



Treaty Series No. 51 (1964)

# Exchange of Notes

between the Government of the  
United Kingdom of Great Britain and Northern Ireland  
and the Government of the Kingdom of Denmark

on the Application of Uniform Testing Rules for the  
Structural Fire Protection of Ships to comply with the  
Requirements of the International Convention for  
the Safety of Life at Sea 1960

London, June 30, 1964

*Presented to Parliament by the Secretary of State for Foreign Affairs  
by Command of Her Majesty  
November 1964*

LONDON

HER MAJESTY'S STATIONERY OFFICE

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**EXCHANGE OF NOTES BETWEEN THE GOVERNMENT OF THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND AND THE GOVERNMENT OF THE KINGDOM OF DENMARK ON THE APPLICATION OF UNIFORM TESTING RULES FOR THE STRUCTURAL FIRE PROTECTION OF SHIPS TO COMPLY WITH THE REQUIREMENTS OF THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA 1960**

No. 1

*The Danish Ambassador at London to the Secretary of State for Foreign Affairs*

*Royal Danish Embassy,*

*London, 30th June, 1964.*

Sir,

1. I have the honour to refer to the recent negotiations between representatives of the Government of the Kingdom of Denmark and the Government of the United Kingdom of Great Britain and Northern Ireland regarding the question of applying uniform testing rules in order to ensure that constructions and materials for use in connection with structural fire protection of ships when tested at a testing laboratory, recognised by the Government in the other Country, comply with the requirements laid down in the International Convention for the Safety of Life at Sea, open for signature at London on the 17th June, 1960.<sup>(1)</sup>

2. I now have to propose on behalf of the Danish Government that an agreement on this subject be concluded in the following terms:—

- (a) When constructions and materials for use in connection with structural fire protection of ships have been tested according to the rules laid down in the attached Annex,<sup>(2)</sup> the results stated in the fire test report shall be accepted by the Administration of the other Contracting Government without further test as a basis for the issuing of a certificate of approval for these constructions and materials. For the purposes of this Agreement it is understood that the term Administration means in the case of the Danish Government the Handelsministeriet and in the case of the Government of the United Kingdom the Ministry of Transport.
- (b) Approval can only be granted if the fire test has been attended and reported upon by a representative of the Administration of the country in which the test is carried out.
- (c) The Administrations shall regularly verify that the approved types of constructions or materials still attain the approved standards and will exchange information on the general form of control.
- (d) Information concerning approvals shall be exchanged between the Contracting Governments.
- (e) Alterations and additions to the rules laid down in the above mentioned Annex may take place when agreed upon by both Contracting Governments.

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<sup>(1)</sup> The text of the Convention was laid before Parliament on December 10, 1963, and published by H.M.S.O. (Code 88-3501) for the Inter-Governmental Maritime Consultative Organisation. The United Kingdom instrument of acceptance was deposited on May 11, 1964, and the Convention will enter into force on May 26, 1965.

<sup>(2)</sup> See page 5.

3. If the foregoing proposals are acceptable to the Government of the Kingdom of Denmark and the Government of the United Kingdom of Great Britain and Northern Ireland I have the honour to suggest that this Note together with the Annex and your reply in that sense shall constitute an Agreement between the two Governments in this matter, which shall enter into force on this day's date.

I have, etc.

E. KRISTIANSEN.

No. 2

*The Secretary of State for Foreign Affairs to the Danish Ambassador at London*

*Foreign Office, S.W. 1,  
June 30, 1964.*

Your Excellency,

I have the honour to acknowledge the receipt of Your Excellency's Note of the 30th of June, 1964, which reads as follows:—

[As in No. 1]

In reply, I have the honour to state that the foregoing proposals are acceptable to the Government of the United Kingdom of Great Britain and Northern Ireland, who therefore agree that Your Excellency's Note with its Annex and the present reply shall constitute an Agreement between the two Governments which shall enter into force on this day's date.

I have, etc.

(For the Secretary of State)

DENYS BROWN.

ANNEX

Regler

for

prøvning og godkendelse af konstruktioner og materialer til brug  
i forbindelse med den konstruktive brandinddeling i skibe

Rules

concerning

testing and approval of erections and materials for use  
in connection with constructional fire protection of ships

## FORORD

Den internationale konference om sikkerhed for menneskeliv på søen, London 1960, anbefalede i Rekommandation nr. II, at de kontraherende regeringer skulle gøre IMCO bekendt med de af dem anvendte metoder for prøvning af bl.a. klasse "A" og "B" skodder til anvendelse i skibe med henblik på tilvejebringelse af en mere ensartet praksis på dette område.

I 1961 udarbejdede Statsprøveanstalten i samarbejde med Direktoratet for Statens Skibstilsyn udkast til sådanne regler, idet man herved tog i betragtning de bestemmelser, der er indeholdt i kap. II regl. 35 (b) i den internationale konvention om sikkerhed for menneskeliv på søen, 1960, som angiver dimensionerne for prøveemner for skodder eller dæk, som skal prøves i prøveovn.

Udkastet blev derefter af Statsprøveanstalten forelagt prøveanstalterne i Holland, Norge, Sverige og England med henblik på at skabe et sæt regler, der kunne danne grundlaget for en gensidig anerkendelse i disse lande af prøverapporter for de omhandlede materialer og konstruktioner.

Søfartsadministrationerne i Finland, Holland, Norge, Sverige, England og Danmark besluttede derpå, at udkastet skulle drøftes på et møde af sagkyndige fra disse lande. Et sådant møde holdtes i København i dagene 3.-4. september 1962 efterfulgt af et møde i Haag 17.-19. april 1963, på hvilket deltagerne enedes om regler for prøvning, prøverapporter og betingelser for godkendelse af konstruktioner og materialer til brug i forbindelse med den konstruktive brandinddeling i skibe.

## FOREWORD

The International Conference on Safety of Life at Sea, London 1960, recommended that Contracting Governments should provide IMCO with copies of any document setting out the test procedures they employ regarding, inter alia, "A" and "B" Class bulkheads with a view to achieving greater uniformity of practice in these matters.

In 1961, the Danish Testing Laboratory in co-operation with the Danish Ships Inspection Service drafted such rules taking into account the provisions laid down in Regulation 35 (b) of Chapter II of the International Convention for the Safety of Life at Sea, 1960, which specifies the dimensions of specimens of bulkheads or decks which are to be tested in a test furnace.

The Danish Testing Laboratory thereafter held consultations with the testing laboratories in the Netherlands, Norway, Sweden and the United Kingdom with a view to formulating uniform rules which could form the basis of mutual acceptance in these countries of test certificates for the materials and constructions in question.

The Shipping Administrations of the said countries and Finland thereupon decided that the draft should be discussed at a meeting of experts. An expert meeting on the subject was held in Copenhagen 3-4 September, 1962, followed by a further meeting in The Hague 17-19 April, 1963, during which the participants agreed on rules for Testing, Test Reports and Conditions for Approval.

## INDHOLD

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## A. Prøvning

### (1) Almindelige bestemmelser

I henhold til bestemmelserne i den internationale konvention om sikkerhed for menneskeliv på søen, London 1960, skal konstruktioner og materialer, der skal anvendes i passagerskibe som klasse A-skodder, klasse A-døre, klasse B-skodder, klasse B-døre, have en isolationsværdi, der opfylder de af administrationen stillede krav og godkendes af administrationen. Konstruktioner og materialer, der skal anvendes i lastskibe på 4000 brutto registertons og derover som klasse B-skodder og klasse B-døre, skal godkendes på tilsvarende måde.

Sådanne godkendelser vil blive meddelt på grundlag af rapporter fra en af administrationen godkendt prøveanstalt over prøvningsresultater opnået ved prøvning af den pågældende konstruktion og det pågældende materiale, og fabrikanten eller rekvirenten må derfor om fornødent til prøveanstalten indsende prøvelegemer og oplysninger som foreskrevet under (2) nedenfor. Fabrikanten eller rekvirenten bør i alle tilfælde træffe aftale med administrationen og prøveanstalten om den nærmere udførelse og opstilling af prøvelegemer, o.s.v. Dette bør ske i nøje overensstemmelse med praksis inden for skibsbygning.

### (2) Prøvelegemers beskaffenhed, størrelse og opstilling

#### 2.1. Isoleret klasse A-skod

##### 2.1.1. Bærende materiale:

Stål eller tilsvarende materiale.

##### 2.1.2. Prøvelegemets dimensioner:

I henhold til vedhæftede tegning nr. I.

Tykkelse	...	...	Stål: 4,5 mm
			Aluminium: 6,0 mm

Lodrette stivere med			
600 mm indbyrdes			
afstand	...	...	Stål: 65 × 65 × 6 mm
			Aluminium: 75 × 75 × 9,5 mm

##### 2.1.3. Isolationsmateriale:

Følgende data skal opgives:

Identifikationsmærke.

Rumvægt ved almindelig stuetemperatur.

Varmefylde ved almindelig stuetemperatur.

Varmeledningsevne ved almindelig stuetemperatur.

Vigtigste detaljer ved sammensætningen.

##### 2.1.4. Tegninger:

En tegning af prøvelegemet med mål og følgende detaljer:

Isolation ved stag.

Midler til fastgørelse af isolation til skoddet og de hertil anvendte materialer.

## A. Testing

### (1) General

Under the provisions of the International Convention for the Safety of Life at Sea, London 1960, construction and materials for use in passenger ships as "A" Class bulkheads, "A"-doors, "B" Class bulkheads, "B"-doors shall have an insulating value to the satisfaction of and be approved by the Administration. Constructions and materials for use in cargo ships of 4000 gross tons and upwards as "B" Class bulkheads and "B"-doors shall be similarly approved.

Such approvals will be based upon reports from a Testing Laboratory, recognised by the Administration, of test results obtained at tests carried out with the construction and material in question, and therefore the manufacturer or agent must, if required, submit test specimens and information to the Testing Laboratory as laid down in (2) below. In all cases the manufacturer or agent should consult the Administration and the Testing Laboratory regarding details of construction and erection of test specimen, etc. This should be strictly in accordance with the practice to be used in ship-building procedure.

### (2) Nature, Size, and Erection of Test Specimens

#### 2.1. Insulated "A" Class bulkhead

##### 2.1.1. Supporting material:

Steel or other equivalent material.

##### 2.1.2. Dimensions of test specimen:

According to attached drawing No. I.

Thickness ... .. Steel: 4.5 mm

Aluminium: 6.0 mm

Vertical stiffeners spaced

at 600 mm intervals ... .. Steel: 65 × 65 × 6 mm

Aluminium: 75 × 75 × 9.5 mm

##### 2.1.3. Insulating material:

The information below must be submitted:

Identification mark.

Specific weight at ambient temperature.

Specific heat at ambient temperature.

Heat conductivity at ambient temperature.

Principal details of composition.

##### 2.1.4. Drawings:

A drawing of the test specimen giving measurements and the following details:

Insulation in way of stiffeners.

Means of fastening the insulation to the bulkhead and materials used for this purpose.

## 2.2. *A-døre med tilhørende dørkarm*

### 2.2.1. Materialer:

Bærende materiale:  
Stål eller tilsvarende materiale.

### 2.2.2. Opstilling af prøvelegeme:

Døre og karme skal altid prøves sammen.

### 2.2.3. Isolationsmateriale:

Følgende data skal opgives:  
Identifikationsmærke.  
Rumvægt ved almindelig stuetemperatur.  
Varmefylde ved almindelig stuetemperatur.  
Varmeledningsevne ved almindelig stuetemperatur.  
Vigtigste detaljer ved sammensætningen.

### 2.2.4. Dørkarme:

Dørkarme forsynes med forankringsjern, ca.  $250 \times 25 \times 9$  mm, opslidset 100 mm, anbragt med ca. 500 mm indbyrdes afstand, indmures i en ramme af beton eller tilsvarende materiale, i hvilket døren er anbragt med karmen plant med rammens udsatte overflade. Hængslede døre skal åbne bort fra ilden.

### 2.2.5. Tegninger:

En tegning af prøvelegemet med mål og detaljer af karm og dør samt oplysninger om de metoder og materialer, der anvendes til at sikre eventuel isolation.

## 2.3 *Klasse B-skodder*

### 2.3.1. Materialer:

Følgende data skal opgives:  
Identifikationsmærke og skodelementets bredder skal angives.  
Vigtigste detaljer ved sammensætning og konstruktion.  
Om materialerne er brændbare eller ubrændbare.

### 2.3.2. Dimensioner:

I henhold til vedhæftede tegning nr. II. Prøvelegemet skal være konstrueret af skodelementer, hvoraf mindst ét har den i praksis anvendte største bredde, idet mindst én samling skal forefindes.

### 2.3.3. Skodder bør prøves uden maling eller anden overfladebehandling.

### 2.3.4. Tegninger:

En tegning af prøvelegemet med mål og detaljer af samlinger og af alle anvendte materialer.  
Et snit gennem skoddet skal indbefattes.

## 2.2. "A"-doors and frames

### 2.2.1. Materials:

Supporting material:  
Steel or other equivalent material.

### 2.2.2. Erection of specimen:

Doors and frames must always be tested together.

### 2.2.3. Insulating material:

The information below must be submitted:  
Identification mark.  
Specific weight at ambient temperature.  
Specific heat at ambient temperature.  
Heat conductivity at ambient temperature.  
Principal details of composition.

### 2.2.4. Door frame:

Door frames to be fitted with anchorirons approx.  $250 \times 25 \times 9$  mm slit 100 mm, spaced aprox. 500 mm, to be sunk into a concrete or similar surround in which the door is situated with the frame flush with the exposed face of the surround. Hinged doors to open away from the fire.

### 2.2.5. Drawings:

A drawing of the test specimen giving measurements and details of door frame and door together with information as to methods and materials used for securing insulation, if any.

## 2.3. "B" Class bulkhead

### 2.3.1. Materials:

The information below must be submitted:  
Identification mark and panel widths to be nominated.  
Principal details of composition and construction.  
Whether the materials are combustible or incombustible.

### 2.3.2. Dimensions:

According to attached drawing No. II. The test specimen must be constructed of panels at least one of which is the maximum width which may be used in practice, subject to at least one joint being incorporated.

### 2.3.3. Bulkheads should be tested without being painted or having superimposed finishes.

### 2.3.4. Drawings:

A drawing of the test specimen giving measurements and details of joints and all materials used.  
A section through the bulkhead to be included.

## 2.4. B-døre med tilhørende dørkarme

### 2.4.1. Materialer:

Følgende data skal opgives:

Identifikationsmærke.

Om materialerne er brændbare eller ubrændbare.

Vigtigste detaljer ved sammensætning og konstruktion.

### 2.4.2. Opstilling af prøvelegeme:

Døre og karme skal altid prøves sammen.

### 2.4.3. Dørkarme skal indsættes i et af administrationen godkendt klasse B-skod i henhold til tegning nr. II eller i en ramme af beton eller tilsvarende materiale, i hvilket døren er anbragt med karmen plant med rammens udsatte overflade. Hængslede døre skal åbne bort fra ilden.

### 2.4.4. Tegninger:

En tegning af prøvelegemet visende alle detaljer ved dør og dørkarm og dens befæstelse til skod eller materiale skal indsendes.

## (3) Prøvningsmetoder

### 3.1. Brandkammerprøvning

Denne prøve udføres med de under 2.1., 2.2., 2.3. og 2.4. omhandlede prøvelegemer.

#### 3.1.1. Prøvelegemets kondition:

Prøvelegemer skal konditioneres til ligevægtstilstand i atmosfærisk luft med en relativ fugtighed på  $65 \pm 5\%$  og ved en temperatur på  $20^\circ \pm 5^\circ\text{C}$ . For alle typer af prøvelegemer skal det rigtige tidspunkt for prøvningen bestemmes ved måling af fugtighedsindholdet enten på prøvelegemet eller på repræsentative prøvestykker.

#### 3.1.2. Midler til fastgørelse af prøvelegemer i ovnen:

Prøvelegemerne, konstrueret som omhandlet under 2.1., 2.2., 2.3. og 2.4., skal anbringes på en sådan måde, at der fremkommer en udsat overflade mindst 244 cm høj og mindst 200 cm bred. Prøvelegemet skal fastgøres som følger:

Klasse A-skod: Langs alle kanter.

Klasse B-skod: Forneden og langs de lodrette sider og indsat i én rille langs overkanten anbragt oven over det udsatte område.

## 2.4. "B"-doors and door frames

### 2.4.1. Materials:

The information below must be submitted:

Identification mark.

Whether the materials are combustible or incombustible.

Principal details of composition and construction.

### 2.4.2. Erection of test specimen:

Doors and frames must always be tested together.

### 2.4.3. Door frames must be erected in a "B" Class bulkhead approved by the Administration and according to drawing No. II, or in a concrete or similar surround, in which the door is situated with the frame flush with the exposed face of the surround.

Hinged doors to open away from the fire.

### 2.4.4. Drawings:

A drawing of the test specimen showing all details of door and door frame and its connection to the bulkhead or surround to be submitted.

## (3) Methods of Testing

### 3.1. Fire Resistance Test of Structures

This test to be carried out with the specimens mentioned under 2.1., 2.2., 2.3. and 2.4.

#### 3.1.1. Conditions of test specimen:

Test specimens shall be conditioned to an equilibrium with an atmosphere of a relative humidity of  $65 \pm 5\%$  and a temperature of  $20^\circ \pm 5^\circ \text{C}$ . For all types of specimen the appropriate time for testing shall be determined by measuring, either on the specimen or on a representative sample, the conditions of equilibrium of weight.

#### 3.1.2. Means of fastening specimens in the furnace:

The specimens, constructed as mentioned under 2.1., 2.2., 2.3. and 2.4. shall be fitted in such a way as to give an exposed area of at least 244 centimetres high and at least 200 centimetres wide. The specimen shall be secured as follows:

"A" Class bulkhead: Along all sides:

"B" Class bulkhead: At the bottom and the vertical sides and housed in a channel along the top edge situated above the exposed area.

### 3.1.3. Fremgangsmåde ved prøvning:

Ovntemperaturen bestemmes ved hjælp af 4 ubeskyttede termoelementer, mindst 0,75 mm i diameter, anbragt i centrum af prøvelegemets fjerdedelssnit og med deres loddesteder ca. 100 mm fra prøvelegemets udsatte overflade.

Prøvekonstruktioner, som skal kunne modstå brand fra begge sider, skal prøves fra begge sider, såfremt administrationen stiller krav derom.

Temperaturerne i ovnen kontrolleres kontinuerligt således, at de så vidt muligt følger de temperaturer, der er fastsat ved standard tids-temperaturkurven.

Denne standard tids-temperaturkurve er som følger:

538°C	efter	5 min.
704°C	efter	10 min.
843°C	efter	30 min.
927°C	efter	60 min.
1010°C	efter	120 min.

Nøjagtigheden af ovnkontrollen skal være således, at

- (a) Arealet under kurven for middel-ovntemperatur ikke afviger med mere end  $\pm 15\%$  af arealet under standardkurven i de første 10 minutter af prøven.
- (b) Arealet under kurven for middel-ovntemperatur ikke afviger med mere end  $\pm 10\%$  af arealet under standardkurven under den første halve time af prøven.
- (c) Arealet under kurven for middel-ovntemperatur ikke afviger med mere end  $\pm 5\%$  af arealet under standardkurven i en hvilken som helst periode efter den første halve time af prøven.
- (d) Middel-ovntemperaturen ikke afviger med mere end  $\pm 100^\circ\text{C}$  fra standardkurven på et hvilket som helst tidspunkt under de første 10 minutter af prøven.
- (e) Trykket i ovnen ved ca. 1/3 af prøvelegemets højde er det samme som trykket i laboratoriet.
- (f) Prøvelegemets begyndelsestemperatur ikke overstiger  $40^\circ\text{C}$ .

### 3.1.4. Røg- og gasgennemtrængningsprøve:

Såfremt der opstår revner eller anden skade under prøvningsperioden, skal der foretages en antændelsesprøve som foreskrevet i 4.1.1. og 4.2.1. straks efter, at revnen eller skaden er opstået, og denne prøve skal efterfølges af lignende prøver med passende mellemrum.

### 3.1.3. Test Procedure:

The furnace temperature is determined by means of 4 unprotected thermo-couples not less than 0.75 mm dia. disposed at the centres of the quarter sections of the specimen and with their hot junctions abt. 100 mm from the exposed side of the specimen.

Specimens of construction which shall be required to withstand fire from either side shall be tested from each side if required by the Administration.

The furnace temperatures are continuously controlled so that they follow as far as possible those laid down in the standard time-temperature curve.

This standard time-temperature curve is indicated below:

538°C	after	5 min.
704°C	after	10 min.
843°C	after	30 min.
927°C	after	60 min.
1010°C	after	120 min.

The accuracy of furnace control should be such that

- (a) During the first 10 minutes of test the area under the curve of mean furnace temperature shall not vary by more than  $\pm 15\%$  of the area under the standard curve.
- (b) During the first half hour of test the area under the curve of mean furnace temperature shall not vary by more than  $\pm 10\%$  of the area under the standard curve.
- (c) For any period after the first half hour of test the area under the curve of mean furnace temperature shall not vary by more than  $\pm 5\%$  of the area under the standard curve.
- (d) At any time of the first 10 minutes of test the mean furnace temperature does not differ from the standard curve by more than  $\pm 100^\circ\text{C}$ .
- (e) At about one third of the height of the specimen the pressure in the furnace shall be equal to that in the laboratory.
- (f) The initial temperature of the specimen must not exceed  $40^\circ\text{C}$ .

### 3.1.4. Smoke and gas penetration test:

Where cracks or other damage arises during the testing period an ignition test as prescribed in 4.1.1. and 4.2.1. shall take place immediately after the crack and damage arises followed by similar tests at appropriate intervals.



### 3.1.5. Observationer under prøvningen:

Overfladetemperaturen på den upåvirkede side skal måles med mindst 4 termoelementer, hvert bestående af en cirkulær 12 mm, 0,2 mm tyk kobberplade, hvortil er loddet 0,5 mm tykke termoelementtråde. Termoelementerne anbringes så vidt muligt i centrum af prøvelegemets fjerdedelssektioner. De skal dækkes og fastholdes med 30 mm store kvadratiske 2 mm tykke asbestplader, og termoelementtrådene lægges således, at de ligger an mod overfladen på de første 100 mm fra loddestedet. Et på lignende måde konstrueret og fastholdt termoelement anbringes over den lodrette samling, hvis en sådan forefindes, ellers i centrum af prøvelegemets overflade. Middelttemperaturen af de ovennævnte 5 termoelementer anvendes til at angive gennemsnittet af temperaturstigningen på den upåvirkede side. Der kan til bestemmelse af temperaturen på de punkter, der skønnes at få større temperaturstigning end nogen af standardpunkterne med de 5 termoelementer, anbringes yderligere termoelementer af samme konstruktion. Ved prøvning af klasse A-skod af aluminiumlegering med isolation på begge sider anbringes termoelementer på metallet på tilsvarende steder som overfladeelementerne til bestemmelse af dettes temperatur.

### 3.1.6. Prøvningens varighed:

Prøvningen skal mindst fortsætte, indtil en af de under (4) fastsatte grænser er overskredet.

### 3.1.7. Prøvningsresultater:

Prøvningsresultaterne skal angives i en rapport i relation til den tid, regnet fra forsøgets begyndelse, i hvilken prøvelegemet opfylder de under (4) fastsatte krav til den pågældende konstruktion.

## 3.2. *Brændbarhedsprøvning af materialer*

Denne anvendes over for de under 2.1., 2.2., 2.3. og 2.4. omhandlede prøvelegemer og udføres som beskrevet i B.S. (British Standard) 476, 1. del, stk. 1.

## (4) **Krav til prøvningsresultater**

### 4.1. *Klasse A-skodder og -døre*

#### 4.1.1. Almindelige krav:

- (a) Revner og anden skade, som måtte opstå, og utætheder ved døre, der afgiver passage for flammer og varme forbrændingsprodukter, må ikke kunne medføre antændelse af tvist anbragt i en afstand af 2 til 3 cm vandret fra åbningen i prøvelegemet under de 60 minutter, prøven varer.

### 3.1.5. Observations during testing:

The surface temperature on the unexposed side shall be measured by at least 4 thermo-couples, each consisting of a circular 12 mm dia. 0,2 mm copper sheet into which are soldered 0,5 mm thermo-couple wires. The thermo-couples shall as far as possible be placed in the centre of each quarter section of the test specimen. They are to be covered and fastened by 30 mm square asbestos sheets 2 mm thick and the thermo-couple wires are placed so that they touch the face for 100 mm from the soldering point. A thermo-couple similarly constructed and held is placed at the vertical joint, if any, or in the centre of the surface of the specimen. The mean of the above mentioned five thermo-couples is used to give the mean temperature rise of the unexposed face. Further, thermo-couples of the same construction may be placed for the purpose of determining the temperature at points deemed likely to give a greater temperature rise than any of the 5 thermo-couples in the standard positions. When testing an "A" Class bulkhead of aluminium alloy fitted with insulation on both sides thermo-couples shall be fixed to the metal, in positions corresponding to the surface thermo-couples, to determine its temperature.

### 3.1.6. Duration of Testing:

The testing shall continue at least until one of the limits given in (4) has been passed.

### 3.1.7. Test Results:

The test results are to be stated in a report in relation to the time reckoned from the commencement of the test during which the specimen satisfies the requirements laid down in (4) for the said construction.

## 3.2. *Combustibility Test of Materials*

This test is used for the specimens mentioned under 2.1., 2.2., 2.3., and 2.4., and is carried out as described in B.S. 476, Part I, Section One.

## (4) Required Results of Testing

### 4.1. "A" Class bulkheads and "A"-doors

#### 4.1.1. General requirements:

- (a) Cracks and other damage which may arise and door clearances through which flames and hot gases may penetrate must not be such as to lead to ignition of cotton waste held at a distance of 2 to 3 centimetres horizontally from the opening in the specimen during the 60 minutes of testing.

- (b) For at et skod kan få betegnelsen  $A_{60}$ , må overfladetemperaturens stigning på den upåvirkede side ikke overstige følgende grænser i 60 minutter: Middeltemperaturen som defineret under 3.1.5.:  $139^{\circ}\text{C}$ . Maksimumtemperaturen på et hvilket som helst punkt:  $180^{\circ}\text{C}$ .
- (c) Temperaturstigningen på den upåvirkede side af døren, undtagen på gennemgående metaldele, må ikke overstige de ovenfor under (b) nævnte værdier, medmindre administrationen tillader lavere isolationsværdier.
- (d) Prøveanstaltens rapport skal angive, hvorvidt en klasse A-dør kunne åbnes og lukkes umiddelbart efter standardbrandprøven.

#### 4.1.2. Særlige krav:

Skodder af aluminium.

Under prøven må stigningen i metallets temperatur i et bærende, isoleret klasse A-skod af aluminium (som beskrevet under 3.1.5.) ikke overstige  $200^{\circ}\text{C}$  og for andre sådanne skodder ikke  $300^{\circ}\text{C}$ .

#### 4.2. Klasse B-skodder og -døre

##### 4.2.1. Almindelige krav:

- (a) Revner og anden skade, som måtte opstå, og utætheder ved døre, der afgiver passage for flammer og varme forbrændingsprodukter, må ikke kunne medføre antændelse af tvist anbragt i en afstand af 2 til 3 cm vandret fra åbningen i prøvelegemet under den pågældende del af prøvetiden.
- (b) Temperaturstigningen på den upåvirkede side må for ubrændbare klasse B-skodder i 15 minutter og for brændbare klasse B-skodder i 30 minutter ikke overskride følgende grænser: Middeltemperaturen som defineret under 3.1.5.:  $139^{\circ}\text{C}$ . Maksimumtemperaturen på et hvilket som helst punkt, herunder ved alle samlinger:  $225^{\circ}\text{C}$ .

## B. Prøverapporter

Prøverapporter skal udfærdiges på det nationale sprog og på engelsk og skal indeholde:

Fabrikantens navn.

Navnet på den repræsentant fra administrationen, som er til stede ved prøven.

Reglerne som skal iagttages.

Beskrivelse og tegning af prøvelegemet med fabrikantens identifikationsmærke.

Oplysning om forholdene, hvorunder prøven fandt sted.

Oplysning om fremgangsmåde ved prøven ledsaget af de under denne foretagne observationer samt eventuelle fotografier.

Konklusion.

- (b) In order that a bulkhead may be described as A<sub>60</sub> the rise of surface temperature on the unexposed side shall not exceed the following limits for 60 minutes:  
The mean as defined under 3.1.5.: 139°C.  
The maximum at any point: 180°C.
- (c) The temperature rise on the unexposed side of a door shall not exceed the values, mentioned in (b) of this paragraph, through-going metal members excepted, unless the Administration permits lower insulation values.
- (d) The report of the Testing Laboratory shall state whether an "A" Class door was capable of being opened and closed immediately following the standard fire test.

4.1.2. Special requirements:

Bulkheads of aluminium.

During the test the rise in metal temperature of an insulated load carrying aluminium "A" Class bulkhead must not (as described under 3.1.5.) exceed 200°C and for other such bulkheads 300°C.

4.2. "B" Class bulkheads and "B"-doors

4.2.1. General:

- (a) Cracks and other damage which may arise and door clearances through which flames and hot gases may penetrate must not be such as to lead to ignition of cotton waste held at a distance of 2 to 3 centimetres horizontally from the opening in the specimen during the relevant time of testing.
- (b) The rise of temperature on the unexposed side shall not exceed—as regards incombustible "B" Class bulkheads for 15 minutes and combustible "B" Class bulkheads for 30 minutes—the following limits:  
The mean as defined under 3.1.5.: 139°C.  
The maximum at any point including any joint: 225°C.

## B. Test Reports

Test reports shall be in the National language and in English and shall contain:

Name of manufacturer.

Name of representative of Administration present at test.

The Rules which have to be complied with.

Description and drawing of the test specimen with manufacturer's identification mark.

Test conditions.

Testing procedure with observations during test, including photographs, if any.

Conclusion.

### **C. Betingelser for godkendelse**

1. Før prøven kan påbegyndes, skal fabrikanten fremsende en underskrevet erklæring til administrationen om, at en identisk konstruktion ikke tidligere er blevet underkastet prøve ved en af denne administration anerkendt prøveanstalt. En afskrift af denne erklæring skal tillige med begæringen om afholdelse af prøven fremsendes til prøveanstalten.

2. Når en identisk konstruktion har været underkastet flere end én gyldig brandprøve af en given type ved prøveanstalten, må kun det dårligste resultat tages i betragtning med henblik på godkendelse.

3. Når konstruktioner til brug i forbindelse med den konstruktive brandinddeling i skibe har været underkastet prøve i henhold til de i afsnit A fastsatte regler, skal prøveanstalten fremsende brandprøverapporten til fabrikanten. Såfremt der udkræves godkendelsesbevis, skal fabrikanten indsende en afskrift af nævnte rapport til administrationen i det land, i hvilket prøven er blevet foretaget.

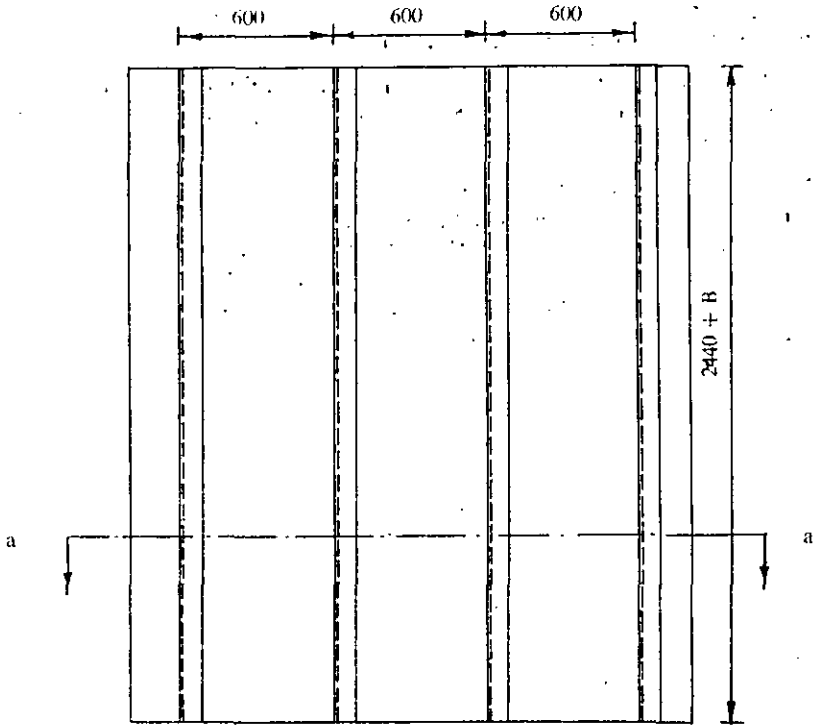
### **C. Conditions for Approval**

1. Before the test can be commenced the manufacturer must forward to the Administration a signed declaration that an identical construction has not before been tested by any of the Testing Laboratories recognized by this Administration. A copy of this declaration together with an application for the test shall be forwarded to the Testing Laboratory.

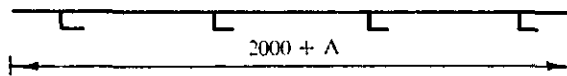
2. When an identical construction has been submitted to more than one valid fire test of a given type at the Testing Laboratory, only the worst result must be considered for approval.

3. When constructions for use in connection with structural fire protection of ships have been tested according to the rules laid down in Part A, the fire test report shall be forwarded by the Testing Laboratory to the manufacturer. If a certificate of approval is required, a copy of this report shall be submitted by the manufacturer to the Administration of the country in which the test has been carried out.

Drawing No. I



Elevation



Section a-a

Steel: thickness 4.5 mm.

Steel: Stiffeners 65×65×6 mm.

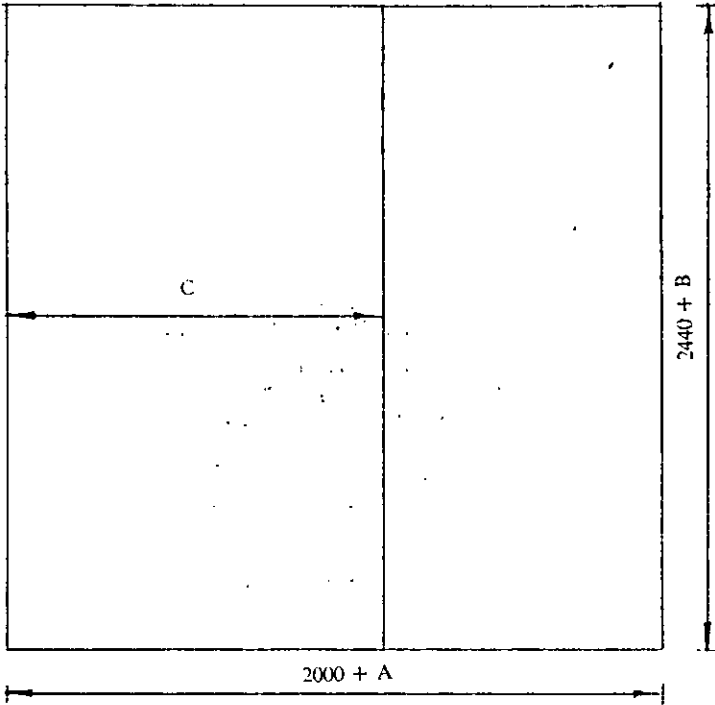
Aluminium: thickness 6.0 mm.

Aluminium: Stiffeners 75×75×9.5 mm.

The dimensions A and B are determined by the size of the supporting frame available in the individual laboratory.

A-class BULKHEAD  
Fire-test specimen

Scale  
1:20



Elevation

C-max. breadth used in practice.

The dimensions A and B are determined by the size of the supporting frame available in the individual laboratory.

A-class BULKHEAD  
fire-test specimen

Scale  
1:20



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