THE

STANDARDS OF FIRE RESISTANCE

OF THE

BRITISH FIRE PREVENTION COMMITTEE

AS ADOPTED TO SERVE AS

UNIVERSAL STANDARDS

AT THE

INTERNATIONAL FIRE PREVENTION CONGRESS,

LONDON, 1903,

WITH

TRANSLATIONS INTO GERMAN AND FRENCH.

TOGETHER WITH

SPECIAL TABLES

OF

MEASUREMENTS, WEIGHTS AND TEMPERATURES

CONVERTED INTO

THEIR METRIC EQUIVALENTS.

OBJECTS OF THE COMMITTEE:

The main objects of the Committee are :—

To direct attention to the urgent need for increased protection of life and property from fire by the adoption of preventive measures.

To use its influence in every direction towards minimising the possibilities and dangers of fire.

To bring together those scientifically interested in the subject of Fire Prevention.

To arrange periodical meetings for the discussion of practical questions bearing on the same.

To establish a reading-room, library and collections for purposes of research, and for supplying recent and authentic information on the subject of Fire Prevention.

To publish from time to time papers specially prepared for the Committee, together with records, extracts, and translations.

To undertake such independent investigations and tests of materials, methods and appliances as may be considered advisable.

The Committee's Reports on Tests with Materials, Methods of Construction, or Appliances are intended solely to state bare facts and occurrences, with tables, diagrams, or illustrations, and they are on no account to be read as expressions of opinion, criticisms, or comparisons.

The Committee is not responsible for the views of individual authors as expressed in Papers or Notes, but only for such observations as are formally issued on behalf of the Executive.

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Sub-Committees comprise Members of the Executive with Assistance from the General Membership.

The Chairman and Hon. Secretary of the Executive are ex officio *members of all Sub-Committees.*

NOTE.

The Standards of Fire Resistance, which were originally prepared in the form of Suggestions by the British Fire Prevention Committee and afterwards adopted as Universal Standards by the International Fire Prevention Congress of July, 1903, are being accorded such importance in different countries that the Executive have deemed it necessary to publish them, with an authorised translation in French and German, and with the measurements, weights and temperatures common to this country transcribed into metric ones.

It will have been observed that since the Congress above referred to, and in accordance with one of the resolutions arrived at on that occasion, the reports on tests issued by this Committee embody the metric equivalents wherever practicable. But as so many reports had been issued prior to the adoption of this policy, the Executive have deemed it appropriate to append some tables which should be found useful by students abroad who wish quickly to find metric figures in place of the British ones constantly recurring in these publications.

The importance of this universal standard need not be dwelt upon on this occasion except to say that, if anything, the recent fires both in Great Britain, on the Continent and in America, continue to point to the urgency of systematic efforts on an identical basis in all countries to combat the growing evil of fatal fires. The standardisation of the available materials and systems of construction that will resist fire should greatly facilitate the adoption of suitable precautionary measures.

In the compilation of this Publication, the Executive are much indebted to Chief Officers Dittman, of Bremen, and Welsch, of Ghent; and further, in respect to the conversion of the figures, to Mr. Max Clarke, F.R.I.B.A.

EDWIN O. SACHS.

LONDON, *July 16th*, 1904.

THE GENERAL ARRANGEMENTS FOR TESTS.
(*MEMORANDUM.*)

THE purpose of the tests undertaken by the British Fire Prevention Committee is to obtain reliable data as to the exact fire-resistance of the various materials, systems of construction, or appliances used in building practice.

The tests are of an entirely independent character, arranged on scientific lines, but with full consideration for the practical purpose in view. Absolute reliability is assured, records being mostly taken automatically, or by photography, and the temperatures being easily regulated by the application of gas.

All reports on tests solely state the bare facts and occurrences, with tables, diagrams, and illustrations, and on no account are reports to be taken as including expressions of opinion, nor should any expression be read as a comparison or criticism.

The general arrangement and direction of the tests are in the hands of the Executive, who act in accordance with certain principles laid down after careful study and experiment. The official tests are attended by the members of the Council and the members of the Committee in rotation.

As to the Committee's present Testing Station, it comprises a house, standing in its own grounds, near Royal Oak Station, and backing on to the Great Western Railway. The principal building is used for Committee Rooms and laboratory purposes, whilst the gardens are utilised for so-called "full-size" tests.

As to the financial aspect of the station, the establishment expenses are being met by a special subscription. As far as the funds of the committee permit, investigations and experimental tests with ordinary (*i.e.*, not patented) forms of construction are undertaken from time to time and duly reported on. Official tests with patented materials, makers' systems, etc., etc., are subject to a scale of charges, but these charges are so figured as to only just cover the actual cost. The Testing Station is also open to members for such private research work or tests they may desire to undertake.

The services of the members participating in the management of the station, conducting or attending tests, are given entirely gratuitously.

For the Executive,
EDWIN O. SACHS, *Chairman.*

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The following were the Congress Resolutions referring to the subject :—

Re the term "Fireproof."

THE Congress having given their consideration to the constant misuse of the term "fireproof," and its indiscriminate and unsuitable application to many building materials and systems in use, have come to the conclusion that the avoidance of this term in the general business and technical vocabulary is essential.

Re the term "Fire-resisting."

THE Congress considers the term "fire-resisting" more applicable for general use, and that it more correctly describes the varying qualities of the different materials and systems of construction intended to resist the effect of fire for shorter or longer periods, at high or low temperatures, as the case may be; and it advocates the general adoption of this term in the place of the term "fireproof."

Re Standards of Fire Resistance.

THE Congress confirms the British Fire Prevention Committee's proposed standards of fire-resistance, and hereby resolves that the universal standards of fire-resistance shall in future be :—

1. *Temporary protection ;*
2. *Partial protection ;*
3. *Full protection ;*

in accordance with the Committee's schedule.

The executive of the British Fire Prevention Committee having given their careful consideration to the common misuse of the term "fireproof," now indiscriminately and often most unsuitably applied to many

building materials and systems of building construction in use in Great Britain, have come to the conclusion that the avoidance of this term in general business, technical, and legislative vocabulary is essential.

The executive consider the term "fire-resisting" more applicable for general use, and that it more correctly describes the varying qualities of different materials and systems of construction intended to resist the effect of fire for shorter or longer periods, at high or low temperatures, as the case may be, and they advocate the general adoption of this term in place of "fireproof."

Further, the executive, fully realising the great variations in the fire-resisting qualities of materials and systems of construction, consider that the public, the professions concerned, and likewise the authorities controlling building operations, should clearly discriminate between the amount of protection obtainable or, in fact, requisite for different classes of property. For instance, the city warehouse filled with highly inflammable goods of great weight requires very different protection from the tenement house of the suburbs.

The executive are desirous of discriminating between fire-resisting materials and systems of construction affording *temporary* protection, *partial* protection, and *full* protection against fire, and to classify all building materials and systems of construction under these three headings. The exact and definite limit of these three classes is based on the experience obtained from numerous investigations and tests, combined with the experience obtained from actual fires, and after due consideration of the limitations of building practice and the question of cost.

The executive's minimum requirements of fire-resistance for building materials or systems of construction will be seen from the standard tables appended for—

I. Fire-resisting floors and ceilings,

II. Fire-resisting partitions,

III. Fire-resisting doors,

but they could be popularly summarised as follows :—

(*a*) That temporary protection implies resistance against fire for at least three-quarters of an hour.

(*b*) That partial protection implies resistance against a fierce fire for at least one hour and a-half.

(c) That full protection implies resistance against a fierce fire for at least two hours and a-half.

The conditions under this resistance should be obtainable, the actual minimum temperatures, thickness, questions of load, and the application of water can be appreciated from the annexed tables by all technically interested, but for the popular discrimination—which the executive are desirous of encouraging—the time standard alone should suffice.

It is desirable that these standards become the universal standards in this country, on the Continent, and in the United States, so that the same standardisation may in future be common to all countries, and the preliminary arrangements for this universal standardisation are already in hand.

On behalf of the Executive

EDWIN O. SACHS (*Chairman*).

ELLIS MARSLAND (*Gen. Hon. Secretary*).

STANDARD TABLE FOR FIRE-RESISTING FLOORS AND CEILINGS.

CLASSIFICATION.	Sub-Class.	Duration of Test at Least.	Minimum Temperature.	Load per Superficial Foot Distributed. *per square metre.*	Minimum Superficial Area under Test.	Minimum Time for Application of Water under Pressure.
Temporary Protection	Class A	45 mins.	1500° F. (815 5°C)	Optional	100 sq. ft. (9·290 sq. m.)	2 mins.
	Class B	60 mins.	1500° F. (815 5°C)	Optional	200 sq. ft. (18 580 sq. m.)	2 mins.
Partial Protection	Class A	90 mins.	1800° F. (982 2°C)	112 lbs (546 852 kg.)	100 sq. ft. (9 290 sq. m)	2 mins.
	Class B	120 mins.	1800° F. (982 2°C)	168 lbs. (820 278 kg.)	200 sq. ft. (18·580 sq. m.)	2 mins.
Full Protection	Class A	150 mins.	1800° F (982 2°C)	224 lbs. (1093 706 kg.)	100 sq. ft. (9 290 sq. m.)	2 mins.
	Class B	240 mins.	1800° F (982 2°C)	280 lbs. (1367 130 kg.)	200 sq. ft. (18 580 sq. m.)	5 mins.

kg = kilogramme.

STANDARD TABLE FOR FIRE-RESISTING PARTITIONS.

CLASSIFICATION.	Sub-Class.	Duration of Test at Least.	Minimum Temperature.	Thickness of Material.	Minimum Superficial Area under Test.	Minimum Time for Application of Water under Pressure.
Temporary Protection	Class A	45 mins.	1500° F. (815·5°C)	2 in. & under (·051 m.)	80 sq. ft. (7·432 sq. m.)	2 mins.
	Class B	60 mins.	1500° F. (815·5°C)	Optional	80 sq. ft. (7·432 sq. m.)	2 mins.
Partial Protection ...	Class A	90 mins.	1800° F. (982·2°C)	2½ in. & under (·063 m.)	80 sq. ft. (7·432 sq. m.)	2 mins.
	Class B	120 mins.	1800° F. (982·2°C)	Optional	80 sq. ft. (7·432 sq. m.)	2 mins.
Full Protection ...	Class A	150 mins.	1800° F. (982·2°C)	2½ in. & under (·063 m.)	80 sq. ft. (7·432 sq. m.)	2 mins.
	Class B	240 mins.	1800° F. (982·2°C)	Optional	80 sq. ft. (7·432 sq. m.)	5 mins.

STANDARD TABLE FOR FIRE-RESISTING SINGLE DOORS, WITH OR WITHOUT FRAMES.

CLASSIFICATION.	Sub-Class.	Duration of Test at Least.	Minimum Temperature.	Thickness of Material.	Minimum Superficial Area under Test.	Minimum Time for Application of Water under Pressure.
Temporary Protection	Class A	45 mins.	1500° F. (815·5°C)	2 in. & under (·051 m.)	20 sq. ft. (1·858 sq. m.)	2 mins.
	Class B	60 mins.	1500° F. (815·5°C)	Optional	20 sq. ft. (1·858 sq. m.)	2 mins.
Partial Protection ...	Class A	90 mins.	1800° F. (982·2°C)	2½ in. & under (·063 m.)	20 sq. ft. (1·858 sq. m.)	2 mins.
	Class B	120 mins.	1800° F. (982·2°C)	Optional	20 sq. ft. (1·858 sq. m.)	2 mins.
Full Protection ...	Class A	150 mins.	1800° F. (982·2°C)	½ in. & under (·018 m.)	25 sq. ft. (2·322 sq. m.)	2 mins.
	Class B	240 mins.	1800° F. (982·2°C)	Optional	25 sq. ft. (2·322 sq. m.)	5 mins.

PROPOSITIONS

DU

BRITISH FIRE PREVENTION COMMITTEE

RELATIVES À LA RÉSISTANCE AU FEU DES

MATÉRIAUX DE CONSTRUCTION.

ADOPTÉES COMME TYPES UNIVERSELS

AU

CONGRÈS INTERNATIONAL DES MESURES

PRÉVENTIVES TENU À LONDRES EN 1903.

RÉSOLUTIONS DU CONGRES.

L'expression " *à l'épreuve du Feu,*"

*LE Congrès ayant délibéré sur l'abus universel de l'expres-
sion " à l'épreuve du feu" (fire-proof) et sur son emploi
injustifié pour désigner beaucoup de matériaux et systèmes
employés dans la construction, émet le voeu que cette expres-
sion soit rayée du vocabulaire commercial et professionnel.*

L'expression "*Résistant au Feu,*"

*LE Congrès est d'avis que l'expression " résistant au feu"
(fire-resisting) convient généralement mieux pour définir plus
exactement cette qualité spéciale des matériaux et systèmes
de construction de résister plus ou moins longtemps à l'effet
d'un feu à haute ou basse température, suivant les circon-
stances.*

Classes *de Résistance au Feu.*

*LE Congrès approuve et adopte le classement des systèmes
de construction résistant au feu proposé par le " British Fire
Prevention Committee" qui tient compte des degrés de
résistance au feu des matériaux pour assurer:—*

1° *Une protection temporaire ;*
2° *Une protection partielle ;*
3° *Une protection entière.*

Le comité exécutif du British Fire Prevention Com-
mittee tenant compte de l'abus universel de l'expression
à " l'épreuve du feu" et de son application et emploi
injustifiés pour désigner beaucoup de matériaux et

systèmes de construction employés dans la Grande Bretagne, a conclu que cette expression soit être rayée du vocabulaire commercial, professionnel et législatif.

Le comité exécutif est d'avis que l'expression "résistant au feu" (fire-resisting) convient généralement mieux pour définir plus exactement cette qualité spéciale des matériaux et systèmes de construction de résister plus ou moins longtemps à l'effet d'un feu, à haute ou basse température suivant les circonstances et il émet le voeu de voir adopter généralement cette expression à la place de " fire-proof."

Enfin le comité exécutif tenant compte des nombreuses variations que subissent les matériaux et les systèmes de construction résistant au feu considère que le public, les personnes que la chose concerne, ainsi que les autorités chargées de contrôler les opérations de la bâtisse puissent discerner le degré de protection qu'on peut obtenir ou plutôt indispensable aux différentes classes d'immeubles. Par exemple, un entrepôt communal, rempli de matières hautement inflammables, nécessite une protection qui diffère essentiellement de celle d'un immeuble de la banlieue. Le comité exécutif estime qu'il faut pouvoir discerner entre les matériaux et systèmes de construction résistant au feu donnant une protection temporaire, partielle ou entière et ranger tous les matériaux et systèmes employés dans ces trois catégories.

La limite exacte et définitive de ces trois classes sera basée d'après les résultats obtenus à de nombreuses investigations et expériences, ainsi qu'aux incendies, en tenant compte de la destination de l'immeuble et des frais de construction.

Les exigences minima du comité exécutif relatives aux matériaux et systèmes de construction résistant au feu seront conformes aux tableaux-types ci-après dressés pour :

1º Les planchers et les plafonds ;

2º Les cloisons ;

3º Les portes.

Ce qui revient à dire en d'autres termes que :

A) Une protection temporaire nécessite une résistance au feu de $\frac{3}{4}$ d'heure au moins.

B) Une protection partielle doit résister à un violent feu pendant $1\frac{1}{2}$ heure au moins.

C) Une protection entière est considérée comme acquise quand la matière à soumettre à un feu violent résiste au moins pendant 2½ heures.

Les intéressés trouveront dans les tableaux ci-après tous les renseignements relatifs aux températures minima réelles, à l'épaisseur, à la charge, à la durée de la projection de l'eau, mais pour le discernement des masses, que le comité exécutif désire encourager, le temps stipulé seul sera pris en considération.

Il est désirable que ces types soient universellement acceptés et que le même mode d'appréciation soit en usage à l'avenir dans tous les pays ; les bases d'adoption de cette méthode universelle peuvent être considérées comme établies.

Pour le comité exécutif du British Fire Prevention Committee,

EDWIN O. SACHS, *Président.*
ELLIS MARSLAND, *Sécretaire.*

TABLEAU-TYPE DE LA RESISTANCE AU FEU DES PLANCHERS.

CLASSIFICATION.	Subdivision.	Durée minimum de l'épreuve.	Température minimum.	Charge par m.c. de superficie.	Superficie minimum à soumettre à l'épreuve.	Durée minimum de projection d'eau.
Protection temporaire	Classe A	45 min.	815·5° C.	Facultatif	9·290 m.c.	2 min.
	Classe B	60 min.	815·5° C.	Facultatif	18·580 m.c.	2 min.
Protection partielle ...	Classe A	90 min.	982·2° C.	546·852 kg.	9·290 m.c.	2 min.
	Classe B	120 min.	982·2° C.	820·278 kg.	18·580 m.c.	2 min.
Protection entière ...	Classe A	150 min.	982·2° C.	1093·706 kg.	9·290 m.c.	2 min.
	Classe B	240 min.	982·2° C.	1367·130 kg.	18·580 m.c.	5 min.

* *

TABLEAU-TYPE DE LA RÉSISTANCE AU FEU DES CLOISONS.

CLASSIFICATION.	Subdivision.	Durée minimum de l'épreuve.	Température minimum.	Epaisseur des matériaux.	Superficie minimum à soumettre à l'épreuve.	Durée minimum de la projection d'eau.
Protection temporaire	Classe A	45 min.	815·5° C.	·051 m. et moins	7·432 m.c.	2 min.
	Classe B	60 min.	815·5° C.	Facultatif	7·432 m.c.	2 min.
Protection partielle ...	Classe A	90 min.	982·2° C.	·063 m. et moins	7·432 m.c.	2 min.
	Classe B	120 min.	982·2° C.	Facultatif	7·432 m.c.	2 min.
Protection entière ...	Classe A	150 min.	982·2° C.	·063 m. et moins	7·432 m.c.	2 min.
	Classe B	240 min.	982·2° C.	Facultatif	7·432 m.c.	5 min.

TABLEAU-TYPE DE LA RÉSISTANCE AU FEU POUR DE SIMPLES PORTES OU SANS CHAMBRANLE.

CLASSIFICATION.	Subdivision.	Durée minimum de l'épreuve.	Température minimum.	Epaisseur des matériaux.	Superficie minimum à soumettre à l'épreuve.	Durée minimum de la projection d'eau.
Protection temporaire	Classe A	45 min.	815·5° C.	·051 m. et moins	1·858 m.c.	2 min.
	Classe B	60 min.	815·5° C.	Facultatif	1·858 m.c.	2 min.
Protection partielle ...	Classe A	90 min.	982·2° C.	·063 m. et moins	1·858 m.c.	2 min.
	Classe B	120 min.	982·2° C.	Facultatif	1·858 m.c.	2 min.
Protection entière ...	Classe A	150 min.	982·2° C.	·013 m. et moins	2·322 m.c.	2 min.
	Classe B	240 min.	982·2° C.	Facultatif	2·322 m.c.	5 min.

DIE FEUERSICHERHEITS NORMEN

BRITISH FIRE PREVENTION COMMITTEE

ALLGEMEINE NORMEN VOM INTERNATIONALEN FEUER-VERHÜTUNGS CONGRESS, LONDON, 1903.

Die folgenden Resolutionen sind die Congress-Beschlüsse :—

Der Begriff "Feuerfest."

DER Kongress ist der Meinung, dass die Anwendung des Begriffes "feuerfest" (fire-proof) in Gross Britannien oft nicht die richtige Bezeichnung für Baumaterialien und Bauconstructionen ist, und hält es für nötig, dass die Bezeichnung "feuerfest" (fire-proof) im geschäftlichen und technischen Verkehr nicht mehr gebraucht wird.

Der Begriff "Feuersicher."

DER Kongress hält den Begriff "feuersicher" (fire-resisting) mehr der Wirklichkeit der Verhältnisse entsprechend und empfiehlt das Wort "feuersicher" (fire-resisting) an Stelle des Wortes "feuerfest" zu gebrauchen.

Klassen der Feuersicherheit.

DER Kongress ist mit der Einteilung in verschiedene Klassen der Feuersicherheit, wie sie von dem British Fire Prevention Committee vorgeschlagen sind, einverstanden, und bestimmt, dass man in Zukunft unterscheiden möge zwischen :

Zeitweiser ⎫
Teilweiser ⎬ Feuersicherheit.
Voller ⎭

Der Geschäftsausschuss des British Fire Prevention Committee hat dem allgemein verbreiteten Missbrauch der Bezeichnung *feuerfest*, die zur Zeit ohne Unterschied und oft ohne Berechtigung vielen Baumaterialien und Bauconstruktionen beigelegt wird, nachgeforscht und ist

zu dem Schlusse gekommen, dass es notwendig ist, diese Bezeichnung aus dem geschäftlichen, technischen und juristichen Sprachgebrauch zu verbannen.

Der Geschäftsausschuss hält die Bezeichnung *feuersicher* für empfehlenswerter und besser geeignet, die Fähigkeit der verschiedenen Baumaterialien und Construktionen zu kennzeichnen dem Feuer für kürzere oder längere Zeit bei hohen oder niederen Temparaturen Widerstand zu leisten.   Er schlägt daher vor statt *feuerfest* die Bezeichnung *feuersicher* anzuwenden.

Ferner ist der Geschäftsausschuss in Anbetracht der grossen Verschiedenheit der Feuersicherheit der Baumaterialien und Construktionen der Meinung, dass das Publikum, die Interessentenkreise und die Behörden genau unterscheiden müssen zwischen dem für verschiedene Arten von Gebäuden erforderlichen Grad des Feuerschutzes. Es bedarf doch z. B. ein mit feuergefährlichen Gütern angefülltes Warenhaus eines ganz anderen Feuerschutzes, als ein kleines Mietshaus in der Vorstadt.

Der Geschäftsausschuss will unterschieden sehen bei den feuersicheren Materialien und Bauconstruktionen, zwischen solchen, die *zeitweisen*, die *teilweisen* oder *vollen* Schutz gegen Feuer bieten und möchte nach diesen 3 Graden alle Baumaterialien und Construktionen klassifizieren. Die genaue Einteilung in die Klassen erfolgt nach dem Ergebnis zahlreicher Untersuchungen und Proben, sowie nach den bei Bränden gesammelten Erfahrungen unter sorgfältiger Berücksichtigung der dem praktischen Bauwesen gezogenen Schranken und der Kostenfrage. ·

Die vom Geschäftsausschuss vorgeschlagenen Mindestforderungen an die Feuersicherheit der Baumaterialien oder Construktionen sind in den beigefütgen Tabellen enthalten für :

     I. Feuersichere Fussböden und Decken.
    II. Feuersichere Wände.
    III. Feuersichere Türen.

Dieselben lassen sich kurz dahin zusammenfassen, dass die Klasse
zeitweiser Schutz Widerstand gegen Feuer für mindestens $\frac{3}{4}$ Stunden,

teilweiser Schutz Widerstand gegen heftiges Feuer für mindestens 1½ Stunden,

voller Schutz Widerstand gegen heftiges Feuer für mindestens 2½ Stunden voraussetzt.

Die genauen Bedingungen, unter denen dieser Widerstand geleistet werden muss, besonders hinsichtlich der Mindesttemperatur, Dicke des Materials, Belastung und in Bezug auf Bespritzen mit kaltem Wasser unter Druck werden die Jnteressenten leicht aus den Tabellen entnehmen können. Für das Publikum aber, auf dessen Jnteresse an dieser Klassification grosser Wert gelegt werden muss, wird die Dauer des Widerstandes allein maasgebend sein.

Es ist wünschenswert, dass diese Klassification sowohl in England, als auch auf dem Continent und in den Vereinigten Staaten allgemein anerkannt werde und in Zukunft ein einheitliches Klassificationssystem in allen Ländern herrsche.

Mit den Vorarbeiten hierfür ist bereits begonnen worden.

Vorgeschlagen im Auftrage des Geschäftsausschusses.

EDWIN O. SACHS, *Vorsitzender.*
ELLIS MARSLAND, *Ehrenschriftführer.*

NORMEN FUER FEUERSICHERE FUSSBÖDEN

U. DECKEN.

KLASSIFIKATION.	Untere Klasse.	Geringste Zeitdauer des Versuchs.	Minimum Temperatur.	Belastung per q.m. Fläche.	Kleinste Fläche für den Test.	Geringste Zeit für das Bespritzen mit Wasser.
Zeitweiser Schutz ...	Klasse A	45 min.	815·5° C.	Beliebig	9·290 q.m.	2 min.
	Klasse B	60 min.	815·5° C.	Beliebig	18·580 q.m.	2 min.
Teilweiser Schutz ...	Klasse A	90 min.	982·2° C.	546·852 kg.	9·290 q.m	2 min.
	Klasse B	120 min.	982·2° C.	820·278 kg.	18·580 q.m.	2 min.
Voller Schutz	Klasse A	150 min.	982·2° C.	1093·706 kg.	9·290 q.m.	2 min.
	Klasse B	240 min.	982·2° C.	1367·130 kg.	18·580 q.m.	5 min.

NORMEN FUER FEUERSICHERE ZWISCHEN-WAENDE.

KLASSIFIKATION.	Untere Klasse.	Geringste Zeitdauer des Versuchs.	Minimum Temperatur.	Dicke.	Kleinste Fläche für den Test.	Geringste Zeit für das Bespritzen mit Wasser.
Zeitweiser Schutz ...	Klasse A	45 min.	815·5° C.	·051 m. & unter	7·432 q m.	2 min.
	Klasse B	60 min.	815·5° C.	Beliebig	7·432 q.m	2 min.
Teilweiser Schutz ...	Klasse A	90 min.	982·2° C.	·063 m. & unter	7·432 q.m.	2 min.
	Klasse B	120 min.	982·2° C.	Beliebig	7·432 q.m.	2 min.
Voller Schutz	Klasse A	150 min.	982·2° C.	063 m. & unter	7·432 q.m.	2 min.
	Klasse B	240 min.	982·2° C.	Beliebig	7·432 q.m.	5 min.

NORMEN FUER FEUERSICHERE EINZEL TUEREN.

KLASSIFIKATION.	Untere Klasse.	Geringste Zeitdauer des Versuchs.	Minimum Temperatur.	Dicke.	Kleinste Fläche für den Test.	Geringste Zeit für das Bespritzen mit Wasser.
Zeitweiser Schutz ...	Klasse A	45 min.	815·5° C.	·051 m. & unter	1·858 q.m.	2 min.
	Klasse B	60 min.	815·5° C.	Beliebig	1·858 q.m.	2 min.
Teilweiser Schutz ...	Klasse A	90 min.	982·2° C.	·063 m. & unter	1·858 q.m.	2 min.
	Klasse B	120 min.	982·2° C.	Beliebig	1·858 q.m.	2 min.
Voller Schutz	Klasse A	150 min.	982·2° C.	·013 m. & unter	2·322 q.m.	2 min.
	Klasse B	240 min.	982·2° C.	Beliebig	2·322 q.m.	5 min.

TABLE OF DEGREES CENTIGRADE EQUIVALENT TO DEGREES FAHRENHEIT.

Fahr. Cent.	Fahr. Cent.	Fahr. Cent.	Fahr. Cent.	Fahr. Cent.
*1 = −17·2	51 = 10·5	101 = 38·3	151 = 66·1	201 = 93·8
2 = −16·6	52 = 11·1	102 = 38·8	152 = 66·6	202 = 94·4
3 = −16·1	53 = 11·6	103 = 39·4	153 = 67·2	203 = 95·0
4 = −15·5	54 = 12·2	104 = 40·0	154 = 67·7	204 = 95·5
5 = −15·0	55 = 12·7	105 = 40·5	155 = 68·3	205 = 96·1
6 = −14·4	56 = 13·3	106 = 41·1	156 = 68·8	206 = 96·6
7 = −13·8	57 = 13·8	107 = 41·6	157 = 69·4	207 = 97·2
8 = −13·3	58 = 14·4	108 = 42·2	158 = 70·0	208 = 97·7
9 = −12·7	59 = 15·0	109 = 42·7	159 = 70·5	209 = 98·3
10 = −12·2	60 = 15·5	110 = 43·3	160 = 71·1	210 = 98·8
11 = −11·6	61 = 16·1	111 = 43·8	161 = 71·6	211 = 99·4
12 = −11·1	62 = 16·6	112 = 44·4	162 = 72·2	212 = 100·0
13 = −10·5	63 = 17·2	113 = 45·0	163 = 72·7	213 = 100·5
14 = −10·0	64 = 17·7	114 = 45·5	164 = 73·3	214 = 101·1
15 = − 9·4	65 = 18·3	115 = 46·1	165 = 73·8	215 = 101·6
16 = − 8·8	66 = 18·8	116 = 46·6	166 = 74·4	216 = 102·2
17 = − 8·3	67 = 19·4	117 = 47·2	167 = 75·0	217 = 102·7
18 = − 7·7	68 = 20·0	118 = 47·7	168 = 75·5	218 = 103·3
19 = − 7·2	69 = 20·5	119 = 48·3	169 = 76·1	219 = 103·8
20 = − 6·6	70 = 21·1	120 = 48·8	170 = 76·6	220 = 104·4
21 = − 6·1	71 = 21·6	121 = 49·4	171 = 77·2	221 = 105·0
22 = − 5·5	72 = 22·2	122 = 50·0	172 = 77·7	222 = 105·5
23 = − 5·0	73 = 22·7	123 = 50·5	173 = 78·3	223 = 106·1
24 = − 4·4	74 = 23·3	124 = 51·1	174 = 78·8	224 = 106·6
25 = − 3·8	75 = 23·8	125 = 51·6	175 = 79·4	225 = 107·2
26 = − 3·3	76 = 24·4	126 = 52·2	176 = 80·0	226 = 107·7
27 = − 2·7	77 = 25·0	127 = 52·7	177 = 80·5	227 = 108·3
28 = − 2·2	78 = 25·5	128 = 53·3	178 = 81·1	228 = 108·8
29 = − 1·6	79 = 26·1	129 = 53·8	179 = 81·6	229 = 109·4
30 = − 1·1	80 = 26·6	130 = 54·4	180 = 82·2	230 = 110·0
*31 = − 0·5	81 = 27·2	131 = 55·0	181 = 82·7	231 = 110·5
32 = 0·0	82 = 27·7	132 = 55·5	182 = 83·3	232 = 111·1
33 = 0·5	83 = 28·3	133 = 56·1	183 = 83·8	233 = 111·6
34 = 1·1	84 = 28·8	134 = 56·6	184 = 84·4	234 = 112·2
35 = 1·6	85 = 29·4	135 = 57·2	185 = 85·0	235 = 112·7
36 = 2·2	86 = 30·0	136 = 57·7	186 = 85·5	236 = 113·3
37 = 2·7	87 = 30·5	137 = 58·3	187 = 86·1	237 = 113·8
38 = 3·3	88 = 31·1	138 = 58·8	188 = 86·6	238 = 114·4
39 = 3·8	89 = 31·6	139 = 59·4	189 = 87·2	239 = 115·0
40 = 4·4	90 = 32·2	140 = 60·0	190 = 87·7	240 = 115·5
41 = 5·0	91 = 32·7	141 = 60·5	191 = 88·3	241 = 116·1
42 = 5·5	92 = 33·3	142 = 61·1	192 = 88·8	242 = 116·6
43 = 6·1	93 = 33·8	143 = 61·6	193 = 89·4	243 = 117·2
44 = 6·6	94 = 34·4	144 = 62·2	194 = 90·0	244 = 117·7
45 = 7·2	95 = 35·0	145 = 62·7	195 = 90·5	245 = 118·3
46 = 7·7	96 = 35·5	146 = 63·3	196 = 91·1	246 = 118·8
47 = 8·3	97 = 36·1	147 = 63·8	197 = 91·6	247 = 119·4
48 = 8·8	98 = 36·6	148 = 64·4	198 = 92·2	248 = 120·0
49 = 9·4	99 = 37·2	149 = 65·0	199 = 92·7	249 = 120·5
50 = 10·0	100 = 37·7	150 = 65·5	200 = 93·3	250 = 121·1

* NOTE.—*The figures from 1 to 31 Fahr. in the Centigrade column are all minus 0·00 Cent.*

NOTE.—*To convert Fahr. into Cent. deduct 32. Multiply by 5, and then divide by 9.*

Approximate!

Table of Degrees Centigrade Equivalent to Degrees Fahrenheit.

Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.
251	= 121·6	300	= 148·8	550	= 287·7	800	= 426·6	1050	= 565·5
252	= 122·2	305	= 151·6	555	= 290·5	805	= 429·4	1055	= 568·3
253	= 122·7	310	= 154·4	560	= 293·3	810	= 432·2	1060	= 571·1
254	= 123·3	315	= 157·2	565	= 296·1	815	= 435·0	1065	= 573·8
255	= 123·8	320	= 160·0	570	= 298·8	820	= 437·7	1070	= 576·6
256	= 124·4	325	= 162·7	575	= 301·6	825	= 440·5	1075	= 579·4
257	= 125·0	330	= 165·5	580	= 304·4	830	= 443·3	1080	= 582·2
258	= 125·5	335	= 168·3	585	= 307·2	835	= 446·1	1085	= 585·0
259	= 126·1	340	= 171·1	590	= 310·0	840	= 448·8	1090	= 587·7
260	= 126·6	345	= 173·8	595	= 312·7	845	= 451·6	1095	= 590·5
261	= 127·2	350	= 176·6	600	= 315·5	850	= 454·4	1100	= 593·3
262	= 127·7	355	= 179·4	605	= 318·3	855	= 457·2	1105	= 596·1
263	= 128·3	360	= 182·2	610	= 321·1	860	= 460·0	1110	= 598·8
264	= 128·8	365	= 185·0	615	= 323·8	865	= 462·7	1115	= 601·6
265	= 129·4	370	= 187·7	620	= 326·6	870	= 465·5	1120	= 604·4
266	= 130·0	375	= 190·5	625	= 329·4	875	= 468·3	1125	= 607·2
267	= 130·5	380	= 193·3	630	= 332·2	880	= 471·1	1130	= 610·0
268	= 131·1	385	= 196·1	635	= 335·0	885	= 473·8	1135	= 612·7
269	= 131·6	390	= 198·8	640	= 337·7	890	= 476·6	1140	= 615·5
270	= 132·2	395	= 201·6	645	= 340·5	895	= 479·4	1145	= 618·3
271	= 132·7	400	= 204·4	650	= 343·3	900	= 482·2	1150	= 621·1
272	= 133·3	405	= 207·2	655	= 346·1	905	= 485·0	1155	= 623·8
273	= 133·8	410	= 210·0	660	= 348·8	910	= 487·7	1160	= 626·6
274	= 134·4	415	= 212·7	665	= 351·6	915	= 490·5	1165	= 629·4
275	= 135·0	420	= 215·5	670	= 354·4	920	= 493·3	1170	= 632·2
276	= 135·5	425	= 218·3	675	= 357·2	925	= 496·1	1175	= 635·0
277	= 136·1	430	= 221·1	680	= 360·0	930	= 498·8	1180	= 637·7
278	= 136·6	435	= 223·8	685	= 362·7	935	= 501·6	1185	= 640·5
279	= 137·2	440	= 226·6	690	= 365·5	940	= 504·4	1190	= 643·3
280	= 137·7	445	= 229·4	695	= 368·3	945	= 507·2	1195	= 646·1
281	= 138·3	450	= 232·2	700	= 371·1	950	= 510·0	1200	= 648·8
282	= 138·8	455	= 235·0	705	= 373·8	955	= 512·7	1205	= 651·6
283	= 139·4	460	= 237·7	710	= 376·6	960	= 515·5	1210	= 654·4
284	= 140·0	465	= 240·5	715	= 379·4	965	= 518·3	1215	= 657·2
285	= 140·5	470	= 243·3	720	= 382·2	970	= 521·1	1220	= 660·0
286	= 141·1	475	= 246·1	725	= 385·0	975	= 523·8	1225	= 662·7
287	= 141·6	480	= 248·8	730	= 387·7	980	= 526·6	1230	= 665·5
288	= 142·2	485	= 251·6	735	= 390·5	985	= 529·4	1235	= 668·3
289	= 142·7	490	= 254·4	740	= 393·3	990	= 532·2	1240	= 671·1
290	= 143·3	495	= 257·2	745	= 396·1	995	= 535·0	1245	= 673·8
291	= 143·8	500	= 260·0	750	= 398·8	1000	= 537·7	1250	= 676·6
292	= 144·4	505	= 262·7	755	= 401·6	1005	= 540·5	1255	= 679·4
293	= 145·0	510	= 265·5	760	= 404·4	1010	= 543·3	1260	= 682·2
294	= 145·5	515	= 268·3	765	= 407·2	1015	= 546·1	1265	= 685·0
295	= 146·1	520	= 271·1	770	= 410·0	1020	= 548·8	1270	= 687·7
296	= 146·6	525	= 273·8	775	= 412·7	1025	= 551·6	1275	= 690·5
297	= 147·2	530	= 276·6	780	= 415·5	1030	= 554·4	1280	= 693·3
298	= 147·7	535	= 279·4	785	= 418·3	1035	= 557·2	1285	= 696·1
299	= 148·3	540	= 282·2	790	= 421·1	1040	= 560·0	1290	= 698·8
300	= 148·8	545	= 285·0	795	= 423·8	1045	= 562·7	1295	= 701·6

Approximate !

Table of Degrees Centigrade Equivalent to Degrees Fahrenheit.

Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.
1300	704·4	1550	843·3	1800	982·2	2050	1121·1	2300	1260·0
1305	707·2	1555	846·1	1805	985·0	2055	1123·8	2305	1262·7
1310	710·0	1560	848·8	1810	987·7	2060	1126·6	2310	1265·5
1315	712·7	1565	851·6	1815	990·5	2065	1129·4	2315	1268·3
1320	715·5	1570	854·4	1820	993·3	2070	1132·2	2320	1271·1
1325	718·3	1575	857·2	1825	996·1	2075	1135·0	2325	1273·8
1330	721·1	1580	860·0	1830	998·8	2080	1137·7	2330	1276·6
1335	723·8	1585	862·7	1835	1001·6	2085	1140·5	2335	1279·4
1340	726·6	1590	865·5	1840	1004·4	2090	1143·3	2340	1282·2
1345	729·4	1595	868·3	1845	1007·2	2095	1146·1	2345	1285·0
1350	732·2	1600	871·1	1850	1010·0	2100	1148·8	2350	1287·7
1355	735·0	1605	873·8	1855	1012·7	2105	1151·6	2355	1290·5
1360	737·7	1610	876·6	1860	1015·5	2110	1154·4	2360	1293·3
1365	740·5	1615	879·4	1865	1018·3	2115	1157·2	2365	1296·1
1370	743·3	1620	882·2	1870	1021·1	2120	1160·0	2370	1298·8
1375	746·1	1625	885·0	1875	1023·8	2125	1162·7	2375	1301·6
1380	748·8	1630	887·7	1880	1026·6	2130	1165·5	2380	1304·4
1385	751·6	1635	890·5	1885	1029·4	2135	1168·3	2385	1307·2
1390	754·4	1640	893·3	1890	1032·2	2140	1171·1	2390	1310·0
1395	757·2	1645	896·1	1895	1035·0	2145	1173·8	2395	1312·7
1400	760·0	1650	898·8	1900	1037·7	2150	1176·6	2400	1315·5
1405	762·7	1655	901·6	1905	1040·5	2155	1179·4	2405	1318·3
1410	765·5	1660	904·4	1910	1043·3	2160	1182·2	2410	1321·1
1415	768·3	1665	907·2	1915	1046·1	2165	1185·0	2415	1323·8
1420	771·1	1670	910·0	1920	1048·8	2170	1187·7	2420	1326·6
1425	773·8	1675	912·7	1925	1051·6	2175	1190·5	2425	1329·4
1430	776·6	1680	915·5	1930	1054·4	2180	1193·3	2430	1332·2
1435	779·4	1685	918·3	1935	1057.2	2185	1196·1	2435	1335·0
1440	782·2	1690	921·1	1940	1060·0	2190	1198·8	2440	1337·7
1445	785·0	1695	923·8	1945	1062·7	2195	1201·6	2445	1340·5
1450	787·7	1700	926·6	1950	1065·5	2200	1204·4	2450	1343·3
1455	790·5	1705	929·4	1955	1068·3	2205	1207·2	2455	1346·1
1460	793·3	1710	932·2	1960	1071·1	2210	1210·0	2460	1348·8
1465	796·1	1715	935·0	1965	1073·8	2215	1212·7	2465	1351·6
1470	798·8	1720	937·7	1970	1076·6	2220	1215·5	2470	1354·4
1475	801·6	1725	940·5	1975	1079·4	2225	1218·3	2475	1357·2
1480	804·4	1730	943·3	1980	1082·2	2230	1221·1	2480	1360·0
1485	807·2	1735	946·1	1985	1085·0	2235	1223·8	2485	1362·7
1490	810·0	1740	948·8	1990	1087·7	2240	1226·6	2490	1365·5
1495	812·7	1745	951·6	1995	1090·5	2245	1229·4	2495	1368·3
1500	815·5	1750	954·4	2000	1093·3	2250	1232·2	2500	1371·1
1505	818·3	1755	957·2	2005	1096·1	2255	1235·0	2505	1373·8
1510	821·1	1760	960·0	2010	1098·8	2260	1237·7	2510	1376·6
1515	823·8	1765	962·7	2015	1101·6	2265	1240·5	2515	1379·4
1520	826·6	1770	965·5	2020	1104·4	2270	1243·3	2520	1382·2
1525	829·4	1775	968·3	2025	1107·2	2275	1246·1	2525	1385·0
1530	832·2	1780	971·1	2030	1110·0	2280	1248·8	2530	1387·7
1535	835·0	1785	973·8	2035	1112·7	2285	1251·6	2535	1390·5
1540	837·7	1790	976·6	2040	1115·5	2290	1254·4	2540	1393·3
1545	840·5	1795	979·4	2045	1118·3	2295	1257·2	2545	1396·1

Approximate !

INCHES AND FRACTIONS OF INCHES CONVERTED INTO MÈTRES.

Ins.	0	1	2	3	4	5	6	7	8	9	10	11	12
	...	·0254	·0508	·0762	·1016	1270	·1524	·1778	·2032	·2286	·2540	·2793	·3047
$\frac{1}{16}$	·0015	·0269	·0523	0777	·1032	·1286	·1539	·1793	·2047	·2301	·2555	·2809	$\frac{1}{16}$
$\frac{1}{8}$	·0031	·0285	·0539	·0793	·1047	·1301	·1555	1809	·2063	·2317	·2571	·2825	$\frac{1}{8}$
$\frac{3}{16}$	·0047	0301	0555	·0809	·1063	·1317	·1571	·1825	·2079	·2333	·2587	·2841	$\frac{3}{16}$
$\frac{1}{4}$	·0063	·0317	·0571	·0825	·1079	·1333	1587	·1841	·2095	·2349	·2603	·2857	$\frac{1}{4}$
$\frac{5}{16}$	·0079	0333	·0587	·0841	·1095	·1349	·1603	·1857	·2111	·2365	·2619	·2873	$\frac{5}{16}$
$\frac{3}{8}$	·0095	·0349	·0603	·0857	·1111	·1365	·1619	·1873	·2127	·2381	·2635	·2889	$\frac{3}{8}$
$\frac{7}{16}$	·0111	·0365	0619	0873	·1127	·1381	·1635	·1889	·2143	·2397	·2651	·2905	$\frac{7}{16}$
$\frac{1}{2}$	·0127	·0380	·0635	·0888	·1143	·1397	·1651	·1905	·2159	·2413	·2667	·2920	$\frac{1}{2}$
$\frac{9}{16}$	·0142	·0396	·0650	·0904	·1158	·1412	1666	·1920	·2174	·2428	·2682	·2936	$\frac{9}{16}$
$\frac{5}{8}$	·0158	·0412	·0366	·0920	·1174	·1428	·1682	·1936	·2190	·2444	·2698	·2952	$\frac{5}{8}$
$\frac{11}{16}$	·0174	·0428	0682	·0936	·1190	·1444	·1698	·1952	·2206	·2460	·2714	·2968	$\frac{11}{16}$
$\frac{3}{4}$	·0190	·0444	·0698	·0952	·1206	·1460	·1714	·1968	·2222	·2476	·2730	·2984	$\frac{3}{4}$
$\frac{13}{16}$	·0206	·0460	·0714	·0968	·1222	·1476	·1730	·1984	·2238	·2492	·2746	·3000	$\frac{13}{16}$
$\frac{7}{8}$	·0222	·0476	·0730	·0984	·1238	·1492	·1746	·2000	·2254	·2508	·2762	·3016	$\frac{7}{8}$
$\frac{15}{16}$	·0238	·0492	·0746	·1000	1254	·1508	·1762	·2016	·2270	·2524	2778	·3032	$\frac{15}{16}$
Ins.	0	1	2	3	4	5	6	7	8	9	10	11	Ins.

Approximate ! *Do not multiply these figures.*

FEET AND INCHES
CONVERTED INTO MÈTRES.

Feet		Mètres	Feet		Mètres	Feet		Mètres	Feet		Mètres
0"	=	...	7' 6"	=	2·2859	15' 0"	=	4·5718	22' 6"	=	6·8577
3"	=	0·0762	9	=	2·3621	3	=	4·6479	9	=	6·9339
6"	=	0·1524	8' 0"	=	2·4383	6	=	4·7242	23' 0"	=	7·0101
9"	=	0·2286	3	=	2·5144	9	=	4·8004	3	=	7·0862
1' 0"	=	0·3047	6	=	2·5907	16' 0"	=	4·8766	6	=	7·1625
3	=	0·3808	9	=	2·6669	3	=	4·9527	9	=	7 2387
6	=	0·4571	9' 0"	=	2·7431	6	=	5·0290	24' 0"	=	7·3149
9	=	0·5333	3	=	2·8192	9	=	5·1052	3	=	7·3910
2' 0"	=	0·6095	6	=	2·8955	17' 0"	=	5·1814	6	=	7·4673
3	=	0·6856	9	=	2·9717	3	=	5·2575	9	=	7·5435
6	=	0·7619	10' 0"	=	3·0479	6	=	5·3338	25' 0"	=	7·6197
9	=	0·8381	3	=	3·1240	9	=	5·4100	3	=	7·6958
3' 0"	=	0·9143	6	=	3·2003	18' 0"	=	5·4862	6	=	7·7721
3	=	0·9904	9	=	3·2765	3	=	5 5623	9	=	7 8483
6	=	1·0667	11' 0"	=	3·3526	6	=	5·6386	26' 0"	=	7·9245
9	=	1·1429	3	=	3·4287	9	=	5·7148	3	=	8·0006
4' 0"	=	1·2191	6	=	3·5050	19' 0"	=	5·7910	6	=	8·0769
3	=	1·2952	9	=	3·5812	3	=	5·8671	9	=	8·1531
6	=	1·3715	12' 0"	=	3·6574	6	=	5·9434	27' 0"	=	8·2293
9	=	1·4477	3	=	3·7335	9	=	6·0196	3	=	8·3054
5' 0"	=	1·5239	6	=	3·8098	20' 0"	=	6·0958	6	=	8·3817
3	=	1·6000	9	=	3·8860	3	=	6·1719	9	=	8·4579
6	=	1·6763	13' 0"	=	3·9622	6	=	6·2482	28' 0"	=	8·5341
9	=	1·7525	3	=	4·0383	9	=	6·3244	3	=	8·6102
6' 0"	=	1·8287	6	=	4·1146	21' 0"	=	6·4005	6	=	8·6865
3	=	1·9048	9	=	4·1908	3	=	6 4766	9	=	8.7627
6	=	1·9811	14' 0"	=	4·2670	6	=	6·5529	29' 0"	=	8·8389
9	=	2·0573	3	=	4·3431	9	=	6·6291	3	=	8·9150
7' 0"	=	2·1335	6	=	4·4194	22' 0"	=	6·7053	6	=	8·9913
3	=	2·2096	9	=	4·4956	3	=	6·7814	9	=	9·0675

Approximate !   *Do not multiply these figures.*

Table of Kilogrammes Equivalent to Lbs. Avoirdupois.

Lbs.	Kilos.	Lbs.	Kilos.	Lbs.	Kilos.	Lbs.	Kilos.	Lbs.	Kilos.	Lbs.	Kilos.
1 =	·4536	51 =	23·1332	101 =	45·8129	160 =	72·5749	700 =	317·515	3200 =	1451·498
2 =	·9072	52 =	23·5868	102 =	46·2665	170 =	77·1108	750 =	340·194	3250 =	1474·178
3 =	1·3608	53 =	24·0404	103 =	46·7201	180 =	81·6467	800 =	362·874	3300 =	1496·858
4 =	1·8143	54 =	24·4940	104 =	47·1736	190 =	86·1827	850 =	385·554	3350 =	1519·537
5 =	2·2680	55 =	24·9476	105 =	47·6273	200 =	90·7185	900 =	408·233	3400 =	1542·217
6 =	2·7216	56 =	25·4012	106 =	48·0809	210 =	95·2545	950 =	430·913	3450 =	1564·897
7 =	3·1751	57 =	25·8548	107 =	48·5344	220 =	99·7904	1000 =	453·593	3500 =	1587·576
8 =	3·6287	58 =	26·3084	108 =	48·9880	230 =	104·3263	1050 =	476·272	3550 =	1610·256
9 =	4·0823	59 =	26·7620	109 =	49·4416	240 =	108·8616	1100 =	498·952	3600 =	1632·935
10 =	4·5360	60 =	27·2156	110 =	49·8953	250 =	113·398	1150 =	521·632	3650 =	1655·615
11 =	4·9895	61 =	27·6691	111 =	50·3488	260 =	117·934	1200 =	544·311	3700 =	1678·294
12 =	5·4431	62 =	28·1227	112 =	50·8024	270 =	122·470	1250 =	566·991	3750 =	1700·974
13 =	5·8967	63 =	28·5763	113 =	51·2560	280 =	127·000	1300 =	589·671	3800 =	1723·653
14 =	6·3503	64 =	29·0299	114 =	51·7096	290 =	131·542	1350 =	612·351	3850 =	1746·333
15 =	6·8039	65 =	29·4835	115 =	52·1632	300 =	136·078	1400 =	635·030	3900 =	1769·012
16 =	7·2575	66 =	29·9371	116 =	52·6168	310 =	140·614	1450 =	657·710	3950 =	1791·692
17 =	7·7111	67 =	30·3907	117 =	53·0704	320 =	145·150	1500 =	680·389	4000 =	1814·371
18 =	8·1647	68 =	30·8443	118 =	53·5240	330 =	149·686	1550 =	703·069	4050 =	1837·051
19 =	8·6183	69 =	31·2979	119 =	53·9776	340 =	154·222	1600 =	725·749	4100 =	1859·730
20 =	9·0718	70 =	31·7515	120 =	54·4312	350 =	158·757	1650 =	748·429	4150 =	1882·410
21 =	9·5255	71 =	32·2051	121 =	54·8848	360 =	163·293	1700 =	771·108	4200 =	1905·089
22 =	9·9790	72 =	32·6587	122 =	55·3382	370 =	167·829	1750 =	793·788	4250 =	1927·769
23 =	10·4326	73 =	33·1122	123 =	55·7919	380 =	172·365	1800 =	816·467	4300 =	1950·449
24 =	10·8862	74 =	33·5658	124 =	56·2454	390 =	176·901	1850 =	839·147	4350 =	1973·128
25 =	11·3398	75 =	34·0194	125 =	56·6991	400 =	181·437	1900 =	861·826	4400 =	1995·808
26 =	11·7934	76 =	34·4730	126 =	57·1526	410 =	185·973	1950 =	884·506	4450 =	2018·488
27 =	12·2470	77 =	34·9266	127 =	57·6063	420 =	190·509	2000 =	907·185	4500 =	2041·167
28 =	12·7000	78 =	35·3802	128 =	58·0598	430 =	195·045	2050 =	929·865	4550 =	2063·847
29 =	13·1542	79 =	35·8338	129 =	58·5135	440 =	199·581	2100 =	952·545	4600 =	2086·526
30 =	13·6078	80 =	36·2874	130 =	58·9670	450 =	204·117	2150 =	975·225	4650 =	2109·206
31 =	14·0614	81 =	36·7410	131 =	59·4207	460 =	208·653	2200 =	997·904	4700 =	2131·886
32 =	14·5150	82 =	37·1946	132 =	59·8742	470 =	213·189	2250 =	1020·584	4750 =	2154·565
33 =	14·9686	83 =	37·6482	133 =	60·3279	480 =	217·725	2300 =	1043·263	4800 =	2177·245
34 =	15·4222	84 =	38·1018	134 =	60·7814	490 =	222·260	2350 =	1065·943	4850 =	2199·925
35 =	15·8757	85 =	38·5554	135 =	61·2350	500 =	226·796	2400 =	1088·622	4900 =	2222·604
36 =	16·3293	86 =	39·0090	136 =	61·6886	510 =	231·332	2450 =	1111·302	4950 =	2245·284
37 =	16·7829	87 =	39·4626	137 =	62·1422	520 =	235·868	2500 =	1133·981	5000 =	2267·963
38 =	17·2365	88 =	39·9162	138 =	62·5958	530 =	240·404	2550 =	1156·661	5050 =	2290·643
39 =	17·6901	89 =	40·3697	139 =	63·0494	540 =	244·940	2600 =	1179·341	5100 =	2313·322
40 =	18·1437	90 =	40·8233	140 =	63·5030	550 =	249·476	2650 =	1202·021	5150 =	2336·002
41 =	18·5973	91 =	41·2769	141 =	63·9566	560 =	254·012	2700 =	1224·700	5200 =	2358·681
42 =	19·0509	92 =	41·7305	142 =	64·4102	570 =	258·548	2750 =	1247·380	5250 =	2381·361
43 =	19·5045	93 =	42·1841	143 =	64·8638	580 =	263·084	2800 =	1270·059	5300 =	2404·041
44 =	19·9581	94 =	42·6377	144 =	65·3174	590 =	267·620	2850 =	1292·739	5350 =	2426·720
45 =	20·4117	95 =	43·0913	145 =	65·7710	600 =	272·156	2900 =	1315·419	5400 =	2449·400
46 =	20·8653	96 =	43·5449	146 =	66·2244	610 =	276·691	2950 =	1338·099	5450 =	2472·079
47 =	21·3189	97 =	43·9985	147 =	66·6780	620 =	281·227	3000 =	1360·779	5500 =	2494·759
48 =	21·7725	98 =	44·4521	148 =	67·1316	630 =	285·763	3050 =	1383·459	5550 =	2517·438
49 =	22·2260	99 =	44·9057	149 =	67·5852	640 =	290·299	3100 =	1406·138	5600 =	2540·118
50 =	22·6796	100 =	45·3593	150 =	68·0388	650 =	294·835	3150 =	1428·818	5650 =	2562·798

Approximate !　　　　　　　　　　　　　　　　　　　　*Do not multiply these figures.*

NOTE :

1 Cwt. = 112 lbs. = 50·8024 Kilogrammes.　　1 Kilogramme = 2·2046213 lbs. avoirdupois.
1 Ton = 2,240 lbs. = 1016·048 Kilogrammes.　　1 Gramme = 15·432349 Grains.

THE

British Fire Prevention Committee

[FOUNDED 1897.—INCORPORATED 1899.]

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