

THERMAL TECHNOLOGIES

FROM FIBRE TO SMART TEXTILES

PRODUCT EXAMPLES FROM THE PERFORMANCE FORUM

POSITION		PRODUCT INFORMATION			PERFORMANCE			EXPLANATIONS BASED ON PRODUCER INFORMATION						
Table	Wall	Product	Producer	passive	active	g/m ²	Thermal weight efficiency higher value = more warmth per g ²	Fibre & Yarn: additives: PCM, EKS...	Construction: Knit	Construction: Woven	Construction: Non-woven/ Padding	Construction: Lamination	Construction: All-in-One Fabric	Good fields/ Layers to use it
-	W15	PrimaLoft® Silver Insulation ThermoPlume® with Cross Core™ Technology	PrimaLoft	X	-	160-270	Clo: 28-31.11 Depending on the used amount of ThermoPlume's	Silica aerogel (known from aeronautical applications by NASA scientists) is blended with proprietary microfibres.	-	-	X	-	-	Insulation
-	W9	CAS-120	Cocona, Inc. / 375	X	-	120	Clo: 26,00	Activated carbon provides double the thermal storage. The active particles absorb IR-light and warmth or cool based on what the body needs.	-	-	X	-	-	Insulation
-	W17	FL-FL-KSS100	Flocus	X	-	100	Clo: 25,90	-	-	-	X	-	-	Insulation
-	W5	Twins CRB	Imbotex	X	-	130	Clo: 23,08	Performance of repeated heat generation absorbing visible, ultraviolet and infrared rays. Inner layer: polyester microfibrils with i.e. advanced thermal characteristics. Outer layer: fibre with a high concentration of conducting and heat-generating carbon particles in the core.	-	-	X	-	-	Insulation
-	W10	3M Thinsulate / Water Resistant 1120	Rudholm & Haak	X	-	120	Clo: 21,67	-	-	-	X	-	-	Insulation
-	W3	Thermore Thermal Booster	Thermore	X	-	90	Clo: 19,44	Increases warmth by 20% at lower temperatures.	-	-	X	-	-	Insulation
-	W6	Celiant Heat	Imbotex	X	-	130	Clo: 19,23	Thermo-reactive minerals convert body heat into IR energy. Combined with Polypropylene, it provides a very low coefficient of heat transfer, a great insulating power available and is up to 30% lighter than other insulations.	-	-	X	-	-	Insulation
-	W20	RR2111-011	Chia Her	X	-	342	Clo: 4,59	Hollow section polyester for better air insulation layer.	X	X	X	-	Combines: + Baselayer + Padding + Midlayer	Highdensity & Lightweight + Padding
T13	-	SCK-3025	Singtex	X	-	278	Clo: 4,08	-	Fleece / Double brushed knit	-	-	-	-	Midlayer
T2	-	SK4132A0	Cocona, Inc. / 375	X	-	240	Clo: 3,29	Activated carbon provides twice the thermal storage. The active particles absorb IR-light and warm or cool based on what your body needs.	X	-	-	-	-	Baselayer or Midlayer
T18	-	P05270A1	Labtex	X	-	192	Clo: 2,19	-	-	-	Woven - the back is designed to lengthen the nap to keep the air as insulation zone	-	-	Softshell or Shirts & Pants
T15	-	D827A2	Derun	X	-	245	Clo: 1,22	-	Brushed knit - brushing increases the body volume and creates more room to store warm air	-	-	-	-	Midlayer
T12	-	LE1617A	Technow	X	-	280	Clo: 0,39 Only lightweight fabric, padding/baselayer need to be added	-	-	X	X	Aluminum / thermal foil reflects warmth	Combines: + Baselayer + Padding + Lightweight	Highdensity & Lightweight + Padding
T16	-	8335/M/EKS	Pontetorto	X	X	173	Clo: 4,05 for the fabric +2°C by EKS yarn / ACTIVE TECHNOLOGY	Moisture activates the EKS-fibres to generate heat. ACTIVE WARMTH GENERATION!	Brushed knit - brushing increases the body volume and creates more room to store warm air	-	-	-	-	Midlayer
-	W11	Comfortemp CX1 100/41	Freudenberg	X	X	-	ACTIVE TECHNOLOGY clo value changes with body temperature	Thermo regulation by PCM (= phase change material). Saves warmth of a heated body to return it when the body is colder. ACTIVE WARMTH GENERATION!	-	-	X	-	-	Insulation
T7	-	SENSIL® HEAT ATS BY NILIT 110-68	Nilit	X	-	164	Not yet tested - Warmth retention measured by Kaken and Centex- bel Institutes	SENSIL® Heat maintains the body's natural warmth (heat retention) with coffee carbon integrated in the fibre. Best to be used in baselayer and offers a cottony soft touch with new ATS (Airjet Texturising Technology). The heat retention is about 15-20% higher than with a conventional fabric. In Hologentest: fabric temperature up by 16.8°C.	Brushed knit - brushing increases the body volume and creates more room to store warm air	-	-	-	-	Baselayer
T3	-	S24438	Li Peng	X	-	175	Not yet available	NanoRed® = Titanium dioxide (TiO ₂) + Zirconium dioxide (ZrO ₂) - The 100% natural mineral additives are activated by light. They absorb and retain body heat.	-	X	-	-	-	Shirt & Pants
T8	-	INSTINCT BE HOT GZ	Sitip	X	X	180	Not yet available	When Instinct be Hot GZ yarn stretches, it generates +1°C heat by decreasing the entropy (disorder or randomness of molecules). ACTIVE WARMTH GENERATION!	Brushed knit - brushing increases the body volume and creates more room to store warm air	-	-	-	-	Baselayer
T17	-	TKP007 (TK-Heat series)	Tough Knitting	X	-	-	Not yet available	-	Brushed knit - brushing increases the body volume and creates more room to store warm air	-	-	Graphene (ca.5%) & carbon film as coating keep the body heat inside and conduct heat to avoid overheating.	-	Midlayer
T19 T24	-	500T0.1*0.1 N/Taffeta SD / 200 Soft N/Taffeta FD (both with aluminum finish)	Flying Textile	X	-	26 39	Not yet available	-	-	X	-	Aluminum finish reflects IR-band of the human body to keep the warmth longer.	-	Highdensity & Lightweight
-	W18	HDW100W	Amaterrace	X	-	100	Not yet available	-	-	-	X	-	-	Insulation
-	W12	Clo Insulation Eco Vivo	Clo Insulation	X	-	80	Not yet available	The insulation is perforated by a series of small apertures. These holes through the insulation are a specially designed size and pattern to trap air and create a fantastic warmth consistency when in low activity, but also allow for the air and water vapour to flow through very quickly when the body temperature increases.	-	-	X	-	-	Insulation
T1	-	VANW2057 2LS BLK	Craftevo / V&A Japan	X	-	46	No information	Thermalon® is a nylon yarn with volcanic rock powder for warmth and moisture management.	-	X	-	-	-	2Layer
T4	-	MTP107 PR6GT	WidePlus	X	X	150	No information	PCM (=phase change material) for thermo regulation can store and release heat as needed. Microcapsules transfer solid and liquid to buffer against overheating and keep the thermal degree longer stable. ACTIVE WARMTH GENERATION!	-	X	-	-	-	Shirt & Pants
T5	-	SSN0439	Li Peng	X	-	173	No information	Thermalon® is a nylon yarn with volcanic rock powder for warmth and moisture management.	Brushed knit - brushing increases the body volume and creates more room to store warm air	-	-	-	-	Baselayer
T9	-	SK4742	Labtex	X	-	270	No information	-	Spacer - increases the body volume and creates more room to store warm air	-	-	-	-	Midlayer
T20	-	VOEE PG1043 A	Silkytex	X	-	35	No information	-	-	X	-	Metallic backing for heat reflection.	-	Highdensity & Lightweight
T21	-	VANW2142 DWBCR	Craftevo / V&A Japan	X	-	38	No information	Carbon-blended web yarn absorbs and retains IR-body heat.	-	X	-	-	-	Highdensity & Lightweight
T22	-	ATT0078P1GR	WidePlus	X	-	155	No information	-	X	-	-	-	-	Athleisure
T23	-	N2016FCRMS	Craftevo / V&A Japan	X	-	38	No information	-	-	X	-	-	-	Highdensity & Lightweight
-	W7	Fast-Heat	Modestex	X	-	-	No information	Nano grade bamboo charcoal keeps the heat faster.	-	-	X	-	-	Insulation

