

Cellular (expanded foam) Plastics Used For Building Insulation

The problem—energy conservation

In today's economic environment, rising energy prices have become a major cost of doing business. Whether the fuel source for heating buildings is oil, natural gas, coal or electricity, there are two realities that must be faced:

1. Heat must be provided and,
2. It will be expensive.

Cellular (expanded foam) plastic insulation

An excellent means of conserving building heat is through the use of good insulation. Cellular (expanded foam) plastics are excellent insulators. Their cost is reasonable and they are relatively easy to install. Thus, they are now in extensive use.

The two major types of cellular foam plastic insulation most commonly found in commercial buildings today are:

1. Polystyrene foam
2. Polyurethane foam

The hazard

Although these insulation materials will do the job intended, it must be recognized that they do present a cause for concern.

When exposed to the heat of fire, the plastic foam will degrade giving off toxic, combustible gases. It will burn intensely and produce heavy volumes of smoke.

Can the hazard be controlled?

Although this hazard cannot be completely eliminated since it is inherent in the insulation material itself, it can be minimized to the point where this insulation can be used relatively safely.

How?

Exposed cellular foam plastic insulation should always be covered with an acceptable thermal barrier.

Thermal barriers

A thermal barrier is simply an approved noncombustible material used to provide a protective coating over the surface of the exposed foam plastic insulation.

It should be applied directly to the surface of the insulation and should be of a quality and thickness which in the event of fire, will delay ignition of the foam plastic for a period of not less than 15 minutes.

Remember—expanded foam plastic will burn. The thermal barrier will delay ignition. But—it will not permanently prevent ignition of the insulation.

Acceptable thermal barriers

The following are examples of acceptable thermal barrier protection. There are many other noncombustible materials that may be used just as effectively to delay ignition. Contact your local contractor for additional details.

- Metal lath and plaster. Minimum of 3/8" thick.

Metal lath should be secured directly to building structure to support the cement plaster.

- Portland cement plaster 1/2" to 3/4" thick applied directly to the foam plastic will produce a hard durable thermal barrier.
- Type X gypsum wallboard 1/2" to 3/4" thick, or fire retardant plywood 3/4" thick, provide suitable fire protection. The gypsum and plywood covering should be firmly secured to the structure and all seams must be sealed.

Local code requirements

Model building codes require thermal barrier protection for exposed cellular plastic insulation. In most cases, the barriers should be capable of retarding fire for a 15 minute period. However, occupancy, life safety considerations may, in the view of the local authority having jurisdiction, require a barrier providing protection for a longer time period.

Check with local code authorities before installation.

Portland cement plaster may be applied directly to the expanded foam plastic insulation.

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