

Thinsulate™ Insulation

Technical Bulletin

Guidelines for the lamination and processing of Thinsulate™ Flex Insulation Type FX

Thinsulate Flex insulation type FX is a unique elastomeric insulation, which provides stretch and recovery in addition to warmth. This makes it ideal for activewear and handwear applications which may call for lamination of the insulation to stretchable, flexible shell fabrics and linings.

To provide the recovery properties necessary for compatibility with stretchy, flexible fabrics, a low-melt temperature component has been incorporated into the Thinsulate Flex insulation type FX product. Therefore, anyone using high temperature processes should be aware of the temperature sensitivity of Thinsulate Flex insulation.

It is important to retain the initial warmth and elastomeric properties of Thinsulate Flex insulation. Typically, other Thinsulate insulation products have melt temperatures falling between 150-170°C (302-338°F). In contrast, **Thinsulate Flex insulation has a melt temperature of 98°C (208°F). Thus, the melting point of Thinsulate Flex insulation is approximately 52°C (94°F) lower than other Thinsulate insulation products.** Exposure to excessive heat will result in loss of properties and noticeable stiffness. Thus, lamination and/or manufacturing processes should be adjusted accordingly and monitored to achieve optimum results.

Thinsulate Flex insulation has been successfully laminated to stretch fabrics including fleece, tricot, stretch wovens, and spandex blends using either traditional water-based, hot-melt, solvent-based or flame lamination processes. Successful laminations have been performed at processing temperatures of 80-85°C (176-185°F). This includes both single and double pass lamination processes. Thinsulate Flex insulation should not be placed in direct contact with any heated process surface. Instead, place the other lamination substrate (fleece, spandex, tricot, etc.) between the insulation and the processing equipment. This will help reduce the effects of high temperatures on the insulation. Wash durable, water-based adhesives are recommended; other adhesives have also been found successful.

If you have further questions or concerns regarding Thinsulate Flex insulation type FX, please contact 3M Technical Service at 651-733-8697.