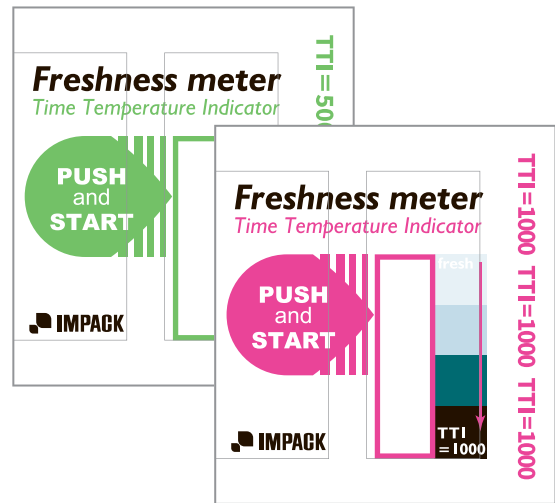


Make Freshness Visible !

Freshness meter Time Temperature Indicator



Features of the Freshness Meter

In collaboration with Hokkaido University, which has a patent for TTI using the Maillard reaction, we have created the Freshness Meter that can be used to check the freshness of cut flowers, agricultural products and marine products. By mixing the two liquids enclosed in the sachet, the clear liquid turns dark brown over time and the freshness is visualized.

Another feature of this product is that it can be stored at room temperature before use.

* Bacteria-based TTI requires low-temperature storage equipment

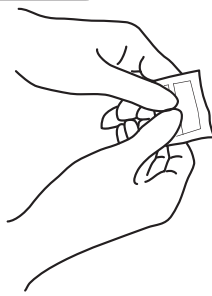
What is TTI (Time Temperature Indicator) ?

A device that changes color over time and temperature. It changes faster at higher temperatures and slower at lower temperatures. In other words, the color changes slowly if it is refrigerated or the temperature is low.

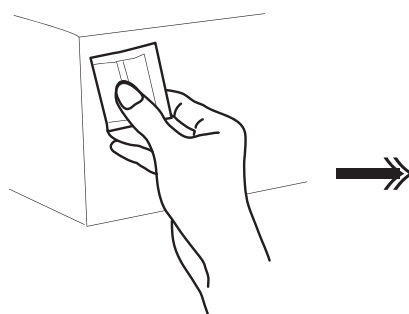
Integrated value of time and temperature	ex. $20^{\circ}\text{C} \times 24\text{hour} = 480$
	$10^{\circ}\text{C} \times 24\text{hour} = 240$

It is known that freshness status of cut flowers, many agricultural products (fruits and vegetables), marine products, livestock products, processed foods, etc. can be checked with the "Integrated Temperature (Temperature Time Value)". Before the development of TTI, it was necessary to collect and process data using data loggers, now it can be handled more easily.

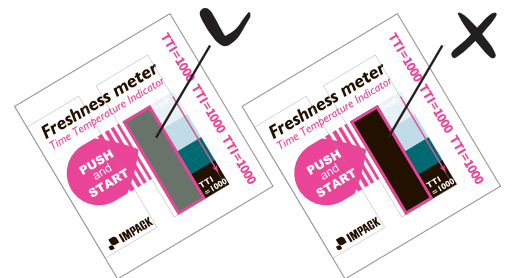
How to use



Mix the two liquids by pushing the sachet and penetrating the center seal to make the reaction starts.



Remove the release paper on the back and paste it on the shipping box.



The color of the reagent visible from the transparent part of the seal makes it easy to check if the Temperature Time Value has reached 500 or 1000.

The use of the Freshness Meter for cut flower sale with vasselife guarantee

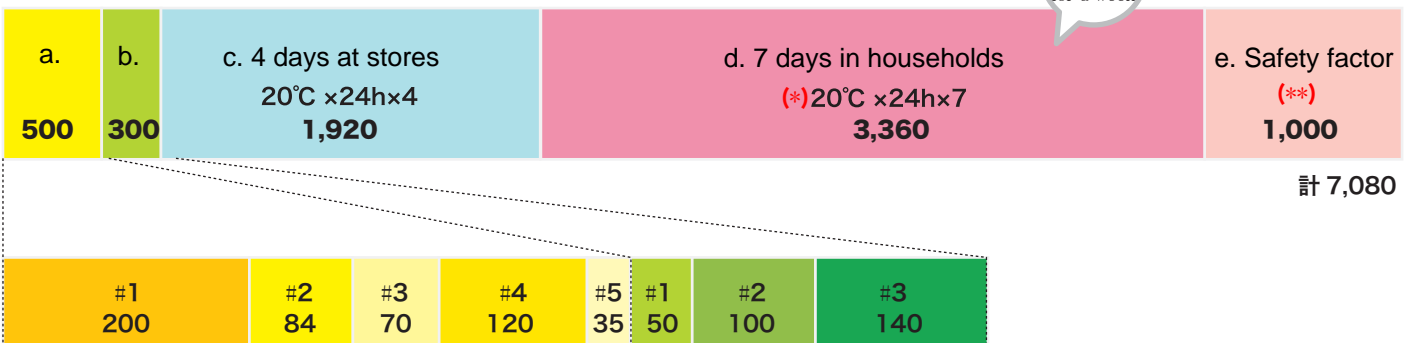
Cold chain for quality control of cut flowers. Flowers must be stored and transported at the lowest possible temperature.

Integrated temperature is an important factor for the longevity of cut flowers.

For a week-long guaranteed sale, the recommended Temperature Time Value of the procured flowers is 500 for bouquet makers. in some countries companies has adopted 300 for quality controls.

For a one-week guarantee sale

"Cut Flower Vasselife" in light of "Integrated Temperature"



a. From growers to auctions / bouquet makers

	(Breakdown of Temperature Time Value)
#1. During harvest and post-harvest	25°C x 8h = 200
#2. During storage at farms	7°C x 12h = 84
#3. From growers to auctions	7°C x 10h = 70
#4. During storage at auctions	20°C x 6h = 120
#5. From auctions to bouquet makers	7°C x 5h = 35
	Total 509

b. From bouquet makers to retail stores

	(Breakdown of Temperature Time Value)
1. Storage	5°C x 10h = 50
2. Process	20°C x 5h = 100
3. Transport	20°C x 7h = 140
	Total 290

(*)Temperature
It is assumed that the temperature at stores and households is 20 °C. If the temperature is 25 °C, the vasselife will be shortened by 25%.

(**)Safety Factor
When carrying out 7-day guarantee sales, it is important to check the vasselife for 9 days at minimum.

The role of the Freshness Meter

The flower industry consists of domestic cut flowers and imported cut flowers. Flowershops, processing manufacturers and funeral companies procure cut flowers. However, it is not possible to easily check the freshness status, such as whether the cut flowers are exposed to high temperatures during the distribution process.

By attaching the Freshness Meter to cardboard boxes at the time of shipment will make it possible to visually recognize whether the products have arrived at a temperature lower or higher than your acceptable integrated temperature.

The Freshness Meter allows you to distribute fresh flowers and make the end-users enjoy the flowers longer.

more information



Address : 1-11-13 Nangai Higashiyamatoshi, Japan, 207-0014
Tel : +81-42-564-1711 Fax : +81-42-565-1050
<http://impack-corporation.jp>
trade@impack.co.jp

