



NATIONAL INSTITUTE OF CHEMISTRY

Sectors: **Material Science**

Industries: **Packaging, Transport, Cold Supply Chain**

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

TYPE OF COOPERATION

R&D cooperation and
Technology licensing
opportunities

INTELLECTUAL PROPERTY

WO2017086883

DEVELOPED BY

Department of Materials
Chemistry

MORE INFORMATION ABOUT THE INVENTION



CONTACT

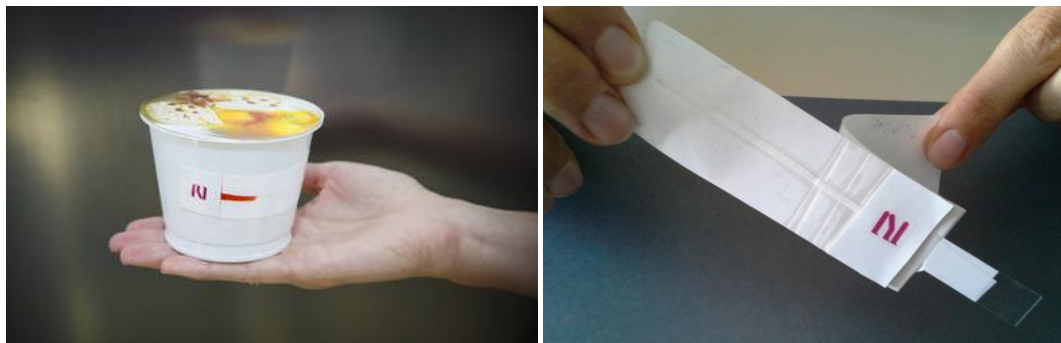
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The invention is label that irreversibly indicates cumulative time of heating above the pre-defined temperature. The invented time-temperature indicator (TTI) is thin, flexible and self-adhesive. It could be mass-produced and is applicable directly 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 holder 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 (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 active materials are possible.

Main advantages

- Compactible with modern printing technologies;
- Can be used with flexible packaging and material carrier;
- Very large color difference between unexposed and exposed samples;
- Suitable for long expiration times (unlimited shelf life).

Keywords

Time-temperature indicators, Cold supply chain, Smart label