0.286	0.273	0.250	0.179	0.179
330	1.724	1.244	0.807	0.344	0.317	0.288	0.276	0.252	0.180	0.180
335	1.749	1.263	0.824	0.347	0.320	0.291	0.278	0.254	0.182	0.182
340	1.773	1.282	0.842	0.350	0.322	0.293	0.280	0.256	0.183	0.183
345	1.797	1.301	0.860	0.353	0.325	0.296	0.282	0.258	0.184	0.184
350	1.822	1.320	0.878	0.355	0.327	0.298	0.285	0.261	0.185	0.185
355	1.846	1.339	0.896	0.358	0.330	0.300	0.287	0.263	0.187	0.187
360	1.870	1.358	0.914	0.361	0.332	0.303	0.289	0.265	0.188	0.188
365	1.895	1.377	0.932	0.376	0.335	0.305	0.292	0.267	0.189	0.189
370	1.919	1.397	0.950	0.395	0.338	0.307	0.294	0.269	0.190	0.190
375	1.943	1.416	0.968	0.413	0.340	0.310	0.296	0.271	0.192	0.192
380	1.968	1.435	0.986	0.431	0.343	0.312	0.299	0.274	0.193	0.193
385	1.992	1.454	1.003	0.449	0.345	0.315	0.301	0.276	0.194	0.194
390	2.016	1.473	1.021	0.467	0.348	0.317	0.303	0.278	0.195	0.195
395	2.040	1.492	1.039	0.486	0.351	0.319	0.305	0.280	0.197	0.197
400	2.065	1.511	1.057	0.504	0.353	0.322	0.308	0.282	0.198	0.198

Thickness is intumescent only. Results apply to I section beams with 3 sides fire exposure.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

certifire

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 3 HENSOTHERM® 370 KS I-Section Beams 45 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
30	0.204	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
35	0.266	0.198	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
40	0.329	0.237	0.194	0.179	0.179	0.179	0.179	0.179	0.179	0.179
45	0.442	0.276	0.219	0.190	0.179	0.179	0.179	0.179	0.179	0.179
50	0.613	0.315	0.244	0.207	0.187	0.179	0.179	0.179	0.179	0.179
55	0.728	0.355	0.270	0.224	0.198	0.184	0.182	0.182	0.179	0.179
60	0.808	0.440	0.295	0.240	0.209	0.191	0.188	0.185	0.180	0.179
65	0.889	0.537	0.320	0.257	0.220	0.199	0.193	0.189	0.183	0.179
70	0.969	0.634	0.345	0.274	0.231	0.206	0.199	0.193	0.185	0.179
75	1.050	0.706	0.373	0.290	0.242	0.213	0.205	0.196	0.188	0.179
80	1.130	0.756	0.407	0.307	0.253	0.220	0.211	0.200	0.190	0.179
85	1.211	0.807	0.440	0.324	0.263	0.227	0.216	0.204	0.193	0.180
90	1.291	0.858	0.474	0.340	0.274	0.234	0.222	0.207	0.196	0.182
95	1.372	0.909	0.507	0.357	0.285	0.241	0.228	0.211	0.198	0.185
100	1.452	0.960	0.541	0.378	0.296	0.249	0.233	0.215	0.201	0.187
105	1.533	1.011	0.574	0.401	0.307	0.256	0.239	0.218	0.203	0.189
110	1.613	1.062	0.608	0.425	0.318	0.263	0.245	0.222	0.206	0.191
115	1.694	1.112	0.641	0.448	0.329	0.270	0.251	0.225	0.209	0.193
120	1.774	1.163	0.675	0.471	0.340	0.277	0.256	0.229	0.211	0.195
125	1.855	1.214	0.699	0.494	0.351	0.284	0.262	0.233	0.214	0.197
130	1.935	1.265	0.723	0.517	0.362	0.292	0.268	0.236	0.216	0.200
135	2.011	1.316	0.746	0.540	0.375	0.299	0.273	0.240	0.219	0.202
140	2.029	1.367	0.770	0.563	0.388	0.306	0.279	0.244	0.222	0.204
145	2.048	1.418	0.793	0.586	0.401	0.313	0.285	0.247	0.224	0.206
150	2.067	1.468	0.816	0.609	0.414	0.320	0.290	0.251	0.227	0.208
155	2.085	1.519	0.840	0.632	0.427	0.327	0.296	0.255	0.229	0.210
160	2.104	1.570	0.863	0.655	0.440	0.334	0.302	0.258	0.232	0.213
165	2.122	1.621	0.887	0.678	0.453	0.342	0.308	0.262	0.235	0.215
170	2.141	1.672	0.910	0.700	0.466	0.349	0.313	0.266	0.237	0.217
175	2.160	1.723	0.934	0.722	0.479	0.356	0.319	0.269	0.240	0.219
180	2.178	1.774	0.957	0.743	0.492	0.365	0.325	0.273	0.242	0.221
185	2.197	1.824	0.981	0.765	0.505	0.383	0.330	0.276	0.245	0.223
190	2.216	1.875	1.004	0.786	0.518	0.401	0.336	0.280	0.248	0.226
195	2.234	1.926	1.027	0.808	0.531	0.419	0.342	0.284	0.250	0.228
200	2.253	1.977	1.051	0.830	0.544	0.437	0.348	0.287	0.253	0.230
205	2.271	2.015	1.074	0.851	0.557	0.455	0.353	0.291	0.255	0.232
210	2.290	2.030	1.098	0.873	0.570	0.473	0.359	0.295	0.258	0.234

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

certifire

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 3 HENSOTHERM® 370 KS I-Section Beams 45 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
215	2.309	2.045	1.121	0.895	0.583	0.491	0.371	0.298	0.261	0.236
220	2.327	2.060	1.145	0.916	0.596	0.509	0.388	0.302	0.263	0.239
225	2.346	2.075	1.168	0.938	0.609	0.527	0.406	0.306	0.266	0.241
230	2.365	2.090	1.192	0.959	0.622	0.545	0.424	0.309	0.268	0.243
235	2.383	2.105	1.215	0.981	0.636	0.563	0.441	0.313	0.271	0.245
240	2.402	2.121	1.239	1.003	0.649	0.582	0.459	0.317	0.274	0.247
245	2.421	2.136	1.262	1.024	0.662	0.600	0.477	0.320	0.276	0.249
250	2.439	2.151	1.285	1.046	0.675	0.618	0.495	0.324	0.279	0.251
255	2.458	2.166	1.309	1.067	0.694	0.636	0.512	0.328	0.281	0.254
260	2.476	2.181	1.332	1.089	0.715	0.654	0.530	0.331	0.284	0.256
265	2.495	2.196	1.356	1.111	0.736	0.672	0.548	0.335	0.287	0.258
270	2.514	2.211	1.379	1.132	0.758	0.690	0.565	0.338	0.289	0.260
275	2.532	2.226	1.403	1.154	0.779	0.708	0.583	0.342	0.292	0.262
280	2.551	2.242	1.426	1.175	0.800	0.726	0.601	0.346	0.294	0.264
285	2.570	2.257	1.450	1.197	0.821	0.744	0.619	0.349	0.297	0.267
290	2.588	2.272	1.473	1.219	0.843	0.762	0.636	0.353	0.300	0.269
295	2.607	2.287	1.496	1.240	0.864	0.781	0.654	0.357	0.302	0.271
300	2.625	2.302	1.520	1.262	0.885	0.799	0.672	0.360	0.305	0.273
305	2.644	2.317	1.543	1.283	0.906	0.817	0.690	0.372	0.307	0.275
310	2.663	2.332	1.567	1.305	0.928	0.835	0.707	0.390	0.310	0.277
315	2.681	2.348	1.590	1.327	0.949	0.853	0.725	0.408	0.313	0.280
320	2.700	2.363	1.614	1.348	0.970	0.871	0.743	0.426	0.315	0.282
325	2.719	2.378	1.637	1.370	0.991	0.889	0.760	0.444	0.318	0.284
330	2.737	2.393	1.661	1.392	1.013	0.907	0.778	0.461	0.320	0.286
335	2.756	2.408	1.684	1.413	1.034	0.925	0.796	0.479	0.323	0.288
340	2.775	2.423	1.707	1.435	1.055	0.943	0.814	0.497	0.326	0.290
345	2.793	2.438	1.731	1.456	1.076	0.961	0.831	0.515	0.328	0.293
350	2.812	2.453	1.754	1.478	1.098	0.980	0.849	0.533	0.331	0.295
355	2.830	2.469	1.778	1.500	1.119	0.998	0.867	0.551	0.333	0.297
360	2.849	2.484	1.801	1.521	1.140	1.016	0.884	0.569	0.336	0.299
365	2.868	2.499	1.825	1.543	1.161	1.034	0.902	0.587	0.339	0.301
370	2.886	2.514	1.848	1.564	1.183	1.052	0.920	0.605	0.341	0.303
375	2.905	2.529	1.872	1.586	1.204	1.070	0.938	0.623	0.344	0.305
380	2.924	2.544	1.895	1.608	1.225	1.088	0.955	0.641	0.346	0.308
385	2.942	2.559	1.919	1.629	1.246	1.106	0.973	0.659	0.349	0.310
390	2.961	2.575	1.942	1.651	1.268	1.124	0.991	0.677	0.351	0.312
395	2.979	2.590	1.965	1.672	1.289	1.142	1.008	0.695	0.354	0.314
400	2.998	2.605	1.989	1.694	1.310	1.160	1.026	0.713	0.357	0.316

Thickness is intumescent only. Results apply to I section beams with 3 sides fire exposure.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 4 HENSOTHERM® 370 KS I-Section Beams 60 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
30	0.599	0.322	0.207	0.179	0.179	0.179	0.179	0.179	0.179	0.179
35	0.631	0.348	0.261	0.212	0.182	0.179	0.179	0.179	0.179	0.179
40	0.773	0.482	0.314	0.251	0.210	0.184	0.179	0.179	0.179	0.179
45	0.892	0.642	0.374	0.290	0.238	0.205	0.195	0.182	0.179	0.179
50	1.010	0.737	0.476	0.329	0.266	0.225	0.213	0.198	0.180	0.179
55	1.128	0.814	0.578	0.372	0.294	0.246	0.231	0.213	0.189	0.182
60	1.247	0.891	0.680	0.440	0.322	0.267	0.250	0.228	0.199	0.187
65	1.365	0.968	0.746	0.507	0.350	0.287	0.268	0.243	0.209	0.191
70	1.483	1.045	0.813	0.574	0.385	0.308	0.286	0.258	0.218	0.196
75	1.601	1.121	0.880	0.642	0.425	0.329	0.304	0.273	0.228	0.200
80	1.720	1.198	0.947	0.696	0.464	0.349	0.323	0.289	0.238	0.204
85	1.838	1.275	1.013	0.734	0.504	0.372	0.341	0.304	0.247	0.209
90	1.956	1.352	1.080	0.772	0.544	0.398	0.359	0.319	0.257	0.213
95	2.107	1.429	1.147	0.810	0.583	0.424	0.380	0.334	0.267	0.218
100	2.285	1.506	1.214	0.849	0.623	0.451	0.401	0.349	0.276	0.222
105	2.462	1.582	1.280	0.887	0.662	0.477	0.423	0.364	0.286	0.226
110	2.640	1.659	1.347	0.925	0.693	0.503	0.444	0.377	0.296	0.231
115	2.817	1.736	1.414	0.963	0.717	0.529	0.465	0.390	0.305	0.235
120	2.995	1.813	1.481	1.002	0.741	0.555	0.486	0.402	0.315	0.240
125	-	1.890	1.547	1.040	0.765	0.581	0.507	0.415	0.325	0.244
130	-	1.967	1.614	1.078	0.790	0.608	0.529	0.428	0.334	0.248
135	-	2.017	1.681	1.116	0.814	0.634	0.550	0.441	0.344	0.253
140	-	2.036	1.748	1.155	0.838	0.660	0.571	0.454	0.354	0.257
145	-	2.055	1.814	1.193	0.862	0.685	0.592	0.466	0.363	0.262
150	-	2.074	1.881	1.231	0.887	0.708	0.614	0.479	0.373	0.266
155	-	2.093	1.948	1.269	0.911	0.730	0.635	0.492	0.383	0.270
160	-	2.111	2.010	1.307	0.935	0.753	0.656	0.505	0.393	0.275
165	-	2.130	2.026	1.346	0.959	0.775	0.677	0.518	0.403	0.279
170	-	2.149	2.043	1.384	0.984	0.798	0.699	0.530	0.412	0.284
175	-	2.168	2.059	1.422	1.008	0.820	0.722	0.543	0.422	0.288
180	-	2.187	2.075	1.460	1.032	0.843	0.744	0.556	0.432	0.292
185	-	2.206	2.091	1.499	1.056	0.865	0.766	0.569	0.442	0.297
190	-	2.224	2.107	1.537	1.081	0.888	0.788	0.582	0.452	0.301
195	-	2.243	2.123	1.575	1.105	0.911	0.810	0.594	0.461	0.306
200	-	2.262	2.139	1.613	1.129	0.933	0.832	0.607	0.471	0.310
205	-	2.281	2.155	1.652	1.153	0.956	0.855	0.620	0.481	0.314
210	-	2.300	2.171	1.690	1.178	0.978	0.877	0.633	0.491	0.319

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 4 HENSOTHERM® 370 KS I-Section Beams 60 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
215	-	2.318	2.187	1.728	1.202	1.001	0.899	0.646	0.501	0.323
220	-	2.337	2.203	1.766	1.226	1.023	0.921	0.658	0.511	0.328
225	-	2.356	2.219	1.805	1.250	1.046	0.943	0.671	0.520	0.332
230	-	2.375	2.235	1.843	1.275	1.068	0.965	0.689	0.530	0.336
235	-	2.394	2.252	1.881	1.299	1.091	0.987	0.711	0.540	0.341
240	-	2.412	2.268	1.919	1.323	1.113	1.010	0.734	0.550	0.345
245	-	2.431	2.284	1.958	1.347	1.136	1.032	0.757	0.560	0.350
250	-	2.450	2.300	1.996	1.372	1.159	1.054	0.780	0.569	0.354
255	-	2.469	2.316	2.021	1.396	1.181	1.076	0.802	0.579	0.358
260	-	2.488	2.332	2.039	1.420	1.204	1.098	0.825	0.589	0.365
265	-	2.507	2.348	2.057	1.444	1.226	1.120	0.848	0.599	0.383
270	-	2.525	2.364	2.075	1.469	1.249	1.143	0.870	0.609	0.401
275	-	2.544	2.380	2.093	1.493	1.271	1.165	0.893	0.618	0.419
280	-	2.563	2.396	2.111	1.517	1.294	1.187	0.916	0.628	0.437
285	-	2.582	2.412	2.129	1.541	1.316	1.209	0.939	0.638	0.455
290	-	2.601	2.428	2.148	1.565	1.339	1.231	0.961	0.648	0.473
295	-	2.619	2.444	2.166	1.590	1.361	1.253	0.984	0.658	0.491
300	-	2.638	2.460	2.184	1.614	1.384	1.275	1.007	0.667	0.509
305	-	2.657	2.477	2.202	1.638	1.407	1.298	1.030	0.677	0.527
310	-	2.676	2.493	2.220	1.662	1.429	1.320	1.052	0.698	0.545
315	-	2.695	2.509	2.238	1.687	1.452	1.342	1.075	0.720	0.562
320	-	2.713	2.525	2.256	1.711	1.474	1.364	1.098	0.741	0.580
325	-	2.732	2.541	2.274	1.735	1.497	1.386	1.121	0.763	0.598
330	-	2.751	2.557	2.292	1.759	1.519	1.408	1.143	0.785	0.616
335	-	2.770	2.573	2.310	1.784	1.542	1.431	1.166	0.806	0.634
340	-	2.789	2.589	2.328	1.808	1.564	1.453	1.189	0.828	0.652
345	-	2.808	2.605	2.347	1.832	1.587	1.475	1.212	0.849	0.670
350	-	2.826	2.621	2.365	1.856	1.609	1.497	1.234	0.871	0.688
355	-	2.845	2.637	2.383	1.881	1.632	1.519	1.257	0.893	0.706
360	-	2.864	2.653	2.401	1.905	1.654	1.541	1.280	0.914	0.724
365	-	2.883	2.669	2.419	1.929	1.677	1.563	1.302	0.936	0.742
370	-	2.902	2.686	2.437	1.953	1.700	1.586	1.325	0.958	0.760
375	-	2.920	2.702	2.455	1.978	1.722	1.608	1.348	0.979	0.778
380	-	2.939	2.718	2.473	2.002	1.745	1.630	1.371	1.001	0.796
385	-	2.958	2.734	2.491	2.026	1.767	1.652	1.393	1.023	0.814
390	-	2.977	2.750	2.509	2.050	1.790	1.674	1.416	1.044	0.831
395	-	2.996	2.766	2.527	2.075	1.812	1.696	1.439	1.066	0.849
400	-	3.014	2.782	2.546	2.099	1.835	1.718	1.462	1.088	0.867

Thickness is intumescent only. Results apply to I section beams with 3 sides fire exposure.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

certifire

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 5 HENSOTHERM® 370 KS I-Section Beams 75 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
30	1.095	0.610	0.326	0.301	0.209	0.179	0.179	0.179	0.179	0.179
35	1.194	0.702	0.461	0.334	0.259	0.215	0.202	0.184	0.179	0.179
40	1.348	0.809	0.621	0.417	0.310	0.253	0.236	0.213	0.183	0.179
45	1.502	0.916	0.728	0.537	0.360	0.291	0.270	0.242	0.204	0.179
50	1.657	1.023	0.806	0.656	0.457	0.329	0.304	0.271	0.225	0.191
55	1.811	1.131	0.884	0.736	0.556	0.373	0.338	0.299	0.246	0.206
60	1.965	1.238	0.962	0.807	0.654	0.452	0.382	0.328	0.268	0.220
65	2.176	1.345	1.040	0.878	0.719	0.532	0.451	0.357	0.289	0.235
70	2.411	1.452	1.118	0.948	0.773	0.612	0.521	0.408	0.310	0.249
75	2.646	1.559	1.195	1.019	0.827	0.683	0.590	0.463	0.331	0.263
80	2.880	1.666	1.273	1.090	0.881	0.715	0.660	0.519	0.353	0.278
85	3.115	1.774	1.351	1.161	0.934	0.748	0.696	0.575	0.382	0.292
90	-	1.881	1.429	1.231	0.988	0.780	0.720	0.630	0.417	0.307
95	-	1.988	1.507	1.302	1.042	0.812	0.744	0.681	0.452	0.321
100	-	2.101	1.585	1.373	1.096	0.844	0.768	0.705	0.487	0.336
105	-	2.216	1.663	1.444	1.150	0.876	0.793	0.730	0.522	0.350
110	-	2.331	1.741	1.515	1.204	0.908	0.817	0.754	0.558	0.364
115	-	2.445	1.819	1.585	1.258	0.940	0.841	0.778	0.593	0.379
120	-	2.560	1.897	1.656	1.312	0.972	0.865	0.802	0.628	0.393
125	-	2.675	1.975	1.727	1.366	1.004	0.889	0.826	0.663	0.408
130	-	2.789	2.020	1.798	1.420	1.036	0.913	0.850	0.691	0.422
135	-	2.904	2.041	1.868	1.473	1.068	0.938	0.874	0.713	0.437
140	-	3.019	2.061	1.939	1.527	1.100	0.962	0.899	0.736	0.451
145	-	3.133	2.081	2.009	1.581	1.132	0.986	0.923	0.758	0.466
150	-	-	2.101	2.027	1.635	1.164	1.010	0.947	0.780	0.480
155	-	-	2.122	2.045	1.689	1.196	1.034	0.971	0.803	0.495
160	-	-	2.142	2.063	1.743	1.228	1.059	0.995	0.825	0.509
165	-	-	2.162	2.081	1.797	1.260	1.083	1.019	0.847	0.524
170	-	-	2.183	2.099	1.851	1.292	1.107	1.043	0.870	0.538
175	-	-	2.203	2.117	1.905	1.324	1.131	1.068	0.892	0.553
180	-	-	2.223	2.135	1.959	1.356	1.155	1.092	0.915	0.567
185	-	-	2.243	2.153	2.010	1.388	1.179	1.116	0.937	0.582
190	-	-	2.264	2.171	2.027	1.420	1.204	1.140	0.959	0.596
195	-	-	2.284	2.189	2.045	1.452	1.228	1.164	0.982	0.610
200	-	-	2.304	2.207	2.062	1.485	1.252	1.188	1.004	0.625
205	-	-	2.325	2.225	2.079	1.517	1.276	1.212	1.026	0.639
210	-	-	2.345	2.243	2.097	1.549	1.300	1.237	1.049	0.654

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 5 HENSOTHERM® 370 KS I-Section Beams 75 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
215	-	-	2.365	2.261	2.114	1.581	1.325	1.261	1.071	0.668
220	-	-	2.385	2.279	2.131	1.613	1.349	1.285	1.093	0.685
225	-	-	2.406	2.297	2.148	1.645	1.373	1.309	1.116	0.708
230	-	-	2.426	2.315	2.166	1.677	1.397	1.333	1.138	0.730
235	-	-	2.446	2.333	2.183	1.709	1.421	1.357	1.160	0.752
240	-	-	2.466	2.351	2.200	1.741	1.445	1.381	1.183	0.774
245	-	-	2.487	2.369	2.217	1.773	1.470	1.406	1.205	0.796
250	-	-	2.507	2.387	2.235	1.805	1.494	1.430	1.228	0.818
255	-	-	2.527	2.405	2.252	1.837	1.518	1.454	1.250	0.840
260	-	-	2.548	2.423	2.269	1.869	1.542	1.478	1.272	0.863
265	-	-	2.568	2.441	2.287	1.901	1.566	1.502	1.295	0.885
270	-	-	2.588	2.458	2.304	1.933	1.591	1.526	1.317	0.907
275	-	-	2.608	2.476	2.321	1.965	1.615	1.550	1.339	0.929
280	-	-	2.629	2.494	2.338	1.997	1.639	1.575	1.362	0.951
285	-	-	2.649	2.512	2.356	2.022	1.663	1.599	1.384	0.973
290	-	-	2.669	2.530	2.373	2.043	1.687	1.623	1.406	0.996
295	-	-	2.690	2.548	2.390	2.064	1.711	1.647	1.429	1.018
300	-	-	2.710	2.566	2.408	2.084	1.736	1.671	1.451	1.040
305	-	-	2.730	2.584	2.425	2.105	1.760	1.695	1.473	1.062
310	-	-	2.750	2.602	2.442	2.126	1.784	1.719	1.496	1.084
315	-	-	2.771	2.620	2.459	2.147	1.808	1.744	1.518	1.106
320	-	-	2.791	2.638	2.477	2.167	1.832	1.768	1.541	1.129
325	-	-	2.811	2.656	2.494	2.188	1.857	1.792	1.563	1.151
330	-	-	2.831	2.674	2.511	2.209	1.881	1.816	1.585	1.173
335	-	-	2.852	2.692	2.529	2.230	1.905	1.840	1.608	1.195
340	-	-	2.872	2.710	2.546	2.250	1.929	1.864	1.630	1.217
345	-	-	2.892	2.728	2.563	2.271	1.953	1.888	1.652	1.239
350	-	-	2.913	2.746	2.580	2.292	1.977	1.913	1.675	1.261
355	-	-	2.933	2.764	2.598	2.313	2.002	1.937	1.697	1.284
360	-	-	2.953	2.782	2.615	2.333	2.028	1.961	1.719	1.306
365	-	-	2.973	2.800	2.632	2.354	2.055	1.985	1.742	1.328
370	-	-	2.994	2.818	2.650	2.375	2.082	2.009	1.764	1.350
375	-	-	3.014	2.836	2.667	2.396	2.110	2.033	1.786	1.372
380	-	-	3.034	2.854	2.684	2.416	2.137	2.057	1.809	1.394
385	-	-	3.055	2.872	2.701	2.437	2.164	2.082	1.831	1.417
390	-	-	3.075	2.890	2.719	2.458	2.191	2.106	1.854	1.439
395	-	-	-	2.908	2.736	2.479	2.219	2.130	1.876	1.461
400	-	-	-	2.926	2.753	2.499	2.246	2.154	1.898	1.483

Thickness is intumescent only. Results apply to I section beams with 3 sides fire exposure.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 6 HENSOTHERM® 370 KS I-Section Beams 90 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
30	1.593	1.084	0.631	0.542	0.326	0.271	0.223	0.200	0.179	0.179
35	1.734	1.185	0.742	0.577	0.391	0.311	0.275	0.244	0.202	0.179
40	1.965	1.316	0.853	0.708	0.538	0.359	0.328	0.289	0.236	0.192
45	2.156	1.447	0.963	0.788	0.682	0.481	0.405	0.334	0.271	0.217
50	2.338	1.578	1.074	0.867	0.754	0.609	0.527	0.404	0.305	0.242
55	2.520	1.709	1.185	0.947	0.826	0.707	0.648	0.516	0.339	0.268
60	2.702	1.840	1.295	1.026	0.898	0.770	0.720	0.628	0.394	0.293
65	2.885	1.971	1.406	1.106	0.970	0.833	0.777	0.704	0.488	0.318
70	3.067	2.178	1.517	1.185	1.042	0.896	0.833	0.751	0.582	0.343
75	-	2.417	1.627	1.265	1.114	0.959	0.889	0.798	0.676	0.376
80	-	2.656	1.738	1.344	1.186	1.022	0.945	0.844	0.705	0.433
85	-	2.894	1.849	1.424	1.258	1.084	1.001	0.891	0.734	0.489
90	-	3.133	1.959	1.503	1.330	1.147	1.057	0.938	0.762	0.546
95	-	-	2.088	1.583	1.402	1.210	1.113	0.984	0.790	0.603
100	-	-	2.231	1.662	1.474	1.273	1.169	1.031	0.818	0.659
105	-	-	2.374	1.742	1.546	1.336	1.225	1.078	0.846	0.694
110	-	-	2.517	1.821	1.618	1.399	1.281	1.125	0.874	0.717
115	-	-	2.660	1.901	1.690	1.462	1.337	1.171	0.902	0.741
120	-	-	2.803	1.980	1.762	1.525	1.393	1.218	0.930	0.764
125	-	-	2.946	2.031	1.834	1.588	1.450	1.265	0.958	0.788
130	-	-	-	2.066	1.906	1.650	1.506	1.312	0.986	0.812
135	-	-	-	2.101	1.978	1.713	1.562	1.358	1.015	0.835
140	-	-	-	2.136	2.020	1.776	1.618	1.405	1.043	0.859
145	-	-	-	2.171	2.040	1.839	1.674	1.452	1.071	0.882
150	-	-	-	2.206	2.059	1.902	1.730	1.499	1.099	0.906
155	-	-	-	2.240	2.079	1.965	1.786	1.545	1.127	0.930
160	-	-	-	2.275	2.098	2.014	1.842	1.592	1.155	0.953
165	-	-	-	2.310	2.118	2.032	1.898	1.639	1.183	0.977
170	-	-	-	2.345	2.138	2.050	1.954	1.685	1.211	1.000
175	-	-	-	2.380	2.157	2.068	2.009	1.732	1.239	1.024
180	-	-	-	2.415	2.177	2.086	2.027	1.779	1.267	1.048
185	-	-	-	2.450	2.196	2.104	2.045	1.826	1.296	1.071
190	-	-	-	2.484	2.216	2.122	2.063	1.872	1.324	1.095
195	-	-	-	2.519	2.235	2.140	2.081	1.919	1.352	1.118
200	-	-	-	2.554	2.255	2.158	2.099	1.966	1.380	1.142
205	-	-	-	2.589	2.275	2.176	2.117	2.010	1.408	1.165
210	-	-	-	2.624	2.294	2.194	2.135	2.029	1.436	1.189

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 6 HENSOTHERM® 370 KS I-Section Beams 90 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
215	-	-	-	2.659	2.314	2.212	2.153	2.047	1.464	1.213
220	-	-	-	2.694	2.333	2.230	2.171	2.065	1.492	1.236
225	-	-	-	2.728	2.353	2.248	2.189	2.083	1.520	1.260
230	-	-	-	2.763	2.372	2.266	2.207	2.101	1.548	1.283
235	-	-	-	2.798	2.392	2.284	2.225	2.119	1.577	1.307
240	-	-	-	2.833	2.412	2.302	2.243	2.137	1.605	1.331
245	-	-	-	2.868	2.431	2.320	2.261	2.156	1.633	1.354
250	-	-	-	2.903	2.451	2.338	2.278	2.174	1.661	1.378
255	-	-	-	2.938	2.470	2.356	2.296	2.192	1.689	1.401
260	-	-	-	2.972	2.490	2.374	2.314	2.210	1.717	1.425
265	-	-	-	3.007	2.510	2.392	2.332	2.228	1.745	1.449
270	-	-	-	3.042	2.529	2.410	2.350	2.246	1.773	1.472
275	-	-	-	3.077	2.549	2.428	2.368	2.264	1.801	1.496
280	-	-	-	3.112	2.568	2.446	2.386	2.282	1.829	1.519
285	-	-	-	-	2.588	2.464	2.404	2.301	1.858	1.543
290	-	-	-	-	2.607	2.482	2.422	2.319	1.886	1.566
295	-	-	-	-	2.627	2.500	2.440	2.337	1.914	1.590
300	-	-	-	-	2.647	2.518	2.458	2.355	1.942	1.614
305	-	-	-	-	2.666	2.536	2.476	2.373	1.970	1.637
310	-	-	-	-	2.686	2.554	2.494	2.391	1.998	1.661
315	-	-	-	-	2.705	2.572	2.512	2.409	2.023	1.684
320	-	-	-	-	2.725	2.590	2.530	2.428	2.046	1.708
325	-	-	-	-	2.744	2.608	2.548	2.446	2.070	1.732
330	-	-	-	-	2.764	2.626	2.565	2.464	2.093	1.755
335	-	-	-	-	2.784	2.644	2.583	2.482	2.116	1.779
340	-	-	-	-	2.803	2.662	2.601	2.500	2.139	1.802
345	-	-	-	-	2.823	2.680	2.619	2.518	2.162	1.826
350	-	-	-	-	2.842	2.698	2.637	2.536	2.186	1.849
355	-	-	-	-	2.862	2.716	2.655	2.555	2.209	1.873
360	-	-	-	-	2.881	2.734	2.673	2.573	2.232	1.897
365	-	-	-	-	2.901	2.752	2.691	2.591	2.255	1.920
370	-	-	-	-	2.921	2.770	2.709	2.609	2.279	1.944
375	-	-	-	-	2.940	2.788	2.727	2.627	2.302	1.967
380	-	-	-	-	2.960	2.806	2.745	2.645	2.325	1.991
385	-	-	-	-	2.979	2.824	2.763	2.663	2.348	2.015
390	-	-	-	-	2.999	2.842	2.781	2.682	2.371	2.038
395	-	-	-	-	3.018	2.860	2.799	2.700	2.395	2.062
400	-	-	-	-	3.038	2.878	2.817	2.718	2.418	2.085

Thickness is intumescent only. Results apply to I section beams with 3 sides fire exposure.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 7 HENSOTHERM® 370 KS I-Section Beams 105 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
30	-	1.482	1.101	0.834	0.610	0.326	0.326	0.300	0.213	0.179
35	-	1.618	1.206	0.912	0.674	0.466	0.387	0.333	0.262	0.206
40	-	1.800	1.329	1.017	0.759	0.645	0.559	0.429	0.311	0.243
45	-	1.983	1.453	1.122	0.844	0.739	0.700	0.592	0.361	0.281
50	-	2.165	1.576	1.227	0.929	0.813	0.772	0.710	0.499	0.319
55	-	2.346	1.700	1.333	1.014	0.888	0.844	0.778	0.640	0.357
60	-	2.528	1.823	1.438	1.099	0.962	0.916	0.846	0.719	0.454
65	-	2.709	1.947	1.543	1.184	1.036	0.987	0.914	0.775	0.560
70	-	2.891	2.126	1.648	1.269	1.111	1.059	0.982	0.831	0.667
75	-	3.072	2.362	1.753	1.354	1.185	1.131	1.050	0.888	0.710
80	-	-	2.599	1.858	1.439	1.260	1.203	1.119	0.944	0.746
85	-	-	2.835	1.963	1.524	1.334	1.275	1.187	1.000	0.782
90	-	-	3.072	2.106	1.609	1.408	1.346	1.255	1.056	0.818
95	-	-	-	2.277	1.694	1.483	1.418	1.323	1.112	0.854
100	-	-	-	2.448	1.779	1.557	1.490	1.391	1.169	0.890
105	-	-	-	2.619	1.864	1.631	1.562	1.459	1.225	0.926
110	-	-	-	2.790	1.949	1.706	1.633	1.527	1.281	0.963
115	-	-	-	2.962	2.023	1.780	1.705	1.595	1.337	0.999
120	-	-	-	-	2.071	1.855	1.777	1.663	1.393	1.035
125	-	-	-	-	2.119	1.929	1.849	1.731	1.449	1.071
130	-	-	-	-	2.167	2.003	1.921	1.799	1.506	1.107
135	-	-	-	-	2.215	2.029	1.992	1.867	1.562	1.143
140	-	-	-	-	2.263	2.050	2.024	1.935	1.618	1.179
145	-	-	-	-	2.311	2.071	2.044	2.003	1.674	1.215
150	-	-	-	-	2.359	2.092	2.064	2.026	1.730	1.251
155	-	-	-	-	2.407	2.114	2.085	2.045	1.787	1.287
160	-	-	-	-	2.455	2.135	2.105	2.064	1.843	1.323
165	-	-	-	-	2.503	2.156	2.125	2.083	1.899	1.359
170	-	-	-	-	2.551	2.177	2.145	2.102	1.955	1.395
175	-	-	-	-	2.599	2.199	2.165	2.122	2.010	1.431
180	-	-	-	-	2.647	2.220	2.185	2.141	2.028	1.467
185	-	-	-	-	2.695	2.241	2.205	2.160	2.046	1.503
190	-	-	-	-	2.743	2.262	2.225	2.179	2.064	1.539
195	-	-	-	-	2.790	2.284	2.245	2.198	2.082	1.575
200	-	-	-	-	2.838	2.305	2.265	2.217	2.100	1.611
205	-	-	-	-	2.886	2.326	2.285	2.236	2.118	1.647
210	-	-	-	-	2.934	2.347	2.305	2.255	2.137	1.683

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 7 HENSOTHERM® 370 KS I-Section Beams 105 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
215	-	-	-	-	2.982	2.369	2.325	2.274	2.155	1.720
220	-	-	-	-	3.030	2.390	2.345	2.293	2.173	1.756
225	-	-	-	-	3.078	2.411	2.365	2.312	2.191	1.792
230	-	-	-	-	3.126	2.432	2.385	2.331	2.209	1.828
235	-	-	-	-	-	2.454	2.405	2.350	2.227	1.864
240	-	-	-	-	-	2.475	2.425	2.369	2.245	1.900
245	-	-	-	-	-	2.496	2.445	2.388	2.263	1.936
250	-	-	-	-	-	2.517	2.466	2.407	2.281	1.972
255	-	-	-	-	-	2.539	2.486	2.426	2.300	2.008
260	-	-	-	-	-	2.560	2.506	2.445	2.318	2.029
265	-	-	-	-	-	2.581	2.526	2.464	2.336	2.049
270	-	-	-	-	-	2.602	2.546	2.483	2.354	2.069
275	-	-	-	-	-	2.624	2.566	2.502	2.372	2.090
280	-	-	-	-	-	2.645	2.586	2.521	2.390	2.110
285	-	-	-	-	-	2.666	2.606	2.540	2.408	2.130
290	-	-	-	-	-	2.687	2.626	2.559	2.426	2.151
295	-	-	-	-	-	2.709	2.646	2.578	2.445	2.171
300	-	-	-	-	-	2.730	2.666	2.597	2.463	2.191
305	-	-	-	-	-	2.751	2.686	2.616	2.481	2.212
310	-	-	-	-	-	2.772	2.706	2.635	2.499	2.232
315	-	-	-	-	-	2.794	2.726	2.654	2.517	2.252
320	-	-	-	-	-	2.815	2.746	2.673	2.535	2.273
325	-	-	-	-	-	2.836	2.766	2.692	2.553	2.293
330	-	-	-	-	-	2.857	2.786	2.711	2.571	2.313
335	-	-	-	-	-	2.879	2.806	2.730	2.589	2.334
340	-	-	-	-	-	2.900	2.826	2.749	2.608	2.354
345	-	-	-	-	-	2.921	2.846	2.768	2.626	2.374
350	-	-	-	-	-	2.942	2.867	2.787	2.644	2.395
355	-	-	-	-	-	2.964	2.887	2.806	2.662	2.415
360	-	-	-	-	-	2.985	2.907	2.825	2.680	2.435
365	-	-	-	-	-	3.006	2.927	2.844	2.698	2.456
370	-	-	-	-	-	3.027	2.947	2.863	2.716	2.476
375	-	-	-	-	-	3.049	2.967	2.882	2.734	2.496
380	-	-	-	-	-	3.070	2.987	2.901	2.753	2.517
385	-	-	-	-	-	3.091	3.007	2.920	2.771	2.537
390	-	-	-	-	-	-	3.027	2.939	2.789	2.557
395	-	-	-	-	-	-	3.047	2.958	2.807	2.578
400	-	-	-	-	-	-	3.067	2.977	2.825	2.598

Thickness is intumescent only. Results apply to I section beams with 3 sides fire exposure.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 8 HENSOTHERM® 370 KS I-Section Beams 120 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
30	-	1.808	1.444	1.140	0.903	0.610	0.610	0.326	0.315	0.209
35	-	2.037	1.580	1.249	0.988	0.708	0.671	0.522	0.344	0.261
40	-	2.211	1.742	1.370	1.095	0.802	0.755	0.700	0.482	0.313
45	-	2.385	1.905	1.490	1.202	0.896	0.840	0.777	0.671	0.370
50	-	2.559	2.075	1.611	1.309	0.991	0.924	0.854	0.747	0.519
55	-	2.732	2.258	1.732	1.417	1.085	1.008	0.932	0.818	0.667
60	-	2.906	2.441	1.853	1.524	1.179	1.092	1.009	0.889	0.734
65	-	3.080	2.623	1.973	1.631	1.274	1.177	1.086	0.961	0.795
70	-	-	2.806	2.167	1.738	1.368	1.261	1.164	1.032	0.855
75	-	-	2.989	2.391	1.845	1.462	1.345	1.241	1.104	0.916
80	-	-	-	2.616	1.953	1.557	1.429	1.318	1.175	0.977
85	-	-	-	2.840	2.103	1.651	1.514	1.396	1.246	1.037
90	-	-	-	3.064	2.303	1.746	1.598	1.473	1.318	1.098
95	-	-	-	-	2.502	1.840	1.682	1.550	1.389	1.158
100	-	-	-	-	2.701	1.934	1.766	1.628	1.461	1.219
105	-	-	-	-	2.900	2.021	1.851	1.705	1.532	1.279
110	-	-	-	-	3.100	2.077	1.935	1.782	1.603	1.340
115	-	-	-	-	-	2.133	2.015	1.860	1.675	1.400
120	-	-	-	-	-	2.189	2.060	1.937	1.746	1.461
125	-	-	-	-	-	2.245	2.106	2.011	1.818	1.522
130	-	-	-	-	-	2.301	2.151	2.042	1.889	1.582
135	-	-	-	-	-	2.357	2.197	2.073	1.960	1.643
140	-	-	-	-	-	2.413	2.242	2.104	2.015	1.703
145	-	-	-	-	-	2.469	2.288	2.135	2.035	1.764
150	-	-	-	-	-	2.525	2.333	2.166	2.055	1.824
155	-	-	-	-	-	2.581	2.379	2.197	2.075	1.885
160	-	-	-	-	-	2.637	2.424	2.227	2.095	1.945
165	-	-	-	-	-	2.693	2.470	2.258	2.115	2.006
170	-	-	-	-	-	2.749	2.515	2.289	2.135	2.027
175	-	-	-	-	-	2.806	2.561	2.320	2.155	2.045
180	-	-	-	-	-	2.862	2.606	2.351	2.175	2.064
185	-	-	-	-	-	2.918	2.652	2.382	2.195	2.083
190	-	-	-	-	-	2.974	2.697	2.413	2.214	2.101
195	-	-	-	-	-	3.030	2.743	2.444	2.234	2.120
200	-	-	-	-	-	3.086	2.788	2.475	2.254	2.139
205	-	-	-	-	-	3.142	2.834	2.506	2.274	2.157
210	-	-	-	-	-	-	2.879	2.536	2.294	2.176

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 8 HENSOTHERM® 370 KS I-Section Beams 120 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
215	-	-	-	-	-	-	2.925	2.567	2.314	2.194
220	-	-	-	-	-	-	2.970	2.598	2.334	2.213
225	-	-	-	-	-	-	3.016	2.629	2.354	2.232
230	-	-	-	-	-	-	3.061	2.660	2.374	2.250
235	-	-	-	-	-	-	3.107	2.691	2.394	2.269
240	-	-	-	-	-	-	-	2.722	2.414	2.288
245	-	-	-	-	-	-	-	2.753	2.433	2.306
250	-	-	-	-	-	-	-	2.784	2.453	2.325
255	-	-	-	-	-	-	-	2.814	2.473	2.343
260	-	-	-	-	-	-	-	2.845	2.493	2.362
265	-	-	-	-	-	-	-	2.876	2.513	2.381
270	-	-	-	-	-	-	-	2.907	2.533	2.399
275	-	-	-	-	-	-	-	2.938	2.553	2.418
280	-	-	-	-	-	-	-	2.969	2.573	2.437
285	-	-	-	-	-	-	-	3.000	2.593	2.455
290	-	-	-	-	-	-	-	3.031	2.613	2.474
295	-	-	-	-	-	-	-	3.062	2.633	2.493
300	-	-	-	-	-	-	-	3.093	2.652	2.511
305	-	-	-	-	-	-	-	-	2.672	2.530
310	-	-	-	-	-	-	-	-	2.692	2.548
315	-	-	-	-	-	-	-	-	2.712	2.567
320	-	-	-	-	-	-	-	-	2.732	2.586
325	-	-	-	-	-	-	-	-	2.752	2.604
330	-	-	-	-	-	-	-	-	2.772	2.623
335	-	-	-	-	-	-	-	-	2.792	2.642
340	-	-	-	-	-	-	-	-	2.812	2.660
345	-	-	-	-	-	-	-	-	2.832	2.679
350	-	-	-	-	-	-	-	-	2.852	2.697
355	-	-	-	-	-	-	-	-	2.871	2.716
360	-	-	-	-	-	-	-	-	2.891	2.735
365	-	-	-	-	-	-	-	-	2.911	2.753
370	-	-	-	-	-	-	-	-	2.931	2.772
375	-	-	-	-	-	-	-	-	2.951	2.791
380	-	-	-	-	-	-	-	-	2.971	2.809
385	-	-	-	-	-	-	-	-	2.991	2.828
390	-	-	-	-	-	-	-	-	3.011	2.847
395	-	-	-	-	-	-	-	-	3.031	2.865
400	-	-	-	-	-	-	-	-	3.051	2.884

Thickness is intumescent only. Results apply to I section beams with 3 sides fire exposure.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 9 HENSOTHERM® 370 KS I-Section Beams 150 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	550	600	620	650	700	750
30	-	-	-	1.752	1.455	1.204	1.110	0.975	0.627	0.326
35	-	-	-	1.914	1.593	1.320	1.215	1.067	0.735	0.501
40	-	-	-	2.098	1.748	1.440	1.334	1.181	0.843	0.699
45	-	-	-	2.264	1.903	1.560	1.453	1.294	0.951	0.781
50	-	-	-	2.430	2.065	1.680	1.572	1.408	1.059	0.863
55	-	-	-	2.597	2.238	1.800	1.691	1.522	1.167	0.945
60	-	-	-	2.763	2.412	1.920	1.810	1.635	1.275	1.027
65	-	-	-	2.929	2.586	2.064	1.929	1.749	1.383	1.109
70	-	-	-	-	2.760	2.271	2.076	1.862	1.491	1.190
75	-	-	-	-	2.934	2.478	2.282	1.976	1.599	1.272
80	-	-	-	-	-	2.686	2.488	2.159	1.707	1.354
85	-	-	-	-	-	2.893	2.694	2.371	1.815	1.436
90	-	-	-	-	-	3.100	2.900	2.582	1.923	1.518
95	-	-	-	-	-	-	3.106	2.794	2.030	1.600
100	-	-	-	-	-	-	-	3.006	2.133	1.681
105	-	-	-	-	-	-	-	-	2.236	1.763
110	-	-	-	-	-	-	-	-	2.339	1.845
115	-	-	-	-	-	-	-	-	2.441	1.927
120	-	-	-	-	-	-	-	-	2.544	2.009
125	-	-	-	-	-	-	-	-	2.647	2.126
130	-	-	-	-	-	-	-	-	2.750	2.244
135	-	-	-	-	-	-	-	-	2.853	2.362
140	-	-	-	-	-	-	-	-	2.956	2.479
145	-	-	-	-	-	-	-	-	3.059	2.597
150	-	-	-	-	-	-	-	-	-	2.715
155	-	-	-	-	-	-	-	-	-	2.832
160	-	-	-	-	-	-	-	-	-	2.950
165	-	-	-	-	-	-	-	-	-	3.067

Thickness is intumescent only. Results apply to I section beams with 3 sides fire exposure.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 10 HENSOTHERM® 370 KS I-Section Columns 15 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
30	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
35	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
40	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
45	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
50	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
55	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
60	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
65	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
70	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
75	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
80	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
85	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
90	0.162	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
95	0.168	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
100	0.175	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
105	0.182	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
110	0.188	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
115	0.195	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
120	0.202	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
125	0.209	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
130	0.215	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
135	0.222	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
140	0.229	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
145	0.235	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
150	0.242	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
155	0.249	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
160	0.255	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
165	0.262	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
170	0.269	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
175	0.276	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
180	0.282	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
185	0.289	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
190	0.296	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
195	0.302	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
200	0.309	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
205	0.316	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
210	0.323	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 10 HENSOTHERM® 370 KS I-Section Columns 15 minutes (continued)									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
215	0.329	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
220	0.336	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
225	0.343	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
230	0.349	0.164	0.161	0.161	0.161	0.161	0.161	0.161	0.161
235	0.356	0.170	0.161	0.161	0.161	0.161	0.161	0.161	0.161
240	0.363	0.176	0.161	0.161	0.161	0.161	0.161	0.161	0.161
245	0.370	0.183	0.161	0.161	0.161	0.161	0.161	0.161	0.161
250	0.376	0.189	0.161	0.161	0.161	0.161	0.161	0.161	0.161
255	0.383	0.195	0.161	0.161	0.161	0.161	0.161	0.161	0.161
260	0.390	0.202	0.161	0.161	0.161	0.161	0.161	0.161	0.161
265	0.396	0.208	0.161	0.161	0.161	0.161	0.161	0.161	0.161
270	0.403	0.214	0.161	0.161	0.161	0.161	0.161	0.161	0.161
275	0.410	0.221	0.161	0.161	0.161	0.161	0.161	0.161	0.161
280	0.416	0.227	0.161	0.161	0.161	0.161	0.161	0.161	0.161
285	0.423	0.233	0.161	0.161	0.161	0.161	0.161	0.161	0.161
290	0.430	0.240	0.161	0.161	0.161	0.161	0.161	0.161	0.161
295	0.437	0.246	0.161	0.161	0.161	0.161	0.161	0.161	0.161
300	0.443	0.253	0.161	0.161	0.161	0.161	0.161	0.161	0.161
305	0.450	0.259	0.161	0.161	0.161	0.161	0.161	0.161	0.161
310	0.457	0.265	0.161	0.161	0.161	0.161	0.161	0.161	0.161
315	0.463	0.272	0.161	0.161	0.161	0.161	0.161	0.161	0.161
320	0.470	0.278	0.161	0.161	0.161	0.161	0.161	0.161	0.161
325	0.477	0.284	0.161	0.161	0.161	0.161	0.161	0.161	0.161
330	0.484	0.291	0.161	0.161	0.161	0.161	0.161	0.161	0.161
335	0.490	0.297	0.161	0.161	0.161	0.161	0.161	0.161	0.161
340	0.497	0.303	0.161	0.161	0.161	0.161	0.161	0.161	0.161
345	0.504	0.310	0.161	0.161	0.161	0.161	0.161	0.161	0.161
350	0.510	0.316	0.161	0.161	0.161	0.161	0.161	0.161	0.161
355	0.517	0.323	0.161	0.161	0.161	0.161	0.161	0.161	0.161
360	0.524	0.329	0.161	0.161	0.161	0.161	0.161	0.161	0.161
365	0.531	0.335	0.161	0.161	0.161	0.161	0.161	0.161	0.161
370	0.537	0.342	0.161	0.161	0.161	0.161	0.161	0.161	0.161
375	0.544	0.348	0.161	0.161	0.161	0.161	0.161	0.161	0.161
380	0.551	0.354	0.161	0.161	0.161	0.161	0.161	0.161	0.161
385	0.557	0.361	0.161	0.161	0.161	0.161	0.161	0.161	0.161
390	0.564	0.367	0.161	0.161	0.161	0.161	0.161	0.161	0.161
395	0.571	0.373	0.164	0.161	0.161	0.161	0.161	0.161	0.161
400	0.577	0.380	0.170	0.161	0.161	0.161	0.161	0.161	0.161

Thickness is intumescent only. Results also apply to I section beams with 4 sides fire exposure subject to a maximum DFT of 3.28mm.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 11 HENSOTHERM® 370 KS I-Section Columns 30 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
30	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
35	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
40	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
45	0.193	0.162	0.162	0.161	0.161	0.161	0.161	0.161	0.161
50	0.229	0.179	0.170	0.161	0.161	0.161	0.161	0.161	0.161
55	0.265	0.196	0.178	0.162	0.161	0.161	0.161	0.161	0.161
60	0.300	0.213	0.186	0.169	0.161	0.161	0.161	0.161	0.161
65	0.336	0.229	0.194	0.176	0.161	0.161	0.161	0.161	0.161
70	0.372	0.246	0.202	0.183	0.164	0.161	0.161	0.161	0.161
75	0.407	0.263	0.210	0.190	0.170	0.161	0.161	0.161	0.161
80	0.443	0.280	0.218	0.196	0.176	0.161	0.161	0.161	0.161
85	0.479	0.297	0.226	0.203	0.182	0.161	0.161	0.161	0.161
90	0.514	0.314	0.234	0.210	0.188	0.161	0.161	0.161	0.161
95	0.550	0.331	0.242	0.217	0.194	0.161	0.161	0.161	0.161
100	0.586	0.347	0.250	0.223	0.200	0.161	0.161	0.161	0.161
105	0.621	0.364	0.258	0.230	0.205	0.161	0.161	0.161	0.161
110	0.657	0.381	0.266	0.237	0.211	0.161	0.161	0.161	0.161
115	0.685	0.398	0.274	0.244	0.217	0.161	0.161	0.161	0.161
120	0.710	0.415	0.282	0.251	0.223	0.161	0.161	0.161	0.161
125	0.736	0.432	0.290	0.257	0.229	0.167	0.161	0.161	0.161
130	0.762	0.448	0.298	0.264	0.235	0.173	0.161	0.161	0.161
135	0.787	0.465	0.306	0.271	0.241	0.178	0.161	0.161	0.161
140	0.813	0.482	0.314	0.278	0.247	0.184	0.161	0.161	0.161
145	0.838	0.499	0.322	0.284	0.253	0.189	0.161	0.161	0.161
150	0.864	0.516	0.330	0.291	0.259	0.195	0.161	0.161	0.161
155	0.890	0.533	0.338	0.298	0.265	0.200	0.161	0.161	0.161
160	0.915	0.549	0.345	0.305	0.270	0.206	0.161	0.161	0.161
165	0.941	0.566	0.353	0.312	0.276	0.211	0.161	0.161	0.161
170	0.967	0.583	0.361	0.318	0.282	0.217	0.161	0.161	0.161
175	0.992	0.600	0.369	0.325	0.288	0.223	0.161	0.161	0.161
180	1.018	0.617	0.377	0.332	0.294	0.228	0.161	0.161	0.161
185	1.043	0.634	0.385	0.339	0.300	0.234	0.161	0.161	0.161
190	1.069	0.650	0.393	0.345	0.306	0.239	0.161	0.161	0.161
195	1.095	0.668	0.401	0.352	0.312	0.245	0.161	0.161	0.161
200	1.120	0.689	0.409	0.359	0.318	0.250	0.161	0.161	0.161
205	1.146	0.711	0.417	0.366	0.324	0.256	0.161	0.161	0.161
210	1.171	0.732	0.425	0.373	0.330	0.261	0.161	0.161	0.161

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 11 HENSOTHERM® 370 KS I-Section Columns 30 minutes (continued)									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
215	1.197	0.753	0.433	0.379	0.335	0.267	0.161	0.161	0.161
220	1.223	0.775	0.441	0.386	0.341	0.273	0.161	0.161	0.161
225	1.248	0.796	0.449	0.393	0.347	0.278	0.161	0.161	0.161
230	1.274	0.817	0.457	0.400	0.353	0.284	0.161	0.161	0.161
235	1.300	0.839	0.465	0.407	0.359	0.289	0.161	0.161	0.161
240	1.325	0.860	0.473	0.413	0.365	0.295	0.161	0.161	0.161
245	1.351	0.881	0.481	0.420	0.371	0.300	0.163	0.161	0.161
250	1.376	0.903	0.489	0.427	0.377	0.306	0.168	0.161	0.161
255	1.402	0.924	0.497	0.434	0.383	0.311	0.174	0.161	0.161
260	1.428	0.946	0.505	0.440	0.389	0.317	0.180	0.161	0.161
265	1.453	0.967	0.513	0.447	0.395	0.323	0.186	0.161	0.161
270	1.479	0.988	0.521	0.454	0.400	0.328	0.192	0.161	0.161
275	1.504	1.010	0.529	0.461	0.406	0.334	0.197	0.161	0.161
280	1.530	1.031	0.537	0.468	0.412	0.339	0.203	0.161	0.161
285	1.556	1.052	0.545	0.474	0.418	0.345	0.209	0.161	0.161
290	1.581	1.074	0.553	0.481	0.424	0.350	0.215	0.161	0.161
295	1.607	1.095	0.561	0.488	0.430	0.356	0.221	0.161	0.161
300	1.632	1.116	0.569	0.495	0.436	0.361	0.226	0.161	0.161
305	1.658	1.138	0.577	0.501	0.442	0.367	0.232	0.161	0.161
310	1.684	1.159	0.585	0.508	0.448	0.373	0.238	0.161	0.161
315	1.709	1.180	0.593	0.515	0.454	0.378	0.244	0.161	0.161
320	1.735	1.202	0.601	0.522	0.460	0.384	0.249	0.161	0.161
325	1.761	1.223	0.609	0.529	0.465	0.389	0.255	0.161	0.161
330	1.786	1.245	0.617	0.535	0.471	0.395	0.261	0.161	0.161
335	1.812	1.266	0.625	0.542	0.477	0.400	0.267	0.161	0.161
340	1.837	1.287	0.633	0.549	0.483	0.406	0.273	0.161	0.161
345	1.863	1.309	0.641	0.556	0.489	0.411	0.278	0.161	0.161
350	1.889	1.330	0.648	0.562	0.495	0.417	0.284	0.161	0.161
355	1.914	1.351	0.656	0.569	0.501	0.423	0.290	0.161	0.161
360	1.940	1.373	0.664	0.576	0.507	0.428	0.296	0.161	0.161
365	1.965	1.394	0.689	0.583	0.513	0.434	0.302	0.161	0.161
370	1.991	1.415	0.715	0.590	0.519	0.439	0.307	0.161	0.161
375	2.016	1.437	0.742	0.596	0.524	0.445	0.313	0.161	0.161
380	2.038	1.458	0.768	0.603	0.530	0.450	0.319	0.166	0.161
385	2.061	1.480	0.794	0.610	0.536	0.456	0.325	0.172	0.161
390	2.083	1.501	0.820	0.617	0.542	0.461	0.331	0.177	0.161
395	2.106	1.522	0.846	0.623	0.548	0.467	0.336	0.183	0.161
400	2.129	1.544	0.872	0.630	0.554	0.473	0.342	0.188	0.161

Thickness is intumescent only. Results also apply to I section beams with 4 sides fire exposure subject to a maximum DFT of 3.28mm.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 12 HENSOTHERM® 370 KS I-Section Columns 45 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
30	0.221	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
35	0.316	0.207	0.167	0.161	0.161	0.161	0.161	0.161	0.161
40	0.411	0.263	0.198	0.172	0.161	0.161	0.161	0.161	0.161
45	0.507	0.318	0.229	0.192	0.173	0.166	0.161	0.161	0.161
50	0.602	0.373	0.260	0.213	0.187	0.175	0.162	0.161	0.161
55	0.693	0.428	0.292	0.234	0.201	0.183	0.169	0.161	0.161
60	0.776	0.483	0.323	0.254	0.215	0.192	0.176	0.161	0.161
65	0.859	0.539	0.354	0.275	0.229	0.200	0.183	0.164	0.161
70	0.941	0.594	0.385	0.296	0.243	0.209	0.190	0.170	0.161
75	1.024	0.649	0.416	0.316	0.257	0.218	0.197	0.177	0.161
80	1.107	0.703	0.447	0.337	0.271	0.226	0.205	0.183	0.161
85	1.189	0.756	0.478	0.358	0.284	0.235	0.212	0.189	0.161
90	1.272	0.809	0.509	0.379	0.298	0.243	0.219	0.195	0.161
95	1.355	0.862	0.540	0.399	0.312	0.252	0.226	0.202	0.161
100	1.437	0.915	0.571	0.420	0.326	0.261	0.233	0.208	0.167
105	1.520	0.968	0.602	0.441	0.340	0.269	0.240	0.214	0.172
110	1.603	1.021	0.633	0.461	0.354	0.278	0.247	0.220	0.178
115	1.685	1.074	0.665	0.482	0.368	0.287	0.255	0.227	0.183
120	1.768	1.127	0.688	0.503	0.382	0.295	0.262	0.233	0.188
125	1.851	1.180	0.712	0.523	0.396	0.304	0.269	0.239	0.194
130	1.933	1.233	0.735	0.544	0.410	0.312	0.276	0.245	0.199
135	2.011	1.286	0.759	0.565	0.424	0.321	0.283	0.251	0.204
140	2.029	1.339	0.782	0.586	0.438	0.330	0.290	0.258	0.210
145	2.048	1.392	0.805	0.606	0.452	0.338	0.298	0.264	0.215
150	2.067	1.445	0.829	0.627	0.466	0.347	0.305	0.270	0.220
155	2.086	1.498	0.852	0.648	0.480	0.355	0.312	0.276	0.226
160	2.105	1.551	0.876	0.669	0.493	0.364	0.319	0.283	0.231
165	2.123	1.604	0.899	0.690	0.507	0.373	0.326	0.289	0.236
170	2.142	1.657	0.923	0.712	0.521	0.381	0.333	0.295	0.242
175	2.161	1.710	0.946	0.734	0.535	0.390	0.341	0.301	0.247
180	2.180	1.764	0.970	0.756	0.549	0.398	0.348	0.308	0.252
185	2.199	1.817	0.993	0.778	0.563	0.407	0.355	0.314	0.258
190	2.217	1.870	1.017	0.800	0.577	0.416	0.362	0.320	0.263
195	2.236	1.923	1.040	0.822	0.591	0.424	0.369	0.326	0.268
200	2.255	1.976	1.064	0.844	0.605	0.433	0.376	0.333	0.274
205	2.274	2.015	1.087	0.866	0.619	0.442	0.383	0.339	0.279
210	2.293	2.030	1.110	0.888	0.633	0.450	0.391	0.345	0.284

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 12 HENSOTHERM® 370 KS I-Section Columns 45 minutes (continued)									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
215	2.312	2.045	1.134	0.909	0.647	0.459	0.398	0.351	0.290
220	2.330	2.060	1.157	0.931	0.661	0.467	0.405	0.358	0.295
225	2.349	2.076	1.181	0.953	0.680	0.476	0.412	0.364	0.300
230	2.368	2.091	1.204	0.975	0.701	0.485	0.419	0.370	0.306
235	2.387	2.106	1.228	0.997	0.723	0.493	0.426	0.376	0.311
240	2.406	2.122	1.251	1.019	0.744	0.502	0.434	0.383	0.316
245	2.424	2.137	1.275	1.041	0.765	0.510	0.441	0.389	0.322
250	2.443	2.152	1.298	1.063	0.787	0.519	0.448	0.395	0.327
255	2.462	2.167	1.322	1.085	0.808	0.528	0.455	0.401	0.333
260	2.481	2.183	1.345	1.106	0.829	0.536	0.462	0.408	0.338
265	2.500	2.198	1.369	1.128	0.851	0.545	0.469	0.414	0.343
270	2.518	2.213	1.392	1.150	0.872	0.553	0.477	0.420	0.349
275	2.537	2.228	1.416	1.172	0.894	0.562	0.484	0.426	0.354
280	2.556	2.244	1.439	1.194	0.915	0.571	0.491	0.432	0.359
285	2.575	2.259	1.462	1.216	0.936	0.579	0.498	0.439	0.365
290	2.594	2.274	1.486	1.238	0.958	0.588	0.505	0.445	0.370
295	2.612	2.289	1.509	1.260	0.979	0.597	0.512	0.451	0.375
300	2.631	2.305	1.533	1.282	1.001	0.605	0.519	0.457	0.381
305	2.650	2.320	1.556	1.304	1.022	0.614	0.527	0.464	0.386
310	2.669	2.335	1.580	1.325	1.043	0.622	0.534	0.470	0.391
315	2.688	2.350	1.603	1.347	1.065	0.631	0.541	0.476	0.397
320	2.706	2.366	1.627	1.369	1.086	0.640	0.548	0.482	0.402
325	2.725	2.381	1.650	1.391	1.107	0.648	0.555	0.489	0.407
330	2.744	2.396	1.674	1.413	1.129	0.657	0.562	0.495	0.413
335	2.763	2.412	1.697	1.435	1.150	0.666	0.570	0.501	0.418
340	2.782	2.427	1.721	1.457	1.172	0.690	0.577	0.507	0.423
345	2.800	2.442	1.744	1.479	1.193	0.714	0.584	0.514	0.429
350	2.819	2.457	1.767	1.501	1.214	0.739	0.591	0.520	0.434
355	2.838	2.473	1.791	1.523	1.236	0.763	0.598	0.526	0.439
360	2.857	2.488	1.814	1.544	1.257	0.787	0.605	0.532	0.445
365	2.876	2.503	1.838	1.566	1.278	0.811	0.612	0.539	0.450
370	2.894	2.518	1.861	1.588	1.300	0.835	0.620	0.545	0.455
375	2.913	2.534	1.885	1.610	1.321	0.859	0.627	0.551	0.461
380	2.932	2.549	1.908	1.632	1.343	0.884	0.634	0.557	0.466
385	2.951	2.564	1.932	1.654	1.364	0.908	0.641	0.564	0.471
390	2.970	2.579	1.955	1.676	1.385	0.932	0.648	0.570	0.477
395	2.989	2.595	1.979	1.698	1.407	0.956	0.655	0.576	0.482
400	3.007	2.610	2.002	1.720	1.428	0.980	0.663	0.582	0.488

Thickness is intumescent only. Results also apply to I section beams with 4 sides fire exposure subject to a maximum DFT of 3.28mm.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 13 HENSOTHERM® 370 KS I-Section Columns 60 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
30	0.599	0.394	0.221	0.161	0.161	0.161	0.161	0.161	0.161
35	0.664	0.468	0.294	0.224	0.184	0.161	0.161	0.161	0.161
40	0.781	0.558	0.367	0.274	0.219	0.185	0.162	0.161	0.161
45	0.899	0.649	0.440	0.324	0.255	0.211	0.182	0.163	0.161
50	1.016	0.728	0.513	0.374	0.290	0.238	0.201	0.176	0.165
55	1.134	0.806	0.586	0.424	0.325	0.264	0.221	0.189	0.173
60	1.252	0.883	0.659	0.474	0.360	0.290	0.241	0.202	0.181
65	1.369	0.961	0.727	0.524	0.396	0.316	0.261	0.215	0.189
70	1.487	1.038	0.795	0.574	0.431	0.342	0.280	0.228	0.196
75	1.604	1.115	0.863	0.625	0.466	0.368	0.300	0.242	0.204
80	1.722	1.193	0.930	0.672	0.501	0.395	0.320	0.255	0.212
85	1.839	1.270	0.998	0.711	0.537	0.421	0.340	0.268	0.220
90	1.957	1.347	1.066	0.750	0.572	0.447	0.359	0.281	0.227
95	2.105	1.425	1.134	0.789	0.607	0.473	0.379	0.294	0.235
100	2.279	1.502	1.201	0.828	0.643	0.499	0.399	0.307	0.243
105	2.452	1.579	1.269	0.867	0.674	0.525	0.419	0.320	0.251
110	2.626	1.657	1.337	0.906	0.697	0.551	0.438	0.333	0.258
115	2.799	1.734	1.405	0.945	0.720	0.578	0.458	0.347	0.266
120	2.972	1.812	1.473	0.984	0.743	0.604	0.478	0.360	0.274
125	-	1.889	1.540	1.023	0.767	0.630	0.498	0.373	0.282
130	-	1.966	1.608	1.062	0.790	0.656	0.517	0.386	0.289
135	-	2.018	1.676	1.101	0.813	0.679	0.537	0.399	0.297
140	-	2.036	1.744	1.139	0.836	0.701	0.557	0.412	0.305
145	-	2.055	1.811	1.178	0.860	0.722	0.577	0.425	0.313
150	-	2.074	1.879	1.217	0.883	0.744	0.596	0.438	0.320
155	-	2.093	1.947	1.256	0.906	0.766	0.616	0.452	0.328
160	-	2.112	2.010	1.295	0.930	0.787	0.636	0.465	0.336
165	-	2.131	2.027	1.334	0.953	0.809	0.656	0.478	0.344
170	-	2.150	2.043	1.373	0.976	0.830	0.676	0.491	0.351
175	-	2.169	2.059	1.412	0.999	0.852	0.696	0.504	0.359
180	-	2.188	2.075	1.451	1.023	0.873	0.716	0.517	0.367
185	-	2.207	2.092	1.490	1.046	0.895	0.736	0.530	0.375
190	-	2.226	2.108	1.529	1.069	0.917	0.756	0.543	0.382
195	-	2.245	2.124	1.568	1.093	0.938	0.777	0.557	0.390
200	-	2.264	2.140	1.606	1.116	0.960	0.797	0.570	0.398
205	-	2.283	2.156	1.645	1.139	0.981	0.817	0.583	0.406
210	-	2.302	2.173	1.684	1.162	1.003	0.837	0.596	0.414

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 13 HENSOTHERM® 370 KS I-Section Columns 60 minutes (continued)									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
215	-	2.321	2.189	1.723	1.186	1.025	0.858	0.609	0.421
220	-	2.340	2.205	1.762	1.209	1.046	0.878	0.622	0.429
225	-	2.359	2.221	1.801	1.232	1.068	0.898	0.635	0.437
230	-	2.378	2.238	1.840	1.255	1.089	0.918	0.648	0.445
235	-	2.397	2.254	1.879	1.279	1.111	0.939	0.662	0.452
240	-	2.416	2.270	1.918	1.302	1.132	0.959	0.680	0.460
245	-	2.435	2.286	1.957	1.325	1.154	0.979	0.700	0.468
250	-	2.454	2.302	1.996	1.349	1.176	0.999	0.720	0.476
255	-	2.473	2.319	2.021	1.372	1.197	1.019	0.740	0.483
260	-	2.492	2.335	2.039	1.395	1.219	1.040	0.760	0.491
265	-	2.511	2.351	2.057	1.418	1.240	1.060	0.780	0.499
270	-	2.530	2.367	2.076	1.442	1.262	1.080	0.800	0.507
275	-	2.549	2.384	2.094	1.465	1.284	1.100	0.820	0.514
280	-	2.568	2.400	2.112	1.488	1.305	1.121	0.840	0.522
285	-	2.587	2.416	2.130	1.511	1.327	1.141	0.860	0.530
290	-	2.606	2.432	2.148	1.535	1.348	1.161	0.880	0.538
295	-	2.625	2.448	2.167	1.558	1.370	1.181	0.900	0.545
300	-	2.644	2.465	2.185	1.581	1.391	1.201	0.920	0.553
305	-	2.663	2.481	2.203	1.605	1.413	1.222	0.941	0.561
310	-	2.682	2.497	2.221	1.628	1.435	1.242	0.961	0.569
315	-	2.701	2.513	2.240	1.651	1.456	1.262	0.981	0.576
320	-	2.720	2.530	2.258	1.674	1.478	1.282	1.001	0.584
325	-	2.739	2.546	2.276	1.698	1.499	1.303	1.021	0.592
330	-	2.758	2.562	2.294	1.721	1.521	1.323	1.041	0.600
335	-	2.777	2.578	2.312	1.744	1.543	1.343	1.061	0.607
340	-	2.796	2.594	2.331	1.768	1.564	1.363	1.081	0.615
345	-	2.815	2.611	2.349	1.791	1.586	1.384	1.101	0.623
350	-	2.834	2.627	2.367	1.814	1.607	1.404	1.121	0.631
355	-	2.853	2.643	2.385	1.837	1.629	1.424	1.141	0.638
360	-	2.872	2.659	2.403	1.861	1.651	1.444	1.161	0.646
365	-	2.891	2.676	2.422	1.884	1.672	1.464	1.181	0.654
370	-	2.910	2.692	2.440	1.907	1.694	1.485	1.201	0.662
375	-	2.929	2.708	2.458	1.930	1.715	1.505	1.221	0.678
380	-	2.948	2.724	2.476	1.954	1.737	1.525	1.241	0.700
385	-	2.967	2.740	2.495	1.977	1.758	1.545	1.261	0.722
390	-	2.986	2.757	2.513	2.000	1.780	1.566	1.281	0.745
395	-	3.005	2.773	2.531	2.025	1.802	1.586	1.302	0.767
400	-	3.024	2.789	2.549	2.051	1.823	1.606	1.322	0.790

Thickness is intumescent only. Results also apply to I section beams with 4 sides fire exposure subject to a maximum DFT of 3.28mm.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 14 HENSOTHERM® 370 KS I-Section Columns 75 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
30	1.111	0.606	0.490	0.360	0.224	0.161	0.161	0.161	0.161
35	1.212	0.712	0.555	0.431	0.294	0.231	0.186	0.161	0.161
40	1.363	0.818	0.647	0.507	0.363	0.285	0.228	0.182	0.161
45	1.514	0.925	0.728	0.582	0.433	0.339	0.269	0.213	0.171
50	1.664	1.031	0.806	0.658	0.503	0.392	0.311	0.244	0.193
55	1.815	1.137	0.884	0.729	0.572	0.446	0.353	0.276	0.214
60	1.966	1.244	0.962	0.801	0.642	0.499	0.394	0.307	0.235
65	2.175	1.350	1.040	0.872	0.702	0.553	0.436	0.338	0.257
70	2.408	1.456	1.118	0.943	0.756	0.606	0.477	0.369	0.278
75	2.642	1.563	1.195	1.014	0.811	0.660	0.519	0.400	0.299
80	2.875	1.669	1.273	1.085	0.866	0.695	0.561	0.432	0.321
85	3.108	1.775	1.351	1.156	0.920	0.727	0.602	0.463	0.342
90	-	1.882	1.429	1.227	0.975	0.760	0.644	0.494	0.364
95	-	1.988	1.507	1.299	1.029	0.792	0.676	0.525	0.385
100	-	2.120	1.585	1.370	1.084	0.825	0.699	0.557	0.406
105	-	2.257	1.663	1.441	1.139	0.857	0.722	0.588	0.428
110	-	2.394	1.741	1.512	1.193	0.890	0.745	0.619	0.449
115	-	2.532	1.819	1.583	1.248	0.922	0.767	0.650	0.471
120	-	2.669	1.897	1.654	1.302	0.955	0.790	0.676	0.492
125	-	2.807	1.975	1.725	1.357	0.988	0.813	0.697	0.513
130	-	2.944	2.020	1.797	1.412	1.020	0.836	0.718	0.535
135	-	3.082	2.041	1.868	1.466	1.053	0.859	0.739	0.556
140	-	-	2.061	1.939	1.521	1.085	0.881	0.760	0.578
145	-	-	2.082	2.009	1.576	1.118	0.904	0.782	0.599
150	-	-	2.102	2.027	1.630	1.150	0.927	0.803	0.620
155	-	-	2.123	2.046	1.685	1.183	0.950	0.824	0.642
160	-	-	2.143	2.064	1.739	1.216	0.973	0.845	0.663
165	-	-	2.164	2.082	1.794	1.248	0.995	0.866	0.683
170	-	-	2.184	2.100	1.849	1.281	1.018	0.887	0.703
175	-	-	2.205	2.118	1.903	1.313	1.041	0.908	0.723
180	-	-	2.225	2.136	1.958	1.346	1.064	0.929	0.742
185	-	-	2.246	2.154	2.010	1.378	1.087	0.950	0.762
190	-	-	2.266	2.172	2.028	1.411	1.109	0.971	0.782
195	-	-	2.287	2.191	2.045	1.443	1.132	0.992	0.802
200	-	-	2.307	2.209	2.062	1.476	1.155	1.013	0.821
205	-	-	2.327	2.227	2.080	1.509	1.178	1.034	0.841
210	-	-	2.348	2.245	2.097	1.541	1.201	1.055	0.861

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 14 HENSOTHERM® 370 KS I-Section Columns 75 minutes (continued)									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
215	-	-	2.368	2.263	2.115	1.574	1.223	1.077	0.881
220	-	-	2.389	2.281	2.132	1.606	1.246	1.098	0.900
225	-	-	2.409	2.299	2.150	1.639	1.269	1.119	0.920
230	-	-	2.430	2.318	2.167	1.671	1.292	1.140	0.940
235	-	-	2.450	2.336	2.184	1.704	1.315	1.161	0.960
240	-	-	2.471	2.354	2.202	1.737	1.337	1.182	0.979
245	-	-	2.491	2.372	2.219	1.769	1.360	1.203	0.999
250	-	-	2.512	2.390	2.237	1.802	1.383	1.224	1.019
255	-	-	2.532	2.408	2.254	1.834	1.406	1.245	1.039
260	-	-	2.553	2.426	2.271	1.867	1.429	1.266	1.058
265	-	-	2.573	2.444	2.289	1.899	1.451	1.287	1.078
270	-	-	2.593	2.463	2.306	1.932	1.474	1.308	1.098
275	-	-	2.614	2.481	2.324	1.964	1.497	1.329	1.118
280	-	-	2.634	2.499	2.341	1.997	1.520	1.350	1.137
285	-	-	2.655	2.517	2.359	2.022	1.542	1.372	1.157
290	-	-	2.675	2.535	2.376	2.043	1.565	1.393	1.177
295	-	-	2.696	2.553	2.393	2.064	1.588	1.414	1.197
300	-	-	2.716	2.571	2.411	2.085	1.611	1.435	1.216
305	-	-	2.737	2.589	2.428	2.106	1.634	1.456	1.236
310	-	-	2.757	2.608	2.446	2.126	1.656	1.477	1.256
315	-	-	2.778	2.626	2.463	2.147	1.679	1.498	1.276
320	-	-	2.798	2.644	2.481	2.168	1.702	1.519	1.295
325	-	-	2.819	2.662	2.498	2.189	1.725	1.540	1.315
330	-	-	2.839	2.680	2.515	2.210	1.748	1.561	1.335
335	-	-	2.859	2.698	2.533	2.231	1.770	1.582	1.354
340	-	-	2.880	2.716	2.550	2.252	1.793	1.603	1.374
345	-	-	2.900	2.735	2.568	2.272	1.816	1.624	1.394
350	-	-	2.921	2.753	2.585	2.293	1.839	1.645	1.414
355	-	-	2.941	2.771	2.603	2.314	1.862	1.667	1.433
360	-	-	2.962	2.789	2.620	2.335	1.884	1.688	1.453
365	-	-	2.982	2.807	2.637	2.356	1.907	1.709	1.473
370	-	-	3.003	2.825	2.655	2.377	1.930	1.730	1.493
375	-	-	3.023	2.843	2.672	2.398	1.953	1.751	1.512
380	-	-	3.044	2.861	2.690	2.418	1.976	1.772	1.532
385	-	-	3.064	2.880	2.707	2.439	1.998	1.793	1.552
390	-	-	3.085	2.898	2.725	2.460	2.023	1.814	1.572
395	-	-	-	2.916	2.742	2.481	2.050	1.835	1.591
400	-	-	-	2.934	2.759	2.502	2.076	1.856	1.611

Thickness is intumescent only. Results also apply to I section beams with 4 sides fire exposure subject to a maximum DFT of 3.28mm.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 15 HENSOTHERM® 370 KS I-Section Columns 90 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
30	1.598	1.099	0.643	0.568	0.446	0.337	0.212	0.161	0.161
35	1.740	1.202	0.753	0.625	0.514	0.408	0.283	0.214	0.161
40	1.966	1.330	0.863	0.711	0.598	0.483	0.353	0.269	0.196
45	2.156	1.458	0.972	0.791	0.680	0.557	0.423	0.325	0.237
50	2.339	1.587	1.082	0.870	0.752	0.632	0.494	0.380	0.277
55	2.522	1.715	1.192	0.949	0.824	0.700	0.564	0.435	0.317
60	2.704	1.843	1.301	1.029	0.897	0.763	0.634	0.491	0.357
65	2.887	1.972	1.411	1.108	0.969	0.826	0.691	0.546	0.398
70	3.069	2.176	1.521	1.187	1.041	0.890	0.739	0.601	0.438
75	-	2.412	1.631	1.267	1.113	0.953	0.786	0.657	0.478
80	-	2.649	1.740	1.346	1.185	1.016	0.833	0.689	0.519
85	-	2.885	1.850	1.425	1.257	1.079	0.880	0.718	0.559
90	-	3.121	1.960	1.504	1.329	1.143	0.927	0.746	0.599
95	-	-	2.105	1.584	1.401	1.206	0.975	0.775	0.639
100	-	-	2.280	1.663	1.473	1.269	1.022	0.803	0.673
105	-	-	2.455	1.742	1.545	1.332	1.069	0.831	0.695
110	-	-	2.630	1.822	1.617	1.396	1.116	0.860	0.718
115	-	-	2.806	1.901	1.690	1.459	1.163	0.888	0.740
120	-	-	2.981	1.980	1.762	1.522	1.211	0.917	0.763
125	-	-	-	2.043	1.834	1.585	1.258	0.945	0.785
130	-	-	-	2.096	1.906	1.648	1.305	0.974	0.807
135	-	-	-	2.149	1.978	1.712	1.352	1.002	0.830
140	-	-	-	2.202	2.020	1.775	1.399	1.031	0.852
145	-	-	-	2.255	2.040	1.838	1.446	1.059	0.874
150	-	-	-	2.308	2.060	1.901	1.494	1.088	0.897
155	-	-	-	2.361	2.079	1.965	1.541	1.116	0.919
160	-	-	-	2.414	2.099	2.014	1.588	1.144	0.941
165	-	-	-	2.467	2.119	2.033	1.635	1.173	0.964
170	-	-	-	2.520	2.139	2.051	1.682	1.201	0.986
175	-	-	-	2.573	2.158	2.069	1.730	1.230	1.008
180	-	-	-	2.626	2.178	2.087	1.777	1.258	1.031
185	-	-	-	2.679	2.198	2.105	1.824	1.287	1.053
190	-	-	-	2.732	2.218	2.123	1.871	1.315	1.075
195	-	-	-	2.785	2.237	2.141	1.918	1.344	1.098
200	-	-	-	2.838	2.257	2.160	1.965	1.372	1.120
205	-	-	-	2.891	2.277	2.178	2.010	1.400	1.142
210	-	-	-	2.944	2.297	2.196	2.029	1.429	1.165

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 15 HENSOTHERM® 370 KS I-Section Columns 90 minutes (continued)									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
215	-	-	-	2.997	2.316	2.214	2.047	1.457	1.187
220	-	-	-	3.050	2.336	2.232	2.065	1.486	1.209
225	-	-	-	3.103	2.356	2.250	2.083	1.514	1.232
230	-	-	-	3.156	2.376	2.268	2.102	1.543	1.254
235	-	-	-	-	2.395	2.287	2.120	1.571	1.276
240	-	-	-	-	2.415	2.305	2.138	1.600	1.299
245	-	-	-	-	2.435	2.323	2.157	1.628	1.321
250	-	-	-	-	2.455	2.341	2.175	1.657	1.343
255	-	-	-	-	2.474	2.359	2.193	1.685	1.366
260	-	-	-	-	2.494	2.377	2.211	1.713	1.388
265	-	-	-	-	2.514	2.395	2.230	1.742	1.410
270	-	-	-	-	2.534	2.414	2.248	1.770	1.433
275	-	-	-	-	2.553	2.432	2.266	1.799	1.455
280	-	-	-	-	2.573	2.450	2.285	1.827	1.477
285	-	-	-	-	2.593	2.468	2.303	1.856	1.500
290	-	-	-	-	2.613	2.486	2.321	1.884	1.522
295	-	-	-	-	2.632	2.504	2.339	1.913	1.545
300	-	-	-	-	2.652	2.523	2.358	1.941	1.567
305	-	-	-	-	2.672	2.541	2.376	1.969	1.589
310	-	-	-	-	2.692	2.559	2.394	1.998	1.612
315	-	-	-	-	2.711	2.577	2.412	2.023	1.634
320	-	-	-	-	2.731	2.595	2.431	2.046	1.656
325	-	-	-	-	2.751	2.613	2.449	2.070	1.679
330	-	-	-	-	2.771	2.631	2.467	2.093	1.701
335	-	-	-	-	2.790	2.650	2.486	2.116	1.723
340	-	-	-	-	2.810	2.668	2.504	2.140	1.746
345	-	-	-	-	2.830	2.686	2.522	2.163	1.768
350	-	-	-	-	2.850	2.704	2.540	2.186	1.790
355	-	-	-	-	2.869	2.722	2.559	2.209	1.813
360	-	-	-	-	2.889	2.740	2.577	2.233	1.835
365	-	-	-	-	2.909	2.758	2.595	2.256	1.857
370	-	-	-	-	2.929	2.777	2.613	2.279	1.880
375	-	-	-	-	2.948	2.795	2.632	2.303	1.902
380	-	-	-	-	2.968	2.813	2.650	2.326	1.924
385	-	-	-	-	2.988	2.831	2.668	2.349	1.947
390	-	-	-	-	3.008	2.849	2.687	2.372	1.969
395	-	-	-	-	3.027	2.867	2.705	2.396	1.991
400	-	-	-	-	3.047	2.885	2.723	2.419	2.014

Thickness is intumescent only. Results also apply to I section beams with 4 sides fire exposure subject to a maximum DFT of 3.28mm.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 16 HENSOTHERM® 370 KS I-Section Columns 105 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
30	-	1.488	1.116	0.855	0.599	0.511	0.395	0.236	0.161
35	-	1.626	1.222	0.935	0.680	0.574	0.467	0.319	0.222
40	-	1.805	1.343	1.038	0.764	0.666	0.551	0.402	0.285
45	-	1.983	1.464	1.141	0.849	0.740	0.634	0.485	0.349
50	-	2.165	1.585	1.244	0.934	0.815	0.708	0.567	0.412
55	-	2.346	1.706	1.346	1.018	0.889	0.776	0.650	0.475
60	-	2.528	1.827	1.449	1.103	0.963	0.844	0.711	0.538
65	-	2.709	1.948	1.552	1.188	1.037	0.913	0.768	0.601
70	-	2.891	2.124	1.655	1.272	1.112	0.981	0.824	0.665
75	-	3.073	2.358	1.758	1.357	1.186	1.049	0.881	0.701
80	-	-	2.592	1.861	1.442	1.260	1.117	0.937	0.737
85	-	-	2.825	1.964	1.526	1.335	1.185	0.994	0.774
90	-	-	3.059	2.122	1.611	1.409	1.253	1.050	0.810
95	-	-	-	2.322	1.696	1.483	1.322	1.107	0.846
100	-	-	-	2.523	1.780	1.557	1.390	1.163	0.883
105	-	-	-	2.723	1.865	1.632	1.458	1.220	0.919
110	-	-	-	2.923	1.950	1.706	1.526	1.276	0.955
115	-	-	-	3.123	2.041	1.780	1.594	1.333	0.992
120	-	-	-	-	2.147	1.855	1.662	1.390	1.028
125	-	-	-	-	2.253	1.929	1.731	1.446	1.064
130	-	-	-	-	2.359	2.003	1.799	1.503	1.100
135	-	-	-	-	2.466	2.028	1.867	1.559	1.137
140	-	-	-	-	2.572	2.049	1.935	1.616	1.173
145	-	-	-	-	2.678	2.070	2.003	1.672	1.209
150	-	-	-	-	2.784	2.091	2.027	1.729	1.246
155	-	-	-	-	2.890	2.112	2.046	1.785	1.282
160	-	-	-	-	2.996	2.133	2.065	1.842	1.318
165	-	-	-	-	3.103	2.154	2.084	1.898	1.355
170	-	-	-	-	-	2.175	2.103	1.955	1.391
175	-	-	-	-	-	2.196	2.122	2.010	1.427
180	-	-	-	-	-	2.217	2.142	2.028	1.463
185	-	-	-	-	-	2.238	2.161	2.046	1.500
190	-	-	-	-	-	2.259	2.180	2.065	1.536
195	-	-	-	-	-	2.280	2.199	2.083	1.572
200	-	-	-	-	-	2.301	2.218	2.101	1.609
205	-	-	-	-	-	2.322	2.238	2.119	1.645
210	-	-	-	-	-	2.343	2.257	2.138	1.681

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 16 HENSOTHERM® 370 KS I-Section Columns 105 minutes (continued)									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
215	-	-	-	-	-	2.364	2.276	2.156	1.718
220	-	-	-	-	-	2.385	2.295	2.174	1.754
225	-	-	-	-	-	2.406	2.314	2.192	1.790
230	-	-	-	-	-	2.427	2.333	2.211	1.826
235	-	-	-	-	-	2.448	2.353	2.229	1.863
240	-	-	-	-	-	2.469	2.372	2.247	1.899
245	-	-	-	-	-	2.490	2.391	2.265	1.935
250	-	-	-	-	-	2.511	2.410	2.284	1.972
255	-	-	-	-	-	2.532	2.429	2.302	2.008
260	-	-	-	-	-	2.553	2.449	2.320	2.029
265	-	-	-	-	-	2.574	2.468	2.338	2.049
270	-	-	-	-	-	2.595	2.487	2.357	2.070
275	-	-	-	-	-	2.616	2.506	2.375	2.090
280	-	-	-	-	-	2.637	2.525	2.393	2.111
285	-	-	-	-	-	2.658	2.544	2.411	2.131
290	-	-	-	-	-	2.679	2.564	2.430	2.151
295	-	-	-	-	-	2.700	2.583	2.448	2.172
300	-	-	-	-	-	2.721	2.602	2.466	2.192
305	-	-	-	-	-	2.742	2.621	2.484	2.213
310	-	-	-	-	-	2.763	2.640	2.503	2.233
315	-	-	-	-	-	2.784	2.659	2.521	2.254
320	-	-	-	-	-	2.805	2.679	2.539	2.274
325	-	-	-	-	-	2.826	2.698	2.558	2.294
330	-	-	-	-	-	2.847	2.717	2.576	2.315
335	-	-	-	-	-	2.868	2.736	2.594	2.335
340	-	-	-	-	-	2.889	2.755	2.612	2.356
345	-	-	-	-	-	2.910	2.775	2.631	2.376
350	-	-	-	-	-	2.931	2.794	2.649	2.397
355	-	-	-	-	-	2.952	2.813	2.667	2.417
360	-	-	-	-	-	2.973	2.832	2.685	2.437
365	-	-	-	-	-	2.994	2.851	2.704	2.458
370	-	-	-	-	-	3.015	2.870	2.722	2.478
375	-	-	-	-	-	3.036	2.890	2.740	2.499
380	-	-	-	-	-	3.057	2.909	2.758	2.519
385	-	-	-	-	-	3.078	2.928	2.777	2.540
390	-	-	-	-	-	3.099	2.947	2.795	2.560
395	-	-	-	-	-	-	2.966	2.813	2.580
400	-	-	-	-	-	-	2.986	2.831	2.601

Thickness is intumescent only. Results also apply to I section beams with 4 sides fire exposure subject to a maximum DFT of 3.28mm.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 17 HENSOTHERM® 370 KS I-Section Columns 120 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
30	-	1.808	1.452	1.154	0.922	0.621	0.556	0.424	0.231
35	-	2.037	1.588	1.264	1.009	0.715	0.614	0.496	0.320
40	-	2.212	1.748	1.383	1.114	0.809	0.703	0.587	0.409
45	-	2.386	1.907	1.501	1.219	0.903	0.780	0.675	0.498
50	-	2.561	2.075	1.619	1.324	0.997	0.857	0.746	0.586
55	-	2.735	2.257	1.738	1.429	1.090	0.934	0.818	0.672
60	-	2.909	2.440	1.856	1.534	1.184	1.011	0.889	0.733
65	-	3.084	2.622	1.974	1.639	1.278	1.088	0.961	0.793
70	-	-	2.805	2.165	1.744	1.372	1.166	1.032	0.854
75	-	-	2.987	2.387	1.849	1.466	1.243	1.103	0.915
80	-	-	-	2.608	1.954	1.559	1.320	1.175	0.975
85	-	-	-	2.830	2.107	1.653	1.397	1.246	1.036
90	-	-	-	3.051	2.314	1.747	1.474	1.318	1.096
95	-	-	-	-	2.522	1.841	1.551	1.389	1.157
100	-	-	-	-	2.729	1.935	1.629	1.461	1.218
105	-	-	-	-	2.936	2.037	1.706	1.532	1.278
110	-	-	-	-	3.143	2.172	1.783	1.603	1.339
115	-	-	-	-	-	2.306	1.860	1.675	1.400
120	-	-	-	-	-	2.441	1.937	1.746	1.460
125	-	-	-	-	-	2.576	2.013	1.818	1.521
130	-	-	-	-	-	2.710	2.067	1.889	1.582
135	-	-	-	-	-	2.845	2.122	1.960	1.642
140	-	-	-	-	-	2.980	2.176	2.015	1.703
145	-	-	-	-	-	3.114	2.231	2.036	1.763
150	-	-	-	-	-	-	2.285	2.056	1.824
155	-	-	-	-	-	-	2.340	2.076	1.885
160	-	-	-	-	-	-	2.394	2.096	1.945
165	-	-	-	-	-	-	2.449	2.116	2.006
170	-	-	-	-	-	-	2.504	2.136	2.027
175	-	-	-	-	-	-	2.558	2.156	2.046
180	-	-	-	-	-	-	2.613	2.176	2.064
185	-	-	-	-	-	-	2.667	2.196	2.083
190	-	-	-	-	-	-	2.722	2.216	2.102
195	-	-	-	-	-	-	2.776	2.236	2.121
200	-	-	-	-	-	-	2.831	2.256	2.139
205	-	-	-	-	-	-	2.885	2.276	2.158
210	-	-	-	-	-	-	2.940	2.296	2.177

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 17 HENSOTHERM® 370 KS I-Section Columns 120 minutes (continued)									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m-1)	350	400	450	500	550	600	650	700	750
215	-	-	-	-	-	-	2.994	2.317	2.196
220	-	-	-	-	-	-	3.049	2.337	2.215
225	-	-	-	-	-	-	3.103	2.357	2.233
230	-	-	-	-	-	-	3.158	2.377	2.252
235	-	-	-	-	-	-	3.212	2.397	2.271
240	-	-	-	-	-	-	-	2.417	2.290
245	-	-	-	-	-	-	-	2.437	2.308
250	-	-	-	-	-	-	-	2.457	2.327
255	-	-	-	-	-	-	-	2.477	2.346
260	-	-	-	-	-	-	-	2.497	2.365
265	-	-	-	-	-	-	-	2.517	2.384
270	-	-	-	-	-	-	-	2.537	2.402
275	-	-	-	-	-	-	-	2.557	2.421
280	-	-	-	-	-	-	-	2.578	2.440
285	-	-	-	-	-	-	-	2.598	2.459
290	-	-	-	-	-	-	-	2.618	2.477
295	-	-	-	-	-	-	-	2.638	2.496
300	-	-	-	-	-	-	-	2.658	2.515
305	-	-	-	-	-	-	-	2.678	2.534
310	-	-	-	-	-	-	-	2.698	2.553
315	-	-	-	-	-	-	-	2.718	2.571
320	-	-	-	-	-	-	-	2.738	2.590
325	-	-	-	-	-	-	-	2.758	2.609
330	-	-	-	-	-	-	-	2.778	2.628
335	-	-	-	-	-	-	-	2.798	2.646
340	-	-	-	-	-	-	-	2.818	2.665
345	-	-	-	-	-	-	-	2.838	2.684
350	-	-	-	-	-	-	-	2.859	2.703
355	-	-	-	-	-	-	-	2.879	2.722
360	-	-	-	-	-	-	-	2.899	2.740
365	-	-	-	-	-	-	-	2.919	2.759
370	-	-	-	-	-	-	-	2.939	2.778
375	-	-	-	-	-	-	-	2.959	2.797
380	-	-	-	-	-	-	-	2.979	2.815
385	-	-	-	-	-	-	-	2.999	2.834
390	-	-	-	-	-	-	-	3.019	2.853
395	-	-	-	-	-	-	-	3.039	2.872
400	-	-	-	-	-	-	-	3.059	2.890

Thickness is intumescent only. Results also apply to I section beams with 4 sides fire exposure subject to a maximum DFT of 3.28mm.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 18 HENSOTHERM® 370 KS Hollow Columns 15 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
15	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
20	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
25	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
30	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
35	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
40	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
45	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
50	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
55	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
60	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
65	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
70	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
75	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
80	0.292	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
85	0.306	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
90	0.320	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
95	0.334	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
100	0.348	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
105	0.362	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
110	0.376	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
115	0.390	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
120	0.404	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
125	0.418	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
130	0.432	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
135	0.446	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
140	0.460	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
145	0.474	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
150	0.488	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
155	0.502	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
160	0.516	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
165	0.530	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
170	0.544	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
175	0.558	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
180	0.572	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
185	0.586	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
190	0.600	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
195	0.614	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
200	0.628	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
205	0.647	0.299	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
210	0.677	0.324	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
215	0.708	0.348	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 18 HENSOTHERM® 370 KS Hollow Columns 15 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
220	0.738	0.372	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
225	0.769	0.396	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
230	0.799	0.421	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
235	0.829	0.445	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
240	0.860	0.469	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
245	0.890	0.493	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
250	0.921	0.518	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
255	0.951	0.542	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
260	0.981	0.566	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
265	1.012	0.590	0.291	0.290	0.290	0.290	0.290	0.290	0.290	0.290
270	1.042	0.615	0.312	0.290	0.290	0.290	0.290	0.290	0.290	0.290
275	1.073	0.639	0.333	0.290	0.290	0.290	0.290	0.290	0.290	0.290
280	1.103	0.663	0.354	0.290	0.290	0.290	0.290	0.290	0.290	0.290
285	1.133	0.687	0.375	0.290	0.290	0.290	0.290	0.290	0.290	0.290
290	1.164	0.712	0.396	0.290	0.290	0.290	0.290	0.290	0.290	0.290
295	1.194	0.736	0.417	0.290	0.290	0.290	0.290	0.290	0.290	0.290
300	1.225	0.760	0.438	0.290	0.290	0.290	0.290	0.290	0.290	0.290
305	1.255	0.784	0.459	0.290	0.290	0.290	0.290	0.290	0.290	0.290
310	1.285	0.809	0.480	0.290	0.290	0.290	0.290	0.290	0.290	0.290
315	1.316	0.833	0.501	0.290	0.290	0.290	0.290	0.290	0.290	0.290
320	1.346	0.857	0.521	0.290	0.290	0.290	0.290	0.290	0.290	0.290
325	1.368	0.881	0.542	0.290	0.290	0.290	0.290	0.290	0.290	0.290
330	1.381	0.906	0.563	0.307	0.290	0.290	0.290	0.290	0.290	0.290
335	1.394	0.930	0.584	0.325	0.290	0.290	0.290	0.290	0.290	0.290
340	1.407	0.954	0.605	0.342	0.290	0.290	0.290	0.290	0.290	0.290
345	1.420	0.978	0.626	0.360	0.290	0.290	0.290	0.290	0.290	0.290
350	1.434	1.003	0.647	0.377	0.290	0.290	0.290	0.290	0.290	0.290
355	1.447	1.027	0.668	0.395	0.304	0.290	0.290	0.290	0.290	0.290
360	1.460	1.051	0.689	0.413	0.321	0.290	0.290	0.290	0.290	0.290
365	1.473	1.075	0.710	0.430	0.337	0.290	0.290	0.290	0.290	0.290
370	1.486	1.100	0.731	0.448	0.353	0.290	0.290	0.290	0.290	0.290
375	1.499	1.124	0.752	0.465	0.369	0.290	0.290	0.290	0.290	0.290
380	1.513	1.148	0.773	0.483	0.386	0.290	0.290	0.290	0.290	0.290
385	1.526	1.172	0.794	0.500	0.402	0.290	0.290	0.290	0.290	0.290
390	1.539	1.197	0.815	0.518	0.418	0.290	0.290	0.290	0.290	0.290
395	1.552	1.221	0.836	0.535	0.434	0.290	0.290	0.290	0.290	0.290
400	1.565	1.245	0.857	0.553	0.451	0.305	0.290	0.290	0.290	0.290
405	1.579	1.269	0.878	0.570	0.467	0.319	0.290	0.290	0.290	0.290
410	1.592	1.294	0.899	0.588	0.483	0.334	0.290	0.290	0.290	0.290
415	1.605	1.318	0.920	0.605	0.499	0.348	0.290	0.290	0.290	0.290

Thickness is intumescent only.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 19 HENSOTHERM® 370 KS Hollow Columns 30 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
15	0.444	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
20	0.444	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
25	0.444	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
30	0.444	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
35	0.444	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
40	0.444	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
45	0.444	0.291	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
50	0.469	0.322	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
55	0.510	0.352	0.296	0.290	0.290	0.290	0.290	0.290	0.290	0.290
60	0.550	0.382	0.314	0.290	0.290	0.290	0.290	0.290	0.290	0.290
65	0.590	0.412	0.331	0.290	0.290	0.290	0.290	0.290	0.290	0.290
70	0.631	0.443	0.349	0.299	0.290	0.290	0.290	0.290	0.290	0.290
75	0.697	0.473	0.367	0.314	0.292	0.290	0.290	0.290	0.290	0.290
80	0.768	0.503	0.385	0.328	0.306	0.290	0.290	0.290	0.290	0.290
85	0.840	0.533	0.403	0.342	0.320	0.290	0.290	0.290	0.290	0.290
90	0.911	0.564	0.421	0.356	0.334	0.290	0.290	0.290	0.290	0.290
95	0.982	0.594	0.439	0.370	0.348	0.303	0.290	0.290	0.290	0.290
100	1.053	0.624	0.457	0.385	0.362	0.317	0.290	0.290	0.290	0.290
105	1.124	0.660	0.475	0.399	0.375	0.331	0.290	0.290	0.290	0.290
110	1.195	0.701	0.492	0.413	0.389	0.345	0.290	0.290	0.290	0.290
115	1.267	0.742	0.510	0.427	0.403	0.358	0.290	0.290	0.290	0.290
120	1.338	0.783	0.528	0.441	0.417	0.372	0.290	0.290	0.290	0.290
125	1.377	0.824	0.546	0.456	0.431	0.386	0.290	0.290	0.290	0.290
130	1.401	0.865	0.564	0.470	0.445	0.400	0.290	0.290	0.290	0.290
135	1.426	0.906	0.582	0.484	0.458	0.414	0.290	0.290	0.290	0.290
140	1.450	0.947	0.600	0.498	0.472	0.427	0.290	0.290	0.290	0.290
145	1.474	0.988	0.618	0.512	0.486	0.441	0.290	0.290	0.290	0.290
150	1.498	1.029	0.636	0.527	0.500	0.455	0.290	0.290	0.290	0.290
155	1.522	1.070	0.678	0.541	0.514	0.469	0.290	0.290	0.290	0.290
160	1.547	1.111	0.723	0.555	0.528	0.483	0.290	0.290	0.290	0.290
165	1.571	1.152	0.767	0.569	0.541	0.496	0.290	0.290	0.290	0.290
170	1.595	1.193	0.812	0.583	0.555	0.510	0.290	0.290	0.290	0.290
175	1.619	1.234	0.856	0.598	0.569	0.524	0.290	0.290	0.290	0.290
180	1.643	1.275	0.901	0.612	0.583	0.538	0.290	0.290	0.290	0.290
185	1.668	1.316	0.946	0.626	0.597	0.552	0.290	0.290	0.290	0.290
190	1.692	1.357	0.990	0.646	0.611	0.565	0.290	0.290	0.290	0.290
195	1.716	1.382	1.035	0.688	0.624	0.579	0.290	0.290	0.290	0.290
200	1.740	1.405	1.080	0.730	0.640	0.593	0.290	0.290	0.290	0.290
205	1.764	1.428	1.124	0.772	0.679	0.607	0.290	0.290	0.290	0.290
210	1.789	1.451	1.169	0.814	0.717	0.621	0.300	0.290	0.290	0.290
215	1.813	1.474	1.213	0.856	0.756	0.634	0.345	0.290	0.290	0.290

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 19 HENSOTHERM® 370 KS Hollow Columns 30 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
220	1.837	1.498	1.258	0.898	0.794	0.665	0.390	0.290	0.290	0.290
225	1.861	1.521	1.303	0.939	0.832	0.699	0.436	0.290	0.290	0.290
230	1.885	1.544	1.347	0.981	0.871	0.734	0.481	0.295	0.290	0.290
235	1.910	1.567	1.376	1.023	0.909	0.768	0.526	0.324	0.290	0.290
240	1.934	1.590	1.397	1.065	0.948	0.803	0.571	0.353	0.290	0.290
245	1.958	1.613	1.419	1.107	0.986	0.837	0.617	0.381	0.290	0.290
250	1.982	1.637	1.440	1.149	1.025	0.872	0.654	0.410	0.290	0.290
255	2.006	1.660	1.462	1.191	1.063	0.906	0.685	0.438	0.290	0.290
260	2.031	1.683	1.483	1.232	1.102	0.941	0.716	0.467	0.290	0.290
265	2.055	1.706	1.505	1.274	1.140	0.975	0.747	0.496	0.290	0.290
270	2.079	1.729	1.526	1.316	1.178	1.009	0.778	0.524	0.290	0.290
275	2.103	1.752	1.548	1.358	1.217	1.044	0.809	0.553	0.290	0.290
280	2.127	1.776	1.569	1.379	1.255	1.078	0.841	0.582	0.290	0.290
285	2.152	1.799	1.591	1.399	1.294	1.113	0.872	0.610	0.290	0.290
290	2.176	1.822	1.612	1.418	1.332	1.147	0.903	0.639	0.290	0.290
295	2.200	1.845	1.633	1.438	1.366	1.182	0.934	0.668	0.300	0.290
300	2.224	1.868	1.655	1.457	1.384	1.216	0.965	0.696	0.327	0.290
305	2.248	1.891	1.676	1.477	1.403	1.251	0.996	0.725	0.353	0.290
310	2.273	1.914	1.698	1.496	1.422	1.285	1.027	0.753	0.380	0.290
315	2.297	1.938	1.719	1.516	1.440	1.319	1.058	0.782	0.406	0.290
320	2.321	1.961	1.741	1.535	1.459	1.354	1.089	0.811	0.433	0.290
325	2.345	1.984	1.762	1.555	1.478	1.375	1.120	0.839	0.459	0.290
330	2.369	2.007	1.784	1.575	1.496	1.392	1.151	0.868	0.486	0.290
335	2.394	2.030	1.805	1.594	1.515	1.409	1.182	0.897	0.512	0.290
340	2.418	2.053	1.827	1.614	1.534	1.426	1.213	0.925	0.539	0.290
345	2.442	2.077	1.848	1.633	1.552	1.444	1.244	0.954	0.565	0.290
350	2.466	2.100	1.870	1.653	1.571	1.461	1.276	0.983	0.592	0.290
355	2.490	2.123	1.891	1.672	1.590	1.478	1.307	1.011	0.618	0.290
360	2.515	2.146	1.912	1.692	1.609	1.496	1.338	1.040	0.645	0.290
365	2.539	2.169	1.934	1.711	1.627	1.513	1.365	1.068	0.671	0.290
370	2.563	2.192	1.955	1.731	1.646	1.530	1.379	1.097	0.698	0.290
375	2.587	2.216	1.977	1.750	1.665	1.547	1.394	1.126	0.724	0.290
380	2.611	2.239	1.998	1.770	1.683	1.565	1.408	1.154	0.751	0.290
385	2.636	2.262	2.020	1.790	1.702	1.582	1.423	1.183	0.777	0.290
390	2.660	2.285	2.041	1.809	1.721	1.599	1.438	1.212	0.804	0.290
395	2.684	2.308	2.063	1.829	1.739	1.616	1.452	1.240	0.830	0.290
400	2.708	2.331	2.084	1.848	1.758	1.634	1.467	1.269	0.856	0.290
405	2.732	2.354	2.106	1.868	1.777	1.651	1.481	1.298	0.883	0.290
410	2.757	2.378	2.127	1.887	1.795	1.668	1.496	1.326	0.909	0.290
415	2.781	2.401	2.149	1.907	1.814	1.685	1.510	1.355	0.936	0.290

Thickness is intumescent only.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 20 HENSOTHERM® 370 KS Hollow Columns 45 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
15	0.573	0.573	0.444	0.314	0.314	0.290	0.290	0.290	0.290	0.290
20	0.573	0.573	0.444	0.314	0.314	0.290	0.290	0.290	0.290	0.290
25	0.573	0.573	0.444	0.314	0.314	0.290	0.290	0.290	0.290	0.290
30	0.573	0.573	0.444	0.314	0.314	0.290	0.290	0.290	0.290	0.290
35	0.573	0.573	0.444	0.314	0.314	0.290	0.290	0.290	0.290	0.290
40	0.741	0.573	0.444	0.314	0.314	0.290	0.290	0.290	0.290	0.290
45	0.941	0.573	0.444	0.325	0.314	0.290	0.290	0.290	0.290	0.290
50	1.142	0.573	0.465	0.364	0.340	0.312	0.290	0.290	0.290	0.290
55	1.343	0.675	0.513	0.402	0.374	0.340	0.300	0.290	0.290	0.290
60	1.401	0.809	0.561	0.440	0.408	0.368	0.321	0.290	0.290	0.290
65	1.445	0.943	0.609	0.479	0.442	0.397	0.342	0.304	0.290	0.290
70	1.489	1.077	0.669	0.517	0.475	0.425	0.363	0.320	0.290	0.290
75	1.533	1.211	0.745	0.555	0.509	0.453	0.384	0.335	0.290	0.290
80	1.576	1.345	0.822	0.594	0.543	0.482	0.405	0.351	0.299	0.290
85	1.620	1.390	0.899	0.632	0.577	0.510	0.426	0.366	0.314	0.290
90	1.664	1.423	0.975	0.677	0.611	0.538	0.447	0.382	0.328	0.290
95	1.708	1.456	1.052	0.723	0.647	0.567	0.468	0.398	0.342	0.290
100	1.752	1.490	1.129	0.769	0.690	0.595	0.489	0.413	0.357	0.290
105	1.796	1.523	1.205	0.815	0.734	0.623	0.510	0.429	0.371	0.290
110	1.840	1.556	1.282	0.861	0.778	0.659	0.531	0.445	0.385	0.290
115	1.884	1.589	1.358	0.907	0.822	0.702	0.552	0.460	0.400	0.290
120	1.927	1.622	1.389	0.952	0.865	0.746	0.573	0.476	0.414	0.290
125	1.971	1.655	1.418	0.998	0.909	0.789	0.594	0.492	0.428	0.290
130	2.015	1.688	1.447	1.044	0.953	0.832	0.615	0.507	0.443	0.290
135	2.059	1.722	1.476	1.090	0.996	0.876	0.636	0.523	0.457	0.290
140	2.103	1.755	1.505	1.136	1.040	0.919	0.680	0.539	0.471	0.290
145	2.147	1.788	1.535	1.182	1.084	0.962	0.725	0.554	0.486	0.290
150	2.191	1.821	1.564	1.228	1.128	1.005	0.770	0.570	0.500	0.290
155	2.234	1.854	1.593	1.274	1.171	1.049	0.815	0.586	0.514	0.290
160	2.278	1.887	1.622	1.320	1.215	1.092	0.860	0.601	0.529	0.290
165	2.322	1.921	1.651	1.364	1.259	1.135	0.904	0.617	0.543	0.290
170	2.366	1.954	1.680	1.393	1.302	1.179	0.949	0.633	0.558	0.290
175	2.410	1.987	1.709	1.422	1.346	1.222	0.994	0.673	0.572	0.290
180	2.454	2.020	1.738	1.451	1.380	1.265	1.039	0.724	0.586	0.290
185	2.498	2.053	1.767	1.480	1.407	1.309	1.084	0.774	0.601	0.298
190	2.542	2.086	1.796	1.508	1.435	1.352	1.129	0.825	0.615	0.323
195	2.585	2.119	1.825	1.537	1.463	1.382	1.174	0.876	0.629	0.349
200	2.629	2.153	1.855	1.566	1.491	1.408	1.219	0.926	0.659	0.374
205	2.673	2.186	1.884	1.595	1.519	1.434	1.263	0.977	0.706	0.400
210	2.717	2.219	1.913	1.624	1.547	1.460	1.308	1.028	0.753	0.425
215	2.761	2.252	1.942	1.653	1.575	1.486	1.353	1.078	0.801	0.451

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 20 HENSOTHERM® 370 KS Hollow Columns 45 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
220	2.805	2.285	1.971	1.682	1.603	1.512	1.380	1.129	0.848	0.476
225	2.849	2.318	2.000	1.710	1.631	1.538	1.403	1.180	0.895	0.502
230	2.892	2.351	2.029	1.739	1.659	1.564	1.426	1.230	0.942	0.527
235	2.936	2.385	2.058	1.768	1.687	1.590	1.449	1.281	0.990	0.553
240	2.980	2.418	2.087	1.797	1.715	1.617	1.472	1.332	1.037	0.578
245	3.024	2.451	2.116	1.826	1.743	1.643	1.495	1.369	1.084	0.604
250	-	2.484	2.145	1.855	1.771	1.669	1.518	1.389	1.131	0.629
255	-	2.517	2.174	1.883	1.799	1.695	1.541	1.409	1.179	0.672
260	-	2.550	2.204	1.912	1.827	1.721	1.564	1.428	1.226	0.722
265	-	2.584	2.233	1.941	1.855	1.747	1.587	1.448	1.273	0.772
270	-	2.617	2.262	1.970	1.883	1.773	1.610	1.468	1.320	0.822
275	-	2.650	2.291	1.999	1.911	1.799	1.633	1.487	1.363	0.872
280	-	2.683	2.320	2.028	1.939	1.825	1.656	1.507	1.379	0.922
285	-	2.716	2.349	2.056	1.967	1.852	1.679	1.527	1.395	0.972
290	-	2.749	2.378	2.085	1.995	1.878	1.702	1.546	1.412	1.022
295	-	2.782	2.407	2.114	2.023	1.904	1.725	1.566	1.428	1.072
300	-	2.816	2.436	2.143	2.050	1.930	1.748	1.586	1.444	1.122
305	-	2.849	2.465	2.172	2.078	1.956	1.771	1.605	1.460	1.172
310	-	2.882	2.494	2.201	2.106	1.982	1.794	1.625	1.476	1.222
315	-	2.915	2.524	2.230	2.134	2.008	1.817	1.645	1.492	1.272
320	-	2.948	2.553	2.258	2.162	2.034	1.840	1.664	1.508	1.322
325	-	2.981	2.582	2.287	2.190	2.060	1.863	1.684	1.524	1.364
330	-	3.015	2.611	2.316	2.218	2.087	1.886	1.704	1.540	1.376
335	-	-	2.640	2.345	2.246	2.113	1.909	1.723	1.556	1.389
340	-	-	2.669	2.374	2.274	2.139	1.932	1.743	1.572	1.401
345	-	-	2.698	2.403	2.302	2.165	1.955	1.763	1.588	1.414
350	-	-	2.727	2.431	2.330	2.191	1.978	1.782	1.604	1.427
355	-	-	2.756	2.460	2.358	2.217	2.002	1.802	1.621	1.439
360	-	-	2.785	2.489	2.386	2.243	2.025	1.822	1.637	1.452
365	-	-	2.814	2.518	2.414	2.269	2.048	1.841	1.653	1.464
370	-	-	2.844	2.547	2.442	2.295	2.071	1.861	1.669	1.477
375	-	-	2.873	2.576	2.470	2.322	2.094	1.880	1.685	1.489
380	-	-	2.902	2.605	2.498	2.348	2.117	1.900	1.701	1.502
385	-	-	2.931	2.633	2.526	2.374	2.140	1.920	1.717	1.514
390	-	-	2.960	2.662	2.554	2.400	2.163	1.939	1.733	1.527
395	-	-	2.989	2.691	2.582	2.426	2.186	1.959	1.749	1.540
400	-	-	3.018	2.720	2.610	2.452	2.209	1.979	1.765	1.552
405	-	-	-	2.749	2.638	2.478	2.232	1.998	1.781	1.565
410	-	-	-	2.778	2.666	2.504	2.255	2.018	1.797	1.577
415	-	-	-	2.806	2.693	2.530	2.278	2.038	1.813	1.590

Thickness is intumescent only.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 21 HENSOTHERM® 370 KS Hollow Columns 60 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
15	0.573	0.573	0.573	0.573	0.573	0.444	0.444	0.314	0.290	0.290
20	0.573	0.573	0.573	0.573	0.573	0.444	0.444	0.314	0.290	0.290
25	0.690	0.573	0.573	0.573	0.573	0.444	0.444	0.314	0.290	0.290
30	0.980	0.575	0.573	0.573	0.573	0.444	0.444	0.314	0.290	0.290
35	1.269	0.789	0.573	0.573	0.573	0.444	0.444	0.314	0.290	0.290
40	1.425	1.004	0.619	0.573	0.573	0.444	0.444	0.314	0.290	0.290
45	1.520	1.219	0.778	0.573	0.573	0.444	0.444	0.314	0.290	0.290
50	1.614	1.378	0.938	0.573	0.573	0.475	0.475	0.335	0.290	0.290
55	1.708	1.428	1.098	0.696	0.598	0.522	0.506	0.371	0.311	0.290
60	1.802	1.479	1.257	0.822	0.708	0.591	0.537	0.407	0.339	0.290
65	1.897	1.529	1.376	0.949	0.819	0.668	0.568	0.443	0.366	0.290
70	1.991	1.579	1.418	1.076	0.930	0.759	0.600	0.479	0.394	0.290
75	2.085	1.629	1.460	1.202	1.040	0.849	0.631	0.515	0.421	0.309
80	2.180	1.680	1.503	1.329	1.151	0.940	0.690	0.551	0.449	0.328
85	2.274	1.730	1.545	1.389	1.262	1.031	0.756	0.587	0.477	0.347
90	2.368	1.780	1.588	1.426	1.365	1.122	0.821	0.623	0.504	0.366
95	2.462	1.831	1.630	1.463	1.400	1.213	0.887	0.665	0.532	0.385
100	2.557	1.881	1.672	1.500	1.435	1.303	0.952	0.712	0.559	0.403
105	2.651	1.931	1.715	1.537	1.470	1.373	1.018	0.758	0.587	0.422
110	2.745	1.981	1.757	1.574	1.505	1.405	1.083	0.804	0.614	0.441
115	2.839	2.032	1.799	1.611	1.541	1.438	1.149	0.851	0.645	0.460
120	2.934	2.082	1.842	1.648	1.576	1.471	1.215	0.897	0.693	0.479
125	-	2.132	1.884	1.685	1.611	1.503	1.280	0.943	0.740	0.498
130	-	2.183	1.926	1.722	1.646	1.536	1.346	0.990	0.787	0.516
135	-	2.233	1.969	1.759	1.681	1.568	1.383	1.036	0.834	0.535
140	-	2.283	2.011	1.797	1.717	1.601	1.412	1.082	0.881	0.554
145	-	2.334	2.053	1.834	1.752	1.634	1.440	1.129	0.928	0.573
150	-	2.384	2.096	1.871	1.787	1.666	1.469	1.175	0.975	0.592
155	-	2.434	2.138	1.908	1.822	1.699	1.498	1.221	1.022	0.611
160	-	2.484	2.181	1.945	1.858	1.731	1.527	1.268	1.069	0.630
165	-	2.535	2.223	1.982	1.893	1.764	1.555	1.314	1.116	0.675
170	-	2.585	2.265	2.019	1.928	1.797	1.584	1.360	1.163	0.737
175	-	2.635	2.308	2.056	1.963	1.829	1.613	1.388	1.210	0.799
180	-	2.686	2.350	2.093	1.998	1.862	1.641	1.415	1.257	0.862
185	-	2.736	2.392	2.130	2.034	1.894	1.670	1.443	1.304	0.924
190	-	2.786	2.435	2.167	2.069	1.927	1.699	1.470	1.351	0.986
195	-	2.837	2.477	2.204	2.104	1.960	1.727	1.498	1.379	1.049
200	-	2.887	2.519	2.241	2.139	1.992	1.756	1.525	1.403	1.111
205	-	2.937	2.562	2.278	2.174	2.025	1.785	1.553	1.426	1.173
210	-	2.987	2.604	2.316	2.210	2.057	1.814	1.580	1.450	1.236
215	-	-	2.646	2.353	2.245	2.090	1.842	1.608	1.473	1.298

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table continues overleaf.

Table 21 HENSOTHERM® 370 KS Hollow Columns 60 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
220	-	-	2.689	2.390	2.280	2.122	1.871	1.635	1.496	1.360
225	-	-	2.731	2.427	2.315	2.155	1.900	1.662	1.520	1.380
230	-	-	2.774	2.464	2.350	2.188	1.928	1.690	1.543	1.400
235	-	-	2.816	2.501	2.386	2.220	1.957	1.717	1.567	1.419
240	-	-	2.858	2.538	2.421	2.253	1.986	1.745	1.590	1.439
245	-	-	2.901	2.575	2.456	2.285	2.015	1.772	1.614	1.458
250	-	-	2.943	2.612	2.491	2.318	2.043	1.800	1.637	1.477
255	-	-	2.985	2.649	2.526	2.351	2.072	1.827	1.660	1.497
260	-	-	-	2.686	2.562	2.383	2.101	1.854	1.684	1.516
265	-	-	-	2.723	2.597	2.416	2.129	1.882	1.707	1.536
270	-	-	-	2.760	2.632	2.448	2.158	1.909	1.731	1.555
275	-	-	-	2.798	2.667	2.481	2.187	1.937	1.754	1.575
280	-	-	-	2.835	2.702	2.514	2.216	1.964	1.778	1.594
285	-	-	-	2.872	2.738	2.546	2.244	1.992	1.801	1.614
290	-	-	-	2.909	2.773	2.579	2.273	2.019	1.824	1.633
295	-	-	-	2.946	2.808	2.611	2.302	2.046	1.848	1.653
300	-	-	-	2.983	2.843	2.644	2.330	2.074	1.871	1.672
305	-	-	-	3.020	2.879	2.676	2.359	2.101	1.895	1.691
310	-	-	-	-	2.914	2.709	2.388	2.129	1.918	1.711
315	-	-	-	-	2.949	2.742	2.416	2.156	1.942	1.730
320	-	-	-	-	2.984	2.774	2.445	2.184	1.965	1.750
325	-	-	-	-	3.019	2.807	2.474	2.211	1.988	1.769
330	-	-	-	-	3.055	2.839	2.503	2.238	2.012	1.789
335	-	-	-	-	-	2.872	2.531	2.266	2.035	1.808
340	-	-	-	-	-	2.905	2.560	2.293	2.059	1.828
345	-	-	-	-	-	2.937	2.589	2.321	2.082	1.847
350	-	-	-	-	-	2.970	2.617	2.348	2.105	1.866
355	-	-	-	-	-	3.002	2.646	2.376	2.129	1.886
360	-	-	-	-	-	3.035	2.675	2.403	2.152	1.905
365	-	-	-	-	-	-	2.704	2.431	2.176	1.925
370	-	-	-	-	-	-	2.732	2.458	2.199	1.944
375	-	-	-	-	-	-	2.761	2.485	2.223	1.964
380	-	-	-	-	-	-	2.790	2.513	2.246	1.983
385	-	-	-	-	-	-	2.818	2.540	2.269	2.003
390	-	-	-	-	-	-	2.847	2.568	2.293	2.022
395	-	-	-	-	-	-	2.876	2.595	2.316	2.042
400	-	-	-	-	-	-	2.904	2.623	2.340	2.061
405	-	-	-	-	-	-	2.933	2.650	2.363	2.080
410	-	-	-	-	-	-	2.962	2.677	2.387	2.100
415	-	-	-	-	-	-	2.991	2.705	2.410	2.119

Thickness is intumescent only.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 22 HENSOTHERM® 370 KS Hollow Columns 75 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
15	0.573	0.573	0.573	0.573	0.573	0.573	0.573	0.573	0.444	0.290
20	0.807	0.573	0.573	0.573	0.573	0.573	0.573	0.573	0.444	0.290
25	1.185	0.801	0.573	0.573	0.573	0.573	0.573	0.573	0.444	0.290
30	1.472	1.093	0.759	0.573	0.573	0.573	0.573	0.573	0.444	0.290
35	1.679	1.369	0.986	0.687	0.584	0.573	0.573	0.573	0.444	0.290
40	1.886	1.464	1.214	0.865	0.750	0.585	0.573	0.573	0.444	0.290
45	2.093	1.559	1.382	1.043	0.915	0.737	0.573	0.573	0.444	0.290
50	2.300	1.654	1.440	1.221	1.081	0.888	0.573	0.573	0.474	0.290
55	2.507	1.750	1.499	1.371	1.246	1.040	0.698	0.573	0.506	0.304
60	2.714	1.845	1.558	1.420	1.375	1.191	0.835	0.584	0.539	0.343
65	2.921	1.940	1.616	1.469	1.422	1.343	0.973	0.692	0.572	0.382
70	-	2.035	1.675	1.518	1.468	1.399	1.111	0.799	0.604	0.420
75	-	2.130	1.734	1.567	1.514	1.442	1.249	0.907	0.637	0.459
80	-	2.225	1.792	1.616	1.561	1.485	1.368	1.014	0.717	0.498
85	-	2.321	1.851	1.665	1.607	1.528	1.406	1.122	0.796	0.537
90	-	2.416	1.909	1.713	1.654	1.571	1.444	1.229	0.875	0.575
95	-	2.511	1.968	1.762	1.700	1.614	1.482	1.337	0.954	0.614
100	-	2.606	2.027	1.811	1.746	1.657	1.520	1.386	1.033	0.659
105	-	2.701	2.085	1.860	1.793	1.700	1.558	1.419	1.113	0.715
110	-	2.797	2.144	1.909	1.839	1.743	1.596	1.452	1.192	0.770
115	-	2.892	2.202	1.958	1.886	1.786	1.634	1.485	1.271	0.825
120	-	2.987	2.261	2.007	1.932	1.829	1.672	1.518	1.350	0.880
125	-	-	2.320	2.055	1.978	1.872	1.710	1.551	1.385	0.935
130	-	-	2.378	2.104	2.025	1.915	1.748	1.584	1.413	0.990
135	-	-	2.437	2.153	2.071	1.958	1.786	1.617	1.440	1.045
140	-	-	2.496	2.202	2.118	2.001	1.823	1.650	1.468	1.100
145	-	-	2.554	2.251	2.164	2.044	1.861	1.683	1.496	1.156
150	-	-	2.613	2.300	2.210	2.087	1.899	1.716	1.524	1.211
155	-	-	2.671	2.349	2.257	2.130	1.937	1.748	1.551	1.266
160	-	-	2.730	2.398	2.303	2.173	1.975	1.781	1.579	1.321
165	-	-	2.789	2.446	2.350	2.216	2.013	1.814	1.607	1.368
170	-	-	2.847	2.495	2.396	2.259	2.051	1.847	1.634	1.394
175	-	-	2.906	2.544	2.442	2.302	2.089	1.880	1.662	1.420
180	-	-	2.965	2.593	2.489	2.345	2.127	1.913	1.690	1.446
185	-	-	3.023	2.642	2.535	2.388	2.165	1.946	1.718	1.472
190	-	-	-	2.691	2.582	2.431	2.203	1.979	1.745	1.499
195	-	-	-	2.740	2.628	2.474	2.241	2.012	1.773	1.525
200	-	-	-	2.788	2.674	2.517	2.279	2.045	1.801	1.551
205	-	-	-	2.837	2.721	2.560	2.317	2.078	1.828	1.577
210	-	-	-	2.886	2.767	2.604	2.355	2.110	1.856	1.603
215	-	-	-	2.935	2.814	2.647	2.393	2.143	1.884	1.629

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 22 HENSOTHERM® 370 KS Hollow Columns 75 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
220	-	-	-	2.984	2.860	2.690	2.431	2.176	1.912	1.655
225	-	-	-	3.033	2.906	2.733	2.469	2.209	1.939	1.681
230	-	-	-	-	2.953	2.776	2.506	2.242	1.967	1.707
235	-	-	-	-	2.999	2.819	2.544	2.275	1.995	1.733
240	-	-	-	-	-	2.862	2.582	2.308	2.023	1.759
245	-	-	-	-	-	2.905	2.620	2.341	2.050	1.785
250	-	-	-	-	-	2.948	2.658	2.374	2.078	1.812
255	-	-	-	-	-	2.991	2.696	2.407	2.106	1.838
260	-	-	-	-	-	-	2.734	2.440	2.133	1.864
265	-	-	-	-	-	-	2.772	2.472	2.161	1.890
270	-	-	-	-	-	-	2.810	2.505	2.189	1.916
275	-	-	-	-	-	-	2.848	2.538	2.217	1.942
280	-	-	-	-	-	-	2.886	2.571	2.244	1.968
285	-	-	-	-	-	-	2.924	2.604	2.272	1.994
290	-	-	-	-	-	-	2.962	2.637	2.300	2.020
295	-	-	-	-	-	-	3.000	2.670	2.327	2.046
300	-	-	-	-	-	-	3.038	2.703	2.355	2.072
305	-	-	-	-	-	-	-	2.736	2.383	2.099
310	-	-	-	-	-	-	-	2.769	2.411	2.125
315	-	-	-	-	-	-	-	2.802	2.438	2.151
320	-	-	-	-	-	-	-	2.835	2.466	2.177
325	-	-	-	-	-	-	-	2.867	2.494	2.203
330	-	-	-	-	-	-	-	2.900	2.522	2.229
335	-	-	-	-	-	-	-	2.933	2.549	2.255
340	-	-	-	-	-	-	-	2.966	2.577	2.281
345	-	-	-	-	-	-	-	2.999	2.605	2.307
350	-	-	-	-	-	-	-	3.032	2.632	2.333
355	-	-	-	-	-	-	-	-	2.660	2.359
360	-	-	-	-	-	-	-	-	2.688	2.385
365	-	-	-	-	-	-	-	-	2.716	2.412
370	-	-	-	-	-	-	-	-	2.743	2.438
375	-	-	-	-	-	-	-	-	2.771	2.464
380	-	-	-	-	-	-	-	-	2.799	2.490
385	-	-	-	-	-	-	-	-	2.826	2.516
390	-	-	-	-	-	-	-	-	2.854	2.542
395	-	-	-	-	-	-	-	-	2.882	2.568
400	-	-	-	-	-	-	-	-	2.910	2.594
405	-	-	-	-	-	-	-	-	2.937	2.620
410	-	-	-	-	-	-	-	-	2.965	2.646
415	-	-	-	-	-	-	-	-	2.993	2.672

Thickness is intumescent only.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 23 HENSOTHERM® 370 KS Hollow Columns 90 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
15	0.726	0.573	0.573	0.573	0.573	0.573	0.573	0.573	0.573	0.314
20	1.193	0.848	0.601	0.573	0.573	0.573	0.573	0.573	0.573	0.314
25	-	1.217	0.900	0.654	0.573	0.573	0.573	0.573	0.573	0.314
30	-	1.491	1.199	0.899	0.794	0.652	0.573	0.573	0.573	0.314
35	-	1.703	1.407	1.143	1.020	0.854	0.603	0.573	0.573	0.314
40	-	1.915	1.508	1.369	1.245	1.057	0.779	0.573	0.573	0.314
45	-	2.127	1.609	1.440	1.391	1.260	0.954	0.647	0.573	0.322
50	-	2.339	1.710	1.510	1.454	1.388	1.130	0.811	0.573	0.385
55	-	2.551	1.811	1.581	1.516	1.442	1.306	0.975	0.613	0.447
60	-	2.763	1.912	1.652	1.578	1.495	1.394	1.139	0.760	0.510
65	-	2.975	2.013	1.723	1.640	1.549	1.442	1.303	0.907	0.572
70	-	-	2.114	1.794	1.702	1.602	1.490	1.388	1.055	0.634
75	-	-	2.215	1.865	1.765	1.656	1.537	1.431	1.202	0.745
80	-	-	2.316	1.936	1.827	1.710	1.585	1.473	1.349	0.858
85	-	-	2.417	2.007	1.889	1.763	1.633	1.515	1.395	0.971
90	-	-	2.518	2.078	1.951	1.817	1.681	1.558	1.432	1.084
95	-	-	2.619	2.149	2.014	1.870	1.729	1.600	1.468	1.197
100	-	-	2.720	2.220	2.076	1.924	1.777	1.642	1.505	1.310
105	-	-	2.821	2.291	2.138	1.978	1.825	1.685	1.542	1.378
110	-	-	2.922	2.362	2.200	2.031	1.873	1.727	1.579	1.409
115	-	-	-	2.432	2.262	2.085	1.921	1.769	1.615	1.440
120	-	-	-	2.503	2.325	2.138	1.969	1.812	1.652	1.471
125	-	-	-	2.574	2.387	2.192	2.017	1.854	1.689	1.502
130	-	-	-	2.645	2.449	2.246	2.064	1.896	1.725	1.533
135	-	-	-	2.716	2.511	2.299	2.112	1.939	1.762	1.564
140	-	-	-	2.787	2.573	2.353	2.160	1.981	1.799	1.595
145	-	-	-	2.858	2.636	2.406	2.208	2.023	1.836	1.625
150	-	-	-	2.929	2.698	2.460	2.256	2.066	1.872	1.656
155	-	-	-	3.000	2.760	2.514	2.304	2.108	1.909	1.687
160	-	-	-	-	2.822	2.567	2.352	2.150	1.946	1.718
165	-	-	-	-	2.885	2.621	2.400	2.192	1.983	1.749
170	-	-	-	-	2.947	2.674	2.448	2.235	2.019	1.780
175	-	-	-	-	3.009	2.728	2.496	2.277	2.056	1.811
180	-	-	-	-	-	2.782	2.544	2.319	2.093	1.842
185	-	-	-	-	-	2.835	2.591	2.362	2.130	1.873
190	-	-	-	-	-	2.889	2.639	2.404	2.166	1.904
195	-	-	-	-	-	2.942	2.687	2.446	2.203	1.935
200	-	-	-	-	-	2.996	2.735	2.489	2.240	1.966
205	-	-	-	-	-	-	2.783	2.531	2.277	1.997
210	-	-	-	-	-	-	2.831	2.573	2.313	2.027
215	-	-	-	-	-	-	2.879	2.616	2.350	2.058

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 23 HENSOTHERM® 370 KS Hollow Columns 90 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
220	-	-	-	-	-	-	2.927	2.658	2.387	2.089
225	-	-	-	-	-	-	2.975	2.700	2.424	2.120
230	-	-	-	-	-	-	3.023	2.743	2.460	2.151
235	-	-	-	-	-	-	-	2.785	2.497	2.182
240	-	-	-	-	-	-	-	2.827	2.534	2.213
245	-	-	-	-	-	-	-	2.870	2.571	2.244
250	-	-	-	-	-	-	-	2.912	2.607	2.275
255	-	-	-	-	-	-	-	2.954	2.644	2.306
260	-	-	-	-	-	-	-	2.997	2.681	2.337
265	-	-	-	-	-	-	-	-	2.718	2.368
270	-	-	-	-	-	-	-	-	2.754	2.399
275	-	-	-	-	-	-	-	-	2.791	2.430
280	-	-	-	-	-	-	-	-	2.828	2.460
285	-	-	-	-	-	-	-	-	2.864	2.491
290	-	-	-	-	-	-	-	-	2.901	2.522
295	-	-	-	-	-	-	-	-	2.938	2.553
300	-	-	-	-	-	-	-	-	2.975	2.584
305	-	-	-	-	-	-	-	-	3.011	2.615
310	-	-	-	-	-	-	-	-	-	2.646
315	-	-	-	-	-	-	-	-	-	2.677
320	-	-	-	-	-	-	-	-	-	2.708
325	-	-	-	-	-	-	-	-	-	2.739
330	-	-	-	-	-	-	-	-	-	2.770
335	-	-	-	-	-	-	-	-	-	2.801
340	-	-	-	-	-	-	-	-	-	2.832
345	-	-	-	-	-	-	-	-	-	2.862
350	-	-	-	-	-	-	-	-	-	2.893
355	-	-	-	-	-	-	-	-	-	2.924
360	-	-	-	-	-	-	-	-	-	2.955
365	-	-	-	-	-	-	-	-	-	2.986
370	-	-	-	-	-	-	-	-	-	3.017
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-
395	-	-	-	-	-	-	-	-	-	-
400	-	-	-	-	-	-	-	-	-	-
405	-	-	-	-	-	-	-	-	-	-
410	-	-	-	-	-	-	-	-	-	-
415	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 24 HENSOTHERM® 370 KS Hollow Columns 105 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
15	1.007	0.729	0.573	0.573	0.573	0.573	0.573	0.573	0.573	0.573
20	-	1.177	0.894	0.670	0.591	0.573	0.573	0.573	0.573	0.573
25	-	-	1.264	0.981	0.880	0.743	0.573	0.573	0.573	0.573
30	-	-	1.522	1.292	1.169	1.007	0.761	0.573	0.573	0.573
35	-	-	1.740	1.518	1.393	1.271	0.990	0.722	0.573	0.573
40	-	-	1.959	1.721	1.488	1.430	1.218	0.924	0.607	0.573
45	-	-	2.177	1.924	1.583	1.534	1.386	1.126	0.793	0.573
50	-	-	2.395	2.126	1.678	1.638	1.454	1.328	0.979	0.573
55	-	-	2.613	2.329	1.772	1.742	1.521	1.404	1.165	0.648
60	-	-	2.831	2.531	1.867	1.846	1.588	1.456	1.351	0.832
65	-	-	-	2.734	1.962	1.950	1.656	1.508	1.404	1.016
70	-	-	-	2.936	2.057	2.054	1.723	1.560	1.451	1.201
75	-	-	-	-	2.158	2.158	1.791	1.611	1.497	1.366
80	-	-	-	-	2.262	2.262	1.858	1.663	1.543	1.406
85	-	-	-	-	2.366	2.366	1.925	1.715	1.589	1.446
90	-	-	-	-	2.470	2.470	1.993	1.767	1.635	1.485
95	-	-	-	-	2.575	2.575	2.060	1.818	1.681	1.525
100	-	-	-	-	2.679	2.679	2.128	1.870	1.727	1.565
105	-	-	-	-	2.783	2.783	2.195	1.922	1.773	1.605
110	-	-	-	-	2.887	2.887	2.263	1.974	1.819	1.644
115	-	-	-	-	2.991	2.991	2.330	2.026	1.865	1.684
120	-	-	-	-	-	-	2.397	2.077	1.911	1.724
125	-	-	-	-	-	-	2.465	2.129	1.957	1.763
130	-	-	-	-	-	-	2.532	2.181	2.003	1.803
135	-	-	-	-	-	-	2.600	2.233	2.049	1.843
140	-	-	-	-	-	-	2.667	2.285	2.095	1.883
145	-	-	-	-	-	-	2.735	2.336	2.141	1.922
150	-	-	-	-	-	-	2.802	2.388	2.187	1.962
155	-	-	-	-	-	-	2.869	2.440	2.233	2.002
160	-	-	-	-	-	-	2.937	2.492	2.279	2.041
165	-	-	-	-	-	-	3.004	2.544	2.325	2.081
170	-	-	-	-	-	-	3.072	2.595	2.371	2.121
175	-	-	-	-	-	-	-	2.647	2.417	2.161
180	-	-	-	-	-	-	-	2.699	2.463	2.200
185	-	-	-	-	-	-	-	2.751	2.509	2.240
190	-	-	-	-	-	-	-	2.802	2.555	2.280
195	-	-	-	-	-	-	-	2.854	2.602	2.319
200	-	-	-	-	-	-	-	2.906	2.648	2.359
205	-	-	-	-	-	-	-	2.958	2.694	2.399
210	-	-	-	-	-	-	-	3.010	2.740	2.439
215	-	-	-	-	-	-	-	-	2.786	2.478

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 24 HENSOTHERM® 370 KS Hollow Columns 105 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
220	-	-	-	-	-	-	-	-	2.832	2.518
225	-	-	-	-	-	-	-	-	2.878	2.558
230	-	-	-	-	-	-	-	-	2.924	2.598
235	-	-	-	-	-	-	-	-	2.970	2.637
240	-	-	-	-	-	-	-	-	3.016	2.677
245	-	-	-	-	-	-	-	-	-	2.717
250	-	-	-	-	-	-	-	-	-	2.756
255	-	-	-	-	-	-	-	-	-	2.796
260	-	-	-	-	-	-	-	-	-	2.836
265	-	-	-	-	-	-	-	-	-	2.876
270	-	-	-	-	-	-	-	-	-	2.915
275	-	-	-	-	-	-	-	-	-	2.955
280	-	-	-	-	-	-	-	-	-	2.995
285	-	-	-	-	-	-	-	-	-	3.034

Thickness is intumescent only.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

HENSOTHERM® 370 KS

Table 25 HENSOTHERM® 370 KS Hollow Columns 120 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
15	-	0.971	0.743	0.573	0.573	0.573	0.573	0.573	0.573	0.573
20	-	-	1.184	0.932	0.841	0.717	0.573	0.573	0.573	0.573
25	-	-	-	1.310	1.194	1.042	0.809	0.585	0.573	0.573
30	-	-	-	1.554	1.476	1.364	1.092	0.837	0.573	0.573
35	-	-	-	1.778	1.694	1.526	1.367	1.089	0.792	0.573
40	-	-	-	2.002	1.912	1.688	1.488	1.341	1.018	0.577
45	-	-	-	2.225	2.131	1.850	1.610	1.438	1.243	0.790
50	-	-	-	2.449	2.349	2.012	1.731	1.521	1.387	1.003
55	-	-	-	2.673	2.567	2.174	1.853	1.604	1.442	1.216
60	-	-	-	2.897	2.785	2.336	1.974	1.688	1.497	1.376
65	-	-	-	-	3.003	2.498	2.095	1.771	1.553	1.425
70	-	-	-	-	-	2.660	2.217	1.854	1.608	1.474
75	-	-	-	-	-	2.822	2.338	1.938	1.663	1.522
80	-	-	-	-	-	-	2.459	2.021	1.718	1.571
85	-	-	-	-	-	-	2.581	2.104	1.773	1.619
90	-	-	-	-	-	-	2.702	2.188	1.828	1.668
95	-	-	-	-	-	-	2.824	2.271	1.884	1.716
100	-	-	-	-	-	-	2.945	2.354	1.939	1.765
105	-	-	-	-	-	-	-	2.437	1.994	1.814
110	-	-	-	-	-	-	-	2.521	2.049	1.862
115	-	-	-	-	-	-	-	2.604	2.104	1.911
120	-	-	-	-	-	-	-	2.687	2.159	1.959
125	-	-	-	-	-	-	-	2.771	2.214	2.008
130	-	-	-	-	-	-	-	2.854	2.270	2.057
135	-	-	-	-	-	-	-	2.937	2.325	2.105
140	-	-	-	-	-	-	-	3.021	2.380	2.154
145	-	-	-	-	-	-	-	-	2.435	2.202
150	-	-	-	-	-	-	-	-	2.490	2.251
155	-	-	-	-	-	-	-	-	2.545	2.299
160	-	-	-	-	-	-	-	-	2.601	2.348
165	-	-	-	-	-	-	-	-	2.656	2.397
170	-	-	-	-	-	-	-	-	2.711	2.445
175	-	-	-	-	-	-	-	-	2.766	2.494
180	-	-	-	-	-	-	-	-	2.821	2.542
185	-	-	-	-	-	-	-	-	2.876	2.591
190	-	-	-	-	-	-	-	-	2.931	2.640
195	-	-	-	-	-	-	-	-	2.987	2.688
200	-	-	-	-	-	-	-	-	-	2.737
205	-	-	-	-	-	-	-	-	-	2.785
210	-	-	-	-	-	-	-	-	-	2.834
215	-	-	-	-	-	-	-	-	-	2.882

Table continues overleaf.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024

CERTIFICATE No CF 700
RUDOLF HENSEL GMBH

Table 25 HENSOTHERM® 370 KS Hollow Columns 120 minutes (continued)										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m-1)	350	400	450	500	520	550	600	650	700	750
220	-	-	-	-	-	-	-	-	-	2.931
225	-	-	-	-	-	-	-	-	-	2.980
230	-	-	-	-	-	-	-	-	-	3.028

Thickness is intumescent only.

Signed
C/009

Issued: 28th July 2009
Reissued: 19th July 2019
Valid to: 18th July 2024