

## PPG TESLIN® substrate technical data

PPG TESLIN® substrate is a microporous, dimensionally stable, highly filled, single-layer, polyolefin synthetic material. A non-abrasive inorganic filler comprises 60 percent of the weight, and it is 65 percent air by volume. The porous, uncoated nature of *Teslin* substrate absorbs inks, adhesives, coatings, and laminating films to form strong interlocking bonds with the substrate that secure printed data.

### Typical Properties<sup>1</sup>

|                                  | SP 600     | SP 700 <sup>2</sup> | SP 800 <sup>2</sup> | SP 1000 <sup>2</sup> | SPID 1000  | SP 1000 Blue | IJWP 1000  | Digital 1000 | SP 1200 <sup>2</sup> | SP 1400 <sup>2</sup> | SPID 1400  | HD 1400    | SP 1800    | Reference   |
|----------------------------------|------------|---------------------|---------------------|----------------------|------------|--------------|------------|--------------|----------------------|----------------------|------------|------------|------------|-------------|
| Product code                     | SP600      | SP700               | SP800               | SP1000               | SP1000SPID | SP1000Blue   | SP1000IJWP | SP1000DIGT   | SP1200               | SP1400               | SP1400SPID | SP1400HD   | SP1800     |             |
| Gauge (mils)                     | 5.8        | 7.0                 | 8.0                 | 10.0                 | 10.0       | 10.0         | 10.0       | 10.5         | 12.0                 | 14.0                 | 14.0       | 14.0       | 18.0       | ASTM D-374  |
| Tolerance (+/- mils)             | 0.5        | 0.7                 | 0.7                 | 0.7                  | 0.7        | 0.7          | 0.7        | 0.7          | 0.8                  | 0.9                  | 0.9        | 0.9        | 1.2        |             |
| Gauge (microns)                  | 148        | 178                 | 203                 | 254                  | 254        | 254          | 254        | 267          | 305                  | 356                  | 356        | 356        | 457        |             |
| Tolerance (+/- microns)          | 13.0       | 17.8                | 17.8                | 17.8                 | 17.8       | 17.8         | 17.8       | 17.8         | 20.3                 | 22.9                 | 22.9       | 22.9       | 30.5       |             |
| Yield (in. <sup>2</sup> /lb.)    | 7513       | 6,263               | 5,143               | 4,150                | 4,150      | 4,150        | 4,150      | 3,672        | 3,511                | 2,907                | 2,907      | 2,549      | 1,909      | ASTM D-3776 |
| (oz/sq yd)                       | 2.75       | 3.31                | 3.89                | 4.93                 | 4.93       | 4.93         | 4.93       | 5.76         | 6.12                 | 7.38                 | 7.38       | 7.38       | 8.73       | 10.86       |
| Grammage (g/m <sup>2</sup> )     | 97         | 115                 | 134                 | 167                  | 167        | 167          | 167        | 194          | 206                  | 243                  | 243        | 290        | 368        |             |
| Density (g/cc)                   | 0.63       | 0.63                | 0.65                | 0.68                 | 0.68       | 0.68         | 0.68       | 0.73         | 0.68                 | 0.71                 | 0.71       | 0.84       |            |             |
| <b>Master Roll Configuration</b> |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
| Mill Roll Length (ft)            | 7,000      | 6,000               | 5,250               | 5,000                | 5,000      | 5,000        | 5,000      | 5,000        | 3,750                | 3,300                | 3,300      | 3,300      | 2,400      |             |
| Mill Roll Length (m)             | 2,134      | 1,829               | 1,601               | 1,524                | 1,524      | 1,524        | 1,524      | 1,524        | 1,143                | 1,006                | 1,006      | 1,006      | 732        |             |
| Roll Weight (lbs)                | 657        | 673                 | 685                 | 812                  | 812        | 812          | 812        | 812          | 751                  | 781                  | 781        | 930        | 860        |             |
| Roll Weight (kg)                 | 298        | 305                 | 311                 | 368                  | 368        | 368          | 368        | 368          | 341                  | 354                  | 354        | 422        | 390        |             |
| <b>Tensile Properties</b>        |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
| <b>MD Tensile Strength</b>       |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
| lb./in.                          | 13.0       | 14.4                | 16.5                | 19.6                 | 19.6       | 19.6         | 19.6       | 25.4         | 23.2                 | 25.0                 | 25.0       | 39.0       | 31.0       | ASTM D-882  |
| N/cm                             | 22.8       | 25.2                | 28.8                | 34.3                 | 34.3       | 34.3         | 34.3       | 44.4         | 40.6                 | 39.6                 | 39.6       | 68.2       | 44.0       |             |
| Elongation (%)                   | 600        | 650                 | 700                 | 750                  | 750        | 750          | 750        | 760          | 770                  | 790                  | 790        | 860        | 660        |             |
| 1% Modulus                       | 3.4        | 3.3                 | 3.6                 | 3.7                  | 3.7        | 3.7          | 3.7        | 4.3          | 3.7                  | 4.2                  | 4.2        | 4.9        | 4.5        |             |
| <b>CD Tensile Strength</b>       |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
| lb./in.                          | 5.1        | 5.9                 | 6.7                 | 8.4                  | 8.4        | 8.4          | 8.4        | 11.0         | 9.7                  | 11.0                 | 11.0       | 14.0       | 14.8       |             |
| N/cm                             | 9.3        | 10.3                | 11.6                | 15.1                 | 15.1       | 15.1         | 15.1       | 18.6         | 17.0                 | 19.6                 | 19.6       | 24.5       | 21.0       |             |
| <b>Elmendorf Tear (g)</b>        |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
| MD                               | 66         | 93                  | 111                 | 141                  | 141        | 141          | 141        | 167          | 179                  | 188                  | 188        | 261        | 288        | ASTM D-1922 |
| CD                               | tore to MD | tore to MD          | tore to MD          | tore to MD           | tore to MD | tore to MD   | tore to MD | tore to MD   | tore to MD           | tore to MD           | tore to MD | tore to MD | tore to MD |             |
| <b>Brittleness Temperature</b>   |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
|                                  | <-70°C     | <-70°C              | <-70°C              | <-70°C               | <-70°C     | <-70°C       | <-70°C     | <-70°C       | <-70°C               | <-70°C               | <-70°C     | <-70°C     | <-70°C     | ASTM D-746  |
| <b>Maximum Shrinkage (%)</b>     |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
|                                  | 4.0        | 4.0                 | 4.0                 | 4.0                  | 4.0        | 4.0          | 4.0        | 4.0          | 4.0                  | 4.0                  | 4.0        | 4.0        | 4.0        |             |
| <b>Optical Properties</b>        |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
| <b>Brightness (%)</b>            |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
|                                  | 89         | 89                  | 90                  | 91                   | 91         | 91           | 91         | 91           | 92                   | 92                   | 92         | 92         | 92         | ISO-2470    |
| <b>Whiteness Index</b>           |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
|                                  | 80         | 80                  | 80                  | 80                   | 80         | 80           | 80         | 88           | 83                   | 85                   | 85         | 82         | 80         | ASTM E-313  |
| <b>Opacity (%)</b>               |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
|                                  | 90         | 92                  | 94                  | 96                   | 96         | 96           | 96         | 95           | 98                   | 98                   | 98         | 99         | 99         | ISO-2471    |
| <b>Transmission (%)</b>          |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
|                                  | 17         | 15                  | 11                  | 8                    | 8          | 8            | 8          | 9            | 6                    | 5                    | 5          | 4          | 3          | ASTM D-1003 |
| <b>Sheffield Smoothness</b>      |            |                     |                     |                      |            |              |            |              |                      |                      |            |            |            |             |
| Top                              | 46         | 41                  | 44                  | 42                   | 42         | 42           | 42         | 54           | 42                   | 40                   | 40         | 49         | 63         | ASTM T-538  |
| Bottom                           | 74         | 64                  | 65                  | 66                   | 66         | 66           | 66         | 95           | 61                   | 54                   | 54         | 99         | 97         |             |

<sup>1</sup> Specifications are based on English units of measurement. Metric values are provided for convenience and are not to be considered precise values. Standard master roll width is 57"/1447mm and 28"/711mm OD. 40"/1016mm OD rolls available upon request.

<sup>2</sup> The maximum allowable shrinkage for Thermally Stabilized (TS) grade is 2% (measured at 135 °C for 15 minutes in a forced air oven). All other properties/specifications are the same for TS and SP grades. Custom widths up to 60"/1549mm available upon request. Digital 1000 is available in 12.5"/320mm and 20"/500mm width x 1400'/427m length rolls. Master rolls are put up on 6"/152mm ID cores.