

# *World's First!*

# **Heat-tech**

*Heat resisting tape with plastic protective PEEK "Toughtape"*



## *Heat-resist 260°C*

## *Excellent chemical resistance !*

"Toughtape" is heat-resistant insulating tape protects the world's first with PEEK resin.  
It was developed for cylindrical lithium-ion battery protection tab 18650.  
It could be commercialized successfully developed to withstand high temperature silicone adhesive.

### **【 Feature 】**

PEEK resin exceeds a polyimide material also as insulating tape in electric apparatus or the semiconductor manufacture field. Water absorption coefficient is low and the electrical characteristics by the high frequency range are good, and PEEK is durable resin.

**Moreover, we improved the conventional heat-resistant tape.**

- 1. Water-resistance and Steam-proof**
- 2. Radiation resistance**
- 3. Alkali fastness**

### **【 The use 】**

#### **◎Electric equipment**

Cylindrical lithium-ion battery protection tab 18650  
Temporary fixing of aging heat and cycle test examination process  
Flow and reflow soldering process for printed circuit board, masking the Gold Plate Contact  
Flow and reflow soldering process for printed circuit board through-hole mask  
Insulation of electrical equipment (Class H resistant)  
Motor and Transformer interlayer insulation  
Outer stop winding and interlayer insulating transformers and coils  
Wire bond, Since the adhesive force is stable even after heating.

#### **◎Car equipment**

Car paint protection  
Wire bond, Since the adhesive force is stable even after heating.  
Solidarity and splices that require tensile bond strength

#### **◎Chemical products**

For applications requiring heat resistance and solvent resistance  
Temporary closure near the hotspot  
Splicing and connecting the film  
End surface of the film take-up fixed  
Attachment of film or mask at the exposure and printing.  
Packaging requires a tensile strength of adhesion

#### **◎Food processing**

PEEK resin is adapted to the Food Sanitation Law of Japan.  
PEEK resin is less sure hygroscopic material is resistant to steam.  
Temporarily attach in the process of steam sterilization  
Packaging requires a tensile strength of adhesion

## 【 Specification 】

D/#	TM-HT-25
Colour	Semitransparent
Thickness	45 $\mu$ m
Base	25 $\mu$ m
Width	25mm
Length	10m
Normal use	260°C
Base resin	PEEK
Adhesives	Silicon-based
Price	JPY 10000



"Toughtape" is, PI (polyimide) tape compared to the chemical resistance, tear strength, low water absorption, excellent barrier properties, also, PTFE (polytetrafluoroethylene PTFE /) compared to the mechanical properties abrasion resistance, dielectric strength, releasing toxic gases and low smoke evolution, low permeability, low exhibit characteristics such as low specific gravity.

Moreover, since it has the high heat resistance required of lead-free soldering processing, the use as a masking material in an electric electronic use is also possible.

Furthermore, VICTREX PEEK which is the raw material of APTIV Films, While demonstrating UL94 V-0 fire retardancy, without using the FDA approval and halogen system fire retardant, it is a thermoplastic material which can recycle and is based on RoHS Directive, and conforms to many standards and standards relevant to aerospace, a car, combustion, emitting smoke, toxicity, food/drinking water, or military affairs.

## 【 What is PEEK ? 】

PEEK is the formal name for ISO1043 showing polyetheretherketone (Poly Ether Ether Ketone).

English ICI (Imperial Chemical Industries ) developed PEEK resin. It was announced in 1978 and put on the market in 1981.

Victrex was separated from the PEEK operation division of ICI by MBO in 1993. Present Victrex (head office: British Lancashire state) is a development maker even now. It manufactures and sells and the "Toughtape" adopted APTIV Films of Victrex by the first in the world.

## ***The advantage of PEEK made from VICTREX***

1. Preeminent heat resistance, the high temperature characteristic.  
(Continuous use temperature of about 260 °C)
2. Demonstrate Low Coefficient of Friction and High Wear Resistance, without Using Lubricant.
3. High mechanical strength. (It is strong to a shock, tension, creep, fatigue, and wear)
4. Load Bending Temperature is about 140 °C.
5. Not only excelling in fatigue resistance but wear and abrasion resistance and dimensional stability are also good.
6. Insoluble in Solvent with Outstanding Solubility-proof with Acid, Base, Common Oil, Etc.
7. Chemical resistance is also excellent and it is not invaded by the inorganic matter and an organic medicine except strong sulfuric acid, dark nitric acid, and saturation chlorine water.
8. It has the fire retardancy of UL94V-0 in the state where property modification is not carried out.
9. Since High Purity [ in Low Out Gas and Low Dust], Contamination Generating is Reduced, and it Has Electrical Insulation Properties.
10. Steam-proof Nature (Hydrolysis is not Caused under High Temperature Vapor)
11. Radiation Resistance (Degradation by Radiation Does Not Take Place Easily)
12. Outstanding electrical insulation properties.

# Heat-tech

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<https://heater.heat-tech.biz/>

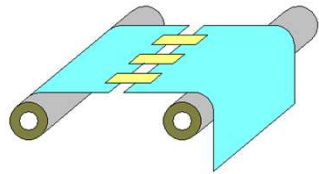
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■ Splicing and connecting the film



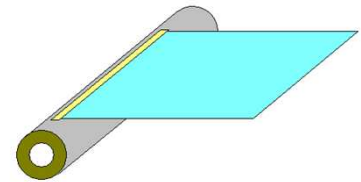
《 Theme 》

For lack of heat resistance, splice unsuccessful.

《 ⇒Kaizen Point 》

It was spliced using the Toughtape. The shape was stable by 260 °C of resistance to distortion at high temperatures, so splice work became smooth, and working hours could be reduced.

■ End surface of the film take-up fixed



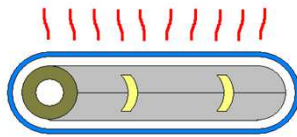
《 Theme 》

The end stop tape dissolved for thermal storage of a film, and poor adherence occurred for the product.

《 ⇒Kaizen Point 》

The end stop was carried out on the Toughtape. Since form was stable in the heat resistance of 260 °C, poor adherence was lost.

■ End stop before heat shrinking of cloth



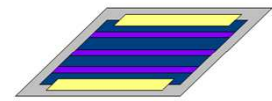
《 Theme 》

For lack of heat resistance, splice unsuccessful.

《 ⇒Kaizen Point 》

It was spliced using the Toughtape. The shape was stable by 260 °C of resistance to distortion at high temperatures, so splice work became smooth, and working hours could be reduced.

■ End stop of a solar panel



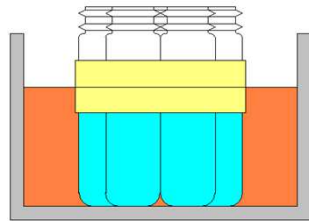
《 Theme 》

It takes time before glue dries.

《 ⇒Kaizen Point 》

The solar panel was stopped on the frame on the Toughtape. Since the lasting heat resistance of 260 °C and form are stable, fixation is possible in an instant and it also OKs a pile. Productivity went up.

■ Scald the vial



《 Theme 》

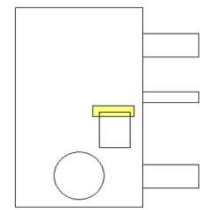
I was in trouble because it wasn't possible to stand outside the Viola bottle against not to cork and to boil.

《 ⇒Kaizen Point 》

Bundle with the Toughtape.

Because the shape is stable and resistant to heat and humidity of a permanent 260 °C, without any modification in the steam could scald.

■ Temporary fixing of boiler construction



《 Theme 》

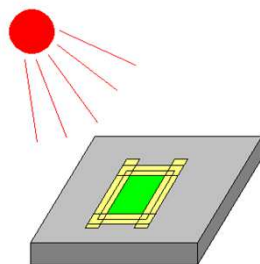
Instrument could not be fixed temporarily during construction of the boiler

《 ⇒Kaizen Point 》

The temporary attached by the Toughtape.

Because the shape is stable and resistant to heat and humidity of a permanent 260 °C, without modification by steam, could temporarily.

■ Fixed position of the exposure apparatus



《 Theme 》

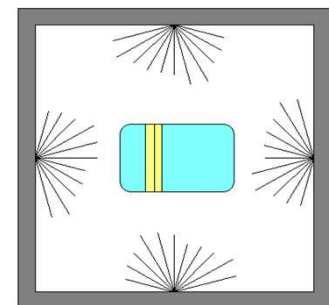
The position shifted and it was troubled by the exposure examination.

《 ⇒Kaizen Point 》

The temporary attached by the Toughtape.

The shape is strong in 260 °C of permanent heat-resistance and radiation, and stable, so an exposure test is done without transforming by solar heat.

■ Temporarily sealing of steam sterilization



《 Theme 》

A weather strip did not go well, but water infiltrated into sterilizing an instrument in steam.

《 ⇒Kaizen Point 》

That the seal-up in Toughtape.

A weather strip did not go well, but water infiltrated into sterilizing an instrument in steam.

■ Attachment of in-company Kamban of a heat-resistant board



《 Theme 》

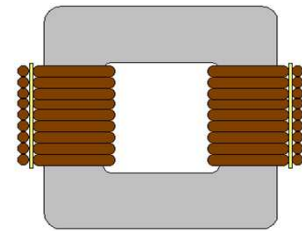
High fever immediately after production, Kanban can not be pasted.

《 ⇒Kaizen Point 》

Kanban is pasted on Toughtape.

Kanban production system expression fill the gap.

■ Outer stop winding and interlayer insulating transformers and coils



《 Theme 》

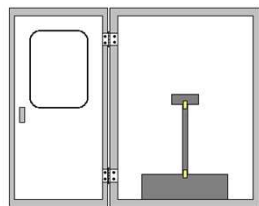
The quality of an insulator needs to be inserted because of rare short prevention.

《 ⇒Kaizen Point 》

Insulated protection was carried out on the Toughtape.

Reliability improved by sufficient insulation and radiation resistance.

■ Temporary fixing of aging heat and cycle test examination process



《 Theme 》

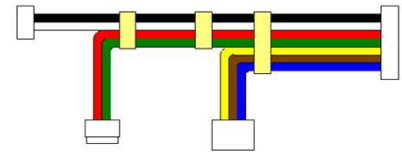
The inside of a constant temperature bath cannot perform a temporary attachment in a high fever.

《 ⇒Kaizen Point 》

The temporary attached by the Toughtape.

Work became easy and working efficiency increased.

■ Solidarity and splices that require tensile bond strength



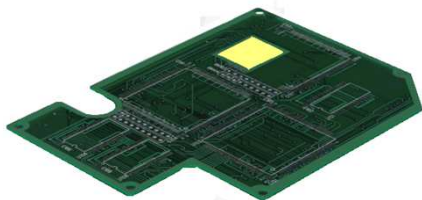
《 Theme 》

Degradation would be a problem early for a high fever near the engine.

《 ⇒Kaizen Point 》

It banded together using the Toughtape corresponding to 260 °C of high fever. Since after heating has stable adhesive power, it is improvement in reliability

■ Flow and reflow soldering process for printed circuit board, masking the Gold Plate



《 Theme 》

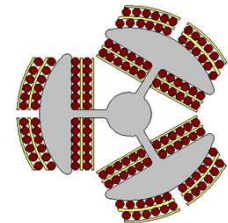
Heat resistance is required to protect a golden terminal from cream solder.

《 ⇒Kaizen Point 》

The Toughtape was used and masked.

It is improvement in reliability at sufficient heat resistance

■ Motor and Transformer interlayer insulation



《 Theme 》

A pole crosses between the commutator fragment of rotter, time, it was in trouble about degradation early stage of a interlayer insulation thing by impulse wave discharge.

《 ⇒Kaizen Point 》

Insulated protection was carried out on the Toughtape. Reliability improved by the sufficient insulation and radiation resistance of PEEK resin.

■ Insulation protects the hard disk



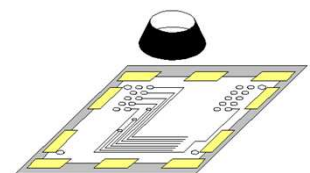
《 Theme 》

The insulation for protecting from the mistake touch under assembly is required.

《 ⇒Kaizen Point 》

Insulated protection was carried out on the Toughtape. Reliability improved by the sufficient insulation and radiation resistance of PEEK resin.

■ Attachment of a film (mask) at the time of exposure and printing.



《 Theme 》

In order that there might not be heat resistance and radiation resistance in a mask stop tape, when it exposed several times, distortion arose.

《 ⇒Kaizen Point 》

The mask stop was carried out on the Toughtape.

Exposure work became favorable and continuation exposure time increased sharply.