

# Fire Protection

## A headline story for The New York Times building

The New York Times building stands as one of the newest and most spectacular additions to Manhattan's renowned skyline. The 52-story tower, completed in 2007, has won plaudits around the world for its unique, exposed-steel "exo-skeleton" design and energy-efficient innovations such as the glass and steel curtain wall's ceramic sunscreen.

New coatings technology used in the building's construction makes the building the first commercial high-rise structure in New York City to employ fire protection that goes beyond the standard ratings for cellulosic fires. This technology provides protection against extreme-heat fires and blast pressure generated by major catastrophic events and International Protective Coatings delivers this technology.

This intumescent-coatings technology is derived from International Protective Coatings fire-protection material, formulated to protect steel structures from hydrocarbon and jet-steam fires in the oil, gas and petrochemical industries.

After the tragic events of September 11th 2001, research and development teams at International Protective

Coatings used this proven coatings technology as the basis for development of the next generation of epoxy-based intumescent fire protection, designed for use in the commercial building industry. The formulation for this coating provides excellent fire and anti-corrosion protection, but with the constructability and aesthetic versatility needed for exposed steel designs and multiple-application environments.

The project is a joint venture between The New York Times Company and Forest City Ratner Companies. The architects who designed the skyscraper are the world-renowned Renzo Piano and FX Fowle Architects. The design features a glass curtain wall screened by ceramic tubes, yielding an energy-conserving structure rising to 1,046 feet at the top of the mast and the epoxy intumescent coating, combined with high-performance primer and topcoat materials, provided long-term protection to the skyscraper's structural steel.

### INTUMESCENT COATINGS: A TECHNOLOGY REVELATION

Intumescent fire-resistive coatings are paint-like materials that are applied to structural steel, and are designed to provide an insulating

barrier between the steel and a fire. In the event of a fire, a chemical reaction causes the cured coating film to "intumesce," or expand rapidly to many times its original thickness, and generate a foam-like or char layer that acts as an insulating barrier to prevent or at least delay failure of the structural steel. Intumescent coatings give you extra time to evacuate the building and put out the fire.

These formulations are typically composed of a film-forming polymeric binder such as an epoxy or acrylic resin; a combination of chemical agents that react to trigger the fire-induced expansion of the coating film; pigments for opacity and colour; and other additives typically found in conventional coatings to provide application, cure, and long-term performance and appearance properties.

Some intumescent coatings require the addition of a reinforcing mesh when applied on specific structural shapes to ensure the integrity of the insulating or char layer.

The use of intumescent coatings has expanded significantly in the architectural and design communities, thanks to paint-like appearance properties of these materials, as compared to mineral-based spray-applied fire-resistive materials (SFRMs).

## The Time(s) challenge

The competitive bidding process for the project began in 2003, with very specific criteria outlined to the coatings suppliers by New York-based FX Fowle, which served as architectural specifier for the project.

- The fire protection material selected would have to carry a minimum guarantee of a five-year lifecycle of performance.
- The application process would have to keep pace with an accelerated construction schedule.
- The material would need to meet a minimum two-hour fire protection rating, preferably higher.



