Global Intrima Bulletin

NO. 010/2018

COMMERCIAL RISK – MATERIALS OF COOLING TOWERS CONSTRUCTION

Materials commonly found in cooling tower construction are selected to resist the generally corrosive conditions. These materials can be wood, concrete, plastic, or metal. Cooling towers of combustible construction present a potential fire hazard. This hazard exists both when the tower is shut down and when the tower is in operation because of relatively dry areas within the tower. The use of engineered plastic cooling towers is significantly increasing because they generally require much less maintenance and are more energy-efficient than cooling towers with galvanized steel shells.

Wood. Wood is used for all static components, excluding hardware. Redwood and fir predominate, usually with post-fabrication pressure treatment with preservative chemicals that prevent the attack of wood- destructive organisms, such as termites or fungus. However, these woods still pose a fire hazard, unless they have been FM Approved as being fire-retardant materials. Some FM Approved fire-retardant plywood or lumber can be used without sprinklers for fan deck, distribution decks, louvers, and end walls.

Plastics. Fiberglass-reinforced plastic materials have broad use, especially for complex-shaped components, such as piping, fan cylinders, fan blades, and structural connecting members. Polypropylene, ABS (acrylonitrile-butadiene-styrene), and other plastics are used as fill bars and flow orifices. All of these materials pose fire hazards and the need for protection must be evaluated when they are used in cooling towers.

The use of PVC is becoming increasingly popular. Some PVC materials have been evaluated and FM Approved to be used as louvers, fills, and drift eliminators without sprinkler protection, as long as other construction features of the unit are built of noncombustible materials.

Sheets of neoprene-asbestos are often formed for fill and eliminators. Reinforced plastic mortar is finding use in larger piping systems coupled with neoprene O-ring-gasketed ball and socket joints. These materials have not been tested by FM Approvals. Consequently, in cases where these materials are used, they must be evaluated individually to determine the fire hazard and protection warranted.

Concrete, Masonry and Tile. Concrete is typically specified for the cold water basin of field-erected cooling towers and is finding wide use in piping, casing, and as structural elements of large towers, primarily in the power industry. Special tiles and masonry generally are used where aesthetic considerations are important. Cementitious board has been used for casing, louvers, eliminators, and fill to meet noncombustible requirements.

Metals. Steel with galvanized zinc coating may be specified for small and medium size installations.

Reference:

FMDS0106, Cooling Tower

PT. Global Intrima
www.global-intrima.com
+62 21 4290 0128
solutions@global-intrima.com

Global intrima