

Thinsulate
INSULATION
3M

Type FX

**A flexible thermal insulation for
modern flexible fabrics.**



**When you reach for these gloves,
you will no longer have cold hands.**

**Gloves with
Thinsulate™ Thermal Insulation Type FX.**

Thinsulate
INSULATION

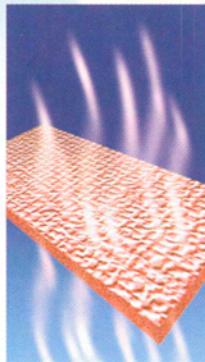
3M

Anything else leaves you cold.

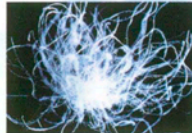
Innovative Thermal Insulation

Thinsulate™ Thermal Insulation Type FX is 3M's newest innovation in insulation and provides added flexibility for increased freedom of movement and warmth without bulk.

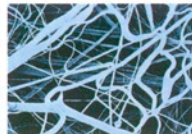
Warm and flexible.



We model our insulation designs on examples found in nature.



Down



Thinsulate™ Insulation

Use

This innovative insulation material is ideal for applications where stretch and recovery are important. For example, gloves, hats and active sportswear. It can be laminated or quilted to a variety of shell and lining fabrics such as fleece, Lycra® or tricot.



Additional Product benefits

Thinsulate™ Thermal Insulation retains exceptional insulation qualities in damp conditions and dries rapidly. Flammability is Class 1 according to test procedure described in 16 CFR Part 1610, Federal Flammable Fabrics Act.

Composition

Thinsulate™ Thermal Insulation Type FX is made of 65% Polyolefin and 35% Polyester.

Typical Properties

	Thickness (cm)	Weight (g/m ²)	Warmth R _{ct} (m ² K/W)	Length (m)	Width (m)
FX40	0,32	43	0,09	318	1,52
FX70	0,50	74	0,12	182	1,52
FX100	0,55	105	0,14	127	1,52

Garment Construction Guidelines

Thinsulate™ Insulation Type FX may be quilted or laminated. Use of a scrim is recommended against any textured surface. A quilt-through construction of 10 cm to 15 cm channels is recommended for non-laminated applications. Single pass laminated constructions may be used in applications up to 30 cm x 45 cm. Dual pass laminated constructions (tri-laminates) may be used in applications up to 55 cm x 55 cm. Please consult your sales representative for construction applications not listed above. For further laminating instructions please see our FX Technical Bulletin.

Care Instructions



Stretchable,
flexible



w a r m t h



3M Innovation

Your fabrics stretch,

why shouldn't your

i n s u l a t i o n ?

40% stretch in all directions . . .

Now there's an insulation that stretches when your fabrics stretch . . . and pulls right back again.

Thinsulate™ Flex Insulation is the ultimate for cold-weather active wear. It stretches a full 40% in all directions. And because it recovers so well, it won't wrinkle your fabrics.

Today's popular, stretchable materials, such as fleece, Lycra® and nylon, don't provide much warmth on their own. That's why we created Thinsulate Flex insulation. It's the perfect solution for insulating items that have little inherent warmth, and it's designed to work with these fabrics.

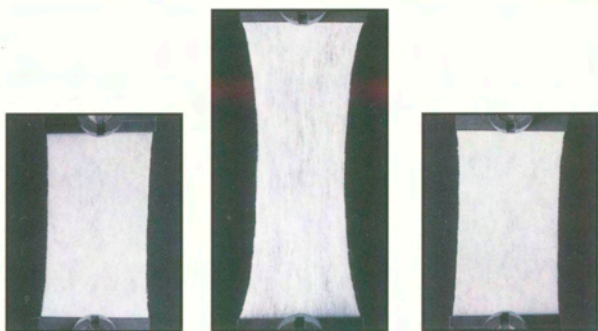
. . . plus all the performance you'd expect from Thinsulate™ Insulation

Thinsulate Flex insulation sacrifices very little warmth for its extreme flexibility. For comparable weights, in fact, it has nearly 80% of the warmth of our original Thinsulate insulation. And, like the original, it retains its warmth even when wet because it absorbs less than 1% of its weight in water.

A unique, elastomeric insulation

Conventional insulations can tear under extreme conditions of stretching or flexing. This, of course, can result in cold spots in your garments, severely compromising the quality. Thinsulate Flex insulation, however, is made with an entirely new construction that can stretch and recover. This construction, coupled with the addition of elasticized fibers made by a proprietary process, allows Thinsulate Flex insulation to elongate with today's high-tech, stretchable fabrics, then quickly return to its original shape.

Yet for all its stretchings and flexings, Thinsulate Flex insulation stands up to machine washings as well as our original Thinsulate insulation. Even under cold temperatures, the elastomeric fibers remain tough, yet resilient — providing warmth coupled with stretch and recovery features for active, cold weather applications. It is lightweight, comfortable and breathable. And because it requires no scrim, it maintains a soft hand and drape and creates a smooth silhouette. It is truly a major advancement in insulation technology — stretchable, flexible and warm.



Thinsulate™ Flex Insulation . . . stretches up to 40%. . . and back again, without wrinkling your garments.

Stretchable, flexible warmth



Another high-tech innovation from the brand that means warm

When Thinsulate™ Insulation was introduced some 25 years ago, it was the most innovative insulation of the day: the first “warmth without bulk” insulation. Since that time, 3M has never stopped looking for even more innovative and high-tech ways to keep your customers warm: Thinsulate™ Lite Loft™ Insulation, Thinsulate™ Ultra Insulation, Thinsulate™ Flex Insulation, and now Thinsulate™ Supreme Insulation.

Thinsulate™ Flex Insulation Type FX

Thinsulate Flex insulation type FX is a blend of unique elastomeric fine olefin fibers and larger staple fibers. The product is designed for use in applications where stretch and recovery are important. Ideal applications include lamination to fleece, Lycra® or tricot. Technical data is based on ongoing internal 3M laboratory and quality testing. Thinsulate insulation laboratory and manufacturing organizations are ISO9001 and ISO9002 certified.

Technical data

Thinsulate Flex insulation type FX

Uses: Handwear, headwear, apparel

Warmth While Damp: Retains insulating ability in damp conditions. Easily dried.

Flammability: Class 1 — as tested according to procedure described in 16 CFR Part 1610, Federal Flammable Fabrics Act.

Composition: 65% Olefin, 35% Polyester

Typical Properties	Thickness		Weight		Warmth*	
	(cm)	(inches)	(g/m ²)	(oz/yd ²)	Intrinsic Clo (I _c)	R-Value
FX40	0.32	0.13	43	1.3	0.6	0.5
FX100	0.55	0.22	105	3.1	0.9	0.8

*Warmth is for insulation alone. $1 \text{ Clo (I}_c) = \frac{0.18 \text{ }^\circ\text{C} \times \text{m}^2 \times \text{hr}}{\text{K cal}}$ R-value = $\left(\frac{\text{hr} \times \text{ft}^2 \times \text{ }^\circ\text{F}}{\text{BTU}} \right)$

Available Width: Thinsulate Flex insulation type FX is available on rolls 60 inches wide on a 2" or 3" core.

Garment construction guidelines:

- Thinsulate Flex insulation type FX may be quilted or laminated. Use of scrim is recommended against any textured surface.
- A quilt-through construction of 4" to 6" channels is recommended for non-laminated applications.
- Single pass laminated constructions may be used in applications up to 12" x 18". Dual pass laminated constructions (tri-laminates) may be used in applications up to 22" x 22".
- Please consult your 3M sales representative for constructions outside these recommendations.

General care recommendations:

- Machine wash warm, delicate cycle. Use only non-chlorine bleach when needed. Tumble dry, low heat. Do not steam press. Steam only or professionally dry-clean. Do not iron.