Colour Changing Thermochromic Paints

Pantone Re/f lex Blue PC
C100 M82 Y0 K2

Pantone 1797 PC
C0 M100 Y99 K4

www.indestructible.co.uk
Thermochromic paints are designed to change colour at specific temperatures giving a visual indication of a temperature change. This can be used for activities such as safety indicators on thermally sensitive systems, indication of the thermal history or R&D components, over temperature safety indicators in the petrochemical industry, etc. These paints function by the action of chemical change within solid components of the coating.

The colour change is non-reversible within this range. The paints are designed to be thermally stable when used below their first temperature change level. When the coatings approach their first colour change the reaction will occur quickly at the specified temperature or gradually if the paint is held within a few tens of degrees of the change temperature.

Examples of the visual colour changes exhibited by our Non-Reversible Thermochromic Paint Range, in response to temperature rise.

Once subject to heating, paints will permanently change colour. Heated within 10 minutes to temperature shown or above. Changes may occur at lower temperatures if heated over long periods.

Paints Available In The Range

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Colour Change Temperature Degrees Centigrade (°C)</th>
<th>Initial Colour</th>
<th>Product Code</th>
<th>Colour Change Temperature Degrees Centigrade (°C)</th>
<th>Initial Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT-80</td>
<td>80 240 295</td>
<td>Beige</td>
<td>CT-IP180</td>
<td>180 310</td>
<td>Dark Blue</td>
</tr>
<tr>
<td>CT-115-Rev1</td>
<td>115 145 300 330</td>
<td>Pink</td>
<td>CT-225</td>
<td>225 235 285</td>
<td>Deep Yellow</td>
</tr>
<tr>
<td>CT-140</td>
<td>140 316 360</td>
<td>Pink</td>
<td>CT-400</td>
<td>400 520 560</td>
<td>Purple</td>
</tr>
<tr>
<td>CT-150</td>
<td>150 240 310</td>
<td>Yellow</td>
<td>CT-410</td>
<td>410 440 560</td>
<td>Blue</td>
</tr>
<tr>
<td>CT-160</td>
<td>160 190 250 300</td>
<td>Blue</td>
<td>CT-440</td>
<td>440</td>
<td>Green</td>
</tr>
<tr>
<td>CT-165-R1</td>
<td>165 180 205</td>
<td>White</td>
<td>CT-8590X1</td>
<td>Thinner For CT Non-Reversible Colour Range</td>
<td></td>
</tr>
</tbody>
</table>
A range of coloured, lower temperature, reversible thermal indicating paints.

CT-IPR Range: Paints are coloured when below the stated temperature, changing to clear or a lighter colour above the relevant temperature.

Examples of the visual colour changes exhibited by our Reversible Thermochromic Paint, in response to temperature rise.

Once subject to heating, paints will change to colour indicated and revert back to original colour upon cooling. Heated within 10 minutes to temperature shown or above. Changes may occur at lower temperatures if heated over long periods.

Temperatures shown in degrees centigrade. For demonstrative purposes only, colours may vary.

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Colour Change Temperature Degrees Centigrade (°C)</th>
<th>Initial Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT-70</td>
<td>70</td>
<td>Red</td>
</tr>
<tr>
<td>CT-IPR28</td>
<td>28</td>
<td>Rose Red</td>
</tr>
<tr>
<td>CT-IPR45</td>
<td>45</td>
<td>Green</td>
</tr>
<tr>
<td>CT-IPR65</td>
<td>65</td>
<td>Deep Blue</td>
</tr>
<tr>
<td>CT-IPR05</td>
<td>05</td>
<td>Thermo Red</td>
</tr>
</tbody>
</table>
Irreversible Thermal Indicating Ink

A water-based thermochromic coating to permanently indicate temperature change at lower temperatures.

A semi-transparent off white/pink water based coating, produced from organic encapsulated thermochromic pigments. This material is specially designed to be printed and over lacquered, if used. Changes from light pink to red irreversibly at temperatures indicated.

- Designed for simple use via printing
- Clear colour contrast for instant visual indication of temperature change
- Permanent record of when temperature has been exceeded
- Appropriate for use as a security measure

Initial starting colour
(ambient temperature)

Permanent colour change at temperatures between 55-60°C

Ambient Temperature 55-60 °C

Also available in the Colour Therm Range

- Solvents, Cleaners and Thinners for the individual paints.
- Anti-corrosive primers for use, for example, to protect steel structures.
- Clear over lacquers for some products, as UV resistance is not yet a qualified resistance.
Refinery Products - CT-IP180

A functional coating for identification of hot spots and internal insulation failures. Exhibiting a visual colour change in response to temperature rise.

Typically used on reaction vessels on chemical and petrochemical sites as a one-time warning of dangerous temperature increases.

This product can be used in two coats as a self-priming system over stainless steel, or over an inorganic zinc primer for optimum corrosion protection to carbon steel substrates. Suitable for application both in the fabrication yard and on-site.

Irreversible Thermochromic Paint

• Simple method of measuring temperature with a single paint pack
• Non-reversible, accurate method of measuring temperature
• Invaluable tool in thermal measurement to indicate dangerous temperature increases
• Strong and clear colour contrast
• Multi change paint indicates more than one temperature rise

Colour change from dark blue to blue at temperatures between 180-220°C (356-428°F), and from blue to white at temperatures between 310-350°C (590-662°F).

Before colour change

<table>
<thead>
<tr>
<th>Colour change</th>
<th>Colour change</th>
</tr>
</thead>
<tbody>
<tr>
<td>at 180°C</td>
<td>at 310°C</td>
</tr>
</tbody>
</table>

Ideal For Refinery Use

CT-IP180 is a one time warning system. The colour change is permanent.

After warning of a temperature change the coating must be reapplied after proper surface preparation has been performed.

Example of colour change on reaction vessel. For demonstrative purposes only, colours may vary.
### Surface Temperature Monitoring System

**Irreversible Labels**

A fast, simple temperature monitoring system based on Proprietary colour change technology

- Inexpensive and easy to use
- Immediate response
- Permanent record of highest temperature
- Oil, water & steam resistant
- Temperature range 40 to 260°C
- Labels or strips
- Silver to black colour change
- Last black event is the highest temperature achieved

### Specifications

**Irreversible Temperature Monitoring System**

**Ten Level Strips**

<table>
<thead>
<tr>
<th>°C</th>
<th>40</th>
<th>43</th>
<th>46</th>
<th>49</th>
<th>54</th>
<th>60</th>
<th>66</th>
<th>71</th>
<th>77</th>
<th>82</th>
</tr>
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<tbody>
<tr>
<td>°F</td>
<td>105</td>
<td>110</td>
<td>115</td>
<td>120</td>
<td>130</td>
<td>140</td>
<td>150</td>
<td>160</td>
<td>170</td>
<td>180</td>
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</tbody>
</table>

**Eight Level Strips**

<table>
<thead>
<tr>
<th>°C</th>
<th>40</th>
<th>43</th>
<th>46</th>
<th>49</th>
<th>54</th>
<th>60</th>
<th>66</th>
<th>71</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>105</td>
<td>110</td>
<td>115</td>
<td>120</td>
<td>130</td>
<td>140</td>
<td>150</td>
<td>160</td>
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</table>

**Five Level Strips**

<table>
<thead>
<tr>
<th>°C</th>
<th>40</th>
<th>43</th>
<th>46</th>
<th>49</th>
<th>54</th>
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<tbody>
<tr>
<td>°F</td>
<td>105</td>
<td>110</td>
<td>115</td>
<td>120</td>
<td>130</td>
</tr>
</tbody>
</table>

**T.D.I. Three Level**

**Specifications**

Size: 20 x 28mm (0.8” x 1.11”)
Type: Horizontal, Self adhesive
Scale: °C and °F
Range: (Sold in units)

<table>
<thead>
<tr>
<th>°C</th>
<th>65</th>
<th>71</th>
<th>82</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>150</td>
<td>160</td>
<td>180</td>
</tr>
</tbody>
</table>

**Specifications**

Size: 39 x 18mm (1.53” x 0.7”)
Type: Vertical, Self adhesive
Scale: °C and °F
Range: (Sold in units of 10)

**Labels or strips**

- **Size:** 20 x 28mm (0.8” x 1.11”)
- **Type:** Horizontal, Self adhesive
- **Scale:** °C and °F
- **Range:** (Sold in units)

**Specifications**

Size: 51 x 18mm (2.00” x 0.7”)
Type: Vertical, Self adhesive
Scale: °C and °F
Range: (Sold in units of 10)

**Specifications**

Size: 54 x 18mm (2.00” x 0.7”)
Type: Vertical, Self adhesive
Scale: °C and °F
Range: (Sold in units of 10)

**Specifications**

Size: 18 x 34mm (0.7” x 1.26”)
Type: Vertical, Self adhesive
Scale: °C and °F
Range: (Sold in units of 10)
Colour Change Thermometry

Digitemp® LC Thermometers
Continuous Temperature Monitoring

A comprehensive system of thermometers based on proprietary Liquid Crystal formulations that change colour at designated temperatures

- Instant Response
- Continuous Readout
- No Batteries or Glass –
- Non Toxic
- Temperature Range - 0 to 100°C (32 to 212°F)
- Accurate +/- 1°C
- Self Adhesive
- Cost Effective

16 Level Thermometer

<table>
<thead>
<tr>
<th>°C</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
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<th>50</th>
<th>55</th>
<th>60</th>
<th>65</th>
<th>70</th>
<th>75</th>
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</thead>
<tbody>
<tr>
<td>°C</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
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<td>75</td>
<td>80</td>
<td>85</td>
<td>90</td>
<td>95</td>
<td>100</td>
</tr>
</tbody>
</table>

Our Product Code:
CT-16SHAL RANGE
Specifications:
Size: 132mm x 19mm (5.2" x 0.75")
Type: Vertical, self adhesive
Scale: °C

16 Level Thermometer

<table>
<thead>
<tr>
<th>°C</th>
<th>31</th>
<th>30</th>
<th>29</th>
<th>28</th>
<th>27</th>
<th>26</th>
<th>24</th>
<th>23</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>88</td>
<td>86</td>
<td>84</td>
<td>82</td>
<td>80</td>
<td>78</td>
<td>76</td>
<td>74</td>
<td>72</td>
</tr>
</tbody>
</table>

Our Product Code:
CT-16SHAL RANGE 14
Specifications:
Size: 127mm x 12.75mm (5" x 0.5")
Type: Vertical, self adhesive
Scale: °C and °F

7 Level Thermometer

<table>
<thead>
<tr>
<th>°C</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>45</td>
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<td>60</td>
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<tr>
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<td>65</td>
<td>70</td>
<td>75</td>
<td>80</td>
<td>85</td>
<td>90</td>
</tr>
</tbody>
</table>

Our Product Code:
CT-07SHAL HORIZONTAL
Specifications:
Size: 127.5mm x 45mm (0.5"x1.77")
Type: Horizontal, self adhesive
Scale: °C and °F

Thermochromic Sheets And Films

<table>
<thead>
<tr>
<th>°C</th>
<th>R20C5W</th>
<th>R25C5W</th>
<th>R30C5W</th>
<th>R35C1W</th>
<th>R35C5W</th>
<th>R40C5W</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>45</td>
</tr>
</tbody>
</table>

Specifications:
Size: 300mm x 450mm (11.8" x 17.7")
Type: Rectangle, self adhesive or non adhesive available
Scale: °C

Indestructible Paint Limited
Telephone: +44 (0) 121 702 2485
Email: sales@indestructible.co.uk
Developer & Manufacturer of Technology
Coatings to support the lifetime of Aviation,
Defence, Maritime and General Industry.

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