I. Introduction

Outdoor decks have become more prevalent as homeowners continue to search for ways to improve their daily quality of life, while at the same time increasing the value of their homes. Outdoor decks are particularly popular for vacation homes or those homes with access to a scenic view. Moreover, they are relatively inexpensive to construct.

Outdoor decks are not without problems though. Outdoor decks have historically been constructed of wood, which is susceptible to rot, decay and fading. In extreme circumstances, outdoor decking can become infested with termites requiring fumigation that can be costly. Finally, outdoor decks require maintenance including periodic sanding, staining and weatherproofing - to alleviate the decay that inevitably results from continuous exposure to the elements.

Recognizing the potential disadvantages of traditional wood decking, companies began introducing alternatives, including wood/plastic composite decking and pure plastic decking. Because there were no fire performance codes or ratings for decking, the combustibility of these alternative forms of decking was not adequately addressed until the decking was prevalent in the marketplace. The obvious concern regarding ignition of outdoor decking is the hazard that it presents to the residence that is typically attached or adjacent to the decking. This article is intended to better acquaint subrogation professionals with the potential combustibility of certain types of decking, and to alert both subrogation professionals and homeowners of disturbing combustion data regarding “Eon,” a particular brand of plastic decking.
II. Background of Eon

Eon, which is marketed as a “beautiful alternative” to traditional wood decking, is manufactured from virgin plastic by CPI Plastics located in Mississauga, Ontario, Canada. Unlike other forms of decking that are composed of polyethylene or polyvinyl chloride, Eon is composed of acrylonitrile butadiene styrene, or “ABS.” While all three are plastics, ABS has a different molecular structure and is noted for its resistance, toughness and gloss. ABS is used to make light, rigid, molded products such as pipes, golf club heads and toys – such as LEGO bricks.

Eon decking can be formulated into a myriad of shapes and is available in six natural colors. Eon decking is manufactured with a wood grain coloration and UV inhibitors to extend the life of the product, can be painted with latex and acrylic-based paints, and is virtually impervious to water and does not require stain or other weatherproofing materials.

Unlike traditional wood decking, Eon decking will not rot, decay or fade. It is considered more “environmentally friendly” because it is not manufactured of wood components. It is termite resistant, does not split, crack or rot, and will last longer than wood. Eon decking is relatively easy to install and comes with a 25 year limited warranty.

There are obvious benefits to Eon decking including the relative strength of the decking and its resistance to environmental forces. However, flammability testing of different types of decking revealed startling results regarding the combustibility of Eon decking, calling into question whether Eon is a “beautiful alternative” to traditional decking or a catastrophic fire loss waiting to happen.

III. Development of Fire Resistive Standards for Decking

An obvious concern regarding the ignition of decking is the potential hazard that it presents to the residence. In addition, the growing prevalence of wildfires and the special hazards that wildfires pose to structures was also a motivating factor in developing uniform fire resistive standards for decking. Because there were no fire performance codes or ratings for decks, the University of California Forest Products Laboratory (“UCFPL”) developed fire test protocols for decking following the 1993 Southern California firestorm. The research was started in 1995 and concluded in 1999. The test protocols developed were written into “Standards” language intended to determine the performance of decking when exposed to the two common forms of ignition: direct flame or flaming debris.

Because there are two common scenarios for ignition of decking, two separate tests were developed. One test examined flame impingement on the underside of the decking, and the other test examined the flammability of the exposed side of the decking from flaming debris. The tests included 15 different
commercial deckboard materials comprised of wood, wood/plastic composites, and pure plastic. All of the materials were purchased from retail stores.

An exemplar of a deck was constructed from each of the 15 materials and attached to a gypsum wall board. A 12 x 12 inch burner that replicated an 80-kW fire (which is the equivalent to about 1 kg of paper trash) was placed directly under each exemplar deck in an area slightly larger than its burner size for 3 minutes. The exposed side of the decking was simply exposed to burning debris. The exemplar decks were observed for a total of forty minutes to determine whether: (1) runaway combustion occurred; (2) the decking dripped flaming combustibles while on fire; and (3) the decking collapsed.

IV. Results of Testing

Several of the materials (including redwood, “Smart Deck,” and “Weatherbest”) displayed no significant degradation effects. Approximately six of the materials (which were either plastic or wood/plastic composites) began dripping flammable materials within 3 minutes of being exposed to the burner. The most alarming test data involved Eon and Maxituf, another brand of plastic decking. Eon and Maxituf not only begin dripping flammable materials after exposure to the burner for less than one minute, but Eon actually began dripping flaming materials after approximately 30 seconds of exposure.

Eon also exhibited signs of accelerated (or “runaway”) combustion. The authors of the study noted that Eon (which again, was the only decking material tested that was comprised of ABS) underwent very rapid and intense runaway combustion and had to be extinguished after approximately 3 minutes. Eon also released corrosive gases that degraded all of the instrumentation in the laboratory.

As part of the testing, the peak heat release rate was also measured. The peak heat release rate is that point where the heat release rate of a fire is at its highest before it becomes limited by either the amount of fuel or oxygen that is available. Eon once again produced disturbing data. While redwood had a peak heat release rate of approximately 12 kW, Eon exhibited a peak heat release rate of $1055 \text{kW}$. This was 360 kW higher than Maxituf, and over 2½ times higher than the next highest material.

The conclusions drawn from the testing were notable. The wood decking did not exhibit any significant signs of degradation during the testing. Most of the plastic materials collapsed very quickly, but did not exhibit sustained combustion. Eon, however, exhibited rapid and intense combustion.

V. Theories of Liability for Fire Losses Involving Eon

There are fire losses that are sometimes incendiary in nature and others where a cause cannot be determined. In those circumstances, it is important to pay particular attention to alternative or “spread” theories of recovery when reviewing subrogation opportunities. In evaluating a spread theory of recovery, it is
important to consider whether the initial fire progressed past reasonable expectations because it was exacerbated by some type of unusually flammable construction material, or by the failure of fire suppression/monitoring devices.

Eon is one type of construction material that could potentially form the basis for an effective spread theory of recovery. As previously discussed, Eon is composed of an alternative material that produces extraordinary, sustained combustion. Eon releases significant amounts of heat as well as corrosive gases. Various causes of action including strict products liability, negligence and warranty claims may exist for fires that were exacerbated by Eon decking, especially if the fire impinges on the residence because of runaway combustion.

VI. Your Investigation

When confronted with a fire loss that appears to have originated in or around an outdoor deck, always be sure that you obtain pertinent information during your investigation regarding the materials used to construct the deck. If the deck was constructed of Eon, a viable spread theory of recovery may exist for some or all of the damage sustained. It is important that appropriate experts are retained to evaluate a spread theory of recovery given the inherent difficulty of proving such claims. For instance, a fire origin and cause investigator can certainly provide insight as to the area of origin and potential cause of the fire. However, additional experts may be necessary to delineate the amount of damage that would have occurred because of the initial fire event from the additional damage caused by Eon’s extraordinary combustion. Such experts are typically referred to as “Fire Modelers” and can be instrumental in segregating additional damages caused by other contributing factors such as construction materials and/or fire suppression systems. Cozen O’Connor stands ready to assist you in proving these claims with scientific data, appropriate experts, and a wealth of experience in handling fire spread theories of recovery.
DIRECTORY OF OFFICES & CONTACT ATTORNEYS

Elliott R. Feldman, Esquire
Chairman, National and International Subrogation & Recovery Department
Cozen O’Connor, 1900 Market Street, Philadelphia, PA 19103
800.523.2900 or 215.665.2071 • Fax: 215.701.2071 • efeldman@cozen.com

PLEASE CONTACT ANY OF OUR OFFICES FOR ADDITIONAL INFORMATION OR VISIT US ONLINE AT WWW.COZEN.COM