Anti-scratch agent for PP, PMMA

# NOF® -ALLOY KA300

## 1 About NOF®–ALLOY KA300

**NOF®–ALLOY KA300 is a resin additive that improves scratch resistance (scratch and abrasion resistance) with a small amount of addition while maintaining the appearance of polypropylene resin (PP) and the transparency of acrylic resin (polymethyl methacrylate, PMMA). Furthermore, even after being added to PP or PMMA, it does not significantly affect the basic physical properties of the resin.**

Fig. 1 Appearance of NOF®-ALLOY KA300

## 2 Addition of NOF®–ALLOY KA300 to PP Compounds

**The addition of NOF®–ALLOY KA300 enables the improvement of scratch resistance in PP compounds.**

**【Scratch Test Condition】**

The scratch property was evaluated with ⊿L of PP compound after cross cut test.

(load: 5N, test speed: 1000mm/min)

＊Evaluation was conducted using test plates the initial, after aging (80°C168h, 110°C168h).

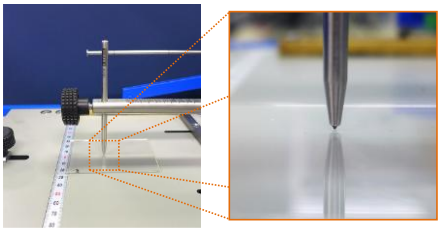
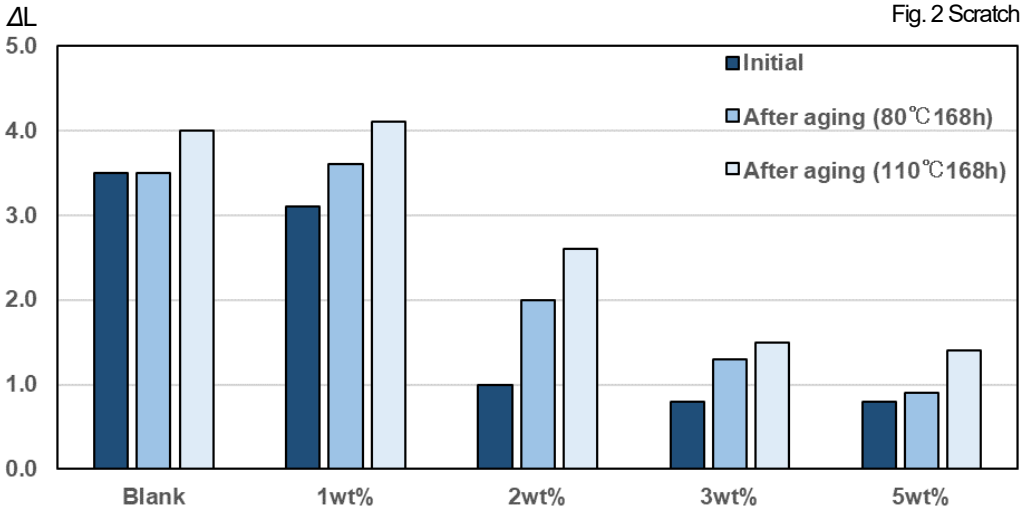


Fig. 2 Scratch Test




Additive amount of NOF®-ALLOY KA300

Fig. 3 The Scratch Resistance Improvement Effect of NOF®-ALLOY KA300

**Even with the addition of NOF®–ALLOY KA300, it does not significantly affect the mechanical properties of PP compounds.**

Table 1 Mechanical Properties of PP Compounds After the Addition of NOF®-ALLOY KA300

| Item | | Test condition | Blank | 1wt% | 2wt% | 3wt% |
|---|---|---|---|---|---|---|
| Flexural Test | Elastic modulus | ISO 178 (Flexural speed : 2mm/min) | 1800 | 1750 | 1530 | 1500 |
| Notched Izod Impact Strength (kJ/m$^2$) | | ISO 180 (23ºC, Notched) | 6 | 9 | 9 | 10 |

b-PP / EPR / Filler (Talc) / Carbon Black composition ratio : 70 / 10 / 20 / 1 (wt)

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## 3 Addition of NOF®-ALLOY KA300 to PMMA

**The addition of NOF®-ALLOY KA300 enables the improvement of scratch resistance in PMMA.**

**【Scratch Test Condition】**

The scratch property was evaluated with ⊿Haze of PMMA after cross cut test.

(load: 8N, test speed: 1000mm/min)

＊Evaluation was conducted using test plates the initial, after aging (80℃168h).

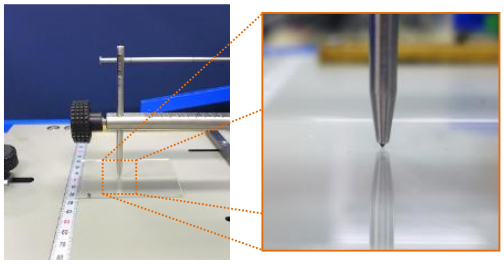
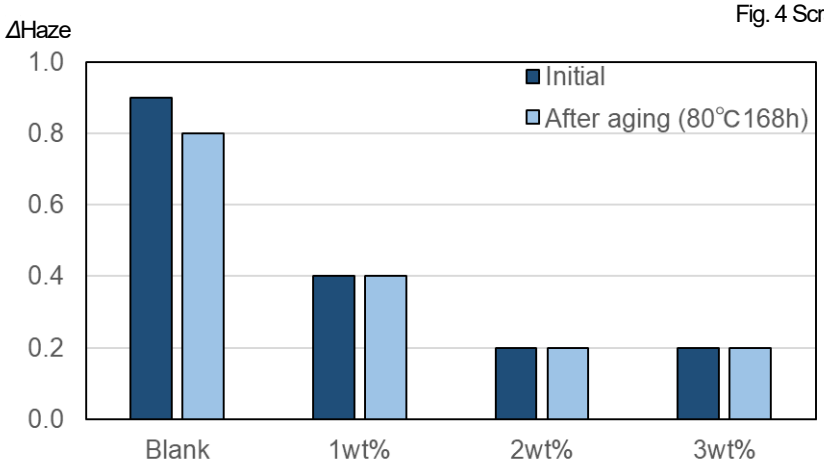


Fig. 4 Scratch Test




Additive amount of NOF®-ALLOY KA300

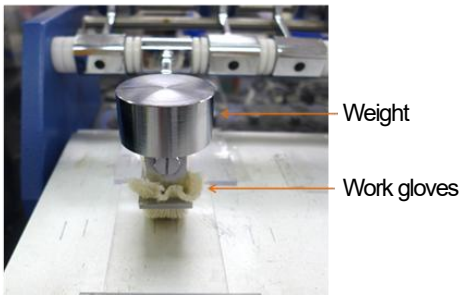
Fig. 5 The Scratch Resistance Improvement Effect of NOF®-ALLOY KA300

**【Mar Test Condition】**

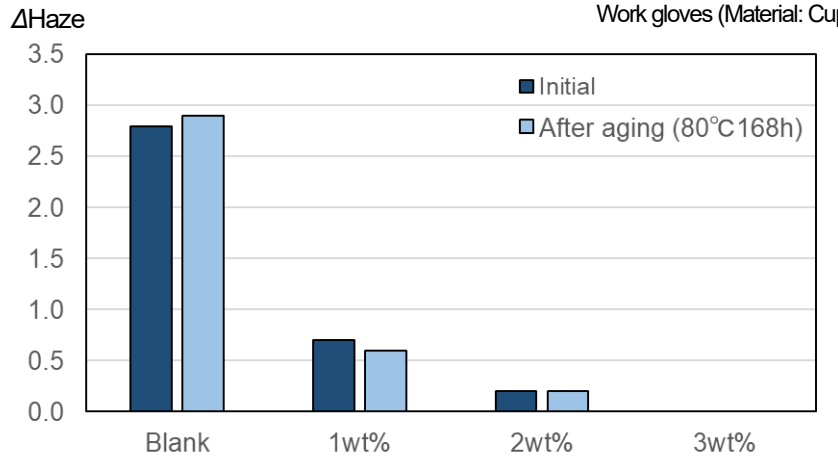
The scratch property was evaluated with ⊿Haze of PMMA after mar test.

(100 times back and forth with cotton cloth with 1kg load and 200mm/sec test speed)

＊Evaluation was conducted using test plates the initial, after aging (80℃168h).




Work gloves (Material: Cuprammonium Rayon)




Additive amount of NOF®-ALLOY KA300

Fig. 7 Abrasion Resistance Improvement Effect of NOF®-ALLOY KA300

**Even with the addition of NOF®-ALLOY KA300, the transparency of PMMA can be maintained.**

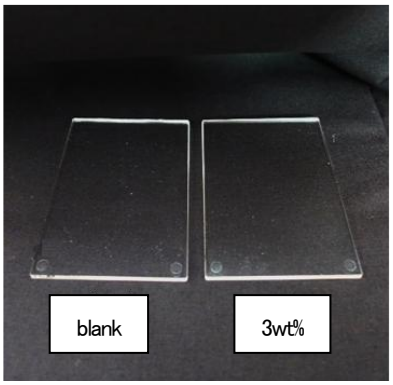



Fig. 8 Appearance of PMMA after adding of NOF®-ALLOY KA300

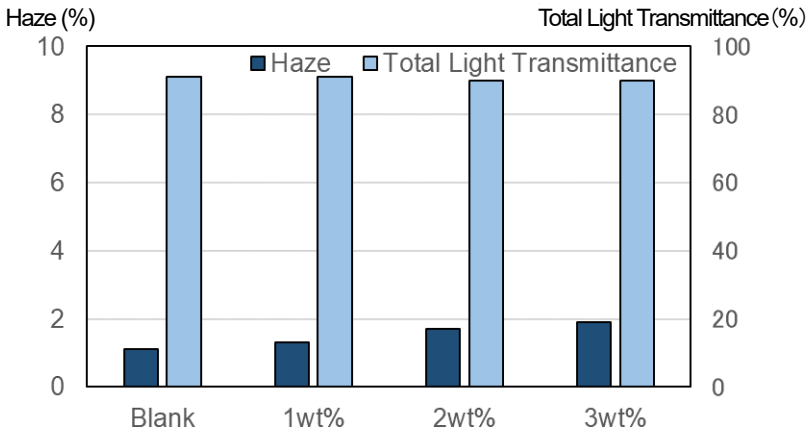



Fig. 9 Effect on PMMA appearance

**The addition of NOF®-ALLOY KA300 does not significantly affect the basic properties of PMMA.**

Table 2 Mechanical Properties of PMMA After the Addition of NOF®-ALLOY KA300

| Item | | Test condition | Blank | 1wt % | 2wt % | 3wt% |
|---|---|---|---|---|---|---|
| Tensile | Strength (MPa) | ISO 527-1 | 85 | 83 | 82 | 82 |
| | Elongation (%) | (Tensile speed :50mm/min) | 9 | 5 | 6 | 9 |
| Flexural | Strength (MPa) | ISO 178 | 120 | 120 | 110 | 110 |
| | Modulus (MPa) | (Flexural speed : 2mm/min) | 3,200 | 3,170 | 3,090 | 3,050 |
| Izod impact (kJ/m$^2$) | | ISO 180 (23C with notch) | 4 | 4 | 4 | 4 |
| Heat Deflection Temperature (°C) | | ISO 75 (Flexural stress :1.8MPa) | 84 | 84 | 83 | 81 |
| Molding shrinkage ratio | MD [1] (%) | Original test [2] | 0.1 | 0.1 | 0.1 | 0.1 |
| | TD [1] (%) | | 0.1 | 0.1 | 0.1 | 0.1 |

1) MD: machine direction, TD: transverse direction

2) Molding shrinkage ratio was measured with the test plaque (80mm × 55mm × 2mm).

## 4 National Chemical Substance Inventories

**The inclusion status of NOF®-ALLOY KA300 in the chemical substance inventories of each country is shown below.**

Table 3 Inclusion status of NOF®-ALLOY KA300 in Chemical Substance Inventories of various countries

| U.S.A. | EU | China | Korea | Taiwan |
|---|---|---|---|---|
| TSCA | REACH | IECSC | K-REACH | TCSCA |
| Listed | Listed (monomer) | Listed | Listed | Listed |

Please be sure to consult with our company before exporting.

## 5 Contact Information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*Please use after confirming the latest Safety Data Sheet (SDS).

*The contents are based on the documentation, information, and data available at the time of writing, and there are no guarantees regarding the data, hazards, and harmfulness listed.
The items described are intended for normal handling, so if you are handling them in a special way, please implement safety measures suitable for the application and usage.

*If you have any other questions, please contact our sales representative.

*The values listed are representative and are not guaranteed.




October, 2025 (Ver. 2)