

# ISPO Top of Innovation Award – TOP TEN

## Cruelty Free, Perfect Down-Feather Replacement Technology



### Breakthrough Innovations in Thermal Insulation

Date issued: 2021 03 26

#### APPLICATIONS (TYPICAL)

Apparel, Glove, Home textile products, (Comforters, Pillows, etc.), Sleeping bags, etc.

#### FIBER COMPOSITION

Component 1 - nDown™ non-woven fabric  
100% Polypropylene or Polypropylene / PET 65/35  
Component 2 - HEAT-MX™ Filling Material  
100% Polyester

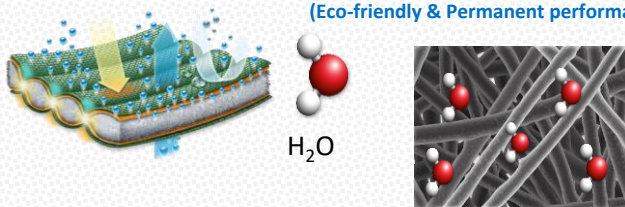
#### FLAMMABILITY

Class 1, Normal according to US Federal Flammable Fabrics Act Procedure in 16 CFR Part 1610.

#### TECHNOLOGY DESCRIPTIONS

##### Patent-pending nDown™ Technology

Innovative Water Molecular Adsorption Process  
(Eco-friendly & Permanent performance technology)



##### Proprietary structural example of nDown™

in comparison with Regular synthetic fill

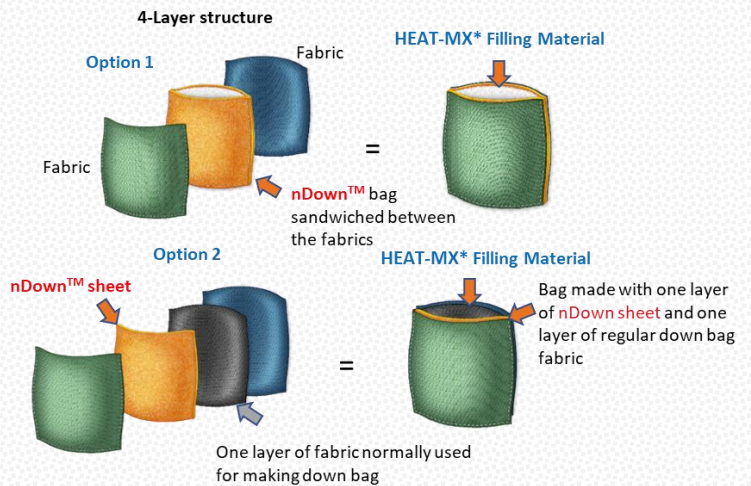


#### PERFORMANCE FEATURES

- Proprietary LRTD™ (Long Range Thermal Dynamics) Technology for optimum warmth
- Odor control
- Down leak proof
- Easy home wash
- Volume increase after wash
- Warm even when damp
- High rate of water-vapor transmission
- Improved longevity of finished goods
- Down cluster free and improvement in warmth
- Sustainable technologies
- High level of air permeability
- Easy home wash
- Windproof & Water resistance



##### nDown™ Technology Construction Method -1



\* HMX-VN, HMX-VNBD3 or HMX-VNRD7 used as filling material

#### CONSTRUCTION GUIDELINES

nDown™ Technology consists of HEAT-MX™ products designed and engineered with HEAT-MX™ proprietary technologies. Air pressure from down/feather blowing machine must not create the reconstruction of the fiber structures of the nDown™ products. Product grades of nDown™ may differ based on the construction methods of the types of finished goods. Please consult with your sales representative for specific instructions of nDown™ product grades as well as DOs and DON'Ts of applying nDown™ into your products. Manufacturing methods as well as product grades of nDown™ proposed by HEAT-MX™ are to be strictly adhered to and incorporated in the cut-and-sew manufacturing processes. Licensing agreement may be required to use the nDown™ Technology. Please contact your sales representative for more details. Avoid high temperature or high pressure in the course of manufacturing to attain optimum performance.

#### CARE INSTRUCTIONS

Consumer products made with the nDown™ Technology are to be washed at home with commercially available home laundry detergents. Avoid dry cleaning unless the washing label indicates otherwise. Ensure sufficient drying time in low-temp tumble dry setting for drying moisture inside the goods. Avoid keeping the goods in areas with high humidity.



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#### PRODUCT USAGE EXAMPLES\*

##### CLOTHING EXAMPLES



Vest

Packable & Light weight

Ski

Parka

##### HOME TEXTILES & SLEEPING BAGS EXAMPLES



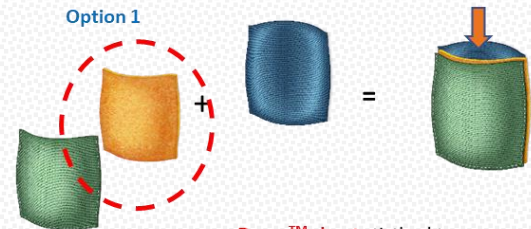
Blankets & Pillows

Sleeping bags

#### nDown™ Technology Construction Method -2

3-Layer structure

Filling material from HEAT-MX\*

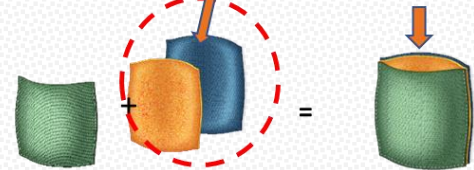


Option 1

nDown™ sheet stitched to one of the fabrics

Option 2

Filling material from HEAT-MX\*



\* HMX-VN, HMX-VNBD3 or HMX-VNRD7 used as filling material

#### EXCEPTIONAL PERFORMANCE FEATURES & SOCIAL / ENVIRONMENTAL BENEFITS



Note - Some performance features are specific to a certain product type (product code) and optional. Please contact your sales representative for more details

\* Product Usage Guidelines are based on entire area applications of HEAT-MX™ products unless otherwise expressed as per Footwear examples, but may vary depending on specific applications. Contact your sales representative for the approval in case of exceptions from the application methods indicated in this document.

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