

TECHNICAL Bulletin

Subject: Polyurethane Roofing
Compounds

Bulletin #: 001

Date: April 1992

THERMAX® N990/N991 IN POLYURETHANE ROOFING COMPOUNDS

Both Thermax® Floform N990 and Powder N991 are employed in polyurethane roofing compounds.

A polyurethane (EU) roofing compound consists of two solutions. One solution contains the additives, fillers and curing agent while the other solution contains the EU prepolymer. The two solutions are mixed together at the roof site and then spread out over the roof. The solution can cure in 1 to 5 hours depending on the formulation.

The addition of Thermax® can vary from 10% to 30% by weight. Thermax® acts as an inert filler while enhancing tensile strength and tear strength. Relatively high elongation and low hardness can also be maintained.

Thermax® Powder is generally employed to ensure adequate dispersion due to the low shear force nature of the liquid mixing system. If Thermax® Floform N990 is used, a two pass mixing process is required to break up the pellets and disperse the carbon black.

A typical formulation may contain the following ingredients:

Solution A: T.D.I.

Viscosity: 8,000 cps

Solution B: N990 or N991

CaCO₃

MgSiO₃

Talc

DOP (dioctyl phthalate)

PPG (propylene glycol)

Viscosity: 20,000 cps

Thermax® and mineral fillers are used to enhance the physical properties of the cured compound. Since this type of formulation is essentially a castable liquid, low viscosity is very important. The low level of structure, large particle size and inert surface chemistry of Thermax® allows it to be added at relatively high levels without greatly increasing the viscosity of the cured compound. Reinforcing and semi-reinforcing carbon blacks can not be used since their high levels of structure, small particle size and reactive surface chemistry would dramatically increase the viscosity of the solution and potentially affect the cure.