

# Type C ORIGINAL

## Product Description

3M™ Thinsulate™ Insulation (Types C/CS/CDS) is ideal when a thin, compressible insulation is important.

- Breathable
- Moisture-resistant
- Washed or dry-cleaned depending on individual manufacturers' recommendations
- Hypoallergenic

## Intended Uses

Outerwear, sportswear, gloves and accessories. Some 3M™ Thinsulate™ Insulation products are compliant under the Berry Amendment. Please work with your Sales Representative to obtain formal Berry certification for the items of interest.

## Fiber Composition

### U.S. Convention:

*Insulation:*  
65% Olefin  
35% Polyester

*Scrim: (in CS & CDS)*  
100% Olefin

### ISO Convention:

*Insulation:*  
65% polypropylene  
35% polyester

*Scrim: (in CS & CDS)*  
100% polypropylene

## Flammability

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

## Warmth While Damp

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

## Restricted Substances

3M™ Thinsulate™ Insulation (Type C) 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 width (nominal) with a 2" (5.1 cm) or 3" (7.6 cm) inside diameter core.

## Properties

Typical Values*	3M™ Thinsulate™ Insulation (Types C/CS/CDS)						
	Basis Weight**		Thickness ASTM D 5736 @ 0.002 psi		Thermal Resistance (R <sub>ct</sub> ) ASTM F 1868		
	g/m <sup>2</sup>	oz/yd <sup>2</sup>	cm	inch	clo	R-value	m <sup>2</sup> °K/W
C/CS/CDS40	43	1.3	0.30	0.12	0.7	0.6	0.11
C/CS/CDS70	74	2.2	0.50	0.20	1.0	0.9	0.15
C/CS/CDS100	105	3.1	0.70	0.28	1.3	1.1	0.20
C/CS/CDS150	157	4.6	1.1	0.41	1.9	1.7	0.29
C/CS/CDS200	210	6.2	1.4	0.55	2.5	2.2	0.39
C/CS/CDS250	263	7.8	1.8	0.69	3.1	2.7	0.48
C/CS/CDS300	315	9.3	2.1	0.83	3.7	3.3	0.57

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

\*\* Weight excludes scrim (16 g/m<sup>2</sup> or 0.46 oz/yd<sup>2</sup> for CS, and 31 g/m<sup>2</sup> or 0.92 oz/yd<sup>2</sup> for CDS)

$$\text{Clo (R}_{ct}) = \frac{(0.18 \text{ °C} \times \text{m}^2 \times \text{hr})}{\text{K cal}} \quad \text{R-value} = \frac{(\text{hr} \times \text{ft}^2 \times \text{°F})}{\text{BTU}}$$

## 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 either by using 3M™ Thinsulate™ Insulation products having a scrim on one or both sides, or 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.

### CONSTRUCTION GUIDELINES FOR GARMENTS

Allow 24 hours for recovery of 3M™ Thinsulate™ Insulation (Type C) after removal from packaging.

#### 3M™ Thinsulate™ Insulation (Type C)

3M™ Thinsulate™ Insulation (Type C) may be quilted using conventional quilting equipment. A quilt-through construction of 4" to 7" channel quilts is recommended.

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

Layers may be adhesively laminated prior to quilting.

#### 3M™ Thinsulate™ Insulation (Type CS)

Panel dimensions or quilt spacings are acceptable up to 12" × 18". Quilt spacings less than 4" are not recommended in order to maintain maximum warmth. **Thorough garment testing is necessary for quilt dimensions outside of the recommended size.**

Scrim should face all abrasive fabrics (shell or lining). Abrasive fabrics include: waterproof breathable laminates, coated and micro-coated fabrics and fabrics with textured yarns. In most cases, the scrim should face the shell fabric.

If fabric is used in which migration of fibers may be a problem:

- a) place scrim next to that fabric to prevent migration, or
- b) substitute 3M™ Thinsulate™ Insulation (Type CDS) or
- c) construct a sample pillow, wash 5 times as recommended on your care labels, and observe the surface for protruding fibers.

If it is anticipated that the garment will be worn over dark colored polyester blended fabrics such as uniform shirts or jackets:

- a) place a scrim between the fibers and the lining fabric, or
- b) substitute 3M™ Thinsulate™ Insulation (Type CDS) or
- c) use downproof lining fabric, or
- d) send a sample of lining fabric to the 3M laboratory through your sales representative for fiber migration evaluation.

Scrim-side should face sewing machine table during stitching operations.

#### 3M™ Thinsulate™ Insulation (Type CDS)

Free-hang in edge-stabilized garment constructions.

Additional quilting is unnecessary. Check before using with light colored shell fabrics to determine if quilt lines create an undesirable appearance.

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 (Types C/CS/CDS) may be home machine washed or professionally dry-cleaned 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 warm (40 °C, 105 °F), delicate cycle. Use only non-chlorine bleach when needed. Tumble dry, low heat. Do not steam press. Steam only or use cool iron.

### DRY-CLEAN ONLY GARMENTS:

- + Professionally dry-clean only. Tumble dry, low heat. Do not steam press. Steam only or use cool iron.

### WASH OR DRY-CLEAN GARMENTS:

- + Machine wash warm (40 °C, 105 °F), delicate cycle. Use only non-chlorine bleach when needed. Tumble dry, low heat. Do not steam press. Steam only or use cool iron or professionally dry-clean.

**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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