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DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH AND FIRE OFFICES' COMMITTEE
JOINT FIRE RESEARCH ORGANIZATION

PROPOSALS FOR NEXT STAGE OF C.I.B. PROGRAMME ON FIRES IN ROOMS

by

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Summary

On the assumption that the results which have been obtained by several Laboratories for the same eight tests show satisfactory agreement, proposals are made for the next phase of the C.I.B. programme on model tests for fires in rooms.

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1. If the results of the first eight tests are satisfactory, we would propose the following scheme for the next phase.

2. It appears that only in the United Kingdom are there facilities for studying systematically the effect of wind on fires of the size in this joint programme. The proposals therefore divide up the programme on still air, leaving the study of wind to the United Kingdom.

3. The programme is a large one and at this stage it is suggested that owing to experimental difficulties connected with the size of the (441) model this should be left out for the time being - though the United Kingdom will do some tests on (441) on the $1\frac{1}{2}$m scale.

4. Some data are available for (111) models, and although these were not obtained under the exact conditions specified for this test programme it is suggested that these existing results could be used as a general guide for the time being for (111) models and the next stage of the programme should concentrate on the other shapes.

5. It is of dubious value - if not impossible - to perform experiments with 30 and 40 kg/m^2 in a $\frac{1}{2}$ m. box. The height of the fire load is such a large fraction of the height of the model that the results are not comparable to those on larger scales.

6. Of the nine combinations for packing and stick size some are of less practical significance than others. Thus if two cribs of equal weight are made of sticks of two different sizes t_1 and t_2 the relative spacing being equal the number of layers are in the ratio t_2/t_1 and the crib of larger sticks can be too shallow in terms of the number of layers to burn. Similarly a crib of narrow sticks may at the same packing be too closely spaced to burn properly. In order to reduce the number of tests in the next phase of the programme it is suggested that (1, $\frac{1}{3}$) (1, 1) and (4, 3) be omitted (the first figure being the stick size in cm and the second the packing density). We should also omit (4, $\frac{1}{3}$) because the crib height for 30 kg/m^2 is only two layers.

7. The suggested next phase therefore includes the following combinations (excluding wind effects)

Scale	$\frac{1}{2}$m 1m $1\frac{1}{2}$m
Fireload	20 kg/m^2 30 kg/m^2 40 kg/m^2 (only 20 kg/m^2 on $\frac{1}{2}$m scale)
Ventilation	$\frac{1}{4}$ $\frac{1}{2}$ 1
Shapes	(121) (211) (221)
Stick and spacing combinations	(1, 3) (2, $\frac{1}{3}$) (2, 1) (2, 3) (4, 1)

Total No. 315 experiments.

8. Some nearly similar experiments are included in this scheme. Thus (121) is one half of (221) so that the fully ventilated version of these should be effectively the same. This will provide a check set of tests. Also it is proposed that some experiments should be duplicated to provide additional checks.

9. The suggested subdivision of the scheme is as follows:-

Country	Experimental group	Shape	Scale m.	Fireloads kg/m^2	Ventilation	Stick and Spacing Combination	No. of tests
Holland	(1)	(121)	$\frac{1}{2}$ & 1	20 on $\frac{1}{2}$m 20, 30, 40 on 1m	$\frac{1}{4}$ $\frac{1}{2}$ 1	(2,$\frac{1}{3}$) (2,1) (4,1) (1,3) (2,3)	60
Australia	(2)	(211)	"	"	"	(2,$\frac{1}{3}$) (2,1) (4,1)	36
Japan	(3)	(221)	"	"	"	"	36
Germany	(4)	(211)	"	"	"	(1,3) (2,1) (2,3)	36
Canada	(5)	(221)	"	"	"	"	36
Italy	(6)	(121)	$1\frac{1}{2}$	20, 30, 40	"	(2,$\frac{1}{3}$) (2,1) (4,1) (1,3) (2,3)	45
Germany	(7)	(211)	"	"	"	"	45
U.S.A.	(8)	(221)	"	"	"	"	45

10. The United Kingdom laboratories undertake to study in this next phase

(a) (111), (121), (211), (221) all ventilations, one fireload $\frac{1}{2}$ m. scale (1 stick spacing combination) two wind speeds, three directions. (72 tests).
(Additionally some tests will be made for a range of wind speeds on a particular model on two scales $\frac{1}{2}$ m. and 1 m.)

(b) (441) $1\frac{1}{2}$ m. scale - 2 stick spacing combinations 3 fireloads, 3 ventilation (18 tests).

11. Other countries wishing to participate are invited to perform tests on the (441) shape on $\frac{1}{2}$ m. or 1 m. scale.