エー・アンド・デイ

RPT-3000W

Rigid-body Pendulum type Physical Properties Testing Instrument

ISO 12013-1
ISO 12013-2

RPT-3000W

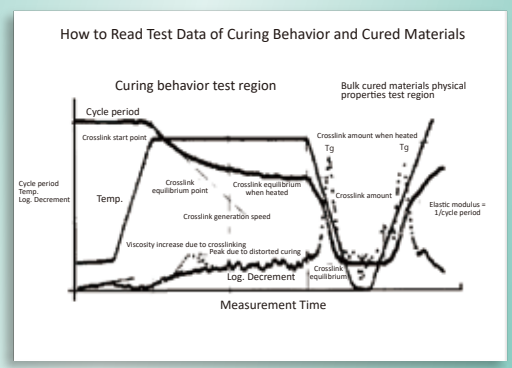
Highly accurate measurer

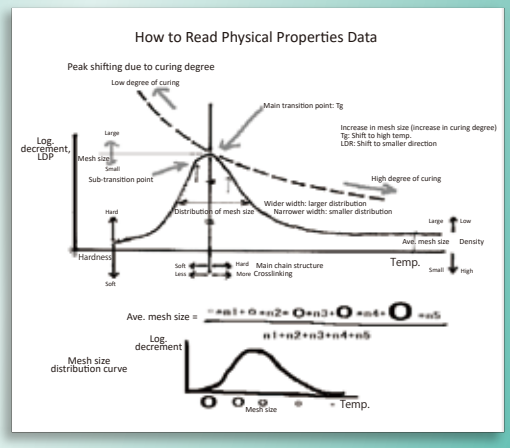
Installation example of small UV irradiation device (optional)

UV irradiation from both sides of the knife edge.

At an angle.

How to read measurement data





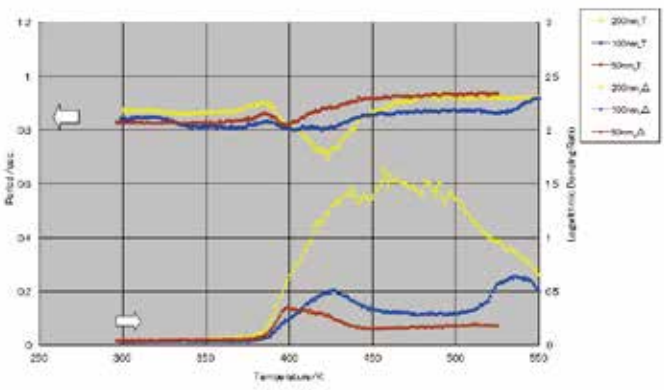
Introduction

The Rigid-body Pendulum Type Physical Properties Testing Instrument is an instrument that dynamically measures the curing process of a substance and the physical properties of the surface.
The behavior of the various raw materials used to form a solidified coating film has a great influence on the characteristics of the subsequent film.
Also, the mechanical properties of the finished coating film are a major concern.

RPT

The solution-like and powder-like substances on the base material solidify under various conditions (temperature, humidity, light, time, etc.) to form a coating film. Even if the solidified material looks fine. if those conditions are not examined properly, then the characteristics of the solidified material cannot be understood properly, which may cause problems later.
If the curing conditions are decided, then it may become necessary to select appropriate materials and compositions for those curing conditions or may involve research and development of new materials.
In addition, it can be used as quality control before it goes on the market by measuring the surface characteristics of the finished coating film. RPT-3000W is an indispensable item for such people.
ISO 12013-1 was established for the examination of curing conditions, and ISO 12013-2 was established for surface physical characteristics, which can be measured with RPT-3000W.

Measurement Example of Thin Nano Film



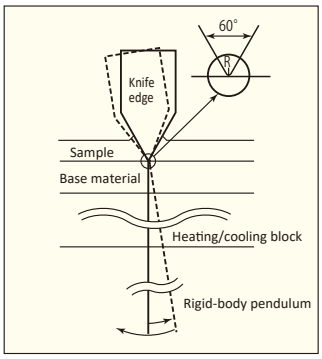
Example of surface physical property measurement of PS thin film (50, 100, 200 nm)
(Measurement data for example was provided by Dr. Inuzuka of Tanaka Laboratory, Kyushu University Graduate School)

Rigid-body Pendulum type Physical Properties Testing Instrument

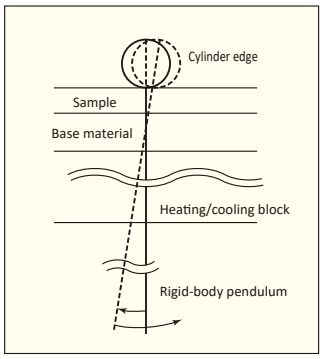
ment of drying/curing behavior and physical properties of substances.

Measurement Mode (curing, physical characteristics)

In a curing measurement, a knife edge is placed in a sample on the base material which displaces the knife attached pendulum very slightly. In surface physical characteristics measurement, a cylinder edge is placed on the measurement surface (see the figure below). By releasing the applied displacement, the pendulum vibrates freely while being influenced by the sample. The cycle period and logarithmic decrement is found.



Curing measurements



Physical properties measurement

Rigid-body pendulum

Substrate, edge

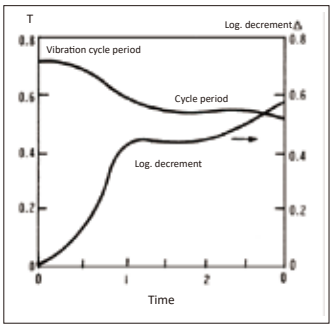
Heating/cooling block (CHB-100, CHB-200)

Coating Tool (CT)

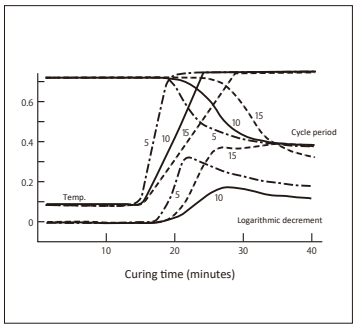
Measurement Examples using RPT

Measurement Examples of Curing Behavior

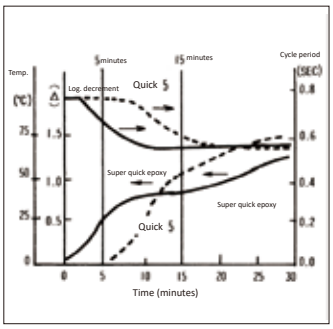
Aqueous emulsion



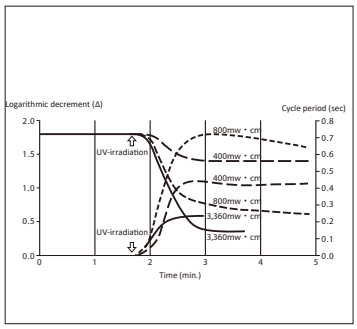
Curability of one-component urethane (difference in temperature rise rate)



Adhesive

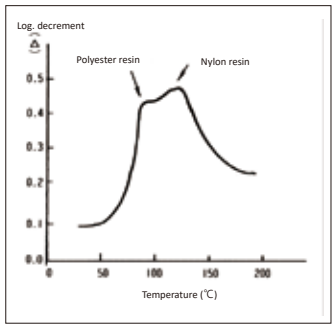


UV curable resin

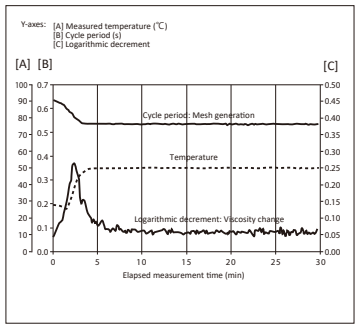


Measurement Examples of Physical Characteristics

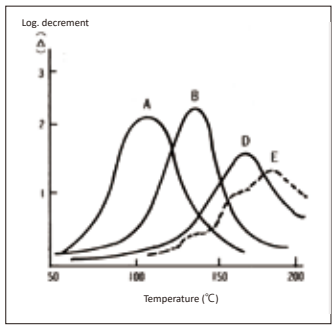
Polyester coated nylon fiber



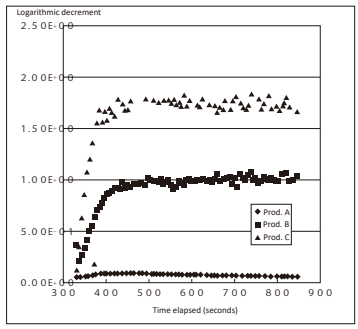
Curing process of electrodes for lithium batteries



Piano coating



Effect of body soap on artificial skin



RPT can be used to evaluate materials in a wide range of fields

Paint **Adhesives**	● Evaluation of curing temperature and curing time. ● Evaluation of curing/physical properties of solidified materials using curing agents. ● Design data for painting/coating production lines. ● Quality evaluation of coating films and thin films (50 nm). ● Evaluation of adhesiveness, distortion, etc. ● Early prediction of weather resistance deterioration. ● Others
Cosmetics Pharmaceuticals	● Evaluation of dryness and surface properties of nail polish and mascara. ● Evaluation of dryness, adhesiveness, and elasticity of packs and poultices. ● Evaluation of lubricity and cleansing properties of hair, etc. ● Evaluation of dryness of contact lenses. ● Others
Food	● Evaluation of gelling properties of gelatin, agar, etc. ● Quantitative evaluation of sensory performance of foods, etc. ● Others
Fibers	● Evaluation of physical properties of fibers. ● Evaluation of the texture of the cloth. ● Others

Plastics	● Evaluation of surface physical properties. ● Evaluation of film physical properties. ● Hard coat curing, surface and internal physical characteristics evaluation. ● Others
Printing	● Evaluation of ink physical properties on printed matter. ● Evaluation of ink drying property. ● Evaluation of transferability to rollers. ● Others
Electrical **Electronics**	● Evaluation of physical properties of battery materials (electrode film, spacers, etc.). ● Evaluation of curability and physical properties of optical fibers and optical filters. ● Evaluation of curing characteristics of conductive paste. ● Evaluation of melting and solidification characteristics of solder. ● Curing of printed circuit board and evaluation of physical properties. ● Others
Others	● Evaluation of physical properties of concrete, asphalt, etc.

■ Main Specifications

Amplitude displacement detection: Non-contact eddy current displacement sensor

Maximum amplitude angle: ±0.57 degrees

Angle resolution: 1.75 e^{-5} degree

Vibration cycle: 0.050 to 2.000 seconds

Logarithmic decrement: 0.001 to 3.0

Measurement temperature range: -80 to +400°C

Cooling method: Liquid nitrogen

Optional UV irradiation device, etc.

External dimensions/weight: Main unit 300 x 220 x 525 mm / 15 kg

(WxDxH) Control unit 410 x 350 x 135 mm / 12 kg

Safety device: Overheat prevention device

Warning lamp (ON at 50°C or higher)

Power supply AC 100 V, 550 VA

Software: OS Windows 10 Pro

Basic application MSAT0001V2

Application MSAT0010V2

The Rigid Pendulum Type Physical Properties Testing Instrument (corresponding to RPT-3000W) owned by A&D Co., Ltd., has been adopted as the international standard in ISO 12013-1 and ISO 12013-2. (October 2012)

ISO 12013-1: How to measure paint cross linkage and mesh formation temperature.
ISO 12013-2: Method for measuring thermal properties (Tg, physical properties, etc.) of paint.

⚠ Safety Precautions	● Please read the instruction manual carefully and use the equipment correctly.

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Discover Precision

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