

Purpose

The NatureWorks LLC sleeping bag certification program will provide the highest standards of performance in warmth, comfort and durability to the consumer. The specifications will maintain and identify to consumer that manufacturers will meet those standards.

Requirements

Before any product can be certified and bear the Ingeo™ brand, manufacturer must sign licensing agreement to meet manufacturing guidelines and product standards. While the specifications are designed against the highest standards for consumer and manufacturer attributes, NatureWorks cannot anticipate all combinations of style and fabric selection. The final responsibility to assure acceptable end use performance lies with the sleeping bag manufacturer. By accepting certification, the sleeping bag manufacturer agrees to:

- Check fabrics for percolation (fiber leakage) control
- Confirm quilt size and pattern will yield required wash durability
- Maintain minimum specified filling weights

1. fiber blends

The certified sleeping bags must be filled with 100% PLA fibers specially designed for Ingeo fibers.

2. filling weight requirements

A minimum filling weight must be maintained to provide adequate warmth and uniformity throughout the sleeping bag without cold spots. In addition, a sufficient number of fibers are required to prevent excessive fiber movement and resulting clumps in laundering or dry cleaning. Minimum filling weights for sleeping bags are:

Sleeping Bag Filling Weight Requirements								
Description	United States			Europe				
	Weight Target	Weight Tolerance			Weight Target	Weight Tolerance		
Ft ²		Yd ²	30 lin. Yds.	0.1 m ²		M ²	30 lin. M	
Single Layer Bags	6 oz/yd ²	±10%	±7.5%	±5%	200 g/m ²	±10%	±7.5%	±5%
Multilayer Bags (offset quilt or shingle)	4.5 oz/yd ²				150 g/m ²			

3. batting appearance

There should be no obvious defects in the batting such as holes, heavy cross-lapper marks and clumps of fibers. All fibers in the batting should be well opened without neps, rat tails or rolling rope. Batting should not be contaminated with foreign materials. No excessive compression on batting should be used to reduce the thickness, which will reduce the warmth value (CLO or Tog value) of the batting. Vacuum packing of batting is not recommended.

4. nonwoven interlinings

If nonwoven interlining is used, the basis weight shall not exceed 20 g/m² (0.6 oz/yd²). Higher basis weight can reduce the softness and drapability of sleeping bag. The options to use interlining are:

To provide unbonded batting stability especially in multilayer offset quilting or shingle construction

To reduce fiber percolation (fiber leakage) if used next to shell fabric (ticking). Selecting high quality, low air permeability fabric is the best way to prevent fiber percolation

Use in between layers of battings in multilayer construction can prevent excessive deterioration of battings in use and laundering

5. shell fabrics

Shell fabrics can be made of spun or filament yarns and shall be of adequate construction and porosity to control fiber percolation or leakage in sleeping bags as produced and after three wash (front load washers) and tumble dry cycles. Coated fabrics severely limit moisture permeability and are unacceptable.

Suggested Shell Fabric Properties		
Fabric Property	English Units	Metric Units
Thread Count	210/in ² (FxW)	31cm ² (FxW)
Air Permeability @ 1.3 cm or 0.5 in water pressure	5ft ³ /ft ² /min	25 l/m ² /sec
Minimum Weight	3.5 oz/yd ²	116 gm ²

6. quilting pattern

The quilting pattern used shall not exceed an area that is adequate to control shifting and separation of the batting after three front load washing and tumble dry cycles. Stitch density shall provide acceptable durability in use and after laundering or dry cleaning. Suggested patterns and stitch density are:

Suggested Quilting Patterns and Stitch Density		
Stitch Pattern	Spacing	
	English	Metric
Straight Line Rows	8 inches	20 cm
Box or Diamond	100 in ² (10"x10")	650 cm ² (25x25)
Stitch Density	6 stitch/in	2.4 stitch/cm

7. laundering instructions

Sleeping bags can be laundered with a mild detergent (no bleach) at moderate settings and cold or warm water (40° C). Large capacity front loading washers are recommended. Tumble dry at low temperature. Dry cleaning is also an acceptable laundering procedure.

Any deviations from the specifications are subject to written approval from NatureWorks

Product Disclaimer

safety and handling considerations

Material Safety Data Sheets (MSDS) for Ingeo fibers are available from NatureWorks LLC. MSDS sheets are provided to help customers satisfy their own handling, safety and disposal needs and those that may be required by locally applicable health and safety regulations, such as MAK (Germany), OSHA (U.S.A.), etc. MSDS sheets are updated regularly; therefore, please request and review the most current MSDS sheets before handling or using any product.

ct your NatureWorks representative.

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