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Our reference: FIR/80/734/3/2
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No 9/1981

To all Chief Fire Officers

38724 24 June 1981

Dear Chief Officer

FIRE RISK FROM EXPANDED CELLULAR PLASTICS WALL AND CEILING LININGS WITHIN BUILDINGS

1. In recent years there has been a significant increase in the use of expanded cellular plastics as linings of walls and ceilings - either in board form or sprayed in situ. The excellent thermal insulation properties of such materials ensure their consideration when improvements are planned to economise on heat loss. The purpose of this letter is to alert you to the fire hazard presented by the use of these materials when sprayed in situ, and to give guidance on the operational and fire prevention implications.

2. Expanded cellular plastics linings are found in private dwellings, agricultural buildings, warehouses and factories (particularly large single storey). They may occur both in new buildings, mainly those of an industrial character, and in existing buildings when improvements have been carried out. Although such linings may also be applied in a number of other situations, for example to the inside of ducts and boat hulls, the outside of roofs, walls and oil tanks, this note deals only with the use of expanded cellular plastics as wall or ceiling linings. So far this type of lining does not appear to have been applied in places of public assembly or in premises presenting a sleeping risk, other than private dwellings. The application of these linings to such premises would be undesirable and should be discouraged.

3. Many types of expanded cellular plastics linings, if unprotected, can be a very serious hazard, and cause for concern may arise even when they are protected if the protection provided is insufficient or ineffective. Unprotected expanded cellular plastics linings or those with only thin surface protection should be regarded as suspect unless their performance has been checked in large scale ad hoc experiments. Such experiments have been carried out by the Fire Research Station and are obviously expensive, but work is in hand at the Fire Research Station to devise an equivalent test on a reduced scale. Linings with a surface of either thin metal foil or a thin "plastics" membrane, designed to achieve Class 0 as prescribed by the Building Regulations or a Class 1 standard when tested to BS 476 Part 7, or those which are themselves inherently Class 1, may have a different fire performance if either subject to a greater heat flux than that of the test apparatus or when a larger area than that of the test sample is subject to that heat flux.

4. BS 4811: Part 2: "Specification for rigid urethane foam for building applications - laminated boards for use as a wall and ceiling insulation" requires that board applications to walls be protected on their outer surface by 9.5mm ($\frac{3}{8}$") plasterboard or by 2 coats of gypsum plaster giving a total thickness of at least

12mm. The fire behaviour of in situ applications is sufficiently similar to that of boards to suggest that a similar standard of protection is appropriate in their case. Whatever protection is provided it is important to ensure that it is sufficiently robust at working level, eg at least up to 2 metres, to withstand accidental damage from impact, leaving the foam exposed.

5. Where expanded cellular plastics linings are found in association with the contents of premises in such juxtaposition that a fire in the contents would result in substantial flame impingement on the lining there is a possibility of rapid involvement of the lining and substantial fire spread. The existence of these linings may not be readily apparent to fire fighting personnel, and you may wish to alert members of your brigade to the possibility of rapid fire spread in buildings insulated in this way.

6. The addition of expanded cellular plastics linings in premises for which a fire certificate under the Fire Precautions Act 1971 had been issued is likely to be a material change affecting the means of escape, and when the fire authority is notified of such a change or discovers the addition of the lining, consideration should be given to the need for additional or alternative precautions. In all cases where these cellular plastics are installed without the protection indicated in paragraph 4 above, Chief Fire Officers need to give serious consideration to the action which should be taken to alleviate the hazard when found. In cases of doubt further information can be obtained from the Fire Research Station.

7. Copies of this letter are being sent to HM Inspectors of Factories.

8. An article on the same subject has been printed in BRE News No 53, Spring 1981.

9. There are no additional costs or manpower implications arising from this letter.

Yours sincerely