Firestone
BUILDING PRODUCTS

MEMORANDUM

- **Resistance to static loading**

  The test simulates a small object (∅ 10 mm) being pushed into the membrane. There are four classes of acceptance and Firestone .045" EPDM on concrete falls into the highest class (L4). This means the membrane can withstand a load (converted) in excess of 3.2 N/mm^2, provided of course that both surfaces are smooth and free of sharp edges (to avoid punctures).

- **Behaviour under compression**

  Tests indicate that Firestone EPDM membranes have little or no deformation under a permanent weight. For your information, the maximum change in thickness of the Firestone EPDM membrane under a permanent load of 20 kN/m^2 will not exceed 10% of the thickness (0.924 mm for standard 1.14mm membrane).
  Moreover, only 25 to 35% of this deformation are irreversible and are referred to as "permanent set".
  This is not the case for FormFlash material, which is in an uncured state (soft) during installation and for this reason, requires an additional protection by a cured membrane.

  Based on the above properties, we are not so much concerned about the compression that normally occurs when the membrane will be loaded with a heavy weight. We are more concerned about an possible mechanical damage of the membrane by rough substrates, sharp edges, etc. as well during installation as in service.

  In case of concrete pillars, they have sharp or rough (irregular) edges, which can easily penetrate a softer material. Under a severe/extreme load, the edges of a concrete pillar may penetrate (deform and cut) the rubber membrane.

  Therefore, in order to play it safe, I would recommend that the load (force) on top of the EPDM membrane be less than 35 kg/square cm. Furthermore, if the load on the EPDM membrane exceeds about 40 kg/square cm. it may compress the membrane itself, resulting in a blow-out condition (deformation), especially during hot weather (the summer months).

- **System Build-up**

  The main principles when installing this type of applications are the following: sufficient protection for the EPDM membrane for the forces induced during installation and service life and a secure installation. The following conditions need therefore to be met:

  <u>Preparation of the substrate</u>
  The substrate has to be smooth, even and free of sharp edges and well compacted before the membrane can be applied. For further info about soil preparation we refer to our technical guidelines.

  <u>Protection of the membrane</u>
  A protection layer is needed between the substrate and the membrane and between

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membrane and build-up to prevent mechanical damage of the membrane both during installation as in service. Between the substrate and the EPDM, we recommend using a geotextile (polyester fleece of min. 300 gr/m2). This geotextile will function as a cushion-layer and will prevent any damage of the membrane that could be caused by abrasion from a rough substrate. We also recommend protecting the topside of the membrane against mechanical damage, especially due to forces encountered whilst installing the top layer, again using a layer of geotextile (minimum weight 300 gr/m^2)

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