



Hot Asphalt and Built-up Roofing

How Hot Is Hot Enough? How Hot Is Too Hot?

Application of built-up roofing during cold weather has been a source of growing concern to the roofing industry for many years. With building construction now extending over a 12 month period, we in the roofing field have to face the facts and consider all aspects of winter roofing and its effect on the performance of the roofing system.

Since asphalt is one of the most important elements in the built-up roofing system, one always tends to treat it very carefully inasmuch as its safe maximum temperature is concerned.

Since 1978 a considerable amount of research work has been done on asphalts used for BUR work and from this has resulted the Equiviscous Temperature (EVT) concept. Prior to this the application temperature of the mopping asphalt had always been based on empirically determined temperature limits. With the advent of the EVT it is now recommended practice to apply asphalts at a temperature based on its viscosity at point of application. With this concept the fluidity of the asphalt being applied is the same and will help to ensure that the quantity of interply asphalt will be at the recommended quantity (0.85 - 1.2 kg/m²) regardless of the type used, provided that the proper application techniques are followed.

It is a known fact that during cold weather application the asphalt chills rapidly, therefore, its viscosity increases and could result in several potential problems that could affect the performance of the system. First, if too much asphalt is applied between the plies of felt there is danger of slippage of the membrane once the warm summer temperatures appear. A colder asphalt does not provide good adhesion and this could also lead to slippage. Colder asphalt does not spread easily and voids could result which could cause the formation of blisters. Research has shown that when asphalts are applied at greater thicknesses than recommended the thermally induced stresses may be larger and splitting of the membrane could result during periods of extreme cold.

The potential problems due to the use of inadequately heated asphalts are indeed serious. The research leading to the development of the Equiviscous Temperature concept has shown that asphalts in order to be at the recommended viscosity at point of application, have to be heated at high temperatures and that this process will not adversely affect the waterproofing and weathering properties of the asphalt.

What are those temperatures?

The suppliers of built-up roofing asphalts now indicate on the labels affixed to the containers, and should do likewise on the Bill of Lading in the case of hot liquid asphalt, the roofing information:

1. The Equiviscous Temperature (EVT)
2. The Flash Point Temperature (FP)
3. The Final Blowing Temperature (FBT)

For the sake of brevity and in order not to get in a long technical dissertation on the above, we offer the following guidelines:

1. Always apply the asphalt at $\pm 15^{\circ}\text{C}$ of the EVT specified. Remember that between the time the asphalt is pumped from the tanker onto the roof a temperature drip is experienced and could be as high as $30 - 45^{\circ}\text{C}$ during winter. This has to be taken in consideration. Use insulated buggies where possible.
2. Never heat the asphalt close to its Flash Point Temperature for obvious safety considerations.
3. The asphalt in a tanker should be kept at or below its Final Blowing Temperature. Should it become necessary to heat the asphalt above the FBT in order to get the right EVT on the roof, the period should be limited to 4 hours, or better still, transfer the asphalt from the large tanker to a kettle in which it can be heated to the required temperature for a short period of time.