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## DNP develops low-reflection (LR) film that has both low reflectance and excellent scratch resistance

Dainippon Printing Co., Ltd. (DNP) develops low-reflection (LR) film that has both low reflectance and excellent scratch resistance.



Compared to the conventional product (right) of DNP, it can be seen that the new product (left) does not show reflected characters. Also, with the new product (left), it can be seen that no damage occurs in the arrow portion.

### **[Background]**

Low-reflection film is an optical film that is used on the top surface of displays such as TVs, digital signage, car navigation systems and personal computers to reduce glare of lighting and external light, and to make the screen easy to see. In recent years, the use as a touch panel that a person directly touches and operates a display with a finger is increasing, and there are also cases where the screen is worn out and scratched due to wiping etc. However, its scratch resistance has been exacerbated by lowering the film's reflectivity. This time, DNP newly developed a material to be coated on the film, and also reviewed the

production process, thereby DNP develops LR film which has the combination of lower reflectance and excellent scratch resistance compared to the conventional products.

## **[Features of the product]**

This product can be widely deployed in various applications, including displays with touch function, which were difficult to use with conventional low-reflective films.

### **■ Both low reflectivity and high scratch resistance**

○ The reflectance of the developed product is 0.3%, and the scratch resistance has achieved 1,500g in the steel wool test \*.

\* A test to confirm the presence or absence of scratches by wiping back and forth 10 times with each load using steel wool.

○ In the conventional product, the reflectance was 1.0% and the scratch resistance was 700g, so we achieved about 7 times improvement in " scratch resistance / reflectance".

(1,500 g / 0.3%: 700 g / 1.0%)

### **■ Other features**

○ It is easy to keep the screen clean because it is highly resistant to stains, dust, dirt, fingerprints and so on, and easy to wipe off.

○ Because the light is reflected in natural colors from the film, it is less likely to be anxious colors. In addition, the viewing angle is wide and the visibility from the side is excellent.

○ This product is also highly resistant to alkaline liquids.

## **[Future plan]**

DNP plans to release the low-reflective film developed this time in 2020. We aim to achieve sales of 2 billion yen annually in 2022 by supplying display manufacturers and in-vehicle system manufacturers. In addition, this film is introduced at the DNP booth of the "SID2019" conference on display held in San Jose, USA from May 14th to 16th.