

Aug 25, 2016

## Panasonic Commercializes "Time-lagged UV Curing Adhesive" Suitable for Assembly of Mobile Phone Housings and UV-Protection Panels



Panasonic's new "Time-lagged UV Curing Adhesive" makes the assembly process of parts and materials easier as it cures slowly after UV irradiation.

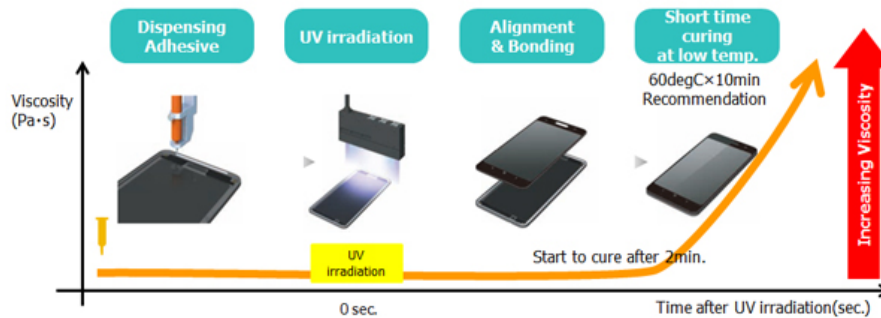
**Osaka, Japan** - Panasonic Corporation announced today that it has developed a "[Time-lagged UV Curing Adhesive \[1\]](#) (Fine Glue)" suitable for gluing and assembly of mobile device housings and panels, and will start mass-producing it in September 2016. This liquid material cures after a certain amount of time following exposure to UV irradiation, making it easier to carry out the assembly process and rendering it possible to attach a UV-protection (UV-proof) panel after irradiation. As this new adhesive can be applied in a thin width and thick layer, it is suitable for mobile devices that have limited space for adding adhesive.

There are various challenges faced by conventional adhesives. For example, double-sided tapes currently used to bond the display panel to the housing of a mobile devices or camera are difficult to be applied on a small area. [Thermoset adhesives \[2\]](#) take a long time to cure in a high temperature environment, whereas fast UV curing adhesive cures so quickly after irradiation that it cannot attach a UV-protection panel to the housing. By developing a unique resin design technology, Panasonic has created a new adhesive product capable of curing after a certain period of time following exposure to ultraviolet irradiation. The extra time before curing enables the position of parts and materials to be adjusted and makes it possible to apply the adhesive to attach materials that do not transmit ultraviolet light. The product is also suitable for quick application on a small area in a low temperature environment.

Panasonic's "Time-lagged UV curing adhesive (Fine Glue)" has the following features:

1. The adhesive cures after a certain amount of time following exposure to UV irradiation, so the positions of parts and materials can be adjusted during the assembly process. This time lag allows the new adhesive to be effectively used in areas where UV cannot reach including between the enclosure and the UV-protection panel.
  - Curing starts two minutes after irradiation (conventional UV curing adhesives start curing immediately after irradiation).

2. Curing at a lower temperature and within a shorter time is possible compared to thermoset adhesives, which contributes to shortening lead time.
  - Curing is completed in 10 minutes at 60 degrees Celsius (conventional thermoset adhesive cures in 60 minutes at 150 degrees Celsius).
3. **High aspect ratio [3]** of the application shape means that the strong adhesion makes it possible to apply the adhesive on a small surface.
  - Maximum aspect ratio: 5:4 (width-to-height ratio of application shape)
  - Hairline application width of the adhesive: 300  $\mu\text{m}$  (0.3 mm) (width of existing double-sided tape: 1 mm)
  - Adhesive width: 400  $\mu\text{m}$  or more



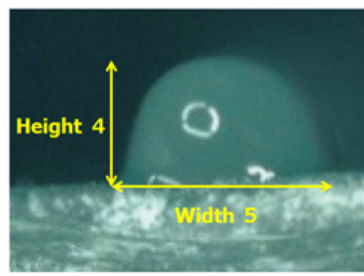
### Suitable applications:

Gluing the housing and display panel, gluing films that do not transmit much UV, camera module assembly, gluing a cover glass or a back light, and the assembly of wearable devices

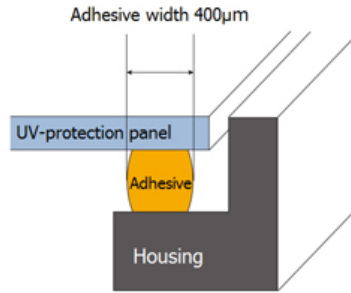
### [Panasonic's technologies]

1. **The adhesive cures after a certain amount of time following exposure to UV irradiation, so the positions of parts and materials can be adjusted during the assembly process. This time lag also allows the adhesive to be effectively used in areas where UV cannot reach including between the enclosure and the UV-protection panel.**  
 Fast curing UV adhesives start curing immediately after UV irradiation, therefore preventing the positions of parts and materials from being adjusted. Another problem with such types of adhesives is that they cannot be used for materials that do not transmit ultraviolet light. The company has developed a UV adhesive that cures after a certain amount of time following exposure to UV irradiation using a unique resin design technology that Panasonic developed. The extra time this adhesive provides, from its application on the enclosure before its viscosity increases, allows parts such as a UV-protection panel to be put in place and their location to be adjusted. The product can also be applied to areas where UV cannot reach such as between the housing and the UV-protection cover.
2. **Curing at a lower temperature and within a shorter time than thermoset adhesives is possible, which contributes to a lead time reduction.**  
 Since conventional thermoset adhesives require high-temperature after-treatment and a long time before curing completely (60 minutes at 150 degrees Celsius), they pose a risk of damaging precision components in devices. Panasonic's new adhesive completes curing at a low-temperature and with a quick treatment (10 minutes at 60 degrees Celsius) after UV irradiation and adhesive of parts. This will contribute to a reduction in lead time for customers and is suitable for application on devices that contain precision components that should not be kept at high temperature. The product can be stored at room temperature, and it can be stored longer compared to thermoset adhesives.
3. **The high aspect ratio of the application shape means that the strong adhesion makes it possible to apply the adhesive on a small surface.**  
 There is demand for a larger display area on mobile devices, so the frame of the display needs to be thin. The challenge for double-sided tape is that it is difficult to make the tape width narrower, while the challenge for thermoset adhesives is the lack of ease with which to apply the adhesive on a small area because of the material's characteristics. Panasonic's unique resin design enables the company to give a high aspect ratio to the application shape of the adhesive, which improves adhesiveness, and the adhesive can therefore be applied thickly on a small area. This provides strong adhesiveness even when the product is applied in an area as narrow as 300  $\mu\text{m}$ , which is the reason why the adhesive is suitable for such application.

## [Adhesive cross section]



Adhesive cross section :  
Maximum aspect ratio 5/4



## [Term Descriptions]

[1] Time-lagged UV curing adhesive(Fine Glue)

A UV curing adhesive that cures after a certain amount of time following exposure to UV irradiation.

[2] Thermoset adhesive

A type of adhesive to be applied on one material to be adhesive another material and which cures when it is heated, but does not melt when reheated.

[3] High aspect ratio

High aspect ratio for the width of the application line.

## About Panasonic

Panasonic Corporation is a worldwide leader in the development of diverse electronics technologies and solutions for customers in the consumer electronics, housing, automotive, enterprise solutions and device industries. Since its founding in 1918, the company has expanded globally and now operates 474 subsidiaries and 94 associated companies worldwide, recording consolidated net sales of 7.553 trillion yen for the year ended March 31, 2016. Committed to pursuing new value through innovation across divisional lines, the company uses its technologies to create a better life and a better world for its customers. To learn more about Panasonic:

<http://www.panasonic.com/global>

## Media Contacts:

### Public Relations Department

Panasonic Corporation

Tel: +81-(0)3-3574-5664 Fax: +81-(0)3-3574-5699

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