



*Duct
Fire Protection
Case
History*

Wynn Hotel and Casino Las Vegas, NV

PROJECT

Wynn Las Vegas
(www.wynnlasvegas.com)

PROBLEM

Maximizing valuable building space when fire protecting complicated duct runs.

FIREMASTER® SOLUTION

Duct Wrap 2x2+
for kitchen grease ducts

FastWrap+ for air ducts

KEY PROJECT PARTICIPANTS

General Contractor

Marnell Corrao Associates
(www.marnellcorrao.com)

Kitchen Grease Duct Insulation Installer

F. Rodgers Insulation
(www.froddgers.com)

Air Duct Insulation Installer

Mechanical Insulation Specialists
(www.misinsulation.org)

Flexible duct wrap saves space and allows zero clearance to combustibles for grease and air ducts at Wynn Las Vegas Hotel and Casino

Wynn Las Vegas, a modern and luxurious hotel and casino on the Las Vegas strip, opened its doors to the public on April 28, 2005. There are 22 food and beverage outlets in the 217-acre Wynn Las Vegas complex, including eight fine-dining restaurants. Each restaurant kitchen is served by fire protected grease ducts that vent fumes from cooking hoods to the roof. These ducts were installed with zero clearance to surrounding combustible surfaces and insulated with FireMaster® fire protection wrap in accordance with the latest 2006 International Mechanical Code (IMC) and 2004 National Fire Protection (NFPA) 96 standard. Both code adoptions for shaft alternative grease duct systems, are based on ASTM E 2336 (AC 101) Standard Test Methods for Fire Resistive Grease Duct Enclosure Systems.

Commercial kitchen grease duct fires commonly result from a flare-up at the stove or grill top, and such events cause more than \$100 million in direct property damage in the U.S. annually. Without suppression, a stovetop fire may spread quickly into the vent system, sometimes resulting in hidden grease duct fires that burn undetected until the fuel source is depleted. While duct temperatures may spike dramatically under these circumstances, an effective fire-resistive enclosure will protect the building structure.

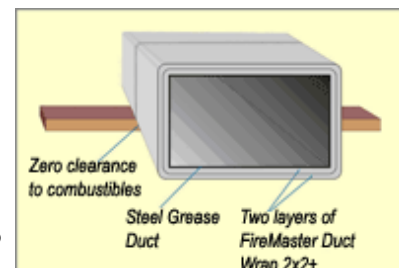


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Traditionally, grease duct insulation consisted of a steel frame around the metal grease duct, covered by a double-layer of fire-rated gypsum board with an air gap of not less than three inches between the duct and drywall as per IMC. Such shafts occupy valuable building space and can be complicated to build and support, particularly along horizontal runs and in confined spaces. The gypsum in a grease duct chase is subject to day-to-day temperatures higher than the manufacturer's recommended 125 °F exposure limit, and these constantly-elevated temperatures can cause drywall to release its chemically-bound water and become weakened.

In contrast, shaft alternative systems protect grease ducts directly and allow them to be placed with zero clearance to surrounding combustible surfaces, even at the roof exit point. Kitchen grease duct runs in the Wynn Las Vegas range from 20 to 120 feet in length, and most of the runs have substantial horizontal segments across kitchen and restaurant ceilings leading to vertical risers. Specifying zero clearance duct insulation made it possible for designers to eliminate the construction space required for drywall shafts around each duct, a space savings amounting to two or three times the volume required for the duct alone.

On the Wynn Las Vegas project, F. Rodgers Insulation, the insulation contractor for the kitchen grease ducts, wrapped and banded the grease ducts with two layers of FireMaster Duct Wrap 2x2+, a 2" foil encapsulated, low bio-persistent insulation blanket, fire rated at 2000°F (1100°C). This material maintains critical properties with age and prolonged exposure to high temperatures.



Grease ducts insulated with FireMaster Duct Wrap 2X2+ , allowing for zero clearance to combustibles and eliminating the need for gypsum chase constructions.

Where grease ducts penetrated fire-rated floors and walls, the insulation company applied a fire rated silicone sealant around the periphery of the insulated duct to maintain the integrity of the one or two-hour rated assembly.

According to F. Rodgers' estimator Herb Swanson, "An alternate grease duct wrap product with somewhat lower temperature capabilities had been specified for initial construction stages of the Wynn Las Vegas project. Our crews found it to be less flexible, heavier and more difficult to wrap around square metal ducts than the Thermal Ceramics material. The product specification was ultimately changed to the preferred material, and this saved time and simplified work for our installers."

Air Ducts

Foil-encapsulated duct wrap was also used for zero clearance insulation in two non-kitchen air duct applications at the Wynn Las Vegas. In one case, a duct delivered fresh air under pressure to stairwells in the hotel's restaurant and casino center area to act against smoke infiltration and protect occupants in the event of a fire. Another duct exhausts fumes to the roof from a basement storage space where swimming pool chemicals are stored.

Like the kitchen grease ducts, these round, 12 and 16-inch diameter duct runs were installed with zero clearance to other construction elements. They were wrapped with two layers of Thermal Ceramics FireMaster FastWrap® +, which is a 1 ½" thick, 2000°F (1100°C) fire rated, alkaline-earth-silicate wool insulation encapsulated in foil. The installer, Mechanical Insulation Specialists, were able to insulate these ducts quickly using two overlapped layers of the foil-wrapped insulation with steel banding to secure the material.

Proven Performance

The innovative duct fire protection solutions chosen for the Wynn Las Vegas hotel and casino demonstrate the ability of new high performance materials to improve construction efficiency and meet challenging building design requirements while satisfying all the requirements of the latest building codes.

FIREMASTER® DUCT WRAP FIRE PROTECTION PRODUCTS



Zero clearance to combustibles



Rigid Shaft Alternative



2 Hr. ASTM E119, E814 & E2336

More Information

For more information on FireMaster duct wrap products and applications, please visit Thermal Ceramics on-line at www.thermalceramics.com or www.sweets.com or contact us via e-mail at firemaster@thermalceramics.com.

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Duct Fire Protection Case History

"Zero clearance insulation has often been considered more expensive than drywall chase construction, and thus the shaft approach for insulating kitchen grease ducts and other building air ducts has commonly been specified. However, the substantial space savings advantage and more efficient installation method for zero clearance insulation make it a more cost-effective approach than shaft systems."

Herb Swanson, Estimator
F. Rodgers Insulation

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