

Product Data Sheet

2018-04-23

Product : Invisible Fluorescent Materials : Green 1816
Lot. No. : #161102
Main use : Gravure, flexo, letterpress, offset, screen printing inks and resin
Supply form : Powder or Inks
*** Testing varnish type** : Modified rosin phenol resin

Chemical & Physical properties

(determined on powder)

| Product name | Appearance form | Appearance color | Solubility (Water, 20°C) | Grindometer test |
|--------------|-----------------|------------------|-----------------------------|------------------|
| Green 1816 | Powder | Off white | - | max. ≤ 1mil |

Luminescent properties

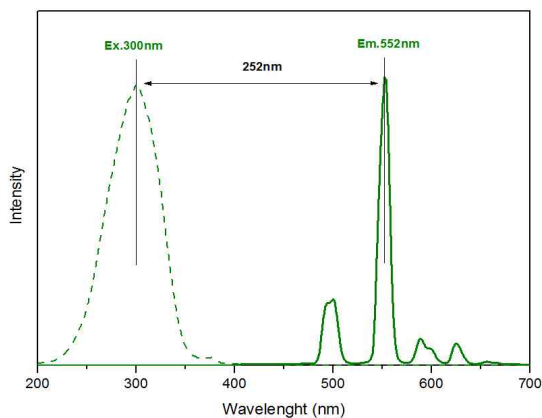
(determined on powder by PL Spectrometer)

| Product name | Excitation Point (nm) | Color of fluorescence | CIE-chromaticity coordinates | DWL (nm) |
|--------------|------------------------------|-----------------------|---------------------------------|-------------|
| Green 1816 | 254 (Abs _{max} 300) | Yellowish green | x=0.3518 y=0.5893 | 552 ± 5 |

- Excitation & Emission

(determined by PL Spectrometer)

Green 1816



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Chemical resistance test

(determined on 20% film by Visual Check or Color Difference Meter, PL Spectrometer)

- Test for Appearance Color Fastness – *Gray Scale (Color Staining)*

| | |
|------------------|------------|
| Product name | Green 1816 |
| Gray Scale (1-5) | ≥ 4.5 |

* Gray Scale (Color Staining) = 5: dE*0.00, 4.5: dE*3.36, 4: dE*5.40, 3.5: dE*7.14, 3: dE*13.65, 2.5: dE*18.25, 2: dE*23.56, 1.5: dE*29.33, 1: dE* 34.28

- Test for Fluorescence Fastness – *Function Class (Residual Fluorescent Intensity)*

| No. | Items | Function Class (1-5) | |
|-----|---|----------------------|----------------|
| | | Green 1816 | |
| | | daylight | under uv light |
| 0 | Initial | | 5 |
| 1 | Ethyl alcohol (30min.) | | 5 |
| 2 | Ethyl acetate (30min.) | | 5 |
| 3 | Perchloro Ethylene (30min) | | 5 |
| 4 | Xylene (30min.) | | 5 |
| 5 | Gasoline (30min.) | | 5 |
| 6 | Acetone (30min.) | | 5 |
| 7 | Toluene (30min.) | | 5 |
| 8 | Acetic acid (20% Sol., 30min.) | | 1 |
| 9 | H ₂ SO ₄ (2% Sol., 30min.) | | 1 |
| 10 | HCl (5% Sol., 30min.) | | 1 |
| 11 | NaOH (2% Sol., 30min.) | | 1 |
| 12 | Soap solution (5% Sol., 80°C, 30min.) | | 1 |
| 13 | NaOCl (5% Sol., 30min.) | | 1 |
| 14 | Hot water (100°C, 30min.) | | 2 |
| 15 | Artificial sweat (30min.) | | 1 |

* Function Class = 5: 100-81%, 4: 80-61%, 3: 60-41%, 2: 40-21%, 1: 20-1%

Above picture may be different from the original.

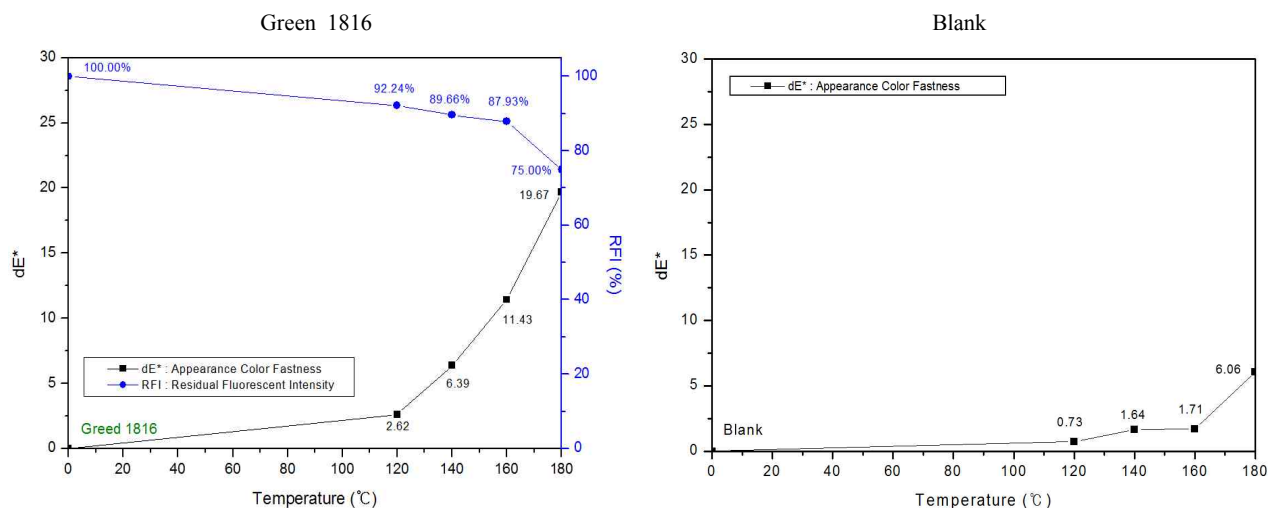
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Thermal stability test

(determined on 20% film by Visual Check or Color Difference Meter, PL Spectrometer)

- Test for Appearance Color Fastness & Residual Fluorescent Intensity



Test for Color Fastness

Test for Color Fastness

Test for Fluorescence Fading
(Residual Fluorescent Intensity)

| | |
|----------------|--|
| Blank | |
| <i>Initial</i> | |
| 120°C | Comparable to initial <i>dE*</i> 0.73 |
| 140°C | <i>dE*</i> 1.64 |
| 160°C | <i>dE*</i> 1.71 |
| 180°C | <i>dE*</i> 6.06 |

| | |
|----------------|--|
| Green 1816 | |
| <i>Initial</i> | |
| 120°C | Comparable to initial <i>dE*</i> 2.62 |
| 140°C | <i>dE*</i> 6.39 |
| 160°C | <i>dE*</i> 11.43 |
| 180°C | <i>dE*</i> 19.67 |

| | |
|----------------|---------------------------------|
| Green 1816 | |
| <i>Initial</i> | |
| 120°C | Comparable to initial 92.24% |
| 140°C | 89.66% |
| 160°C | 87.93% |
| 180°C | 75.00% |

* Above picture may be different from the original.