



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
HENSOTHERM® 370 KS

TECHNICAL SCHEDULE
**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: 29th April 2025
Valid to: 18th July 2029





CERTIFICATE No CF 700

RUDOLF HENSEL GMBH

1. This approval relates to the use of HENSOTHERM® 370 KS for the fire protection of I/H beams and columns, rectangular/square and circular hollow columns. The precise scope is given in the Tables of Results, which show the total dry film thickness of HENSOTHERM® 370 KS (excluding any primer and topcoat) required to provide fire resistance periods in accordance with BS476: Parts 20 and 21: 1987. The scope includes periods of fire resistance of up to 150 minutes for I/H beams, and 120 minutes for I/H columns, rectangular/square and circular hollow columns.
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 2.5 or equivalent and primed with a suitable and compatible primer. Specifications of suitably tested and evaluated surface preparations, primers and topcoats are available from Rudolf Hensel GmbH whose responsibility is to ensure HENSOTHERM® 370 KS is compatible for use in respect of both ambient and fire conditions. The nominal dry film thickness of any primer and topcoat should be applied at a nominal thickness tested unless stated otherwise in this certificate.
6. The data shown is applicable to HENSOTHERM® 370 KS applied by spray to horizontal, vertical, flexural, and compression members supporting loads up to the maximum design loads specified in BS 449: Part 2.
7. Results from the analysis of I/H sections are directly applicable to angles, channels and T-sections for the same section factor.
8. The approval relates to ongoing 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.
9. The data shown in the tables is based on an assessment that complies with the criteria for acceptability incorporated within the CERTIFIRE scheme.
10. For section factors below the extended minimum given in the Tables of Results, the same coating thickness as that applied to the extended minimum section factor shall be applied.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
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CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H 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
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/H section beams with concrete slabs with 3-sided fire exposure.

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EWC-QU-FT-733 (Issue 2)

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CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H 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
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/H section beams with concrete slabs with 3-sided fire exposure.

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CRM61021-3



EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
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CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H 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
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	2.662	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/H section beams with concrete slabs with 3-sided fire exposure.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H 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
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	0.688	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/H section beams with concrete slabs with 3-sided fire exposure.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H 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
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/H section beams with concrete slabs with 3-sided fire exposure.

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Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029

EWC-QU-FT-733 (Issue 2)

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H 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
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/H section beams with concrete slabs with 3-sided fire exposure.

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EW-C-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H 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
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/H section beams with concrete slabs with 3-sided fire exposure.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H 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
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/H section beams with concrete slabs with 3-sided fire exposure.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H 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	-	-	-	3.095	2.760	2.216	2.076	1.862	1.491	1.190
75	-	-	-	3.261	2.934	2.376	2.282	1.976	1.599	1.272
80	-	-	-	3.427	3.108	2.544	2.488	2.159	1.707	1.354
85	-	-	-	3.593	3.282	2.712	2.893	2.694	2.371	1.815
90	-	-	-	3.759	3.456	2.880	3.100	2.900	2.582	1.923
95	-	-	-	3.925	3.630	3.048	3.306	3.106	2.794	2.030
100	-	-	-	4.091	3.804	3.216	3.512	3.312	3.006	2.133
105	-	-	-	4.257	3.978	3.384	3.718	3.518	3.212	2.236
110	-	-	-	4.423	4.152	3.552	3.924	3.724	3.418	2.339
115	-	-	-	4.589	4.326	3.720	4.130	3.930	3.624	2.441
120	-	-	-	4.755	4.500	3.888	4.336	4.136	3.830	2.544
125	-	-	-	4.921	4.674	4.056	4.542	4.342	4.036	2.647
130	-	-	-	5.087	4.848	4.224	4.748	4.548	4.242	2.750
135	-	-	-	5.253	5.022	4.392	4.954	4.754	4.448	2.853
140	-	-	-	5.419	5.196	4.560	5.160	4.960	4.654	2.956
145	-	-	-	5.585	5.370	4.728	5.366	5.166	4.860	3.059
150	-	-	-	5.751	5.544	4.896	5.572	5.372	5.066	3.162
155	-	-	-	5.917	5.718	5.064	5.778	5.578	5.272	3.265
160	-	-	-	6.083	5.892	5.232	5.984	5.784	5.478	3.368
165	-	-	-	6.249	6.066	5.400	6.190	5.990	5.684	3.471
170	-	-	-	6.415	6.240	5.568	6.396	6.196	5.890	3.574
175	-	-	-	6.581	6.414	5.736	6.602	6.402	6.096	3.677
180	-	-	-	6.747	6.588	5.904	6.808	6.608	6.302	3.780
185	-	-	-	6.913	6.762	6.072	7.014	6.814	6.508	3.883
190	-	-	-	7.079	6.936	6.240	7.220	7.020	6.714	3.986
195	-	-	-	7.245	7.110	6.408	7.426	7.226	6.920	4.089
200	-	-	-	7.411	7.284	6.576	7.632	7.432	7.126	4.192
205	-	-	-	7.577	7.458	6.744	7.838	7.638	7.332	4.295
210	-	-	-	7.743	7.632	6.912	8.044	7.844	7.538	4.398
215	-	-	-	7.909	7.806	7.080	8.250	8.050	7.744	4.501
220	-	-	-	8.075	7.980	7.248	8.456	8.256	7.950	4.604
225	-	-	-	8.241	8.154	7.416	8.662	8.462	8.156	4.707
230	-	-	-	8.407	8.328	7.584	8.868	8.668	8.362	4.810
235	-	-	-	8.573	8.502	7.752	9.074	8.874	8.568	4.913
240	-	-	-	8.739	8.676	7.920	9.280	9.080	8.774	5.016
245	-	-	-	8.905	8.850	8.088	9.486	9.286	8.980	5.119
250	-	-	-	9.071	9.024	8.256	9.692	9.492	9.186	5.222
255	-	-	-	9.237	9.198	8.424	9.898	9.698	9.392	5.325
260	-	-	-	9.403	9.372	8.592	10.104	9.904	9.598	5.428
265	-	-	-	9.569	9.546	8.760	10.310	10.110	9.804	5.531
270	-	-	-	9.735	9.720	8.928	10.516	10.316	10.010	5.634
275	-	-	-	9.901	9.894	9.096	10.722	10.522	10.216	5.737
280	-	-	-	10.067	10.068	9.264	10.928	10.728	10.422	5.840
285	-	-	-	10.233	10.242	9.432	11.134	10.934	10.628	5.943
290	-	-	-	10.399	10.416	9.600	11.340	11.140	10.834	6.046
295	-	-	-	10.565	10.590	9.768	11.546	11.346	11.040	6.149
300	-	-	-	10.731	10.764	9.936	11.752	11.552	11.246	6.252
305	-	-	-	10.897	10.938	10.104	11.958	11.758	11.452	6.355
310	-	-	-	11.063	11.112	10.272	12.164	11.964	11.658	6.458
315	-	-	-	11.229	11.286	10.440	12.370	12.170	11.864	6.561
320	-	-	-	11.395	11.460	10.608	12.576	12.376	12.070	6.664
325	-	-	-	11.561	11.634	10.776	12.782	12.582	12.276	6.767
330	-	-	-	11.727	11.808	10.944	12.988	12.788	12.482	6.870
335	-	-	-	11.893	11.982	11.112	13.194	12.994	12.688	6.973
340	-	-	-	12.059	12.156	11.280	13.400	13.200	12.894	7.076
345	-	-	-	12.225	12.330	11.448	13.606	13.406	13.100	7.179
350	-	-	-	12.391	12.504	11.616	13.812	13.612	13.306	7.282
355	-	-	-	12.557	12.678	11.784	14.018	13.818	13.512	7.385
360	-	-	-	12.723	12.852	11.952	14.224	14.024	13.718	7.488
365	-	-	-	12.889	13.026	12.120	14.430	14.230	13.924	7.591
370	-	-	-	13.055	13.200	12.288	14.636	14.436	14.130	7.694
375	-	-	-	13.221	13.374	12.456	14.842	14.642	14.336	7.797
380	-	-	-	13.387	13.548	12.624	15.048	14.848	14.542	7.900
385	-	-	-	13.553	13.722	12.792	15.254	15.054	14.748	8.003
390	-	-	-	13.719	13.896	12.960	15.460	15.260	14.954	8.106
395	-	-	-	13.885	14.070	13.128	15.666	15.466	15.160	8.209
400	-	-	-	14.051	14.244	13.296	15.872	15.672	15.366	8.312

Thickness is intumescent only.

Results apply to I/H section beams with concrete slabs with 3-sided fire exposure.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H Columns 15 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m ²)	350	400	450	500	550	600	650	700	750
30	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
35	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
40	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
45	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
50	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
55	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
60	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
65	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
70	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
75	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
80	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
85	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
90	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
95	0.168	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
100	0.175	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
105	0.182	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
110	0.188	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
115	0.195	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
120	0.202	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
125	0.209	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
130	0.215	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
135	0.222	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
140	0.229	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
145	0.235	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
150	0.242	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
155	0.249	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
160	0.255	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
165	0.262	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
170	0.269	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
175	0.276	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
180	0.282	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
185	0.289	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
190	0.296	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
195	0.302	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
200	0.309	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
205	0.316	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
210	0.323	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
215	0.329	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
220	0.336	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
225	0.343	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
230	0.349	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
235	0.356	0.170	0.167	0.167	0.167	0.167	0.167	0.167	0.167
240	0.363	0.176	0.167	0.167	0.167	0.167	0.167	0.167	0.167
245	0.370	0.183	0.167	0.167	0.167	0.167	0.167	0.167	0.167
250	0.376	0.189	0.167	0.167	0.167	0.167	0.167	0.167	0.167
255	0.383	0.195	0.167	0.167	0.167	0.167	0.167	0.167	0.167
260	0.390	0.202	0.167	0.167	0.167	0.167	0.167	0.167	0.167
265	0.396	0.208	0.167	0.167	0.167	0.167	0.167	0.167	0.167
270	0.403	0.214	0.167	0.167	0.167	0.167	0.167	0.167	0.167
275	0.410	0.221	0.167	0.167	0.167	0.167	0.167	0.167	0.167
280	0.416	0.227	0.167	0.167	0.167	0.167	0.167	0.167	0.167
285	0.423	0.233	0.167	0.167	0.167	0.167	0.167	0.167	0.167
290	0.430	0.240	0.167	0.167	0.167	0.167	0.167	0.167	0.167
295	0.437	0.246	0.167	0.167	0.167	0.167	0.167	0.167	0.167
300	0.443	0.253	0.167	0.167	0.167	0.167	0.167	0.167	0.167
305	0.450	0.259	0.167	0.167	0.167	0.167	0.167	0.167	0.167
310	0.457	0.265	0.167	0.167	0.167	0.167	0.167	0.167	0.167
315	0.463	0.272	0.167	0.167	0.167	0.167	0.167	0.167	0.167
320	0.470	0.278	0.167	0.167	0.167	0.167	0.167	0.167	0.167
325	0.477	0.284	0.167	0.167	0.167	0.167	0.167	0.167	0.167
330	0.484	0.291	0.167	0.167	0.167	0.167	0.167	0.167	0.167
335	0.490	0.297	0.167	0.167	0.167	0.167	0.167	0.167	0.167
340	0.497	0.303	0.167	0.167	0.167	0.167	0.167	0.167	0.167
345	0.504	0.310	0.167	0.167	0.167	0.167	0.167	0.167	0.167
350	0.510	0.316	0.167	0.167	0.167	0.167	0.167	0.167	0.167
355	0.517	0.323	0.167	0.167	0.167	0.167	0.167	0.167	0.167
360	0.524	0.329	0.167	0.167	0.167	0.167	0.167	0.167	0.167
365	0.531	0.335	0.167	0.167	0.167	0.167	0.167	0.167	0.167
370	0.537	0.342	0.167	0.167	0.167	0.167	0.167	0.167	0.167
375	0.544	0.348	0.167	0.167	0.167	0.167	0.167	0.167	0.167
380	0.551	0.354	0.167	0.167	0.167	0.167	0.167	0.167	0.167
385	0.557	0.361	0.167	0.167	0.167	0.167	0.167	0.167	0.167
390	0.564	0.367	0.167	0.167	0.167	0.167	0.167	0.167	0.167
395	0.571	0.373	0.167	0.167	0.167	0.167	0.167	0.167	0.167
400	0.577	0.380	0.170	0.167	0.167	0.167	0.167	0.167	0.167

Thickness is intumescent only. Results apply to I/H section columns with 4-sided fire exposure. Results also apply to I/H section beams exposed on all 4 sides limited to a maximum protection thickness of 3.279mm.

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EWC-QU-FT-733 (Issue 2)

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CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H Columns 30 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m ²)	350	400	450	500	550	600	650	700	750
30	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
35	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
40	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
45	0.193	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
50	0.229	0.179	0.170	0.167	0.167	0.167	0.167	0.167	0.167
55	0.265	0.196	0.178	0.167	0.167	0.167	0.167	0.167	0.167
60	0.300	0.213	0.186	0.169	0.167	0.167	0.167	0.167	0.167
65	0.336	0.229	0.194	0.176	0.167	0.167	0.167	0.167	0.167
70	0.372	0.246	0.202	0.183	0.167	0.167	0.167	0.167	0.167
75	0.407	0.263	0.210	0.190	0.170	0.167	0.167	0.167	0.167
80	0.443	0.280	0.218	0.196	0.176	0.167	0.167	0.167	0.167
85	0.479	0.297	0.226	0.203	0.182	0.167	0.167	0.167	0.167
90	0.514	0.314	0.234	0.210	0.188	0.167	0.167	0.167	0.167
95	0.550	0.331	0.242	0.217	0.194	0.167	0.167	0.167	0.167
100	0.586	0.347	0.250	0.223	0.200	0.167	0.167	0.167	0.167
105	0.621	0.364	0.258	0.230	0.205	0.167	0.167	0.167	0.167
110	0.657	0.381	0.266	0.237	0.211	0.167	0.167	0.167	0.167
115	0.685	0.398	0.274	0.244	0.217	0.167	0.167	0.167	0.167
120	0.710	0.415	0.282	0.251	0.223	0.167	0.167	0.167	0.167
125	0.736	0.432	0.290	0.257	0.229	0.167	0.167	0.167	0.167
130	0.762	0.448	0.298	0.264	0.235	0.173	0.167	0.167	0.167
135	0.787	0.465	0.306	0.271	0.241	0.178	0.167	0.167	0.167
140	0.813	0.482	0.314	0.278	0.247	0.184	0.167	0.167	0.167
145	0.838	0.499	0.322	0.284	0.253	0.189	0.167	0.167	0.167
150	0.864	0.516	0.330	0.291	0.259	0.195	0.167	0.167	0.167
155	0.890	0.533	0.338	0.298	0.265	0.200	0.167	0.167	0.167
160	0.915	0.549	0.345	0.305	0.270	0.206	0.167	0.167	0.167
165	0.941	0.566	0.353	0.312	0.276	0.211	0.167	0.167	0.167
170	0.967	0.583	0.361	0.318	0.282	0.217	0.167	0.167	0.167
175	0.992	0.600	0.369	0.325	0.288	0.223	0.167	0.167	0.167
180	1.018	0.617	0.377	0.332	0.294	0.228	0.167	0.167	0.167
185	1.043	0.634	0.385	0.339	0.300	0.234	0.167	0.167	0.167
190	1.069	0.650	0.393	0.345	0.306	0.239	0.167	0.167	0.167
195	1.095	0.668	0.401	0.352	0.312	0.245	0.167	0.167	0.167
200	1.120	0.689	0.409	0.359	0.318	0.250	0.167	0.167	0.167
205	1.146	0.711	0.417	0.366	0.324	0.256	0.167	0.167	0.167
210	1.171	0.732	0.425	0.373	0.330	0.261	0.167	0.167	0.167
215	1.197	0.753	0.433	0.379	0.335	0.267	0.167	0.167	0.167
220	1.223	0.775	0.441	0.386	0.341	0.273	0.167	0.167	0.167
225	1.248	0.796	0.449	0.393	0.347	0.278	0.167	0.167	0.167
230	1.274	0.817	0.457	0.400	0.353	0.284	0.167	0.167	0.167
235	1.300	0.839	0.465	0.407	0.359	0.289	0.167	0.167	0.167
240	1.325	0.860	0.473	0.413	0.365	0.295	0.167	0.167	0.167
245	1.351	0.881	0.481	0.420	0.371	0.300	0.167	0.167	0.167
250	1.376	0.903	0.489	0.427	0.377	0.306	0.168	0.167	0.167
255	1.402	0.924	0.497	0.434	0.383	0.311	0.174	0.167	0.167
260	1.428	0.946	0.505	0.440	0.389	0.317	0.180	0.167	0.167
265	1.453	0.967	0.513	0.447	0.395	0.323	0.186	0.167	0.167
270	1.479	0.988	0.521	0.454	0.400	0.328	0.192	0.167	0.167
275	1.504	1.010	0.529	0.461	0.406	0.334	0.197	0.167	0.167
280	1.530	1.031	0.537	0.468	0.412	0.339	0.203	0.167	0.167
285	1.556	1.052	0.545	0.474	0.418	0.345	0.209	0.167	0.167
290	1.581	1.074	0.553	0.481	0.424	0.350	0.215	0.167	0.167
295	1.607	1.095	0.561	0.488	0.430	0.356	0.221	0.167	0.167
300	1.632	1.116	0.569	0.495	0.436	0.361	0.226	0.167	0.167
305	1.658	1.138	0.577	0.501	0.442	0.367	0.232	0.167	0.167
310	1.684	1.159	0.585	0.508	0.448	0.373	0.238	0.167	0.167
315	1.709	1.180	0.593	0.515	0.454	0.378	0.244	0.167	0.167
320	1.735	1.202	0.601	0.522	0.460	0.384	0.249	0.167	0.167
325	1.761	1.223	0.609	0.529	0.465	0.389	0.255	0.167	0.167
330	1.786	1.245	0.617	0.535	0.471	0.395	0.261	0.167	0.167
335	1.812	1.266	0.625	0.542	0.477	0.400	0.267	0.167	0.167
340	1.837	1.287	0.633	0.549	0.483	0.406	0.273	0.167	0.167
345	1.863	1.309	0.641	0.556	0.489	0.411	0.278	0.167	0.167
350	1.889	1.330	0.648	0.562	0.495	0.417	0.284	0.167	0.167
355	1.914	1.351	0.656	0.569	0.501	0.423	0.290	0.167	0.167
360	1.940	1.373	0.664	0.576	0.507	0.428	0.296	0.167	0.167
365	1.965	1.394	0.689	0.583	0.513	0.434	0.302	0.167	0.167
370	1.991	1.415	0.715	0.590	0.519	0.439	0.307	0.167	0.167
375	2.016	1.437	0.742	0.596	0.524	0.445	0.313	0.167	0.167
380	2.038	1.458	0.768	0.603	0.530	0.450	0.319	0.167	0.167
385	2.061	1.480	0.794	0.610	0.536	0.456	0.325	0.172	0.167
390	2.083	1.501	0.820	0.617	0.542	0.461	0.331	0.177	0.167
395	2.106	1.522	0.846	0.623	0.548	0.467	0.336	0.183	0.167
400	2.129	1.544	0.872	0.630	0.554	0.473	0.342	0.188	0.167

Thickness is intumescent only. Results apply to I/H section columns with 4-sided fire exposure. Results also apply to I/H section beams exposed on all 4 sides limited to a maximum protection thickness of 3.279mm.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H Columns 45 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m ²)	350	400	450	500	550	600	650	700	750
30	0.221	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
35	0.316	0.207	0.167	0.167	0.167	0.167	0.167	0.167	0.167
40	0.411	0.263	0.198	0.172	0.167	0.167	0.167	0.167	0.167
45	0.507	0.318	0.229	0.192	0.173	0.167	0.167	0.167	0.167
50	0.602	0.373	0.260	0.213	0.187	0.175	0.167	0.167	0.167
55	0.693	0.428	0.292	0.234	0.201	0.183	0.169	0.167	0.167
60	0.776	0.483	0.323	0.254	0.215	0.192	0.176	0.167	0.167
65	0.859	0.539	0.354	0.275	0.229	0.200	0.183	0.167	0.167
70	0.941	0.594	0.385	0.296	0.243	0.209	0.190	0.170	0.167
75	1.024	0.649	0.416	0.316	0.257	0.218	0.197	0.177	0.167
80	1.107	0.703	0.447	0.337	0.271	0.226	0.205	0.183	0.167
85	1.189	0.756	0.478	0.358	0.284	0.235	0.212	0.189	0.167
90	1.272	0.809	0.509	0.379	0.298	0.243	0.219	0.195	0.167
95	1.355	0.862	0.540	0.399	0.312	0.252	0.226	0.202	0.167
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
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 apply to I/H section columns with 4-sided fire exposure. Results also apply to I/H section beams exposed on all 4 sides limited to a maximum protection thickness of 3.279mm.

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CRM61021-3

Issued: 28th July 2009
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Valid to: 18th July 2029
EWC-QU-FT-733 (Issue 2)



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H Columns 60 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m ²)	350	400	450	500	550	600	650	700	750
30	0.599	0.394	0.221	0.167	0.167	0.167	0.167	0.167	0.167
35	0.664	0.468	0.294	0.224	0.184	0.167	0.167	0.167	0.167
40	0.781	0.558	0.367	0.274	0.219	0.185	0.167	0.167	0.167
45	0.899	0.649	0.440	0.324	0.255	0.211	0.182	0.167	0.167
50	1.016	0.728	0.513	0.374	0.290	0.238	0.201	0.176	0.167
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
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	0.670
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 apply to I/H section columns with 4-sided fire exposure. Results also apply to I/H section beams exposed on all 4 sides limited to a maximum protection thickness of 3.279mm.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H Columns 75 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m ²)	350	400	450	500	550	600	650	700	750
30	1.111	0.606	0.490	0.360	0.224	0.167	0.167	0.167	0.167
35	1.212	0.712	0.555	0.431	0.294	0.231	0.186	0.167	0.167
40	1.363	0.818	0.647	0.507	0.363	0.285	0.228	0.182	0.167
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
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 apply to I/H section columns with 4-sided fire exposure. Results also apply to I/H section beams exposed on all 4 sides limited to a maximum protection thickness of 3.279mm.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H Columns 90 minutes									
Required Thickness (mm) for a Design Temperature (°C)									
Section Factor (m ²)	350	400	450	500	550	600	650	700	750
30	1.598	1.099	0.643	0.568	0.446	0.337	0.212	0.167	0.167
35	1.740	1.202	0.753	0.625	0.514	0.408	0.283	0.214	0.167
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
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 apply to I/H section columns with 4-sided fire exposure. Results also apply to I/H section beams exposed on all 4 sides limited to a maximum protection thickness of 3.279mm.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H 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	0.167
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
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 apply to I/H section columns with 4-sided fire exposure. Results also apply to I/H section beams exposed on all 4 sides limited to a maximum protection thickness of 3.279mm.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

I/H 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
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 apply to I/H section columns with 4-sided fire exposure. Results also apply to I/H section beams exposed on all 4 sides limited to a maximum protection thickness of 3.279mm.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Rectangular/Square Hollow Columns 15 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	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	0.313	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
210	0.676	0.336	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
215	0.705	0.359	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
220	0.734	0.382	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
225	0.764	0.406	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
230	0.793	0.429	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
235	0.822	0.452	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
240	0.851	0.476	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
245	0.881	0.499	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
250	0.910	0.522	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
255	0.939	0.546	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
260	0.969	0.569	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
265	0.998	0.592	0.305	0.290	0.290	0.290	0.290	0.290	0.290	0.290
270	1.027	0.616	0.325	0.290	0.290	0.290	0.290	0.290	0.290	0.290
275	1.056	0.639	0.345	0.290	0.290	0.290	0.290	0.290	0.290	0.290
280	1.086	0.662	0.365	0.290	0.290	0.290	0.290	0.290	0.290	0.290
285	1.115	0.685	0.386	0.290	0.290	0.290	0.290	0.290	0.290	0.290
290	1.144	0.709	0.406	0.290	0.290	0.290	0.290	0.290	0.290	0.290
295	1.174	0.732	0.426	0.290	0.290	0.290	0.290	0.290	0.290	0.290
300	1.203	0.755	0.446	0.290	0.290	0.290	0.290	0.290	0.290	0.290
305	1.232	0.779	0.466	0.290	0.290	0.290	0.290	0.290	0.290	0.290
310	1.261	0.802	0.486	0.290	0.290	0.290	0.290	0.290	0.290	0.290
315	1.291	0.825	0.506	0.290	0.290	0.290	0.290	0.290	0.290	0.290
320	1.320	0.849	0.526	0.290	0.290	0.290	0.290	0.290	0.290	0.290
325	1.349	0.872	0.546	0.305	0.290	0.290	0.290	0.290	0.290	0.290
330	1.366	0.895	0.566	0.321	0.290	0.290	0.290	0.290	0.290	0.290
335	1.380	0.918	0.587	0.338	0.290	0.290	0.290	0.290	0.290	0.290
340	1.393	0.942	0.607	0.355	0.290	0.290	0.290	0.290	0.290	0.290
345	1.406	0.965	0.627	0.372	0.290	0.290	0.290	0.290	0.290	0.290
350	1.419	0.988	0.647	0.388	0.303	0.290	0.290	0.290	0.290	0.290
355	1.433	1.012	0.667	0.405	0.319	0.290	0.290	0.290	0.290	0.290
360	1.446	1.035	0.687	0.422	0.334	0.290	0.290	0.290	0.290	0.290
365	1.459	1.058	0.707	0.439	0.350	0.290	0.290	0.290	0.290	0.290
370	1.473	1.082	0.727	0.456	0.365	0.290	0.290	0.290	0.290	0.290
375	1.486	1.105	0.747	0.472	0.381	0.290	0.290	0.290	0.290	0.290
380	1.499	1.128	0.768	0.489	0.396	0.290	0.290	0.290	0.290	0.290
385	1.513	1.152	0.788	0.506	0.412	0.290	0.290	0.290	0.290	0.290
390	1.526	1.175	0.808	0.523	0.427	0.292	0.290	0.290	0.290	0.290
395	1.539	1.198	0.828	0.539	0.443	0.305	0.290	0.290	0.290	0.290
400	1.553	1.221	0.848	0.556	0.458	0.319	0.290	0.290	0.290	0.290
405	1.566	1.245	0.868	0.573	0.474	0.333	0.290	0.290	0.290	0.290
410	1.579	1.268	0.888	0.590	0.490	0.347	0.290	0.290	0.290	0.290
415	1.592	1.291	0.908	0.607	0.505	0.361	0.290	0.290	0.290	0.290

Thickness is intumescent only.

Results apply to Rectangular/Square hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Rectangular/Square Hollow Columns 30 minutes Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	350	400	450	500	520	550	600	650	700	750
15	0.433	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
20	0.433	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
25	0.433	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
30	0.433	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
35	0.433	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
40	0.433	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
45	0.433	0.291	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
50	0.455	0.322	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
55	0.499	0.352	0.296	0.290	0.290	0.290	0.290	0.290	0.290	0.290
60	0.543	0.382	0.314	0.290	0.290	0.290	0.290	0.290	0.290	0.290
65	0.587	0.412	0.331	0.290	0.290	0.290	0.290	0.290	0.290	0.290
70	0.630	0.443	0.349	0.299	0.290	0.290	0.290	0.290	0.290	0.290
75	0.698	0.473	0.367	0.314	0.292	0.290	0.290	0.290	0.290	0.290
80	0.770	0.503	0.385	0.328	0.306	0.290	0.290	0.290	0.290	0.290
85	0.842	0.533	0.403	0.342	0.320	0.290	0.290	0.290	0.290	0.290
90	0.915	0.564	0.421	0.356	0.334	0.290	0.290	0.290	0.290	0.290
95	0.987	0.594	0.439	0.370	0.348	0.303	0.290	0.290	0.290	0.290
100	1.059	0.624	0.457	0.385	0.362	0.317	0.290	0.290	0.290	0.290
105	1.131	0.660	0.475	0.399	0.375	0.331	0.290	0.290	0.290	0.290
110	1.203	0.701	0.492	0.413	0.389	0.345	0.290	0.290	0.290	0.290
115	1.276	0.742	0.510	0.427	0.403	0.358	0.290	0.290	0.290	0.290
120	1.348	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	1.402	0.864	0.564	0.470	0.445	0.400	0.290	0.290	0.290	0.290
135	1.426	0.905	0.582	0.484	0.458	0.414	0.290	0.290	0.290	0.290
140	1.450	0.946	0.600	0.498	0.472	0.427	0.290	0.290	0.290	0.290
145	1.474	0.987	0.618	0.512	0.486	0.441	0.290	0.290	0.290	0.290
150	1.498	1.028	0.636	0.527	0.500	0.455	0.290	0.290	0.290	0.290
155	1.523	1.069	0.677	0.541	0.514	0.469	0.290	0.290	0.290	0.290
160	1.547	1.109	0.721	0.555	0.528	0.483	0.290	0.290	0.290	0.290
165	1.571	1.150	0.765	0.569	0.541	0.496	0.290	0.290	0.290	0.290
170	1.595	1.191	0.809	0.583	0.555	0.510	0.290	0.290	0.290	0.290
175	1.619	1.232	0.853	0.598	0.569	0.524	0.290	0.290	0.290	0.290
180	1.644	1.273	0.897	0.612	0.583	0.538	0.290	0.290	0.290	0.290
185	1.668	1.314	0.940	0.626	0.597	0.552	0.290	0.290	0.290	0.290
190	1.692	1.354	0.984	0.646	0.611	0.565	0.290	0.290	0.290	0.290
195	1.716	1.378	1.028	0.686	0.624	0.579	0.290	0.290	0.290	0.290
200	1.740	1.402	1.072	0.727	0.640	0.593	0.290	0.290	0.290	0.290
205	1.765	1.425	1.116	0.767	0.677	0.607	0.290	0.290	0.290	0.290
210	1.789	1.448	1.160	0.807	0.714	0.621	0.300	0.290	0.290	0.290
215	1.813	1.471	1.204	0.848	0.750	0.634	0.345	0.290	0.290	0.290
220	1.837	1.494	1.247	0.888	0.787	0.664	0.390	0.290	0.290	0.290
225	1.861	1.518	1.291	0.928	0.824	0.697	0.436	0.290	0.290	0.290
230	1.886	1.541	1.335	0.969	0.861	0.730	0.481	0.312	0.290	0.290
235	1.910	1.564	1.377	1.009	0.897	0.763	0.526	0.340	0.290	0.290
240	1.934	1.587	1.389	1.049	0.934	0.796	0.571	0.367	0.290	0.290
245	1.958	1.610	1.410	1.090	0.971	0.828	0.617	0.394	0.290	0.290
250	1.982	1.634	1.432	1.130	1.008	0.861	0.653	0.421	0.290	0.290
255	2.006	1.657	1.454	1.170	1.044	0.894	0.683	0.448	0.290	0.290
260	2.031	1.680	1.475	1.211	1.081	0.927	0.713	0.476	0.290	0.290
265	2.055	1.703	1.497	1.251	1.118	0.960	0.742	0.503	0.290	0.290
270	2.079	1.727	1.518	1.291	1.155	0.993	0.772	0.530	0.290	0.290
275	2.103	1.750	1.540	1.332	1.191	1.026	0.802	0.557	0.290	0.290
280	2.127	1.773	1.562	1.364	1.228	1.059	0.831	0.584	0.290	0.290
285	2.152	1.796	1.583	1.384	1.265	1.092	0.861	0.612	0.290	0.290
290	2.176	1.819	1.605	1.403	1.302	1.125	0.890	0.639	0.295	0.290
295	2.200	1.843	1.626	1.423	1.339	1.158	0.920	0.666	0.320	0.290
300	2.224	1.866	1.648	1.443	1.366	1.191	0.950	0.693	0.345	0.290
305	2.248	1.889	1.670	1.463	1.385	1.224	0.979	0.720	0.370	0.290
310	2.273	1.912	1.691	1.482	1.404	1.257	1.009	0.748	0.395	0.290
315	2.297	1.935	1.713	1.502	1.423	1.290	1.039	0.775	0.420	0.290
320	2.321	1.959	1.734	1.522	1.442	1.323	1.068	0.802	0.445	0.290
325	2.345	1.982	1.756	1.542	1.461	1.356	1.098	0.829	0.470	0.290
330	2.369	2.005	1.778	1.561	1.479	1.373	1.128	0.856	0.495	0.290
335	2.394	2.028	1.799	1.581	1.498	1.391	1.157	0.884	0.520	0.290
340	2.418	2.052	1.821	1.601	1.517	1.408	1.187	0.911	0.545	0.290
345	2.442	2.075	1.842	1.621	1.536	1.426	1.217	0.938	0.569	0.290
350	2.466	2.098	1.864	1.640	1.555	1.443	1.246	0.965	0.594	0.290
355	2.490	2.121	1.886	1.660	1.574	1.461	1.276	0.992	0.619	0.290
360	2.515	2.144	1.907	1.680	1.593	1.478	1.305	1.020	0.644	0.290
365	2.539	2.168	1.929	1.700	1.612	1.496	1.335	1.047	0.669	0.290
370	2.563	2.191	1.950	1.719	1.631	1.513	1.360	1.074	0.694	0.290
375	2.587	2.214	1.972	1.739	1.650	1.531	1.375	1.101	0.719	0.290
380	2.611	2.237	1.993	1.759	1.669	1.548	1.390	1.128	0.744	0.290
385	2.636	2.260	2.015	1.779	1.688	1.566	1.405	1.156	0.769	0.290
390	2.660	2.284	2.037	1.798	1.707	1.583	1.419	1.183	0.794	0.290
395	2.684	2.307	2.058	1.818	1.725	1.601	1.434	1.210	0.819	0.290
400	2.708	2.330	2.080	1.838	1.744	1.618	1.449	1.237	0.844	0.290
405	2.732	2.353	2.101	1.858	1.763	1.636	1.464	1.264	0.869	0.290
410	2.757	2.377	2.123	1.877	1.782	1.653	1.479	1.291	0.893	0.290
415	2.781	2.400	2.145	1.897	1.801	1.671	1.493	1.319	0.918	0.290

Thickness is intumescent only.

Results apply to Rectangular/Square hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Rectangular/Square 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	0.448	0.314	0.314	0.290	0.290	0.290	0.290	0.290
20	0.573	0.573	0.448	0.314	0.314	0.290	0.290	0.290	0.290	0.290
25	0.573	0.573	0.448	0.314	0.314	0.290	0.290	0.290	0.290	0.290
30	0.573	0.573	0.448	0.314	0.314	0.290	0.290	0.290	0.290	0.290
35	0.573	0.573	0.448	0.314	0.314	0.290	0.290	0.290	0.290	0.290
40	0.742	0.573	0.448	0.314	0.314	0.290	0.290	0.290	0.290	0.290
45	0.945	0.573	0.448	0.325	0.314	0.290	0.290	0.290	0.290	0.290
50	1.148	0.573	0.471	0.364	0.340	0.312	0.290	0.290	0.290	0.290
55	1.352	0.676	0.517	0.402	0.374	0.340	0.300	0.290	0.290	0.290
60	1.399	0.812	0.563	0.440	0.408	0.368	0.321	0.290	0.290	0.290
65	1.443	0.948	0.610	0.479	0.442	0.397	0.342	0.304	0.290	0.290
70	1.487	1.084	0.669	0.517	0.475	0.425	0.363	0.320	0.290	0.290
75	1.531	1.220	0.747	0.555	0.509	0.453	0.384	0.335	0.290	0.290
80	1.575	1.355	0.825	0.594	0.543	0.482	0.405	0.351	0.299	0.290
85	1.619	1.389	0.903	0.632	0.577	0.510	0.426	0.366	0.314	0.290
90	1.663	1.422	0.980	0.677	0.611	0.538	0.447	0.382	0.328	0.290
95	1.706	1.455	1.058	0.724	0.647	0.567	0.468	0.398	0.342	0.290
100	1.750	1.489	1.136	0.771	0.690	0.595	0.489	0.413	0.357	0.290
105	1.794	1.522	1.214	0.818	0.734	0.623	0.510	0.429	0.371	0.290
110	1.838	1.555	1.292	0.864	0.778	0.659	0.531	0.445	0.385	0.290
115	1.882	1.588	1.361	0.911	0.822	0.702	0.552	0.460	0.400	0.290
120	1.926	1.621	1.390	0.958	0.865	0.745	0.573	0.476	0.414	0.290
125	1.970	1.654	1.419	1.005	0.909	0.789	0.594	0.492	0.428	0.290
130	2.014	1.688	1.448	1.051	0.953	0.832	0.615	0.507	0.443	0.290
135	2.058	1.721	1.477	1.098	0.997	0.875	0.636	0.523	0.457	0.290
140	2.102	1.754	1.506	1.145	1.040	0.918	0.679	0.539	0.471	0.290
145	2.146	1.787	1.535	1.191	1.084	0.961	0.724	0.554	0.486	0.290
150	2.190	1.820	1.564	1.238	1.128	1.004	0.768	0.570	0.500	0.290
155	2.234	1.853	1.594	1.285	1.172	1.047	0.813	0.586	0.514	0.290
160	2.278	1.887	1.623	1.332	1.215	1.091	0.857	0.601	0.529	0.290
165	2.321	1.920	1.652	1.370	1.259	1.134	0.901	0.617	0.543	0.290
170	2.365	1.953	1.681	1.399	1.303	1.177	0.946	0.633	0.558	0.290
175	2.409	1.986	1.710	1.427	1.347	1.220	0.990	0.672	0.572	0.290
180	2.453	2.019	1.739	1.456	1.378	1.263	1.034	0.722	0.586	0.290
185	2.497	2.053	1.768	1.485	1.406	1.306	1.079	0.771	0.601	0.298
190	2.541	2.086	1.797	1.513	1.434	1.349	1.123	0.820	0.615	0.323
195	2.585	2.119	1.826	1.542	1.462	1.378	1.167	0.870	0.629	0.349
200	2.629	2.152	1.855	1.571	1.490	1.404	1.212	0.919	0.658	0.374
205	2.673	2.185	1.884	1.600	1.518	1.431	1.256	0.969	0.703	0.400
210	2.717	2.218	1.913	1.628	1.546	1.457	1.300	1.018	0.749	0.425
215	2.761	2.252	1.942	1.657	1.574	1.483	1.345	1.067	0.794	0.451
220	2.805	2.285	1.971	1.686	1.602	1.509	1.373	1.117	0.839	0.476
225	2.849	2.318	2.001	1.715	1.630	1.535	1.396	1.166	0.885	0.502
230	2.893	2.351	2.030	1.743	1.658	1.561	1.420	1.215	0.930	0.527
235	2.936	2.384	2.059	1.772	1.686	1.588	1.443	1.265	0.975	0.553
240	2.980	2.417	2.088	1.801	1.714	1.614	1.466	1.314	1.021	0.578
245	3.024	2.451	2.117	1.830	1.742	1.640	1.489	1.359	1.066	0.604
250	-	2.484	2.146	1.858	1.770	1.666	1.512	1.379	1.112	0.629
255	-	2.517	2.175	1.887	1.798	1.692	1.535	1.399	1.157	0.669
260	-	2.550	2.204	1.916	1.826	1.718	1.558	1.418	1.202	0.716
265	-	2.583	2.233	1.944	1.854	1.745	1.581	1.438	1.248	0.762
270	-	2.617	2.262	1.973	1.882	1.771	1.605	1.458	1.293	0.808
275	-	2.650	2.291	2.002	1.910	1.797	1.628	1.478	1.338	0.854
280	-	2.683	2.320	2.031	1.938	1.823	1.651	1.498	1.366	0.900
285	-	2.716	2.349	2.059	1.966	1.849	1.674	1.517	1.382	0.947
290	-	2.749	2.378	2.088	1.994	1.875	1.697	1.537	1.398	0.993
295	-	2.782	2.408	2.117	2.022	1.902	1.720	1.557	1.415	1.039
300	-	2.816	2.437	2.146	2.050	1.928	1.743	1.577	1.431	1.085
305	-	2.849	2.466	2.174	2.078	1.954	1.766	1.597	1.447	1.131
310	-	2.882	2.495	2.203	2.106	1.980	1.790	1.616	1.463	1.178
315	-	2.915	2.524	2.232	2.134	2.006	1.813	1.636	1.479	1.224
320	-	2.948	2.553	2.261	2.162	2.032	1.836	1.656	1.496	1.270
325	-	2.981	2.582	2.289	2.190	2.059	1.859	1.676	1.512	1.316
330	-	3.015	2.611	2.318	2.218	2.085	1.882	1.696	1.528	1.358
335	-	-	2.640	2.347	2.246	2.111	1.905	1.715	1.544	1.371
340	-	-	2.669	2.375	2.274	2.137	1.928	1.735	1.561	1.383
345	-	-	2.698	2.404	2.302	2.163	1.951	1.755	1.577	1.396
350	-	-	2.727	2.433	2.329	2.190	1.975	1.775	1.593	1.409
355	-	-	2.756	2.462	2.357	2.216	1.998	1.795	1.609	1.421
360	-	-	2.785	2.490	2.385	2.242	2.021	1.814	1.626	1.434
365	-	-	2.814	2.519	2.413	2.268	2.044	1.834	1.642	1.447
370	-	-	2.844	2.548	2.441	2.294	2.067	1.854	1.658	1.460
375	-	-	2.873	2.577	2.469	2.320	2.090	1.874	1.674	1.472
380	-	-	2.902	2.605	2.497	2.347	2.113	1.894	1.690	1.485
385	-	-	2.931	2.634	2.525	2.373	2.136	1.913	1.707	1.498
390	-	-	2.960	2.663	2.553	2.399	2.160	1.933	1.723	1.510
395	-	-	2.989	2.692	2.581	2.425	2.183	1.953	1.739	1.523
400	-	-	3.018	2.720	2.609	2.451	2.206	1.973	1.755	1.536
405	-	-	-	2.749	2.637	2.477	2.229	1.993	1.772	1.549
410	-	-	-	2.778	2.665	2.504	2.252	2.012	1.788	1.561
415	-	-	-	2.806	2.693	2.530	2.275	2.032	1.804	1.574

Thickness is intumescent only.

Results apply to Rectangular/Square hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Rectangular/Square 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	0.534	0.480	0.399	0.314	0.290	0.290
20	0.573	0.573	0.573	0.573	0.534	0.480	0.399	0.314	0.290	0.290
25	0.691	0.573	0.573	0.573	0.534	0.480	0.399	0.314	0.290	0.290
30	0.982	0.574	0.573	0.573	0.534	0.480	0.399	0.314	0.290	0.290
35	1.274	0.791	0.573	0.573	0.534	0.480	0.399	0.314	0.290	0.290
40	1.424	1.008	0.619	0.573	0.534	0.480	0.399	0.314	0.290	0.290
45	1.518	1.224	0.780	0.573	0.534	0.480	0.399	0.314	0.290	0.290
50	1.613	1.376	0.941	0.573	0.562	0.504	0.418	0.335	0.290	0.290
55	1.707	1.426	1.103	0.697	0.617	0.554	0.460	0.371	0.311	0.290
60	1.801	1.477	1.264	0.825	0.709	0.604	0.502	0.407	0.339	0.290
65	1.896	1.527	1.374	0.954	0.822	0.668	0.545	0.443	0.366	0.290
70	1.990	1.577	1.417	1.082	0.934	0.760	0.587	0.479	0.394	0.290
75	2.084	1.628	1.459	1.211	1.046	0.853	0.629	0.515	0.421	0.309
80	2.179	1.678	1.502	1.339	1.159	0.945	0.691	0.551	0.449	0.328
85	2.273	1.728	1.544	1.388	1.271	1.037	0.758	0.587	0.477	0.347
90	2.368	1.779	1.586	1.425	1.365	1.129	0.824	0.623	0.504	0.366
95	2.462	1.829	1.629	1.462	1.400	1.221	0.891	0.665	0.532	0.385
100	2.556	1.880	1.671	1.499	1.435	1.313	0.958	0.712	0.559	0.403
105	2.651	1.930	1.714	1.537	1.470	1.374	1.024	0.758	0.587	0.422
110	2.745	1.980	1.756	1.574	1.505	1.406	1.091	0.805	0.614	0.441
115	2.839	2.031	1.798	1.611	1.541	1.439	1.157	0.851	0.645	0.460
120	2.934	2.081	1.841	1.648	1.576	1.471	1.224	0.898	0.692	0.479
125	-	2.131	1.883	1.685	1.611	1.504	1.291	0.944	0.739	0.498
130	-	2.182	1.926	1.722	1.646	1.536	1.357	0.991	0.786	0.516
135	-	2.232	1.968	1.759	1.681	1.569	1.385	1.037	0.833	0.535
140	-	2.282	2.010	1.796	1.717	1.602	1.414	1.083	0.880	0.554
145	-	2.333	2.053	1.833	1.752	1.634	1.443	1.130	0.927	0.573
150	-	2.383	2.095	1.870	1.787	1.667	1.471	1.176	0.974	0.592
155	-	2.434	2.138	1.907	1.822	1.699	1.500	1.223	1.020	0.611
160	-	2.484	2.180	1.945	1.857	1.732	1.529	1.269	1.067	0.630
165	-	2.534	2.222	1.982	1.893	1.764	1.557	1.316	1.114	0.674
170	-	2.585	2.265	2.019	1.928	1.797	1.586	1.360	1.161	0.735
175	-	2.635	2.307	2.056	1.963	1.830	1.615	1.387	1.208	0.797
180	-	2.685	2.350	2.093	1.998	1.862	1.643	1.415	1.255	0.858
185	-	2.736	2.392	2.130	2.034	1.895	1.672	1.442	1.302	0.919
190	-	2.786	2.434	2.167	2.069	1.927	1.701	1.469	1.349	0.981
195	-	2.837	2.477	2.204	2.104	1.960	1.729	1.497	1.376	1.042
200	-	2.887	2.519	2.241	2.139	1.992	1.758	1.524	1.399	1.103
205	-	2.937	2.562	2.278	2.174	2.025	1.786	1.552	1.423	1.165
210	-	2.988	2.604	2.315	2.210	2.058	1.815	1.579	1.446	1.226
215	-	-	2.646	2.352	2.245	2.090	1.844	1.607	1.470	1.287
220	-	-	2.689	2.390	2.280	2.123	1.872	1.634	1.493	1.349
225	-	-	2.731	2.427	2.315	2.155	1.901	1.662	1.517	1.373
230	-	-	2.774	2.464	2.350	2.188	1.930	1.689	1.540	1.392
235	-	-	2.816	2.501	2.386	2.220	1.958	1.717	1.564	1.412
240	-	-	2.858	2.538	2.421	2.253	1.987	1.744	1.587	1.432
245	-	-	2.901	2.575	2.456	2.286	2.016	1.771	1.611	1.451
250	-	-	2.943	2.612	2.491	2.318	2.044	1.799	1.634	1.471
255	-	-	2.986	2.649	2.526	2.351	2.073	1.826	1.658	1.490
260	-	-	-	2.686	2.562	2.383	2.102	1.854	1.681	1.510
265	-	-	-	2.723	2.597	2.416	2.130	1.881	1.705	1.530
270	-	-	-	2.760	2.632	2.449	2.159	1.909	1.728	1.549
275	-	-	-	2.798	2.667	2.481	2.188	1.936	1.751	1.569
280	-	-	-	2.835	2.702	2.514	2.216	1.964	1.775	1.588
285	-	-	-	2.872	2.738	2.546	2.245	1.991	1.798	1.608
290	-	-	-	2.909	2.773	2.579	2.274	2.019	1.822	1.627
295	-	-	-	2.946	2.808	2.611	2.302	2.046	1.845	1.647
300	-	-	-	2.983	2.843	2.644	2.331	2.073	1.869	1.666
305	-	-	-	3.020	2.879	2.677	2.360	2.101	1.892	1.686
310	-	-	-	-	2.914	2.709	2.388	2.128	1.916	1.705
315	-	-	-	-	2.949	2.742	2.417	2.156	1.939	1.725
320	-	-	-	-	2.984	2.774	2.446	2.183	1.963	1.745
325	-	-	-	-	3.019	2.807	2.474	2.211	1.986	1.764
330	-	-	-	-	3.055	2.839	2.503	2.238	2.010	1.784
335	-	-	-	-	-	2.872	2.532	2.266	2.033	1.803
340	-	-	-	-	-	2.905	2.560	2.293	2.057	1.823
345	-	-	-	-	-	2.937	2.589	2.320	2.080	1.842
350	-	-	-	-	-	2.970	2.618	2.348	2.104	1.862
355	-	-	-	-	-	3.002	2.646	2.375	2.127	1.881
360	-	-	-	-	-	3.035	2.675	2.403	2.151	1.901
365	-	-	-	-	-	-	2.704	2.430	2.174	1.920
370	-	-	-	-	-	-	2.732	2.458	2.198	1.940
375	-	-	-	-	-	-	2.761	2.485	2.221	1.960
380	-	-	-	-	-	-	2.790	2.513	2.245	1.979
385	-	-	-	-	-	-	2.818	2.540	2.268	1.999
390	-	-	-	-	-	-	2.847	2.568	2.292	2.018
395	-	-	-	-	-	-	2.876	2.595	2.315	2.038
400	-	-	-	-	-	-	2.904	2.622	2.339	2.057
405	-	-	-	-	-	-	2.933	2.650	2.362	2.077
410	-	-	-	-	-	-	2.962	2.677	2.386	2.096
415	-	-	-	-	-	-	2.990	2.705	2.409	2.116

Thickness is intumescent only.

Results apply to Rectangular/Square hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Rectangular/Square Hollow Columns 75 minutes Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	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	0.483	0.394	0.290
20	0.809	0.573	0.573	0.573	0.573	0.573	0.573	0.483	0.394	0.290
25	1.189	0.802	0.573	0.573	0.573	0.573	0.573	0.483	0.394	0.290
30	1.472	1.096	0.760	0.573	0.573	0.573	0.573	0.483	0.394	0.290
35	1.679	1.367	0.990	0.688	0.584	0.573	0.573	0.483	0.394	0.290
40	1.886	1.462	1.219	0.868	0.751	0.584	0.573	0.483	0.394	0.290
45	2.093	1.558	1.380	1.047	0.918	0.738	0.573	0.483	0.394	0.290
50	2.300	1.653	1.439	1.227	1.085	0.891	0.573	0.506	0.411	0.290
55	2.507	1.748	1.497	1.370	1.253	1.044	0.699	0.559	0.456	0.304
60	2.714	1.844	1.556	1.419	1.374	1.197	0.839	0.611	0.501	0.343
65	2.921	1.939	1.615	1.468	1.420	1.351	0.979	0.692	0.547	0.382
70	-	2.034	1.673	1.517	1.467	1.398	1.119	0.802	0.592	0.420
75	-	2.130	1.732	1.566	1.513	1.441	1.259	0.911	0.637	0.459
80	-	2.225	1.791	1.614	1.559	1.484	1.368	1.020	0.718	0.498
85	-	2.320	1.849	1.663	1.606	1.527	1.405	1.130	0.799	0.537
90	-	2.415	1.908	1.712	1.652	1.570	1.443	1.239	0.879	0.575
95	-	2.511	1.967	1.761	1.699	1.613	1.481	1.348	0.960	0.614
100	-	2.606	2.026	1.810	1.745	1.656	1.519	1.387	1.040	0.660
105	-	2.701	2.084	1.859	1.792	1.699	1.557	1.419	1.121	0.716
110	-	2.797	2.143	1.908	1.838	1.742	1.595	1.452	1.202	0.772
115	-	2.892	2.202	1.957	1.885	1.785	1.633	1.485	1.282	0.829
120	-	2.987	2.260	2.006	1.931	1.828	1.671	1.518	1.358	0.885
125	-	-	2.319	2.055	1.978	1.871	1.709	1.551	1.386	0.941
130	-	-	2.378	2.104	2.024	1.914	1.747	1.584	1.414	0.998
135	-	-	2.436	2.153	2.070	1.957	1.785	1.617	1.441	1.054
140	-	-	2.495	2.201	2.117	2.000	1.823	1.650	1.469	1.110
145	-	-	2.554	2.250	2.163	2.044	1.861	1.683	1.497	1.166
150	-	-	2.613	2.299	2.210	2.087	1.899	1.716	1.525	1.223
155	-	-	2.671	2.348	2.256	2.130	1.937	1.749	1.552	1.279
160	-	-	2.730	2.397	2.303	2.173	1.975	1.781	1.580	1.335
165	-	-	2.789	2.446	2.349	2.216	2.013	1.814	1.608	1.372
170	-	-	2.847	2.495	2.396	2.259	2.051	1.847	1.635	1.398
175	-	-	2.906	2.544	2.442	2.302	2.089	1.880	1.663	1.424
180	-	-	2.965	2.593	2.488	2.345	2.127	1.913	1.691	1.450
185	-	-	3.023	2.642	2.535	2.388	2.165	1.946	1.718	1.476
190	-	-	-	2.691	2.581	2.431	2.203	1.979	1.746	1.502
195	-	-	-	2.740	2.628	2.474	2.241	2.012	1.774	1.528
200	-	-	-	2.788	2.674	2.517	2.279	2.045	1.802	1.554
205	-	-	-	2.837	2.721	2.560	2.317	2.078	1.829	1.580
210	-	-	-	2.886	2.767	2.603	2.354	2.111	1.857	1.606
215	-	-	-	2.935	2.814	2.646	2.392	2.143	1.885	1.632
220	-	-	-	2.984	2.860	2.689	2.430	2.176	1.912	1.658
225	-	-	-	3.033	2.906	2.733	2.468	2.209	1.940	1.684
230	-	-	-	-	2.953	2.776	2.506	2.242	1.968	1.711
235	-	-	-	-	2.999	2.819	2.544	2.275	1.995	1.737
240	-	-	-	-	-	2.862	2.582	2.308	2.023	1.763
245	-	-	-	-	-	2.905	2.620	2.341	2.051	1.789
250	-	-	-	-	-	2.948	2.658	2.374	2.079	1.815
255	-	-	-	-	-	2.991	2.696	2.407	2.106	1.841
260	-	-	-	-	-	-	2.734	2.440	2.134	1.867
265	-	-	-	-	-	-	2.772	2.473	2.162	1.893
270	-	-	-	-	-	-	2.810	2.505	2.189	1.919
275	-	-	-	-	-	-	2.848	2.538	2.217	1.945
280	-	-	-	-	-	-	2.886	2.571	2.245	1.971
285	-	-	-	-	-	-	2.924	2.604	2.272	1.997
290	-	-	-	-	-	-	2.962	2.637	2.300	2.023
295	-	-	-	-	-	-	3.000	2.670	2.328	2.049
300	-	-	-	-	-	-	3.038	2.703	2.356	2.075
305	-	-	-	-	-	-	-	2.736	2.383	2.101
310	-	-	-	-	-	-	-	2.769	2.411	2.127
315	-	-	-	-	-	-	-	2.802	2.439	2.153
320	-	-	-	-	-	-	-	2.835	2.466	2.179
325	-	-	-	-	-	-	-	2.867	2.494	2.205
330	-	-	-	-	-	-	-	2.900	2.522	2.231
335	-	-	-	-	-	-	-	2.933	2.549	2.257
340	-	-	-	-	-	-	-	2.966	2.577	2.283
345	-	-	-	-	-	-	-	2.999	2.605	2.309
350	-	-	-	-	-	-	-	3.032	2.633	2.335
355	-	-	-	-	-	-	-	-	2.660	2.361
360	-	-	-	-	-	-	-	-	2.688	2.387
365	-	-	-	-	-	-	-	-	2.716	2.413
370	-	-	-	-	-	-	-	-	2.743	2.439
375	-	-	-	-	-	-	-	-	2.771	2.465
380	-	-	-	-	-	-	-	-	2.799	2.491
385	-	-	-	-	-	-	-	-	2.826	2.517
390	-	-	-	-	-	-	-	-	2.854	2.543
395	-	-	-	-	-	-	-	-	2.882	2.569
400	-	-	-	-	-	-	-	-	2.910	2.595
405	-	-	-	-	-	-	-	-	2.937	2.621
410	-	-	-	-	-	-	-	-	2.965	2.647
415	-	-	-	-	-	-	-	-	2.993	2.673

Thickness is intumescent only.

Results apply to Rectangular/Square hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Rectangular/Square Hollow Columns 90 minutes Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	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	1.196	0.849	0.601	0.573	0.573	0.573	0.573	0.573	0.573	0.314
25	1.524	1.221	0.902	0.654	0.573	0.573	0.573	0.573	0.573	0.314
30	1.778	1.491	1.203	0.901	0.795	0.652	0.573	0.573	0.573	0.314
35	2.032	1.703	1.406	1.147	1.023	0.857	0.602	0.573	0.573	0.314
40	2.286	1.915	1.507	1.367	1.251	1.062	0.780	0.573	0.573	0.314
45	2.540	2.127	1.608	1.438	1.390	1.267	0.957	0.648	0.573	0.322
50	2.795	2.339	1.709	1.509	1.452	1.386	1.135	0.814	0.573	0.385
55	3.049	2.551	1.810	1.580	1.514	1.440	1.313	0.980	0.612	0.447
60	-	2.763	1.911	1.651	1.576	1.494	1.392	1.146	0.762	0.510
65	-	2.975	2.013	1.722	1.639	1.547	1.440	1.312	0.912	0.572
70	-	-	2.114	1.793	1.701	1.601	1.488	1.387	1.062	0.634
75	-	-	2.215	1.864	1.763	1.655	1.536	1.430	1.212	0.747
80	-	-	2.316	1.935	1.826	1.708	1.584	1.472	1.357	0.863
85	-	-	2.417	2.006	1.888	1.762	1.632	1.514	1.394	0.978
90	-	-	2.518	2.077	1.950	1.816	1.680	1.557	1.431	1.093
95	-	-	2.619	2.148	2.013	1.869	1.728	1.599	1.468	1.208
100	-	-	2.720	2.219	2.075	1.923	1.776	1.641	1.504	1.324
105	-	-	2.821	2.290	2.137	1.977	1.824	1.684	1.541	1.378
110	-	-	2.923	2.361	2.199	2.030	1.872	1.726	1.578	1.409
115	-	-	-	2.432	2.262	2.084	1.920	1.768	1.615	1.440
120	-	-	-	2.503	2.324	2.138	1.968	1.811	1.651	1.471
125	-	-	-	2.574	2.386	2.191	2.016	1.853	1.688	1.502
130	-	-	-	2.645	2.449	2.245	2.064	1.895	1.725	1.533
135	-	-	-	2.716	2.511	2.299	2.112	1.938	1.762	1.564
140	-	-	-	2.787	2.573	2.352	2.160	1.980	1.798	1.595
145	-	-	-	2.858	2.636	2.406	2.208	2.023	1.835	1.626
150	-	-	-	2.929	2.698	2.460	2.255	2.065	1.872	1.657
155	-	-	-	3.000	2.760	2.513	2.303	2.107	1.909	1.687
160	-	-	-	-	2.822	2.567	2.351	2.150	1.946	1.718
165	-	-	-	-	2.885	2.621	2.399	2.192	1.982	1.749
170	-	-	-	-	2.947	2.674	2.447	2.234	2.019	1.780
175	-	-	-	-	3.009	2.728	2.495	2.277	2.056	1.811
180	-	-	-	-	-	2.782	2.543	2.319	2.093	1.842
185	-	-	-	-	-	2.835	2.591	2.361	2.129	1.873
190	-	-	-	-	-	2.889	2.639	2.404	2.166	1.904
195	-	-	-	-	-	2.943	2.687	2.446	2.203	1.935
200	-	-	-	-	-	2.996	2.735	2.488	2.240	1.966
205	-	-	-	-	-	-	2.783	2.531	2.276	1.997
210	-	-	-	-	-	-	2.831	2.573	2.313	2.028
215	-	-	-	-	-	-	2.879	2.616	2.350	2.059
220	-	-	-	-	-	-	2.927	2.658	2.387	2.089
225	-	-	-	-	-	-	2.975	2.700	2.423	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	2.570	2.244
250	-	-	-	-	-	-	-	2.912	2.607	2.275
255	-	-	-	-	-	-	-	2.954	2.644	2.306
260	-	-	-	-	-	-	-	2.997	2.681	2.337
265	-	-	-	-	-	-	-	-	2.717	2.368
270	-	-	-	-	-	-	-	-	2.754	2.399
275	-	-	-	-	-	-	-	-	2.791	2.430
280	-	-	-	-	-	-	-	-	2.828	2.460
285	-	-	-	-	-	-	-	-	2.865	2.491
290	-	-	-	-	-	-	-	-	2.901	2.522
295	-	-	-	-	-	-	-	-	2.938	2.553
300	-	-	-	-	-	-	-	-	2.975	2.584
305	-	-	-	-	-	-	-	-	3.012	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.

Results apply to Rectangular/Square hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Rectangular/Square Hollow Columns 105 minutes Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	350	400	450	500	520	550	600	650	700	750
15	1.009	0.730	0.573	0.573	0.573	0.573	0.573	0.573	0.573	0.573
20	-	1.180	0.896	0.670	0.590	0.573	0.573	0.573	0.573	0.573
25	-	1.504	1.269	0.984	0.882	0.744	0.573	0.573	0.573	0.573
30	-	1.748	1.523	1.297	1.174	1.010	0.763	0.573	0.573	0.573
35	-	1.992	1.741	1.520	1.392	1.276	0.993	0.723	0.573	0.573
40	-	2.236	1.959	1.722	1.487	1.429	1.224	0.927	0.607	0.573
45	-	2.480	2.177	1.925	1.581	1.533	1.385	1.132	0.795	0.573
50	-	2.725	2.395	2.127	1.676	1.637	1.452	1.336	0.984	0.573
55	-	2.969	2.613	2.329	1.771	1.741	1.520	1.403	1.172	0.648
60	-	-	2.831	2.531	1.866	1.846	1.587	1.455	1.357	0.836
65	-	-	-	2.734	1.961	1.950	1.655	1.506	1.403	1.024
70	-	-	-	2.936	2.056	2.054	1.722	1.558	1.449	1.212
75	-	-	-	-	2.158	2.158	1.790	1.610	1.495	1.365
80	-	-	-	-	2.262	2.262	1.857	1.662	1.541	1.405
85	-	-	-	-	2.366	2.366	1.925	1.714	1.587	1.445
90	-	-	-	-	2.470	2.470	1.992	1.766	1.634	1.485
95	-	-	-	-	2.574	2.574	2.060	1.817	1.680	1.524
100	-	-	-	-	2.679	2.679	2.127	1.869	1.726	1.564
105	-	-	-	-	2.783	2.783	2.195	1.921	1.772	1.604
110	-	-	-	-	2.887	2.887	2.262	1.973	1.818	1.644
115	-	-	-	-	2.911	2.991	2.330	2.025	1.864	1.683
120	-	-	-	-	-	2.397	2.077	1.910	1.723	-
125	-	-	-	-	-	-	2.465	2.129	1.956	1.763
130	-	-	-	-	-	-	2.532	2.180	2.002	1.803
135	-	-	-	-	-	-	2.599	2.232	2.048	1.842
140	-	-	-	-	-	-	2.667	2.284	2.094	1.882
145	-	-	-	-	-	-	2.734	2.336	2.140	1.922
150	-	-	-	-	-	-	2.802	2.388	2.187	1.961
155	-	-	-	-	-	-	2.869	2.440	2.233	2.001
160	-	-	-	-	-	-	2.937	2.491	2.279	2.041
165	-	-	-	-	-	-	3.004	2.543	2.325	2.081
170	-	-	-	-	-	-	3.072	2.595	2.371	2.120
175	-	-	-	-	-	-	-	2.647	2.417	2.160
180	-	-	-	-	-	-	-	2.699	2.463	2.200
185	-	-	-	-	-	-	-	2.751	2.509	2.240
190	-	-	-	-	-	-	-	2.802	2.555	2.279
195	-	-	-	-	-	-	-	2.854	2.601	2.319
200	-	-	-	-	-	-	-	2.905	2.647	2.359
205	-	-	-	-	-	-	-	2.958	2.693	2.399
210	-	-	-	-	-	-	-	3.010	2.740	2.438
215	-	-	-	-	-	-	-	-	2.786	2.478
220	-	-	-	-	-	-	-	-	2.832	2.518
225	-	-	-	-	-	-	-	-	2.878	2.558
230	-	-	-	-	-	-	-	-	2.924	2.597
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	-	-	-	-	-	-	-	-	-	3.035
290	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-
395	-	-	-	-	-	-	-	-	-	-
400	-	-	-	-	-	-	-	-	-	-
405	-	-	-	-	-	-	-	-	-	-
410	-	-	-	-	-	-	-	-	-	-
415	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only.

Results apply to Rectangular/Square hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Rectangular/Square Hollow Columns 120 minutes Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	350	400	450	500	520	550	600	650	700	750
15	-	0.972	0.743	0.573	0.573	0.573	0.573	0.573	0.573	0.573
20	-	-	1.188	0.934	0.842	0.717	0.573	0.573	0.573	0.573
25	-	-	1.507	1.314	1.198	1.045	0.810	0.584	0.573	0.573
30	-	-	1.751	1.555	1.477	1.364	1.096	0.839	0.573	0.573
35	-	-	1.995	1.779	1.695	1.526	1.367	1.093	0.794	0.573
40	-	-	2.238	2.002	1.913	1.688	1.488	1.348	1.022	0.576
45	-	-	2.482	2.226	2.131	1.850	1.610	1.437	1.250	0.792
50	-	-	2.725	2.449	2.349	2.012	1.731	1.520	1.386	1.008
55	-	-	2.969	2.673	2.567	2.174	1.852	1.603	1.441	1.224
60	-	-	-	2.896	2.785	2.336	1.974	1.687	1.496	1.375
65	-	-	-	-	3.003	2.498	2.095	1.770	1.551	1.424
70	-	-	-	-	-	2.660	2.217	1.854	1.606	1.472
75	-	-	-	-	-	2.822	2.338	1.937	1.662	1.521
80	-	-	-	-	-	-	2.459	2.020	1.717	1.570
85	-	-	-	-	-	-	2.581	2.104	1.772	1.618
90	-	-	-	-	-	-	2.702	2.187	1.827	1.667
95	-	-	-	-	-	-	2.824	2.270	1.883	1.715
100	-	-	-	-	-	-	2.945	2.354	1.938	1.764
105	-	-	-	-	-	-	-	2.437	1.993	1.813
110	-	-	-	-	-	-	-	2.521	2.048	1.861
115	-	-	-	-	-	-	-	2.604	2.103	1.910
120	-	-	-	-	-	-	-	2.687	2.159	1.959
125	-	-	-	-	-	-	-	2.771	2.214	2.007
130	-	-	-	-	-	-	-	2.854	2.269	2.056
135	-	-	-	-	-	-	-	2.938	2.324	2.104
140	-	-	-	-	-	-	-	3.021	2.379	2.153
145	-	-	-	-	-	-	-	-	2.435	2.202
150	-	-	-	-	-	-	-	-	2.490	2.250
155	-	-	-	-	-	-	-	-	2.545	2.299
160	-	-	-	-	-	-	-	-	2.600	2.348
165	-	-	-	-	-	-	-	-	2.656	2.396
170	-	-	-	-	-	-	-	-	2.711	2.445
175	-	-	-	-	-	-	-	-	2.766	2.493
180	-	-	-	-	-	-	-	-	2.821	2.542
185	-	-	-	-	-	-	-	-	2.876	2.591
190	-	-	-	-	-	-	-	-	2.932	2.639
195	-	-	-	-	-	-	-	-	2.987	2.688
200	-	-	-	-	-	-	-	-	-	2.737
205	-	-	-	-	-	-	-	-	-	2.785
210	-	-	-	-	-	-	-	-	-	2.834
215	-	-	-	-	-	-	-	-	-	2.882
220	-	-	-	-	-	-	-	-	-	2.931
225	-	-	-	-	-	-	-	-	-	2.980
230	-	-	-	-	-	-	-	-	-	3.028
235	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-
245	-	-	-	-	-	-	-	-	-	-
250	-	-	-	-	-	-	-	-	-	-
255	-	-	-	-	-	-	-	-	-	-
260	-	-	-	-	-	-	-	-	-	-
265	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-
275	-	-	-	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-
395	-	-	-	-	-	-	-	-	-	-
400	-	-	-	-	-	-	-	-	-	-
405	-	-	-	-	-	-	-	-	-	-
410	-	-	-	-	-	-	-	-	-	-
415	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only.

Results apply to Rectangular/Square hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Circular Hollow Columns 15 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	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	0.297	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
85	0.311	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
90	0.326	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
95	0.340	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
100	0.354	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
105	0.368	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
110	0.382	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
115	0.396	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
120	0.410	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
125	0.424	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
130	0.438	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
135	0.453	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
140	0.467	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
145	0.481	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
150	0.495	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
155	0.509	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
160	0.523	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
165	0.537	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
170	0.551	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
175	0.565	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
180	0.580	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
185	0.594	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
190	0.608	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
195	0.622	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
200	0.636	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
205	0.650	0.323	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
210	0.664	0.346	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
215	0.724	0.370	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
220	0.754	0.393	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
225	0.784	0.417	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
230	0.813	0.441	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
235	0.843	0.464	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
240	0.873	0.488	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
245	0.902	0.511	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
250	0.932	0.535	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
255	0.962	0.558	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
260	0.992	0.582	0.292	0.290	0.290	0.290	0.290	0.290	0.290	0.290
265	1.021	0.606	0.312	0.290	0.290	0.290	0.290	0.290	0.290	0.290
270	1.051	0.629	0.332	0.290	0.290	0.290	0.290	0.290	0.290	0.290
275	1.081	0.653	0.352	0.290	0.290	0.290	0.290	0.290	0.290	0.290
280	1.111	0.676	0.373	0.290	0.290	0.290	0.290	0.290	0.290	0.290
285	1.140	0.700	0.393	0.290	0.290	0.290	0.290	0.290	0.290	0.290
290	1.170	0.723	0.413	0.290	0.290	0.290	0.290	0.290	0.290	0.290
295	1.200	0.747	0.433	0.290	0.290	0.290	0.290	0.290	0.290	0.290
300	1.229	0.770	0.454	0.290	0.290	0.290	0.290	0.290	0.290	0.290
305	1.259	0.794	0.474	0.290	0.290	0.290	0.290	0.290	0.290	0.290
310	1.289	0.818	0.494	0.290	0.290	0.290	0.290	0.290	0.290	0.290
315	1.319	0.841	0.514	0.290	0.290	0.290	0.290	0.290	0.290	0.290
320	1.348	0.865	0.535	0.298	0.290	0.290	0.290	0.290	0.290	0.290
325	1.366	0.888	0.555	0.315	0.290	0.290	0.290	0.290	0.290	0.290
330	1.380	0.912	0.575	0.332	0.290	0.290	0.290	0.290	0.290	0.290
335	1.393	0.935	0.595	0.349	0.290	0.290	0.290	0.290	0.290	0.290
340	1.407	0.959	0.616	0.366	0.290	0.290	0.290	0.290	0.290	0.290
345	1.420	0.983	0.636	0.383	0.301	0.290	0.290	0.290	0.290	0.290
350	1.434	1.006	0.656	0.400	0.316	0.290	0.290	0.290	0.290	0.290
355	1.447	1.030	0.676	0.417	0.332	0.290	0.290	0.290	0.290	0.290
360	1.461	1.053	0.697	0.434	0.348	0.290	0.290	0.290	0.290	0.290
365	1.474	1.077	0.717	0.451	0.363	0.290	0.290	0.290	0.290	0.290
370	1.488	1.100	0.737	0.468	0.379	0.290	0.290	0.290	0.290	0.290
375	1.501	1.124	0.757	0.485	0.395	0.290	0.290	0.290	0.290	0.290
380	1.515	1.147	0.778	0.502	0.411	0.290	0.290	0.290	0.290	0.290
385	1.528	1.171	0.798	0.519	0.426	0.294	0.290	0.290	0.290	0.290
390	1.542	1.195	0.818	0.536	0.442	0.308	0.290	0.290	0.290	0.290
395	1.555	1.218	0.838	0.553	0.458	0.322	0.290	0.290	0.290	0.290
400	1.569	1.242	0.859	0.570	0.474	0.336	0.290	0.290	0.290	0.290
405	1.582	1.265	0.879	0.587	0.489	0.351	0.290	0.290	0.290	0.290
410	1.596	1.289	0.899	0.604	0.505	0.365	0.290	0.290	0.290	0.290
415	1.609	1.312	0.919	0.620	0.521	0.379	0.290	0.290	0.290	0.290

Thickness is intumescent only.

Results apply to Circular hollow columns exposed to fire on all sides.

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Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029
EWC-QU-FT-733 (Issue 2)

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Circular Hollow Columns 30 minutes Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	350	400	450	500	520	550	600	650	700	750
15	0.442	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
20	0.442	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
25	0.442	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
30	0.442	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
35	0.442	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
40	0.442	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
45	0.442	0.294	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
50	0.464	0.325	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
55	0.509	0.356	0.297	0.290	0.290	0.290	0.290	0.290	0.290	0.290
60	0.554	0.387	0.315	0.290	0.290	0.290	0.290	0.290	0.290	0.290
65	0.598	0.418	0.333	0.290	0.290	0.290	0.290	0.290	0.290	0.290
70	0.647	0.449	0.352	0.303	0.290	0.290	0.290	0.290	0.290	0.290
75	0.723	0.480	0.370	0.317	0.297	0.290	0.290	0.290	0.290	0.290
80	0.799	0.511	0.388	0.331	0.311	0.290	0.290	0.290	0.290	0.290
85	0.875	0.542	0.406	0.346	0.325	0.293	0.290	0.290	0.290	0.290
90	0.951	0.573	0.425	0.360	0.339	0.307	0.290	0.290	0.290	0.290
95	1.027	0.604	0.443	0.374	0.353	0.320	0.290	0.290	0.290	0.290
100	1.103	0.635	0.461	0.388	0.367	0.334	0.290	0.290	0.290	0.290
105	1.179	0.676	0.479	0.403	0.381	0.347	0.290	0.290	0.290	0.290
110	1.255	0.717	0.498	0.417	0.394	0.361	0.290	0.290	0.290	0.290
115	1.331	0.758	0.516	0.431	0.408	0.374	0.290	0.290	0.290	0.290
120	1.372	0.799	0.534	0.446	0.422	0.388	0.290	0.290	0.290	0.290
125	1.397	0.840	0.552	0.460	0.436	0.401	0.290	0.290	0.290	0.290
130	1.421	0.881	0.570	0.474	0.450	0.415	0.290	0.290	0.290	0.290
135	1.446	0.922	0.589	0.488	0.464	0.428	0.290	0.290	0.290	0.290
140	1.470	0.963	0.607	0.503	0.478	0.442	0.290	0.290	0.290	0.290
145	1.494	1.004	0.625	0.517	0.492	0.455	0.290	0.290	0.290	0.290
150	1.519	1.045	0.652	0.531	0.506	0.469	0.290	0.290	0.290	0.290
155	1.543	1.086	0.696	0.546	0.520	0.482	0.290	0.290	0.290	0.290
160	1.567	1.127	0.740	0.560	0.534	0.495	0.290	0.290	0.290	0.290
165	1.592	1.168	0.783	0.574	0.548	0.509	0.290	0.290	0.290	0.290
170	1.616	1.209	0.827	0.588	0.561	0.522	0.290	0.290	0.290	0.290
175	1.640	1.250	0.871	0.603	0.575	0.536	0.295	0.290	0.290	0.290
180	1.665	1.291	0.914	0.617	0.589	0.549	0.321	0.290	0.290	0.290
185	1.689	1.332	0.958	0.631	0.603	0.563	0.347	0.290	0.290	0.290
190	1.714	1.366	1.001	0.661	0.617	0.576	0.372	0.290	0.290	0.290
195	1.738	1.389	1.045	0.702	0.631	0.590	0.398	0.290	0.290	0.290
200	1.762	1.412	1.089	0.743	0.658	0.603	0.424	0.290	0.290	0.290
205	1.787	1.436	1.132	0.785	0.696	0.617	0.449	0.290	0.290	0.290
210	1.811	1.459	1.176	0.826	0.734	0.630	0.475	0.290	0.290	0.290
215	1.835	1.483	1.219	0.867	0.771	0.654	0.501	0.290	0.290	0.290
220	1.860	1.506	1.263	0.908	0.809	0.687	0.527	0.293	0.290	0.290
225	1.884	1.530	1.307	0.949	0.846	0.721	0.552	0.321	0.290	0.290
230	1.909	1.553	1.350	0.990	0.884	0.754	0.578	0.349	0.290	0.290
235	1.933	1.577	1.375	1.031	0.921	0.788	0.604	0.377	0.290	0.290
240	1.957	1.600	1.397	1.072	0.959	0.821	0.629	0.405	0.290	0.290
245	1.982	1.623	1.418	1.113	0.996	0.855	0.658	0.433	0.290	0.290
250	2.006	1.647	1.440	1.154	1.034	0.888	0.689	0.461	0.290	0.290
255	2.030	1.670	1.462	1.195	1.071	0.922	0.719	0.490	0.290	0.290
260	2.055	1.694	1.483	1.236	1.109	0.955	0.750	0.518	0.290	0.290
265	2.079	1.717	1.505	1.277	1.147	0.989	0.780	0.546	0.290	0.290
270	2.103	1.741	1.527	1.318	1.184	1.022	0.811	0.574	0.290	0.290
275	2.128	1.764	1.549	1.357	1.222	1.056	0.841	0.602	0.290	0.290
280	2.152	1.787	1.570	1.377	1.259	1.089	0.871	0.630	0.295	0.290
285	2.177	1.811	1.592	1.397	1.297	1.123	0.902	0.659	0.321	0.290
290	2.201	1.834	1.614	1.417	1.334	1.156	0.932	0.687	0.347	0.290
295	2.225	1.858	1.635	1.437	1.364	1.190	0.963	0.715	0.373	0.290
300	2.250	1.881	1.657	1.457	1.383	1.223	0.993	0.743	0.399	0.290
305	2.274	1.905	1.679	1.477	1.402	1.257	1.024	0.771	0.425	0.290
310	2.298	1.928	1.701	1.497	1.421	1.290	1.054	0.799	0.451	0.290
315	2.323	1.952	1.722	1.517	1.440	1.324	1.084	0.827	0.477	0.290
320	2.347	1.975	1.744	1.536	1.460	1.357	1.115	0.856	0.504	0.290
325	2.372	1.998	1.766	1.556	1.479	1.374	1.145	0.884	0.530	0.290
330	2.396	2.022	1.787	1.576	1.498	1.392	1.176	0.912	0.556	0.290
335	2.420	2.045	1.809	1.596	1.517	1.410	1.206	0.940	0.582	0.290
340	2.445	2.069	1.831	1.616	1.536	1.428	1.237	0.968	0.608	0.290
345	2.469	2.092	1.853	1.636	1.555	1.445	1.267	0.996	0.634	0.290
350	2.493	2.116	1.874	1.656	1.574	1.463	1.297	1.025	0.660	0.290
355	2.518	2.139	1.896	1.676	1.593	1.481	1.328	1.053	0.686	0.290
360	2.542	2.162	1.918	1.696	1.612	1.499	1.357	1.081	0.713	0.290
365	2.566	2.186	1.939	1.716	1.631	1.516	1.372	1.109	0.739	0.290
370	2.591	2.209	1.961	1.735	1.651	1.534	1.387	1.137	0.765	0.290
375	2.615	2.233	1.983	1.755	1.670	1.552	1.402	1.165	0.791	0.290
380	2.640	2.256	2.005	1.775	1.689	1.570	1.417	1.193	0.817	0.290
385	2.664	2.280	2.026	1.795	1.708	1.587	1.433	1.222	0.843	0.290
390	2.688	2.303	2.048	1.815	1.727	1.605	1.448	1.250	0.869	0.290
395	2.713	2.327	2.070	1.835	1.746	1.623	1.463	1.278	0.895	0.290
400	2.737	2.350	2.091	1.855	1.765	1.641	1.478	1.306	0.921	0.290
405	2.761	2.373	2.113	1.875	1.784	1.658	1.493	1.334	0.948	0.290
410	2.786	2.397	2.135	1.895	1.803	1.676	1.508	1.359	0.974	0.290
415	2.810	2.420	2.157	1.915	1.822	1.694	1.523	1.371	1.000	0.290

Thickness is intumescent only.

Results apply to Circular hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Circular Hollow Columns 45 minutes Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	350	400	450	500	520	550	600	650	700	750
15	0.573	0.573	0.453	0.314	0.314	0.290	0.290	0.290	0.290	0.290
20	0.573	0.573	0.453	0.314	0.314	0.290	0.290	0.290	0.290	0.290
25	0.573	0.573	0.453	0.314	0.314	0.290	0.290	0.290	0.290	0.290
30	0.573	0.573	0.453	0.314	0.314	0.290	0.290	0.290	0.290	0.290
35	0.573	0.573	0.453	0.314	0.314	0.290	0.290	0.290	0.290	0.290
40	0.780	0.573	0.453	0.314	0.314	0.290	0.290	0.290	0.290	0.290
45	0.987	0.573	0.453	0.329	0.314	0.290	0.290	0.290	0.290	0.290
50	1.195	0.573	0.475	0.369	0.345	0.317	0.290	0.290	0.290	0.290
55	1.366	0.699	0.522	0.408	0.380	0.346	0.305	0.290	0.290	0.290
60	1.411	0.839	0.569	0.447	0.415	0.376	0.328	0.295	0.290	0.290
65	1.456	0.979	0.616	0.486	0.450	0.405	0.350	0.311	0.290	0.290
70	1.501	1.119	0.681	0.525	0.485	0.435	0.372	0.328	0.290	0.290
75	1.546	1.260	0.760	0.565	0.519	0.464	0.395	0.344	0.297	0.290
80	1.591	1.367	0.840	0.604	0.554	0.494	0.417	0.361	0.311	0.290
85	1.636	1.400	0.919	0.644	0.589	0.523	0.440	0.377	0.326	0.290
90	1.680	1.434	0.999	0.693	0.624	0.552	0.462	0.394	0.341	0.290
95	1.725	1.468	1.078	0.742	0.664	0.582	0.484	0.410	0.356	0.290
100	1.770	1.501	1.158	0.790	0.708	0.611	0.507	0.427	0.370	0.290
105	1.815	1.535	1.237	0.839	0.752	0.643	0.529	0.444	0.385	0.290
110	1.860	1.569	1.317	0.887	0.796	0.686	0.552	0.460	0.400	0.290
115	1.905	1.602	1.371	0.936	0.840	0.729	0.574	0.477	0.415	0.290
120	1.950	1.636	1.400	0.985	0.884	0.772	0.596	0.493	0.429	0.290
125	1.995	1.670	1.429	1.033	0.928	0.816	0.619	0.510	0.444	0.290
130	2.040	1.703	1.459	1.082	0.972	0.859	0.645	0.526	0.459	0.290
135	2.085	1.737	1.488	1.130	1.016	0.902	0.689	0.543	0.473	0.290
140	2.130	1.771	1.517	1.179	1.060	0.946	0.733	0.559	0.488	0.290
145	2.175	1.805	1.547	1.228	1.104	0.989	0.777	0.576	0.503	0.294
150	2.219	1.838	1.576	1.276	1.148	1.032	0.822	0.593	0.518	0.312
155	2.264	1.872	1.605	1.325	1.192	1.075	0.866	0.609	0.532	0.331
160	2.309	1.906	1.634	1.366	1.235	1.119	0.910	0.626	0.547	0.350
165	2.354	1.939	1.664	1.395	1.279	1.162	0.954	0.652	0.562	0.369
170	2.399	1.973	1.693	1.424	1.323	1.205	0.998	0.702	0.577	0.388
175	2.444	2.007	1.722	1.452	1.363	1.248	1.042	0.751	0.591	0.407
180	2.489	2.040	1.752	1.481	1.392	1.292	1.086	0.800	0.606	0.425
185	2.534	2.074	1.781	1.510	1.420	1.335	1.130	0.849	0.621	0.444
190	2.579	2.108	1.810	1.538	1.448	1.370	1.174	0.898	0.636	0.463
195	2.624	2.141	1.840	1.567	1.476	1.396	1.218	0.948	0.679	0.482
200	2.669	2.175	1.869	1.596	1.505	1.423	1.262	0.997	0.727	0.501
205	2.714	2.209	1.898	1.624	1.533	1.449	1.306	1.046	0.774	0.519
210	2.758	2.243	1.927	1.653	1.561	1.476	1.350	1.095	0.821	0.538
215	2.803	2.276	1.957	1.682	1.590	1.502	1.376	1.144	0.869	0.557
220	2.848	2.310	1.986	1.710	1.618	1.529	1.400	1.194	0.916	0.576
225	2.893	2.344	2.015	1.739	1.646	1.555	1.424	1.243	0.963	0.595
230	2.938	2.377	2.045	1.768	1.674	1.582	1.447	1.292	1.010	0.613
235	2.983	2.411	2.074	1.797	1.703	1.608	1.471	1.341	1.058	0.632
240	3.028	2.445	2.103	1.825	1.731	1.635	1.494	1.370	1.105	0.675
245	-	2.478	2.133	1.854	1.759	1.661	1.518	1.390	1.152	0.725
250	-	2.512	2.162	1.883	1.788	1.688	1.541	1.411	1.200	0.775
255	-	2.546	2.191	1.911	1.816	1.715	1.565	1.431	1.247	0.826
260	-	2.579	2.220	1.940	1.844	1.741	1.589	1.451	1.294	0.876
265	-	2.613	2.250	1.969	1.872	1.768	1.612	1.472	1.341	0.927
270	-	2.647	2.279	1.997	1.901	1.794	1.636	1.492	1.368	0.977
275	-	2.681	2.308	2.026	1.929	1.821	1.659	1.512	1.384	1.027
280	-	2.714	2.338	2.055	1.957	1.847	1.683	1.533	1.401	1.078
285	-	2.748	2.367	2.083	1.986	1.874	1.707	1.553	1.418	1.128
290	-	2.782	2.396	2.112	2.014	1.900	1.730	1.573	1.434	1.178
295	-	2.815	2.426	2.141	2.042	1.927	1.754	1.593	1.451	1.229
300	-	2.849	2.455	2.169	2.070	1.953	1.777	1.614	1.468	1.279
305	-	2.883	2.484	2.198	2.099	1.980	1.801	1.634	1.485	1.329
310	-	2.916	2.513	2.227	2.127	2.006	1.825	1.654	1.501	1.362
315	-	2.950	2.543	2.256	2.155	2.033	1.848	1.675	1.518	1.376
320	-	2.984	2.572	2.284	2.184	2.059	1.872	1.695	1.535	1.389
325	-	-	2.601	2.313	2.212	2.086	1.895	1.715	1.552	1.402
330	-	-	2.631	2.342	2.240	2.113	1.919	1.736	1.568	1.416
335	-	-	2.660	2.370	2.269	2.139	1.942	1.756	1.585	1.429
340	-	-	2.689	2.399	2.297	2.166	1.966	1.776	1.602	1.442
345	-	-	2.719	2.428	2.325	2.192	1.990	1.796	1.619	1.456
350	-	-	2.748	2.456	2.353	2.219	2.013	1.817	1.635	1.469
355	-	-	2.777	2.485	2.382	2.245	2.037	1.837	1.652	1.483
360	-	-	2.806	2.514	2.410	2.272	2.060	1.857	1.669	1.496
365	-	-	2.836	2.542	2.438	2.298	2.084	1.878	1.686	1.509
370	-	-	2.865	2.571	2.467	2.325	2.108	1.898	1.702	1.523
375	-	-	2.894	2.600	2.495	2.351	2.131	1.918	1.719	1.536
380	-	-	2.924	2.628	2.523	2.378	2.155	1.939	1.736	1.549
385	-	-	2.953	2.657	2.551	2.404	2.178	1.959	1.753	1.563
390	-	-	2.982	2.686	2.580	2.431	2.202	1.979	1.769	1.576
395	-	-	3.012	2.715	2.608	2.457	2.226	1.999	1.786	1.589
400	-	-	3.041	2.743	2.636	2.484	2.249	2.020	1.803	1.603
405	-	-	-	2.772	2.665	2.511	2.273	2.040	1.819	1.616
410	-	-	-	2.801	2.693	2.537	2.296	2.060	1.836	1.629
415	-	-	-	2.829	2.721	2.564	2.320	2.081	1.853	1.643

Thickness is intumescent only.

Results apply to Circular hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Circular Hollow Columns 60 minutes Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	350	400	450	500	520	550	600	650	700	750
15	0.573	0.573	0.573	0.573	0.543	0.491	0.413	0.314	0.290	0.290
20	0.573	0.573	0.573	0.573	0.543	0.491	0.413	0.314	0.290	0.290
25	0.720	0.573	0.573	0.573	0.543	0.491	0.413	0.314	0.290	0.290
30	1.017	0.596	0.573	0.573	0.543	0.491	0.413	0.314	0.290	0.290
35	1.313	0.816	0.573	0.573	0.543	0.491	0.413	0.314	0.290	0.290
40	1.441	1.036	0.634	0.573	0.543	0.491	0.413	0.314	0.290	0.290
45	1.539	1.256	0.797	0.573	0.543	0.491	0.413	0.314	0.290	0.290
50	1.638	1.384	0.960	0.595	0.572	0.516	0.433	0.348	0.293	0.290
55	1.737	1.435	1.123	0.725	0.628	0.567	0.477	0.386	0.323	0.290
60	1.836	1.486	1.285	0.856	0.735	0.618	0.521	0.424	0.353	0.290
65	1.935	1.537	1.380	0.986	0.851	0.698	0.564	0.462	0.383	0.290
70	2.033	1.588	1.423	1.116	0.967	0.794	0.608	0.500	0.412	0.306
75	2.132	1.639	1.466	1.246	1.083	0.891	0.661	0.539	0.442	0.329
80	2.231	1.690	1.508	1.362	1.199	0.987	0.733	0.577	0.472	0.351
85	2.330	1.741	1.551	1.399	1.315	1.084	0.805	0.615	0.502	0.373
90	2.429	1.792	1.594	1.437	1.379	1.180	0.877	0.659	0.532	0.395
95	2.528	1.843	1.637	1.474	1.415	1.277	0.949	0.710	0.562	0.417
100	2.626	1.895	1.679	1.512	1.451	1.362	1.021	0.762	0.591	0.439
105	2.725	1.946	1.722	1.549	1.486	1.395	1.093	0.814	0.621	0.462
110	2.824	1.997	1.765	1.587	1.522	1.428	1.165	0.865	0.659	0.484
115	2.923	2.048	1.808	1.624	1.558	1.461	1.236	0.917	0.706	0.506
120	-	2.099	1.850	1.662	1.593	1.495	1.308	0.968	0.753	0.528
125	-	2.150	1.893	1.700	1.629	1.528	1.366	1.020	0.800	0.550
130	-	2.201	1.936	1.737	1.665	1.561	1.395	1.071	0.847	0.572
135	-	2.252	1.978	1.775	1.700	1.594	1.424	1.123	0.894	0.594
140	-	2.303	2.021	1.812	1.736	1.627	1.453	1.174	0.941	0.617
145	-	2.354	2.064	1.850	1.772	1.660	1.483	1.226	0.988	0.642
150	-	2.405	2.107	1.887	1.808	1.693	1.512	1.278	1.035	0.698
155	-	2.456	2.149	1.925	1.843	1.727	1.541	1.329	1.082	0.755
160	-	2.507	2.192	1.962	1.879	1.760	1.570	1.369	1.129	0.812
165	-	2.558	2.235	2.000	1.915	1.793	1.599	1.397	1.176	0.868
170	-	2.610	2.278	2.037	1.950	1.826	1.629	1.424	1.223	0.925
175	-	2.661	2.320	2.075	1.986	1.859	1.658	1.452	1.270	0.982
180	-	2.712	2.363	2.112	2.022	1.892	1.687	1.479	1.317	1.038
185	-	2.763	2.406	2.150	2.057	1.925	1.716	1.507	1.360	1.095
190	-	2.814	2.448	2.187	2.093	1.959	1.745	1.534	1.384	1.152
195	-	2.865	2.491	2.225	2.129	1.992	1.775	1.561	1.408	1.208
200	-	2.916	2.534	2.262	2.165	2.025	1.804	1.589	1.433	1.265
205	-	2.967	2.577	2.300	2.200	2.058	1.833	1.616	1.457	1.322
210	-	-	2.619	2.337	2.236	2.091	1.862	1.644	1.481	1.364
215	-	-	2.662	2.375	2.272	2.124	1.891	1.671	1.506	1.385
220	-	-	2.705	2.412	2.307	2.158	1.921	1.699	1.530	1.405
225	-	-	2.748	2.450	2.343	2.191	1.950	1.726	1.554	1.426
230	-	-	2.790	2.487	2.379	2.224	1.979	1.754	1.578	1.447
235	-	-	2.833	2.525	2.414	2.257	2.008	1.781	1.603	1.467
240	-	-	2.876	2.562	2.450	2.290	2.037	1.809	1.627	1.488
245	-	-	2.919	2.600	2.486	2.323	2.067	1.836	1.651	1.509
250	-	-	2.961	2.637	2.521	2.356	2.096	1.864	1.675	1.529
255	-	-	3.004	2.675	2.557	2.390	2.125	1.891	1.700	1.550
260	-	-	-	2.712	2.593	2.423	2.154	1.919	1.724	1.571
265	-	-	-	2.750	2.629	2.456	2.183	1.946	1.748	1.591
270	-	-	-	2.787	2.664	2.489	2.212	1.973	1.772	1.612
275	-	-	-	2.825	2.700	2.522	2.242	2.001	1.797	1.632
280	-	-	-	2.862	2.736	2.555	2.271	2.028	1.821	1.653
285	-	-	-	2.900	2.771	2.588	2.300	2.056	1.845	1.674
290	-	-	-	2.937	2.807	2.622	2.329	2.083	1.869	1.694
295	-	-	-	2.975	2.843	2.655	2.358	2.111	1.894	1.715
300	-	-	-	3.012	2.878	2.688	2.388	2.138	1.918	1.736
305	-	-	-	-	2.914	2.721	2.417	2.166	1.942	1.756
310	-	-	-	-	2.950	2.754	2.446	2.193	1.966	1.777
315	-	-	-	-	2.986	2.787	2.475	2.221	1.991	1.798
320	-	-	-	-	3.021	2.821	2.504	2.248	2.015	1.818
325	-	-	-	-	-	2.854	2.534	2.276	2.039	1.839
330	-	-	-	-	-	2.887	2.563	2.303	2.064	1.859
335	-	-	-	-	-	2.920	2.592	2.331	2.088	1.880
340	-	-	-	-	-	2.953	2.621	2.358	2.112	1.901
345	-	-	-	-	-	2.986	2.650	2.385	2.136	1.921
350	-	-	-	-	-	3.019	2.680	2.413	2.161	1.942
355	-	-	-	-	-	-	2.709	2.440	2.185	1.963
360	-	-	-	-	-	-	2.738	2.468	2.209	1.983
365	-	-	-	-	-	-	2.767	2.495	2.233	2.004
370	-	-	-	-	-	-	2.796	2.523	2.258	2.025
375	-	-	-	-	-	-	2.826	2.550	2.282	2.045
380	-	-	-	-	-	-	2.855	2.578	2.306	2.066
385	-	-	-	-	-	-	2.884	2.605	2.330	2.086
390	-	-	-	-	-	-	2.913	2.633	2.355	2.107
395	-	-	-	-	-	-	2.942	2.660	2.379	2.128
400	-	-	-	-	-	-	2.972	2.688	2.403	2.148
405	-	-	-	-	-	-	3.001	2.715	2.427	2.169
410	-	-	-	-	-	-	3.030	2.743	2.452	2.190
415	-	-	-	-	-	-	2.770	2.476	2.210	

Thickness is intumescent only.

Results apply to Circular hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029

CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Circular Hollow Columns 75 minutes Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	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	0.502	0.415	0.290
20	0.837	0.573	0.573	0.573	0.573	0.573	0.573	0.502	0.415	0.290
25	1.223	0.824	0.573	0.573	0.573	0.573	0.573	0.502	0.415	0.290
30	1.494	1.122	0.773	0.573	0.573	0.573	0.573	0.502	0.415	0.290
35	1.705	1.377	1.005	0.709	0.609	0.573	0.573	0.502	0.415	0.290
40	1.915	1.475	1.237	0.892	0.779	0.620	0.573	0.502	0.415	0.290
45	2.125	1.573	1.385	1.074	0.948	0.776	0.573	0.502	0.415	0.290
50	2.335	1.671	1.445	1.257	1.118	0.933	0.626	0.527	0.433	0.290
55	2.546	1.770	1.505	1.379	1.288	1.089	0.769	0.581	0.481	0.332
60	2.756	1.868	1.565	1.428	1.384	1.245	0.913	0.636	0.528	0.375
65	2.966	1.966	1.625	1.478	1.431	1.369	1.056	0.753	0.576	0.419
70	-	2.064	1.685	1.527	1.478	1.413	1.200	0.871	0.623	0.463
75	-	2.162	1.745	1.576	1.526	1.457	1.344	0.990	0.701	0.507
80	-	2.260	1.805	1.626	1.573	1.500	1.392	1.108	0.790	0.551
85	-	2.358	1.865	1.675	1.620	1.544	1.431	1.226	0.880	0.595
90	-	2.456	1.925	1.725	1.667	1.588	1.470	1.344	0.969	0.640
95	-	2.555	1.985	1.774	1.714	1.632	1.508	1.387	1.059	0.708
100	-	2.653	2.044	1.824	1.761	1.676	1.547	1.421	1.149	0.777
105	-	2.751	2.104	1.873	1.808	1.719	1.586	1.455	1.238	0.845
110	-	2.849	2.164	1.922	1.855	1.763	1.625	1.489	1.328	0.914
115	-	2.947	2.224	1.972	1.902	1.807	1.664	1.523	1.376	0.982
120	-	-	2.284	2.021	1.949	1.851	1.703	1.557	1.405	1.050
125	-	-	2.344	2.071	1.996	1.895	1.742	1.591	1.434	1.119
130	-	-	2.404	2.120	2.043	1.939	1.781	1.625	1.462	1.187
135	-	-	2.464	2.170	2.090	1.982	1.820	1.659	1.491	1.256
140	-	-	2.524	2.219	2.138	2.026	1.859	1.693	1.520	1.324
145	-	-	2.584	2.269	2.185	2.070	1.898	1.727	1.549	1.370
150	-	-	2.644	2.318	2.232	2.114	1.937	1.761	1.578	1.397
155	-	-	2.704	2.367	2.279	2.158	1.976	1.795	1.607	1.423
160	-	-	2.764	2.417	2.326	2.202	2.015	1.829	1.636	1.449
165	-	-	2.824	2.466	2.373	2.245	2.054	1.863	1.665	1.476
170	-	-	2.884	2.516	2.420	2.289	2.093	1.898	1.694	1.502
175	-	-	2.943	2.565	2.467	2.333	2.132	1.932	1.722	1.529
180	-	-	3.003	2.615	2.514	2.377	2.171	1.966	1.751	1.555
185	-	-	-	2.664	2.561	2.421	2.210	2.000	1.780	1.582
190	-	-	-	2.713	2.608	2.465	2.249	2.034	1.809	1.608
195	-	-	-	2.763	2.655	2.508	2.288	2.068	1.838	1.635
200	-	-	-	2.812	2.703	2.552	2.327	2.102	1.867	1.661
205	-	-	-	2.862	2.750	2.596	2.366	2.136	1.896	1.687
210	-	-	-	2.911	2.797	2.640	2.405	2.170	1.925	1.714
215	-	-	-	2.961	2.844	2.684	2.444	2.204	1.954	1.740
220	-	-	-	3.010	2.891	2.727	2.483	2.238	1.982	1.767
225	-	-	-	-	2.938	2.771	2.522	2.272	2.011	1.793
230	-	-	-	-	2.985	2.815	2.561	2.306	2.040	1.820
235	-	-	-	-	3.032	2.859	2.600	2.340	2.069	1.846
240	-	-	-	-	-	2.903	2.639	2.374	2.098	1.872
245	-	-	-	-	-	2.947	2.678	2.408	2.127	1.899
250	-	-	-	-	-	2.990	2.716	2.442	2.156	1.925
255	-	-	-	-	-	-	2.755	2.476	2.185	1.952
260	-	-	-	-	-	-	2.794	2.510	2.214	1.978
265	-	-	-	-	-	-	2.833	2.545	2.242	2.005
270	-	-	-	-	-	-	2.872	2.579	2.271	2.031
275	-	-	-	-	-	-	2.911	2.613	2.300	2.057
280	-	-	-	-	-	-	2.950	2.647	2.329	2.084
285	-	-	-	-	-	-	2.989	2.681	2.358	2.110
290	-	-	-	-	-	-	3.028	2.715	2.387	2.137
295	-	-	-	-	-	-	-	2.749	2.416	2.163
300	-	-	-	-	-	-	-	2.783	2.445	2.190
305	-	-	-	-	-	-	-	2.817	2.474	2.216
310	-	-	-	-	-	-	-	2.851	2.503	2.243
315	-	-	-	-	-	-	-	2.885	2.531	2.269
320	-	-	-	-	-	-	-	2.919	2.560	2.295
325	-	-	-	-	-	-	-	2.953	2.589	2.322
330	-	-	-	-	-	-	-	2.987	2.618	2.348
335	-	-	-	-	-	-	-	3.021	2.647	2.375
340	-	-	-	-	-	-	-	-	2.676	2.401
345	-	-	-	-	-	-	-	-	2.705	2.428
350	-	-	-	-	-	-	-	-	2.734	2.454
355	-	-	-	-	-	-	-	-	2.763	2.480
360	-	-	-	-	-	-	-	-	2.791	2.507
365	-	-	-	-	-	-	-	-	2.820	2.533
370	-	-	-	-	-	-	-	-	2.849	2.560
375	-	-	-	-	-	-	-	-	2.878	2.586
380	-	-	-	-	-	-	-	-	2.907	2.613
385	-	-	-	-	-	-	-	-	2.936	2.639
390	-	-	-	-	-	-	-	-	2.965	2.666
395	-	-	-	-	-	-	-	-	2.994	2.692
400	-	-	-	-	-	-	-	-	3.023	2.718
405	-	-	-	-	-	-	-	-	-	2.745
410	-	-	-	-	-	-	-	-	-	2.771
415	-	-	-	-	-	-	-	-	-	2.798

Thickness is intumescent only.

Results apply to Circular hollow columns exposed to fire on all sides.

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CRM61021-3



EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Circular Hollow Columns 90 minutes Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	350	400	450	500	520	550	600	650	700	750
15	0.751	0.573	0.573	0.573	0.573	0.573	0.573	0.573	0.573	0.435
20	1.228	0.870	0.612	0.573	0.573	0.573	0.573	0.573	0.573	0.435
25	1.545	1.246	0.916	0.672	0.588	0.573	0.573	0.573	0.573	0.435
30	1.803	1.508	1.219	0.922	0.821	0.682	0.573	0.573	0.573	0.435
35	2.062	1.721	1.420	1.173	1.053	0.892	0.651	0.573	0.573	0.435
40	2.320	1.935	1.537	1.375	1.285	1.102	0.833	0.573	0.573	0.435
45	2.578	2.149	1.654	1.448	1.401	1.313	1.015	0.725	0.573	0.435
50	-	2.363	1.771	1.521	1.465	1.399	1.198	0.896	0.573	0.446
55	-	2.577	1.887	1.594	1.530	1.454	1.363	1.067	0.687	0.509
60	-	2.791	2.004	1.667	1.594	1.508	1.412	1.237	0.850	0.572
65	-	3.004	2.121	1.740	1.658	1.563	1.461	1.369	1.014	0.635
70	-	-	2.238	1.813	1.723	1.618	1.510	1.413	1.177	0.768
75	-	-	2.355	1.885	1.787	1.672	1.559	1.457	1.341	0.902
80	-	-	2.471	1.958	1.852	1.727	1.608	1.501	1.391	1.036
85	-	-	2.588	2.031	1.916	1.781	1.658	1.545	1.429	1.170
90	-	-	2.705	2.104	1.980	1.836	1.707	1.588	1.467	1.304
95	-	-	2.822	2.177	2.045	1.890	1.756	1.632	1.506	1.377
100	-	-	2.939	2.250	2.109	1.945	1.805	1.676	1.544	1.410
105	-	-	-	2.323	2.174	1.999	1.854	1.720	1.583	1.443
110	-	-	-	2.396	2.238	2.054	1.904	1.763	1.621	1.477
115	-	-	-	2.468	2.303	2.108	1.953	1.807	1.659	1.510
120	-	-	-	2.541	2.367	2.163	2.002	1.851	1.698	1.543
125	-	-	-	2.614	2.431	2.218	2.051	1.895	1.736	1.577
130	-	-	-	2.687	2.496	2.272	2.100	1.938	1.774	1.610
135	-	-	-	2.760	2.560	2.327	2.150	1.982	1.813	1.643
140	-	-	-	2.833	2.625	2.381	2.199	2.026	1.851	1.677
145	-	-	-	2.906	2.689	2.436	2.248	2.070	1.889	1.710
150	-	-	-	2.978	2.754	2.490	2.297	2.113	1.928	1.743
155	-	-	-	-	2.818	2.545	2.346	2.157	1.966	1.777
160	-	-	-	-	2.882	2.599	2.396	2.201	2.005	1.810
165	-	-	-	-	2.947	2.654	2.445	2.245	2.043	1.843
170	-	-	-	-	3.011	2.709	2.494	2.289	2.081	1.877
175	-	-	-	-	-	2.763	2.543	2.332	2.120	1.910
180	-	-	-	-	-	2.818	2.592	2.376	2.158	1.943
185	-	-	-	-	-	2.872	2.642	2.420	2.196	1.977
190	-	-	-	-	-	2.927	2.691	2.464	2.235	2.010
195	-	-	-	-	-	2.981	2.740	2.507	2.273	2.043
200	-	-	-	-	-	-	2.789	2.551	2.311	2.077
205	-	-	-	-	-	-	2.838	2.595	2.350	2.110
210	-	-	-	-	-	-	2.888	2.639	2.388	2.144
215	-	-	-	-	-	-	2.937	2.682	2.427	2.177
220	-	-	-	-	-	-	2.986	2.726	2.465	2.210
225	-	-	-	-	-	-	3.035	2.770	2.503	2.244
230	-	-	-	-	-	-	-	2.814	2.542	2.277
235	-	-	-	-	-	-	-	2.858	2.580	2.310
240	-	-	-	-	-	-	-	2.901	2.618	2.344
245	-	-	-	-	-	-	-	2.945	2.657	2.377
250	-	-	-	-	-	-	-	2.989	2.695	2.410
255	-	-	-	-	-	-	-	-	2.733	2.444
260	-	-	-	-	-	-	-	-	2.772	2.477
265	-	-	-	-	-	-	-	-	2.810	2.510
270	-	-	-	-	-	-	-	-	2.849	2.544
275	-	-	-	-	-	-	-	-	2.887	2.577
280	-	-	-	-	-	-	-	-	2.925	2.610
285	-	-	-	-	-	-	-	-	2.964	2.644
290	-	-	-	-	-	-	-	-	3.002	2.677
295	-	-	-	-	-	-	-	-	3.040	2.710
300	-	-	-	-	-	-	-	-	-	2.744
305	-	-	-	-	-	-	-	-	-	2.777
310	-	-	-	-	-	-	-	-	-	2.811
315	-	-	-	-	-	-	-	-	-	2.844
320	-	-	-	-	-	-	-	-	-	2.877
325	-	-	-	-	-	-	-	-	-	2.911
330	-	-	-	-	-	-	-	-	-	2.944
335	-	-	-	-	-	-	-	-	-	2.977
340	-	-	-	-	-	-	-	-	-	3.011
345	-	-	-	-	-	-	-	-	-	3.044
350	-	-	-	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-
395	-	-	-	-	-	-	-	-	-	-
400	-	-	-	-	-	-	-	-	-	-
405	-	-	-	-	-	-	-	-	-	-
410	-	-	-	-	-	-	-	-	-	-
415	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only.

Results apply to Circular hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700

RUDOLF HENSEL GMBH

Circular Hollow Columns 105 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	350	400	450	500	520	550	600	650	700	750
15	1.037	0.747	0.573	0.573	0.573	0.573	0.573	0.573	0.573	0.573
20	-	1.203	0.908	0.687	0.610	0.573	0.573	0.573	0.573	0.573
25	-	1.519	1.284	1.005	0.906	0.774	0.573	0.573	0.573	0.573
30	-	1.766	1.533	1.322	1.203	1.046	0.810	0.574	0.573	0.573
35	-	2.012	1.752	1.538	1.403	1.318	1.049	0.787	0.573	0.573
40	-	2.258	1.971	1.741	1.501	1.451	1.287	1.000	0.695	0.573
45	-	2.505	2.190	1.945	1.598	1.561	1.409	1.213	0.889	0.573
50	-	2.751	2.409	2.149	1.696	1.672	1.484	1.374	1.083	0.629
55	-	2.997	2.629	2.352	1.793	1.782	1.558	1.427	1.277	0.832
60	-	-	2.848	2.556	1.892	1.892	1.633	1.480	1.385	1.036
65	-	-	-	2.759	2.002	2.002	1.708	1.534	1.433	1.239
70	-	-	-	2.963	2.113	2.113	1.782	1.587	1.481	1.374
75	-	-	-	-	2.223	2.223	1.857	1.641	1.528	1.417
80	-	-	-	-	2.333	2.333	1.932	1.694	1.576	1.459
85	-	-	-	-	2.443	2.443	2.006	1.748	1.624	1.502
90	-	-	-	-	2.554	2.554	2.081	1.801	1.672	1.544
95	-	-	-	-	2.664	2.664	2.156	1.854	1.720	1.587
100	-	-	-	-	2.774	2.774	2.230	1.908	1.768	1.630
105	-	-	-	-	2.884	2.884	2.305	1.961	1.816	1.672
110	-	-	-	-	2.995	2.995	2.380	2.015	1.864	1.715
115	-	-	-	-	-	-	2.454	2.068	1.912	1.757
120	-	-	-	-	-	-	2.529	2.122	1.960	1.800
125	-	-	-	-	-	-	2.604	2.175	2.008	1.843
130	-	-	-	-	-	-	2.678	2.228	2.056	1.885
135	-	-	-	-	-	-	2.753	2.282	2.104	1.928
140	-	-	-	-	-	-	2.828	2.335	2.152	1.970
145	-	-	-	-	-	-	2.902	2.389	2.200	2.013
150	-	-	-	-	-	-	2.977	2.442	2.248	2.056
155	-	-	-	-	-	-	-	2.496	2.296	2.098
160	-	-	-	-	-	-	-	2.549	2.344	2.141
165	-	-	-	-	-	-	-	2.602	2.392	2.183
170	-	-	-	-	-	-	-	2.655	2.440	2.226
175	-	-	-	-	-	-	-	2.709	2.488	2.269
180	-	-	-	-	-	-	-	2.763	2.536	2.311
185	-	-	-	-	-	-	-	2.816	2.584	2.354
190	-	-	-	-	-	-	-	2.870	2.632	2.397
195	-	-	-	-	-	-	-	2.923	2.680	2.439
200	-	-	-	-	-	-	-	2.976	2.728	2.482
205	-	-	-	-	-	-	-	-	2.776	2.524
210	-	-	-	-	-	-	-	-	2.824	2.567
215	-	-	-	-	-	-	-	-	2.872	2.610
220	-	-	-	-	-	-	-	-	2.920	2.652
225	-	-	-	-	-	-	-	-	2.968	2.695
230	-	-	-	-	-	-	-	-	3.016	2.737
235	-	-	-	-	-	-	-	-	-	2.780
240	-	-	-	-	-	-	-	-	-	2.823
245	-	-	-	-	-	-	-	-	-	2.865
250	-	-	-	-	-	-	-	-	-	2.908
255	-	-	-	-	-	-	-	-	-	2.950
260	-	-	-	-	-	-	-	-	-	2.993
265	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-
275	-	-	-	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-
395	-	-	-	-	-	-	-	-	-	-
400	-	-	-	-	-	-	-	-	-	-
405	-	-	-	-	-	-	-	-	-	-
410	-	-	-	-	-	-	-	-	-	-
415	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only.

Results apply to Circular hollow columns exposed to fire on all sides.

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EWC-QU-FT-733 (Issue 2)

Issued: 28th July 2009
Reissued: 29th April 2025
Valid to: 18th July 2029



CERTIFICATE No CF 700 RUDOLF HENSEL GMBH

Circular Hollow Columns 120 minutes										
Required Thickness (mm) for a Design Temperature (°C)										
Section Factor (m ²)	350	400	450	500	520	550	600	650	700	750
15	-	0.992	0.754	0.573	0.573	0.573	0.573	0.573	0.573	0.573
20	-	-	1.202	0.954	0.865	0.745	0.573	0.573	0.573	0.573
25	-	-	1.517	1.338	1.226	1.079	0.856	0.636	0.573	0.573
30	-	-	1.761	1.571	1.497	1.385	1.150	0.901	0.638	0.573
35	-	-	2.006	1.796	1.717	1.552	1.396	1.165	0.877	0.573
40	-	-	2.251	2.021	1.937	1.720	1.526	1.382	1.115	0.736
45	-	-	2.496	2.246	2.156	1.887	1.657	1.475	1.354	0.963
50	-	-	2.741	2.472	2.376	2.054	1.788	1.568	1.415	1.189
55	-	-	2.985	2.697	2.596	2.222	1.919	1.660	1.475	1.370
60	-	-	-	2.922	2.816	2.389	2.050	1.753	1.534	1.422
65	-	-	-	-	-	2.557	2.181	1.846	1.594	1.473
70	-	-	-	-	-	2.724	2.312	1.939	1.653	1.525
75	-	-	-	-	-	2.891	2.443	2.032	1.713	1.577
80	-	-	-	-	-	-	2.574	2.125	1.772	1.629
85	-	-	-	-	-	-	2.705	2.218	1.832	1.681
90	-	-	-	-	-	-	2.836	2.311	1.892	1.733
95	-	-	-	-	-	-	2.966	2.403	1.951	1.785
100	-	-	-	-	-	-	2.496	2.011	1.836	1.836
105	-	-	-	-	-	-	-	2.589	2.070	1.888
110	-	-	-	-	-	-	-	2.682	2.130	1.940
115	-	-	-	-	-	-	-	2.775	2.189	1.992
120	-	-	-	-	-	-	-	2.868	2.249	2.044
125	-	-	-	-	-	-	-	2.961	2.309	2.096
130	-	-	-	-	-	-	-	-	2.368	2.148
135	-	-	-	-	-	-	-	-	2.428	2.199
140	-	-	-	-	-	-	-	-	2.487	2.251
145	-	-	-	-	-	-	-	-	2.547	2.303
150	-	-	-	-	-	-	-	-	2.606	2.355
155	-	-	-	-	-	-	-	-	2.666	2.407
160	-	-	-	-	-	-	-	-	2.726	2.459
165	-	-	-	-	-	-	-	-	2.785	2.511
170	-	-	-	-	-	-	-	-	2.845	2.562
175	-	-	-	-	-	-	-	-	2.904	2.614
180	-	-	-	-	-	-	-	-	2.964	2.666
185	-	-	-	-	-	-	-	-	3.023	2.718
190	-	-	-	-	-	-	-	-	-	2.770
195	-	-	-	-	-	-	-	-	-	2.822
200	-	-	-	-	-	-	-	-	-	2.874
205	-	-	-	-	-	-	-	-	-	2.925
210	-	-	-	-	-	-	-	-	-	2.977
215	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	-
225	-	-	-	-	-	-	-	-	-	-
230	-	-	-	-	-	-	-	-	-	-
235	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-
245	-	-	-	-	-	-	-	-	-	-
250	-	-	-	-	-	-	-	-	-	-
255	-	-	-	-	-	-	-	-	-	-
260	-	-	-	-	-	-	-	-	-	-
265	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-
275	-	-	-	-	-	-	-	-	-	-
280	-	-	-	-	-	-	-	-	-	-
285	-	-	-	-	-	-	-	-	-	-
290	-	-	-	-	-	-	-	-	-	-
295	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
305	-	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	-	-	-	-	-
315	-	-	-	-	-	-	-	-	-	-
320	-	-	-	-	-	-	-	-	-	-
325	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
335	-	-	-	-	-	-	-	-	-	-
340	-	-	-	-	-	-	-	-	-	-
345	-	-	-	-	-	-	-	-	-	-
350	-	-	-	-	-	-	-	-	-	-
355	-	-	-	-	-	-	-	-	-	-
360	-	-	-	-	-	-	-	-	-	-
365	-	-	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	-	-	-	-
375	-	-	-	-	-	-	-	-	-	-
380	-	-	-	-	-	-	-	-	-	-
385	-	-	-	-	-	-	-	-	-	-
390	-	-	-	-	-	-	-	-	-	-
395	-	-	-	-	-	-	-	-	-	-
400	-	-	-	-	-	-	-	-	-	-
405	-	-	-	-	-	-	-	-	-	-
410	-	-	-	-	-	-	-	-	-	-
415	-	-	-	-	-	-	-	-	-	-

Thickness is intumescent only.
Results apply to Circular hollow columns exposed to fire on all sides.

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Issued: 28th July 2009
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