News Release

Technology behind the RPT-3000W Rigid-body Pendulum-type Physical Properties Testing Machine adopted as ISO standard

Tracking the hardening/drying process transforming liquids to solids

A&D Company, Limited
Headquarters:
3-23-14 Higashi Ikebukuro, Toshima-ku, Tokyo
Representative:
Hikaru Furukawa, President & CEO
Tokyo Stock Exchange 1st Section: 7745

Technology owned by A&D Company, Limited (President: Hikaru Furukawa; Headquarters: Toshima Ward, Tokyo) used in the development of their rigid-body pendulum-type physical properties testing machine (A&D product RPT-3000W) has been adopted by the International Standards Organization (ISO) for their standards ISO 12013-1 & ISO 12013-2.

This technology for tracking over a period of time the hardening/drying process of a liquid solution painted onto a substrate using the free damped oscillation of a rigid-body pendulum, allowing the evaluation of viscosity information or other physical properties, can be used for a wide variety of different applications, such as material development, amelioration, quality management, production line design and troubleshooting in various industries from cosmetics or foodstuffs to automobile or concrete production. It is already being used for a number of purposes, such as evaluating the stability and usability of materials used for coating automobiles; buildings and electrical appliances; as well as materials people apply to their own nails, skin and hair. It is used to evaluate the texture of fabrics; the physical properties of paper, film or plastics; quantitative assessments of the functionality of foodstuffs or evaluation of materials used in the production of batteries.
While the ISO' s basic principle is establishing standardization of a set of values for technology that over a certain course of time has become widespread and in general use, the case of the RPT-3000W could be considered quite an extraordinary example of an innovative product without any similar competing products or technology which has had its broad width of applications and the effectiveness of its special characteristics recognized.
A&D will from hereafter endeavor to contribute to the development of all related industries through the wider application and understanding of this innovative technology.

Uses (evaluation, testing)
- Paint, adhesives: hardening temperature and timeframe; effect of curing agents; design data, adhesive values, distortion values, etc. for a coating/paint line
- Cosmetics, medicine: drying characteristics, surface properties of nail polish, mascara, etc; elasticity, adhesiveness, etc. of packaging agents
- Foodstuffs: quantitative evaluation of functionality and gelling properties of gelatin or agar jelly, etc.
- Fibers: properties of fibers, textures of fabrics, etc.
- Plastics: surface properties; properties of film; hardening, surface/interior properties of hard coating
- Printing: properties of ink on different printable surfaces, drying characteristics of ink, transferability onto rollers
- Electronics: properties of batteries, fiber-optics, conductive paste; melting and hardening of solder
- Others: properties of concrete, asphalt, etc.

ISO standard specifications: Determination of physical properties of paints and coated films using a free damped oscillation method
ISO 12013-1: Determination of the start temperature of the curing reaction of coatings
ISO 12013-2: Determination of the thermal properties (glass transition temperature (Tg), rigidity) of dried and cured films of paints and varnishes

http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=51147
http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=51148

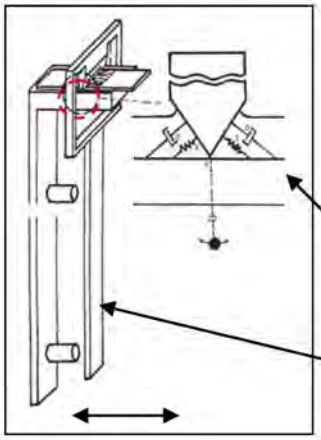
RPT-3000W

A&D Company, Limited
http://www.aandd.jp/

A&D COMPANY, LIMITED
3-23-14 Higashi Ikebukuro, Toshima Ku,
Tokyo 170-0013, Japan
Tel: 81-3-5391-6132 Fax: 81-3-5391-6148

Supplementary explanation – principle of measurement

Using the free damped oscillation of a pendulum, in the case of a liquid sample set a pivot point in the base of the platform where the liquid is lying. With the knife edge of the testing machine submerged in the liquid, induce oscillation in the pendulum.
In the case of a solid sample, set a pivot point at a point of contact with the sample and with the pipe edge rested above the sample induce oscillation. By analysis of this oscillation, the hardening process or surface characteristics of liquid solutions can be evaluated over changes in time or temperature.

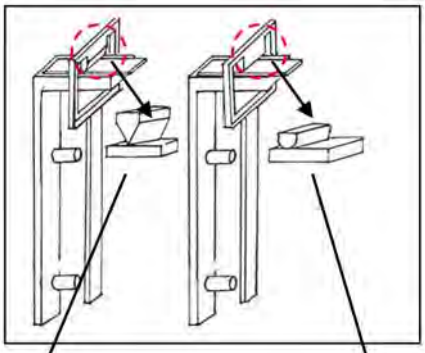


Enlarged cross-section of edge

This part (the pendulum) is swung back and forth

Basic structure

Pendulums

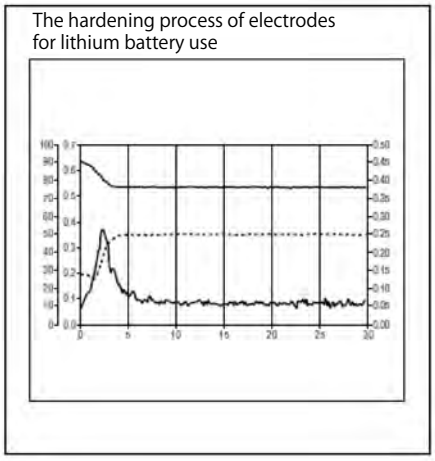


Two types of edge

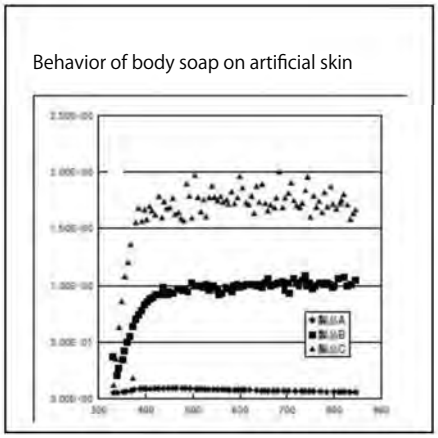
For liquids

For solid samples

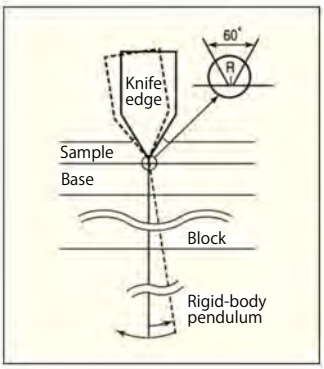
The hardening process of electrodes for lithium battery use



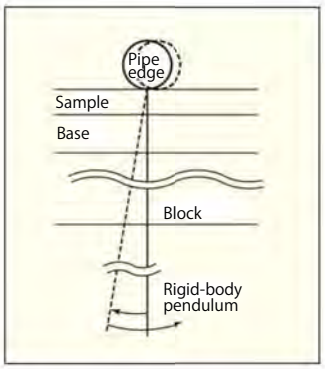
Behavior of body soap on artificial skin



Measurement examples



Conceptual diagram of knife edge test



Conceptual diagram of pipe edge test