

Type KL

ORIGINAL

Product Description

3M™ Thinsulate™ Insulation (Type KL) is a high-loft, soft and comfortable product, designed for use in lofty apparel. It is ideal for use in all types of consumer outerwear apparel.

Intended Uses

General wear, sportswear and workwear. This is not intended for footwear or accessories (handwear, headwear, etc.).

Fiber Composition

U.S. Convention:

Insulation:
100% Polyester

ISO Convention:

Insulation:
100% polyester

Flammability

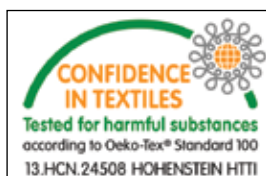
Class 1 — Normal Flammability per procedure in 16 CFR Part 1610, Federal Flammable Fabrics Act.

Warmth While Damp

Individual fibers absorb less than 1% by weight of water. Retains most of its insulating ability even under damp conditions.

Restricted Substances

3M™ Thinsulate™ Insulation (Type KL) meets the harmful substances requirements of OEKO-TEX® Standard 100 and has been awarded the OEKO-TEX® Certificate for Product Class 1 by Hohenstein Institutes (meets the human-ecological requirements of the standard presently established for baby articles).



Available Widths

60" (1.52 m) roll nominal width with a 2" (5.1 cm) inside diameter core of 58" (1.475 m) nominal length. Please refer to comment in "Roll Handling Instructions" section of this Technical Data Sheet.

Properties

Typical Values*	3M™ Thinsulate™ Insulation (Type KL)						
	Basis Weight**		Thickness ASTM D 5736 @ 0.002 psi (0.014 kPa)		Thermal Resistance (R _{ct}) ASTM F 1868		
	g/m ²	oz/yd ²	cm	inch	clo	R-value	m ² °K/W
KL100	100	2.9	1.3	0.51	2.1	1.8	0.32
KL150	150	4.4	1.9	0.74	2.9	2.5	0.44
KL200	200	5.9	2.4	0.96	3.6	3.2	0.56
KL250	250	7.4	3.0	1.18	4.4	3.8	0.68

* Values represent the averages of the population of lots at date of publication

** Actual values may vary up to +/-10% from the indicated Typical Values

$$\text{Clo (R}_{ct}) = \frac{(0.18 \text{ °C} \times \text{m}^2 \times \text{hr})}{\text{K cal}}$$

Construction Guidelines

GENERAL MANUFACTURING GUIDELINES

3M™ Thinsulate™ Insulation products need to be properly used in order to produce their intended benefits in apparel and related articles. For this reason, specifiers, garment manufacturers and converters need to abide by the construction guidelines and care instructions in this Technical Data Sheet, as well as by the proper end-article placement and coverage guidelines in the *Product Usage Requirements (PUR)* brochure. It is primarily the garment manufacturer's/designer's responsibility to assure their end customers' satisfaction by:

1. Selecting appropriate shell and lining fabrics, including findings and recommended scrims for the intended application.
2. Following the construction guidelines supplied by 3M for the design and manufacture of each garment.
3. Determination of the proper care instructions (taking into account 3M recommended care instructions) and creation of the appropriate label to be sewn into each garment.

GENERAL FABRIC RECOMMENDATIONS

The 3M™ Thinsulate™ Insulation family of products does not require downproof fabrics in most instances. However, when using 3M™ Thinsulate™ Insulation with fabrics that are not downproof, the potential for fiber migration should be determined.

- Fiber migration due to wash durability can be detected by sewing a pillow of the garment components — following the construction guidelines — and washing it five times as recommended. Observe the fabric surface for protruding fiber ends.
- Fiber migration caused by other mechanisms can be assessed by submitting fabric samples to the 3M laboratory through 3M sales representatives.

The use of fiberproof scrims to separate the insulation from textured shell or lining fabrics, coated, micro-coated, or waterproof breathable fabrics is required when needed to prevent fiber migration. This can be accomplished by adding scrim(s) during the garment construction process when necessary.

When using coated, micro-coated, or waterproof breathable fabrics, the durability of the insulation is decreased because of surface friction and because water cannot be flushed through the garment and an intervening layer of scrim should be used against such fabrics. Durability may also be enhanced by providing a means via openings or vents at the bottom of a garment through which water can be easily expelled to minimize stress on the insulation during agitation and water extraction.

GUIDELINES FOR GARMENT CONSTRUCTION

Allow 24 hours for recovery of 3M™ Thinsulate™ Insulation (Type KL) after removal from vacuum pack.

3M™ Thinsulate™ Insulation (Type KL) may be quilted using conventional quilting equipment. Quilt spacings less than 4" are not recommended in order to maintain maximum warmth. Channel quilts of 4" to 7" are recommended.

Thorough garment testing is necessary for quilt dimensions outside of the recommended range.

For scrims, please consult your 3M sales representative. Fiber migration should be expected with textured fabrics, micro-coated fabrics or taffetas, especially for constructions having less than 86 picks per inch/34 picks per cm (or having a total thread count of less than 190 threads per inch/75 threads per cm). Applications with textured, coated or waterproof breathable fabrics may also cause abrasion due to surface friction. **All constructions, regardless of pick count, should be evaluated for fiber migration following the previously stated instructions.**

ROLL HANDLING INSTRUCTIONS

Lay flat, do not stand on end.

Allow 24 hours for recovery after vacuum pack is removed.

Note: The core is about 2.25 cm shorter in length than the width of the insulation product on each side; take this into account when mounting and unwinding the roll to prevent damage to the sides.

For questions, contact 3M Home Care Division Customer Service at 651-575-6694.

**CAUTION**

To reduce the inhalation of fibers or airborne dust, always use an appropriate respirator when the cutting or processing of rolls is expected to produce fibrous or airborne dust.

Care Instructions



Garments made with 3M™ Thinsulate™ Insulation (Type KL) may be home machine washed depending on the garment manufacturer's recommendation. Care instructions from the garment manufacturer need to be followed to ensure integrity of the overall garment.

INSTRUCTIONS FOR: MACHINE WASH ONLY GARMENTS:

+ Machine wash cold (30 °C, 85 °F), delicate cycle. Use only non-chlorine bleach when needed. Tumble dry, low heat. Do not steam press. Steam only or use cool iron.

IMPORTANT NOTICE

WARRANTY: In the event any 3M™ Thinsulate™ Insulation product is found to be defective in material, workmanship or not in conformance with any express warranty for a specific purpose, 3M's only obligation and your exclusive remedy shall be to repair, replace or refund the purchase price of such parts or products upon timely notification thereof and substantiation that the product has been stored, maintained and used in accordance with 3M's written instructions.

EXCLUSIONS TO WARRANTY: THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY OR CONDITION OF QUALITY, EXCEPT OF TITLE AND AGAINST PATENT INFRINGEMENT.

LIMITATION OF LIABILITY: Except as provided above, 3M shall not be liable or responsible for any loss or damage, whether direct, indirect, incidental, special or consequential, arising out of the sale, use or misuse of 3M™ Thinsulate™ Insulation products or the user's inability to use such products. **THE REMEDIES SET FORTH HEREIN ARE EXCLUSIVE.**

3M's general terms and conditions also apply to the sale of this product.

3M may change the product, specifications and availability of the product as improvements are made: therefore, user should contact 3M for latest information before specifying the product.

All 3M™ Thinsulate™ Insulation rolls and 3M™ Thinsulate™ Featherless Insulation bags are produced within strict dimensional and weight tolerance specifications. However, changes in environment and other factors may cause the final dimensions and/or bag weights to shift, shrink, or otherwise change up to a maximum of ±4% during handling or shipment.

Please allow products to recover 24 hours after vacuum pack is removed.



Home Care Division

3M Center, Building 223-4NE-13
St. Paul, MN 55144-1000
651-575-6694
Thinsulate.com

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