

Featherless

Type FL600

3M THINSULATE™
Insulation

AUGUST 2016

Product Description

3M™ Thinsulate™ Featherless Insulation (Type FL600) is an alternative to natural down designed to mimic its look and performance:

- As lightweight as natural down
- Highly breathable
- Extreme warmth
- Performs when wet

Intended Uses

General wear, sportswear, accessories and bedding.

Fiber Composition

U.S. Convention:

Insulation:
100% Polyester

ISO Convention:

Insulation:
100% polyester

Warmth While Damp

Individual fibers absorb less than 1% by weight of water; retains insulating ability even under damp conditions.

Restricted Substances

3M™ Thinsulate™ Featherless Insulation (Type FL600) 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 Product Forms

Sample Size Quantities:

1.5 kg Vacuum Packed

Production Size Quantities:

25 kg Vacuum Packed.
(Minimum Order Quantity: 25 kg).

Construction Guidelines

GENERAL MANUFACTURING GUIDELINES

3M™ Thinsulate™ Featherless Insulation (Type FL600) needs to be properly used in order to produce its intended benefits in apparel and related articles. For this reason, specifiers, garment manufacturers and converters need to abide by the construction and care instructions in this Technical Data Sheet, as well as by any proper end-article placement and coverage instructions 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 instructions supplied by 3M for the design and manufacture of each article.

When using coated, micro-coated, or waterproof breathable fabrics, the durability of the insulation is potentially diminished due to surface friction and the inability to flush water through the garment. An intervening scrim should be used with such fabrics. Durability may also be enhanced by providing a means for expelling water at the bottom of a garment (e.g., via openings or vents); this helps reduce stress on the insulation during agitation and water extraction.

INSTRUCTIONS FOR GARMENT CONSTRUCTION

Allow 24 hours for recovery of 3M™ Thinsulate™ Featherless Insulation (Type FL600) after removal from vacuum pack. Fibers should be re-lofted to achieve desired performance attributes. For guidance on re-lofting, reference the technical bulletin *Preparing 3M™ Thinsulate™ Featherless Insulation for Use*.

3M™ Thinsulate™ Featherless Insulation (Type FL600) may be incorporated into an end article as follows:

1. “Quilt-through”/“Direct Sew”: 3M™ Thinsulate™ Featherless Insulation (Type FL600) can be weighed and distributed evenly over the bottom pattern section, adding the top pattern section and quilting through the layers.
2. “Channel-fill”: 3M™ Thinsulate™ Featherless Insulation (Type FL600) can be weighed and stuffed individually into each channel of a pre-quilted shell/lining ensemble. Care needs to be taken to make sure that each channel is evenly stuffed throughout, and that the amount of fill is properly calculated and weighed.
3. “Blown-in”: 3M™ Thinsulate™ Featherless Insulation (Type FL600) can be “blown” into end articles in some applications (depending on particular equipment, operating protocols and manufacturing control).

The allowable channel sizes and quilt spacings will depend on the desired end coverage (as measured in terms of g/m² of the fill), choice of fabric, and the method of filling per above. Please refer to the table below for allowable constructions (anything outside of this will require contact with 3M and thorough article testing):


Basis Weight of Insulation, g/m ²	Construction Method	Channel of Quilt Spacings			
		3" x 3"	4" x 4"	3" x 12"	4" x 12"
400	Direct Sew				
300	Direct Sew				
200	Direct Sew		RECOMMENDED		
200	Channel Fill			NOT RECOMMENDED	
100	Direct Sew			NOT RECOMMENDED	

All constructions, regardless of pick count, should be evaluated for fiber migration following the previously stated instructions. 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.

PRODUCT HANDLING INSTRUCTIONS

Allow 24 hours for recovery after vacuum pack is removed. Fibers should be re-lofted to achieve desired performance attributes.

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 handling or processing of material is expected to produce airborne fibers or dust.

Care Instructions



Articles made with 3M™ Thinsulate™ Featherless Insulation (Type FL600) 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.

Illustrative Examples

MEASURED PROPERTIES OF 3M™ THINSULATE™ FEATHERLESS INSULATION (TYPE FL600) IN QUILTED APPLICATIONS:

The following results are based on internal 3M testing of 3M™ Thinsulate™ Featherless Insulation (Type FL600) quilted in the indicated patterns and filling techniques between a shell and lining fabric consisting of a 104 × 104 thread count 1.9 oz/yd² Nylon Ripstop (5 ribs per inch). Quilting data are based on limited produced samples and are included here for illustrative purposes only and do not mean that the final results obtained by a garment manufacturer will be the same with these or other fabric materials. The quilting and filling conditions used by the garment factory, as well as other variables, may influence results. Manufacturers need to conduct their own testing using their own shell and lining fabrics to determine suitability for their application(s), and whether the garments meet any particular standard or specification.

Basis Weight of Insulation, g/m ²	Construction Method	Thermal Resistance, clo, per ASTM C 518 @ thickness corresponding to 0.002 psi (0.014 kPa) Before Wash (at indicated Channel or Quilt Spacings)*			
		3" × 3"	4" × 4"	3" × 12"	4" × 12"
		400	Direct Sew	4.0	5.3
300	Direct Sew	3.8	4.6	5.2	6.2
200	Direct Sew	3.0	3.7	4.3	4.0
200	Channel Fill	3.6	3.9		
100	Direct Sew	2.1	2.6		

Values after laundering 10 times averaged less than ± 0.2 clo difference from initial values

Basis Weight of Insulation, g/m ²	Construction Method	Thickness, cm, per ASTM D 5736 @ 0.002 psi (0.014 kPa) Before Wash (at indicated Channel or Quilt Spacings)*			
		3" × 3"	4" × 4"	3" × 12"	4" × 12"
		400	Direct Sew	2.6	3.5
300	Direct Sew	2.5	3.2	3.4	4.5
200	Direct Sew	2.0	2.7	3.1	3.7
200	Channel Fill	2.8	3.5		
100	Direct Sew	1.4	1.9		

Values after laundering 10 times averaged less than ± 0.2 cm difference from initial values

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**

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