Solar Touch™

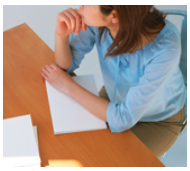
ソーラタッチ® INFRARED EXOTHERMIC FIBER 赤外線発熱繊維

An Ecological Heat Generating Material that Converts Infrared Rays into Thermal Energy

What is **Solar Touch**?

Solar Touch is an ecological heat material. A fine-grained metal oxide absorbs infrared rays emanating from the sun or human body, and converts them into thermal energy.
Not only can this material be used for regular outdoor clothing, but **Solar Touch** *S* is also suitable for winter underwear, even though it is rarely directly exposed to sunlight.

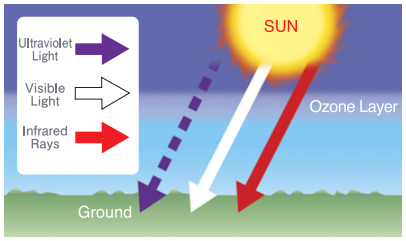
Outdoor Clothing



Indoor Clothing

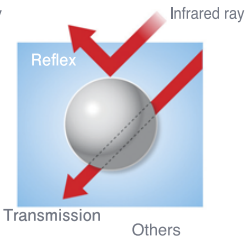
What Does Absorbing Infrared Rays and Converting Them to Thermal Energy Mean?

On Earth, various rays from the sun reach the ground. These "rays", also called electromagnetic waves, are energy.
However, the rays themselves are not thermal energy.
When this material absorbs these (wave energy) rays, it resonate with them, creating an active molecular motion. The molecules in the material begin bouncing off each other. This in turn creates friction, which generates heat, thus increasing the temperature of the material. This is thermal energy.



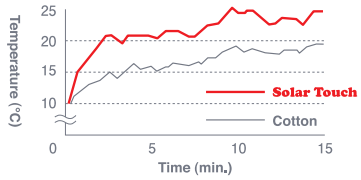
What is the Heat Generating Effect of **Solar Touch**?

Common sense tells us that on a fair day, a black T-shirt will make the wearer feel warmer than a white T-shirt will. This is because black absorbs more sun rays than white and converts them into thermal energy.
Solar Touch is kneaded with a fine-grained metal oxide that absorbs infrared rays that have reached the ground over a wide area, allowing the texture itself to effectively generate heat.



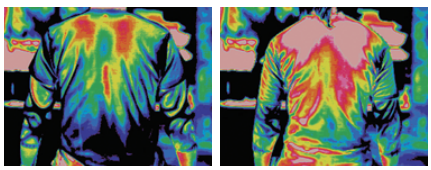
Heat Increase on a Texture's Surface is Overwhelming

◆ Chart showing the increase of cloth temperature under direct sunlight (for 15 minutes)



Test Environment:Temperature: 8-9°C
Solar illumination: 90,000-100,000 Lux
Test Conditions: Measured temperature change inside samples under sunlight

◆ Thermograph of cloth temperature under direct sunlight (after 15 minutes)



Cotton　　**Solar Touch**

Test Environment:
Temperature: 8-9°C
Solar illumination:
90,000-100,000 Lux
Test Conditions: Measured temperature change on the back of clothes under sunlight using thermography

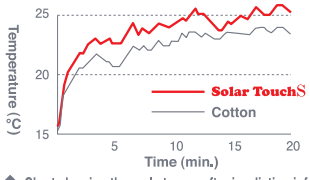
※Solar Touch is comprised of a knit cloth containing 30% Solar Touch and 70% cotton

Solar Touch S™ INFRARED EXOTHERMIC FIBER

Solar Touch S Generates and Stores Heat Using Minute Amounts of Infrared Radiation from the Human Body (The effect is the same for underclothes)

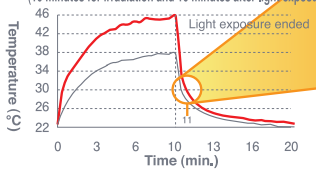
The ability of **Solar Touch** to absorb outdoor infrared rays and generate heat can not be found in other products. **Solar Touch** S is a special texture that further magnifies this function and generates and stores minute amounts of infrared radiation from the human body.

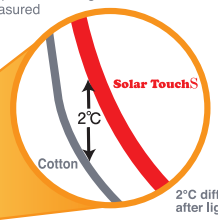
◆ Chart showing the increase of temperature inside of clothes under direct sunlight (for 20 minutes)



Test Environment: Temperature: 8-9°C
Solar illumination: 90,000-100,000 Lux
Test Conditions: While jackets were being worn, the temperature change inside the clothes under sunlight was measured

◆ Chart showing thermal storage after irradiating infrared rays (10 minutes for irradiation and 10 minutes after light exposure ended)

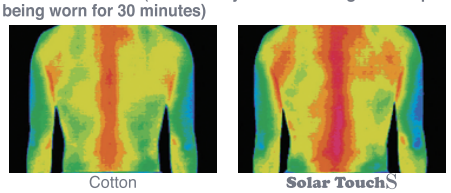




2°C difference at 1 minute after light exposure ended

Test environment: Assuming an environmentally friendly office with a low temperature setting (20°C X 65%RH)
Test conditions: Measuring temperature change while irradiating a pseudo-sunlight (reflector lamp) for 10 minutes, and again 10 minutes after light exposure has ended.

◆ Thermograph after generating heat from a human body's irradiated infrared (immediately after removing the sample after being worn for 30 minutes)



Cotton　　**Solar TouchS**

Test environment: Assuming an environmentally friendly office with low temperature setting (20°C X 65%RH)
Test conditions: Samples and jackets were worn for 30 minutes. Then, the back (skin surface temperature) of the subjects wearing samples were measured using thermography immediately after being removed.

Note Regarding Dying

Solar Touch is kneaded with a specific metal oxide.
Please note that colors may come out differently from regular rayon materials due to this feature.

Numeric values from tests may differ depending on the mixing rate of rayon and knitting contexture. Please check each product when presenting numeric values for general consumers. Please ask our sales personnel for sales promotion expressions for general consumers.

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