

# Functional hard coated film

HA series (with adhesive) · H series

Various functions can be added by thin film wet coating technology. Wide variety of coating formulations are available for various applications. In addition to the clear type, low reflection type and anti-glare type, we also have a lineup of special grades that improve the writing quality of the touch pen.

## Composition

**HA series (with adhesive)**

**H series**

We are able to support a variety of applications by combining our core technologies of "Surface Modification Technology," "Adhesive Technology," and "Release liner Technology." Various films such as stretched plastic films and cast films are used as base film.

## Various technologies for functional hard coated films

**Clear/Anti-glare/Anti-reflective type**  
 Suppresses the decrease in visibility from the reflection of outside light on the screen.  
 For anti-glare type, we offer a line-up of high anti-glare and high-definition grades.

**Clear type**

**Anti-glare type (High anti-glare type)**

**Anti-glare type (High definition anti-glare type)**

**Anti-sparkling type**  
 Applying to high-definition displays enables suppression of dazzle.

**Fingerprint-resistant type**  
 We have two approaches as below for fingerprint-resistant films which are applied to the surface layer of displays.

**Water-repellent type (fingerprint removability)**

Before wiping

After wiping

Water contact angle

Contact angle Water: 105.6°, Oleic acid: 68.4°

**Lipophilic type (makes fingerprint smudges less noticeable)**

Before wiping

After wiping

Oleic acid contact angle

Contact angle Water: 60.6°, Oleic acid: 20.8°

**Anti-water marking and anti-Newton ring type**

Water marks that occur in air gap-type touch panel devices lead to a drop in the visibility.  
 In our coating products, the material designs take into account of the suppression of interference fringes.

**Special function (improved writing feel) type**

Tablet PCs for educational purposes and other devices that allow writing on the screen with a touch pen have become widespread. In order to make writing on them feel natural, we focused on the resistance and vibration when writing with a pencil on paper.

**Figure of paper**  
Schematic diagram when moving the pencil

**Figure of hard coat film(CH,AG)**  
Schematic diagram when moving the touch pen

Paper (Note) surface observation image (SEM×500x magnification)

AG film surface observation image (SEM×500x magnification)

Writing taste OK: Writing taste is close to paper  
 Writing taste NG: Writing taste is not close to paper

## Product Line-up

		Product name	Haze(%) <sup>*1</sup>	T.t. [%] <sup>*2</sup>	Pencil hardness <sup>*3</sup>	Scratch resistance <sup>*4</sup>	Remarks
Anti-Glare Type	(Low definition / high anti-glare)	HA203	9.3	90	2H	○	
	(High definition / low anti-glare)	HA239	5.5	90.5	3H	○	Fingerprint removability
	(High definition / low anti-glare)	HA239LR	10.0	94	3H	○	Low reflectivity
Clear Type		HA110	0.3	90.5	3H	○	Fingerprint removability
		HA116	0.3	91	HB	○	Easy bonding
		HA137	0.3	91	H	○	AWM property
Paper write feeling type		HA243	22	91	2H	○	

\*1 Measuring method : JIS K 7136   \*2 Measuring method : JIS K7361-1   \*3 Measuring method : JIS K5600-5-4(750g load)   \*4 Measuring method : SW #0000, 250g/cm<sup>2</sup> load 10 round trips