

# KYNARAQUATEC<sup>®</sup>

BY ARKEMA

WATER-BASED PVDF

FIELD APPLICATION CASE STUDY



## Cool White Roof of Landmark Las Vegas Hotel Retains High Total Solar Reflectance Properties After 10 Years of Service

MGM Grand relies on Kynar Aquatec<sup>®</sup>-based roof coating for maintaining long-term stay-white properties and high reflectivity in subtropical hot-desert climate.

Towering over the Las Vegas Strip, the spectacular 293-foot-high main building of the MGM Grand defines the Las Vegas skyline. Owned and operated by MGM Resorts International, this massive hotel and casino complex is the largest hotel in the United States and the third-largest hotel resort in the world. The property includes 6.6 acres of pools, rivers and waterfalls; a 380,000 square-foot convention center; and numerous retail shops, entertainment venues and restaurants. It also houses a 1.71,500 square-foot casino, the largest in Clark County, Nevada.

### Cool White Roof Installation

In 2006, the MGM Grand was having issues keeping room temperatures below 75 degrees

Fahrenheit during the hot days of summer, making it uncomfortable for guests staying in the luxury suites on the upper floor. With high temperatures and heavy maintenance taking a toll on the main building's 214,000-square-foot black EPDM roof, the management group decided to install a new, long-lasting cool white roof that would not only help extend the service life of the new roof but also improve occupant comfort and overall energy efficiency.

Most conventional roofing materials absorb solar radiation, causing a rise in surface temperature. Not only does this heat transfer to the interior of the building, but it also accelerates the deterioration of the roofing materials.



**Project:**  
MGM Grand, Las Vegas

**Coating:**  
Kynar Aquatec<sup>®</sup> latex-based coating

In lowering the surface temperature by reflecting heat from the sun, a durable and highly reflective bright-white coating helps ensure a long roof service life with minimal maintenance, decreases air-conditioning load and reduces energy consumption by as much as 18 to 26 percent. In fact, using a cool roof that efficiently reflects visible and infrared light from the sun—and also radiate heat at night—is one of the most important energy cost-savings strategies in locations with hot climates, such as Las Vegas.

### Exceptional Topcoat Solution

After carefully considering various high-performance and sustainable product options, the MGM management team decided to use an ultra-durable, bright-white topcoat for the new cool roof of the hotel's main building. Formulated with Kynar Aquatec® PVDF fluoropolymer resin, the thin-build elastomeric finish coating provides long-term color stability and protection against all types of severe weather extremes.

An added benefit to the MGM Grand's management at the time was that the Kynar Aquatec® latex-based coating would have the highest-known reflectance value of any roof on the Las Vegas Strip, and would deliver an estimated annual energy cost savings of \$15,000 to \$30,000 per 100,000 square feet.

Kynar Aquatec® emulsions have long been used by manufacturers of high-quality cool-roof coatings due to their outstanding durability, resistance to dirt and biological growth accumulation, and capability to maintain high reflectivity for long periods of time without fading or yellowing. Kynar Aquatec®-based coatings have also been reported by the Cool Roof Rating Council to have initial solar reflectance and emissivity values greater than 0.85 each, and to have met or exceeded most "green" building codes and standards, including California's Title 24, LEED® and ENERGY STAR®.

### Immediate Results, Long-Lasting Performance

After the new cool white roof was completed in 2006, complaints from hotel guests about high room temperatures were eliminated. Ten years later, the Kynar Aquatec®-based cool-roof coating continues to contribute to lasting building efficiency and occupant comfort at this iconic Las Vegas resort.

Upon inspection of the cool white roof on MGM Grand's main building in May 2016, total solar reflectance (TSR) measurements remained high, at 82 percent, compared to an original TSR value of 90 percent. The retention of high reflectivity properties after 10 years of service can be attributed to the excellent dirt-shedding and stay-white properties of the ultra-durable Kynar Aquatec®-based coating.

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[kynaraquatec.com](http://kynaraquatec.com)

#### Contact Information

China: +86 21 61476888  
Japan: +81 3 5251 9900  
Korea: +82 2 370367000  
Singapore: +65 64199199  
Taiwan: +886 2 27476979  
India: +91 22 66137500

#### Arkema Inc.

900 First Avenue  
King of Prussia, PA 19406  
USA  
Tel.: (+1) 610-205-7000  
[arkema-inc.com](http://arkema-inc.com)

#### Headquarters: Arkema France

420, rue d'Estienne d'Orves  
92705 Colombes Cedex – France  
Tel.: +33 (0)1 49 00 80 80  
Fax: +33 (0)1 49 00 83 96  
[arkema.com](http://arkema.com)

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