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FIRE DOORS AND LOSSES IN LARGE FIRES

by

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MINISTRY OF TECHNOLOGY AND FIRE OFFICES' COMMITTEE
JOINT FIRE RESEARCH ORGANIZATION

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INTRODUCTION

There appears to be some uncertainty about the use, in fire reports, of the descriptions smoke-stop, fire check, fire stop and fire resisting as applied to doors intended either to check the passage of smoke and hot gases or to prevent or retard the spread of fire. In general all of these terms can be covered by the term "fire doors". If kept in the closed position, these doors would be expected to reduce the monetary loss in a fire. Accurate estimation of the reduction is not at present possible because of inadequate data. However, experience in a few large fires during 1965 and 1966 costing £10,000 or more which is presented in this note provides a rough estimate of the level of savings possible.

VOLUME OF DATA

During 1965 and 1966, 28 buildings involved in large fires were reported to be provided with fire doors. The position of the doors at the time of fires was recorded in only 19 cases. In 5 of these the doors were in the open position.

INDUSTRIAL BUILDINGS

Seventeen of the 19 fires for which details are available, were in industrial buildings and all five instances of incorrect use of doors were in these buildings. These include a very large fire in a paper tube factory in which a number of fire doors were reported to have been left open. This was considered to be one of the factors contributing to the loss which exceeded a million pounds.

Excluding the exceptionally large fire mentioned above, the average loss in the fires in which the doors were open was £135,000. In 12 fires the doors were closed and performed their function satisfactorily so that the average loss was only £106,000. The largest of these with a loss of £490,000 was in a building used for preserving and packing of food and the fire brigade report contained a particular reference to the fact that the doors checked the spread of fire. If the doors had been left open the loss would almost certainly have been still greater.

In order to test the significance of the difference between the average losses in the two cases, a logarithmic transformation (to base 10) was applied to the observed values (in £ thousands). The average for the 12 cases when the doors were closed was 1.73 (giving £54,000 as the geometric mean of the original values). For the 4 cases when the doors were left open the average was 2.08 (with £120,000 as geometric mean). The difference of 0.35 was significant at 0.10 level. If the fire costing more than a million pounds was included the average (2.27) for the doors in the open position was significantly different from the average for the closed position at 0.06 level which is near enough to the conventional

level of 0.05.

OTHER BUILDINGS

Of the two remaining fires in which the position of the doors was recorded one was in a retail grocers and provision merchants with a loss of £10,000. The other was in a cinema and bingo hall and cost £75,000. In both of these fires the doors were closed and were reported to have contained the fire.

CONCLUSIONS

There is some indication that by keeping the fire doors closed, some costly fires have been prevented from becoming even costlier. In industrial buildings the gain or reduction in loss in a large fire could be of the order of £30,000 a large part of which could be attributed to the correct use of the doors. This rough estimate is based on only a small number of fires but may be considered indicative of the value of fire doors in reducing losses.