

# 科思创 PC Makrolon® LED2245 RE物性表

| Thermal properties  |                |                   |                     |          |
|---|----------------|-------------------|---------------------|----------|
| 属性名称  | 测试标准           | 测试标准              | 单位                  | 数值       |
| Burning behavior UL 94 [UL recognition]                               | UL 94          | 2.9 mm            | Class               | HB (CL)  |
| Burning behavior UL 94 [UL recognition]                               | UL 94          | 0.75 mm           | Class               | V-2 (CL) |
| Burning rate (US-FMVSS)   | ISO 3795       | >=1.0 mm          | mm/min              | passed   |
| Coefficient of linear thermal expansion, normal                       | ISO 11359-1,-2 | 23 to 55 °C       | 10 <sup>-4</sup> /K | 0.65     |
| Coefficient of linear thermal expansion, parallel                     | ISO 11359-1,-2 | 23 to 55 °C       | 10 <sup>-4</sup> /K | 0.65     |
| Flash ignition temperature  | ASTM D1929     |                   | °C                  | 480      |
| Glass transition temperature  | ISO 11357-1,-2 | 10 °C/min         | °C                  | 145      |
| Glow wire test (GWFI)   | IEC 60695-2-12 | 1.0 mm            | °C                  | 850      |
| Glow wire test (GWFI)   | IEC 60695-2-12 | 1.5 mm            | °C                  | 875      |
| Glow wire test (GWFI)   | IEC 60695-2-12 | 3.0 mm            | °C                  | 930      |
| Glow wire test (GWIT)   | IEC 60695-2-13 | 0.75 mm           | °C                  | 875      |
| Glow wire test (GWIT)   | IEC 60695-2-13 | 1.5 mm            | °C                  | 875      |
| Glow wire test (GWIT)   | IEC 60695-2-13 | 3.0 mm            | °C                  | 900      |
| Oxygen index  | ISO 4589-2     | Method A          | %                   | 28       |
| Relative temperature index (Electric strength) [UL recognition]       | UL 746B        | 1.5 mm            | °C                  | 125      |
| Relative temperature index (Tensile impact strength) [UL recognition] | UL 746B        | 1.5 mm            | °C                  | 115      |
| Relative temperature index (Tensile strength) [UL recognition]        | UL 746B        | 1.5 mm            | °C                  | 125      |
| Resistance to heat (ball pressure test)                               | IEC 60695-10-2 |                   | °C                  | 136      |
| Self ignition temperature   | ASTM D1929     |                   | °C                  | 550      |
| Temperature of deflection under load                                  | ISO 75-1,-2    | 0.45 MPa          | °C                  | 138      |
| Temperature of deflection under load                                  | ISO 75-1,-2    | 1.80 MPa          | °C                  | 125      |
| Thermal conductivity, through-plane                                   | ISO 8302       | 23 °C; 50 % r. h. | W/(m*K)             | 0.2      |
| Vicat softening temperature   | ISO 306        | 50 N; 120 °C/h    | °C                  | 146      |

|                             |         |               |    |     |
|-----------------------------|---------|---------------|----|-----|
| Vicat softening temperature | ISO 306 | 50 N; 50 °C/h | °C | 145 |
|-----------------------------|---------|---------------|----|-----|

## Mechanical properties (23 °C/50 % r. h.)

| 属性名称                                       | 测试标准                           | 测试标准         | 单位                | 数值     |
|--|--------------------------------|--------------|-------------------|--------|
| Ball indentation hardness                  | ISO 2039-1                     |              | N/mm <sup>2</sup> | 115    |
| Charpy impact strength                     | ISO 179/1eU                    | -60 °C       | kJ/m <sup>2</sup> | N      |
| Charpy impact strength                     | ISO 179/1eU                    | 23 °C        | kJ/m <sup>2</sup> | N      |
| Charpy notched impact strength             | ISO 21305/based on ISO 179/1eA | -30 °C/ 3 mm | kJ/m <sup>2</sup> | 12C    |
| Charpy notched impact strength             | ISO 21305/based on ISO 179/1eA | 23 °C/ 3 mm  | kJ/m <sup>2</sup> | 60P(C) |
| Flexural modulus                           | ISO 178                        | 2 mm/min     | MPa               | 2350   |
| Flexural strain at flexural strength       | ISO 178                        | 2 mm/min     | %                 | 7.1    |
| Flexural strength                          | ISO 178                        | 2 mm/min     | MPa               | 97     |
| Flexural stress at 3.5 % strain            | ISO 178                        | 2 mm/min     | MPa               | 73     |
| Izod notched impact strength               | ISO 21305/based on ISO 180/A   | 23 °C/ 3 mm  | kJ/m <sup>2</sup> | 55P    |
| Izod notched impact strength               | ISO 21305/based on ISO 180/A   | -30 °C/ 3 mm | kJ/m <sup>2</sup> | 12C    |
| Nominal strain at break                    | ISO 527-1,-2                   | 50 mm/min    | %                 | > 50   |
| Puncture energy                            | ISO 6603-2                     | -30 °C       | J                 | 60     |
| Puncture energy                            | ISO 6603-2                     | 23 °C        | J                 | 55     |
| Puncture impact properties - maximum force | ISO 6603-2                     | -30 °C       | N                 | 5900   |
| Puncture impact properties - maximum force | ISO 6603-2                     | 23 °C        | N                 | 4900   |
| Strain at break                            | b.o. ISO 527-1,-2              | 50 mm/min    | %                 | 125    |
| Stress at break                            | ISO 527-1,-2                   | 50 mm/min    | MPa               | 60     |
| Tensile modulus                            | ISO 527-1,-2                   | 1 mm/min     | MPa               | 2350   |
| Yield strain                               | ISO 527-1,-2                   | 50 mm/min    | %                 | 6      |
| Yield stress                               | ISO 527-1,-2                   | 50 mm/min    | MPa               | 63     |

## Material specific properties

| 属性名称   | 测试标准        | 测试标准 | 单位 | 数值    |
|--|-------------|------|----|-------|
| Haze for transparent materials                       | ISO 14782   | 3 mm | %  | < 0.5 |
| Luminous transmittance (clear transparent materials) | ISO 13468-2 | 1 mm | %  | 90    |
| Luminous transmittance (clear transparent materials) | ISO 13468-2 | 2 mm | %  | 90    |

|  |             |             |   |       |
|--|-------------|-------------|---|-------|
| Luminous transmittance (clear transparent materials) | ISO 13468-2 | 4 mm        | % | > 89  |
| Luminous transmittance (clear transparent materials) | ISO 13468-2 | 3 mm        | % | > 89  |
| Refractive index                                     | ISO 489     | Procedure A |   | 1.584 |

## Rheological properties

| 属性名称                        | 测试标准      | 测试标准                   | 单位                      | 数值   |
|-----------------------------|-----------|------------------------|-------------------------|------|
| Melt volume-flow rate       | ISO 1133  | 300 °C/ 1.2 kg         | cm <sup>3</sup> /10 min | 34   |
| Molding shrinkage, normal   | ISO 294-4 | 60x60x2 mm/<br>500 bar | %                       | 0.7  |
| Molding shrinkage, parallel | ISO 294-4 | 60x60x2 mm/<br>500 bar | %                       | 0.65 |

## Electrical properties (23 °C/50 % r. h.)

| 属性名称                             | 测试标准        | 测试标准       | 单位               | 数值   |
|----------------------------------|-------------|------------|------------------|------|
| Comparative tracking index CTI   | IEC 60112   | Solution A | Rating           | 250  |
| Comparative tracking index CTI M | IEC 60112   | Solution B | Rating           | 125M |
| Dissipation factor               | IEC 60250   | 1 MHz      | 10 <sup>-4</sup> | 95   |
| Dissipation factor               | IEC 60250   | 100 Hz     | 10 <sup>-4</sup> | 5    |
| Electrical strength              | IEC 60243-1 | 1 mm       | kV/mm            | 34   |
| Relative permittivity            | IEC 60250   | 1 MHz      |                  | 3.0  |
| Relative permittivity            | IEC 60250   | 100 Hz     |                  | 3.1  |
| Surface resistivity              | IEC 60093   |            | Ohm              | 1E16 |
| Volume resistivity               | IEC 60093   |            | Ohm*m            | 1E14 |

## Processing conditions for test specimens

| 属性名称                                   | 测试标准    | 测试标准 | 单位   | 数值  |
|--|---------|------|------|-----|
| Injection molding - Injection velocity | ISO 294 |      | mm/s | 200 |
| Injection molding - Melt temperature   | ISO 294 |      | °C   | 280 |
| Injection molding - Mold temperature   | ISO 294 |      | °C   | 80  |

## Other properties (23 °C)

| 属性名称         | 测试标准       | 测试标准    | 单位                | 数值   |
|--------------|------------|---------|-------------------|------|
| Bulk density | ISO 60     | Pellets | kg/m <sup>3</sup> | 660  |
| Density      | ISO 1183-1 |         | kg/m <sup>3</sup> | 1190 |

|                                      |        |                   |   |      |
|--------------------------------------|--------|-------------------|---|------|
| Water absorption (equilibrium value) | ISO 62 | 23 °C; 50 % r. h. | % | 0.12 |
| Water absorption (saturation value)  | ISO 62 | Water at 23 °C    | % | 0.3  |

此数据由我们从该材料的生产商处获得。我们尽最大努力确保此数据的准确性，但是我们对这些数据值不承担任何责任，并强烈建议在最终选料前，就数据值与材料供应商进行验证。