EPDM: A Flexible Choice for Today's Roofing Solutions

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Since the early 1960s, the EPDM single-ply rubber roofing membrane has been an appealing choice in the commercial roofing industry. EPDM manufacturers have ensured the product's success by continually investing in technological innovations to improve both overall performance and installation methods.

For contractors, EPDM remains a user-friendly and safe roofing product. The installation of the roofing membrane is performed without any heat, dangerous fumes or heavy machinery. Aside from adhesive application equipment, no special equipment is required to lay down EPDM panels. "No other roofing product offers the wide range of installation advantages for contractors," says Dan Relich, project manager at Cudahy, WI-based Cudahy Roofing and Supply Inc. Any time a roofing system can be installed without the use of potentially dangerous material, such as hot asphalt with liquid temperatures in the 500-degree F range, it translates into a significant safety advantage. EPDM roofing systems also feature low maintenance, easy repair options and low annualized costs.

Contractors' preference for EPDM EPDM offers the ability to install a long-term roof system with relative ease and worker safety. "Since EPDM can be easily installed with large sheets, it reduces a tremendous amount of labor as compared to other roofing systems," comments Bill O'Neill, roofing consultant at Boston, MA-based Building Envelope Management Inc., who has specified and monitored over 10 million square feet of EPDM installations over the past 20 years. Because EPDM exhibits superior flexibility and high strength, the membrane can easily contour to unusual roof shapes. This durable membrane also features outstanding thermal expansion and elongation, and provides excellent resistance to tears and abrasion. The large sheets of EPDM allow for quick coverage of an open roof deck- an important feature when contractors are trying to meet construction schedules or working around inclement weather.

A growing number of contractors are specializing in EPDM installation, due to its low callbacks and insurance premiums. Hans Philippo, president of Florence, KY-based Holland Roofing has a professional preference for the EPDM membrane, with EPDM accounting for about 90% of his company's roofing contracting projects. "We just love working with EPDM," says Philippo. "It's such a clean, user-friendly and overall wonderful product. And since we receive very few callbacks with EPDM-related projects, it clearly outperforms other roofing materials. And when EPDM makes us look good, our company looks good."

Manufacturers' commitment In response to technological advancements, membrane research, and contractor requests for more ergonomic installation methods, EPDM accessory products continue to evolve in order to reduce a contractor's fatigue and discomfort from repetitive motions and kneeling. The innovation of seam tapes in the 1980s to replace liquid adhesives has resulted in improved system reliability, and greater productivity for the contractor. Self-adhering components, with factory-applied adhesive tape, have provided another boost to roof system quality, especially in the more problematic areas such as flashing installations.

The 90 mil EPDM roof system is redefining the roofing industry and the expectations of architects, roof consultants and building owners. After providing outstanding performance for over 15 years, the 90 mil membrane is now available as part of a new 30 year system warranty. This highly puncture resistant and tough

membrane offers the thickest layer of monolithic waterproof protection in the roofing industry. This is the longest performance guarantee in the roofing industry, and the guarantee can include warranty coverage for punctures, hail and wind speeds up to 100 mph.

In geographical and climatically appropriate areas of the country, the application of a white acrylic coating on a fully-adhered EPDM roof system will provide the building owner with numerous additional benefits. In addition to receiving EPDM's outstanding weathering characteristics, the application of an acrylic coating will also provide potential energy savings, reduce peak cooling demand on air conditioning equipment, decrease pollution and offer extended roof service life. In extreme southern climates, a white-coated EPDM roof offers reflectivity and maintains high solar reflectance values over time.

A New ERA in Roofing In an effort to address the need to provide the construction and roofing communities with current data documenting the many benefits and improvements of EPDM roofing systems, two leading EPDM roofing manufacturers (Firestone Building Products Company and Carlisle SynTec Incorporated), along with a dozen of their raw material suppliers, recently formed the EPDM Roofing Association (ERA).

In addition to ERA's mission to educate and be a resource for the roofing and construction community as a whole, the association is especially committed to making sure that roofing contractors and consultants are informed of the latest installation and technical advancements. For the next year, ERA will be releasing independent research studies, technical bulletins and reports that will provide the most up-to-date information, as well as address any information gaps about the EPDM roofing membrane. Topics will include cost-effective roofing solutions, warranty and repair, longevity and sustainability, hail performance and a balanced assessment on reflective roofs.

There is a growing trend among enlightened building owners to realize the benefit of procuring long-term performance from their roof systems. Many facility managers are being evaluated on how building systems perform. And because of the significant financial investment involved in roofing systems, the introduction of the 90 mil systems with 30-year warranties has been received with great enthusiasm. Not only is the life cycle cost lower, the disruption of building occupants is minimized.

Lost time due to roof leaks and reroofing construction can result in substantial overhead costs and lost revenues-a critical concern in any economic climate. Informed contractors sell quality and have the owner's best interest at heart.

Providing roof systems that achieve long-term performance and provide long-term security for the building owner will continue to be both the contractor's and the building owner's goal.

The EPDM Roofing Association will also conduct case studies featuring new roofing installations, roofing removal and replacement roof system installation projects. These case studies will highlight the unique and challenging circumstances involving each project, specific installation methods used and other helpful insights. Called the Roofing Contractor's Corner, these case studies will be regularly featured on ERA's Web site (www.epdmroofs.org) and in its quarterly newsletter.

A new "ERA" in roofing has arrived, and the EPDM manufacturers, along with their raw material suppliers, will forge ahead-continuing to take EPDM roofing systems to the next level of performance excellence.

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Through ERA, the EPDM roofing industry will educate and be a valuable resource in the following areas:

- Technical Assistance and Updates
- Latest and Improved Installation Methods
- Timely and Relevant Research Studies
- Independent Testing Results
- Balanced Perspectives on Environmental and Energy Issues

EPDM field performance characteristics The greatest test of any construction material is how it

performs under actual field conditions. Forty years of empirical experience with field applications have shown EPDM to have the roofing industry's longest average service life, according to ERA. Characteristics that contribute to this superior overall system performance include:

- Cyclical membrane fatigue resistance
- Proven hail resistance
- High degree of ozone, weathering and abrasion resistance
- Low temperature flexibility
- Superior resistance to extreme heat
- Thermal shock durability
- Ultraviolet radiation resistance

A Closer Look at EPDM's Physical Properties

- Chemical compounds (ethylene propylene diene monomer)
- Compounded with carbon black, processing oils and various cross-linking and stabilizing agents
- Recaptures its shape after stretching (thermoset membrane)
- Manufactured in large sheets—from up to 50 feet wide and lengths up to 200 feet
- Available in thicknesses of 45, 60, 75 and 90 mils

EPDM's Three Application Methods:

1. The Ballasted System: Ballasted systems—the workhorse of the EPDM roofing business—account for approximately 35% of EPDM installations today. Using large panels measuring up to 50 feet by 200 feet, the ballasted system provides fast coverage at a relatively low cost. The EPDM panels are loose-laid over the insulation and held in place by smooth, river-washed stones. Ballasted systems are primarily used for large new construction projects, but can also be used on roof replacement or recovery projects where the existing structure can support the additional weight. Ballasted systems are traditionally the easiest of all systems to install and have earned the Underwriters Laboratories (UL) Class A rating.

2. The Mechanically-Attached System: Mechanically-attached systems can be installed using large panels and attached through the membrane, or by using narrow panels with the attachment mechanism being installed in the side laps. Non-reinforced or scrim reinforced membranes can be used, depending on the needs of the building owner. The membrane is then attached using either round plates or batten strips to the underlying deck. Mechanically-attached systems are lightweight and are ideal for all building sizes and configurations.

3. The Fully-Adhered System: Fully-adhered systems use panels measuring up to 30 feet by 100 feet. The membrane is bonded to the insulation, which has been physically attached, using mechanical fasteners, stress plates and/or adhesives. Either non-reinforced or scrim reinforced membrane can be used, with the non-reinforced membrane making up most adhered installations. Fully-adhered systems are lightweight and ideal for a wide range of building sizes and geometric configurations, including high-slope applications. Because of recent technological advances in application, the fully-adhered system is becoming the system of choice for roofing removal and replacement applications in many areas of the country.