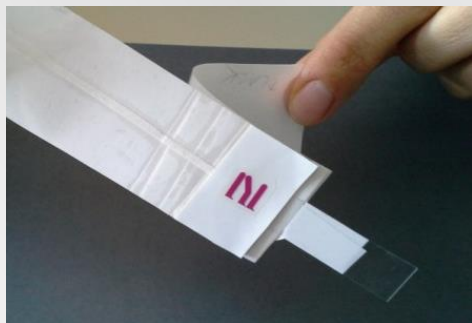


TIME-TEMPERATURE INDICATOR FOR TEMPERATURE SENSITIVE PRODUCTS IN THE COLD SUPPLY CHAIN



The invention is a smart label that irreversibly indicates cumulative time of heating above the pre-defined temperature. The invented time-temperature indicator (TTI) is thin, flexible and self-adhesive. It could be mass-produced and is applicable directly on packaging. After cooling down, the TTI is activated, which starts the indicating. When the temperature is exceeded, a coloured strip appears and its length depends on cumulative time of overheating. This way we can, for example in a cold supply chain, collect information about safety and quality of food, medicine and similar temperature-sensitive products.

Technology

The new technology is special multi-layered label designed to store and release the indicator material quantitatively and in additive way. The used materials and manufacturing processes are known from the security printing area of graphic technology. The same manufacturing process allows producing TTIs with different performances regarding temperature (selected below 15°C) and time (up to a couple of hours). The indicating area could have different shapes where one dimension must be considerably longer than the other. Different colours of the indication area are possible.

TYPE OF COOPERATION

R&D cooperation and Technology licensing opportunities

INTELLECTUAL PROPERTY

EP3377866 (B1)

DEVELOPED BY

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MORE INFORMATION ABOUT THE INVENTION



Main advantages

- Compatible with modern printing technologies
- Can be used on flexible and curved surfaces
- Very large color difference between unheated and overheated samples
- Suitable for long expiration times (unlimited shelf life)

Key words

Time-temperature indicators, Cold supply chain, Smart label