

## Polyvinyl Chloride (PVC)

| TYPICAL PROPERTIES OF POLYVINYL CHLORIDE (PVC) |  |                          |                                    |           |
|--|--|--------------------------|------------------------------------|-----------|
| ASTM Test                                      | Property   | Rigid                    | Flexible                           | Foam      |
| PHYSICAL                                       |  |                          |                                    |           |
| D792   | Specific gravity   | 1.30-1.58                | 1.20-1.70                          | 0.45-0.8  |
| D792   | Specific volume (in <sup>3</sup> /lb)                                  | 19.1-20.5                | —                                  | —         |
| D570   | Water absorption, 24 h, 1/8-in thk (%)                                 | 0.04-0.4                 | 0.15-0.75                          | 0.03-0.04 |
| MECHANICAL                                     |  |                          |                                    |           |
| D638   | Tensile strength (psi)   | 6,000-8,000              | 1,500-3,500                        | 2000-3000 |
| D638   | Elongation (%)   | 50-150                   | 200-450                            | —         |
| D638   | Tensile modulus (10 <sup>5</sup> psi)                                  | 3.5-10                   | —                                  | 1-2.4     |
| D790   | Flexural modulus (10 <sup>5</sup> psi)                                 | 3-8                      | —                                  | —         |
| D256   | Impact strength, izod (ft-lb/in of notch)                              | 0.4-20.0                 | —                                  | 0.4-0.6   |
| D785   | Hardness, Shore  | D65-85                   | A50-100                            | 4-9       |
| D256   | Charpy Impact unnotched  | —                        | —                                  | 0.4-0.6   |
| THERMAL  |  |                          |                                    |           |
| C177   | Thermal conductivity (10 <sup>-4</sup> cal-cm/sec-cm <sup>2</sup> -°C) | 3.5-5.0                  | 3.0-4.0                            | 0.05-3    |
| D696   | Coefficient of thermal expansion (10 <sup>-5</sup> in/in-°F)           | 1.2-5.6                  | 3.9-13.9                           | 3-4.5     |
| D648   | Deflection temperature (°F)<br>At 264 psi 140-170<br>At 66 psi 135-180 | —                        | —                                  | 145-150   |
| UL 94  | Flammability rating  | V-0 (Cell Class 12454-B) | —                                  | VO-SV     |
| E 84   | Flame spread   | —                        | 15-25                              | —         |
| ELECTRICAL                                     |  |                          |                                    |           |
| D149   | Dielectric strength (V/mil)<br>Short time, 1/8-in thk                  | 350-500                  | 300-400                            | —         |
| D150   | Dielectric constant<br>At 1 kHz 3.0-3.8                                | 4.0-8.0                  | —                                  | —         |
| D150   | Dissipation factor<br>At 1 kHz 0.009-0.017                             | 0.07-0.16                | —                                  | —         |
| D257   | Volume resistivity (ohm-cm)<br>At 73°F, 50% RH                         | >10 <sup>16</sup>        | 10 <sup>11</sup> -10 <sup>15</sup> | —         |
| D495   | Arc resistance (s)   | 60-80                    | —                                  | —         |

| TYPICAL PROPERTIES OF POLYVINYL CHLORIDE (PVC) |  |                          |                                    |             |
|--|--|--------------------------|------------------------------------|-------------|
| ISO Test                                       | Property   | Rigid                    | Flexible                           | Foam        |
| PHYSICAL                                       |  |                          |                                    |             |
| ISO1183  | Specific gravity   | 1.30-1.58                | 1.20-1.70                          | 0.45-0.8    |
| ISO1183  | Specific volume (cm <sup>3</sup> /g)                       | 0.687-0.738              | —                                  | —           |
| ISO62  | Water absorption, 24 h, 3.1 mm thk (%)                     | 0.04-0.4                 | 0.15-0.75                          | 0.03-0.04   |
| MECHANICAL                                     |  |                          |                                    |             |
| ISO527   | Tensile strength (MPa)                                     | 41.37-55.16              | 10.34-24.13                        | 13.79-20.68 |
| ISO527   | Elongation (%)   | 50-150                   | 200-450                            | —           |
| ISO527   | Tensile modulus (10 <sup>3</sup> MPa)                      | 2.41-6.89                | —                                  | 0.69-1.65   |
| ISO178   | Flexural modulus (10 <sup>3</sup> MPa)                     | 2.07-5.51                | —                                  | —           |
| ISO180   | Notched izod impact strength (J/m)                         | 21-1068                  | —                                  | 21-32       |
| ISO868   | Hardness, Shore  | D65-85                   | A50-100                            | 4-9         |
| ISO179   | Charpy Impact unnotched                                    | —                        | —                                  | 0.4-0.6     |
| THERMAL  |  |                          |                                    |             |
| ISO8302  | Thermal conductivity (W/(mK))                              | 0.17                     | 0.17                               | 0.17        |
| ISO11359                                       | Coefficient of thermal expansion (10 <sup>-4</sup> m/m-°C) | 0.21-1.00                | 0.71-2.50                          | 0.54-0.90   |
| ISO75  | Deflection temperature (°C)<br>At 1.80 MPa<br>At 0.45 MPa  | 60-77<br>57-82           | —                                  | —<br>63-66  |
| UL 94  | Flammability rating  | V-0 (Cell Class 12454-B) | —                                  | VO-SV       |
| E 84   | Flame spread   | —                        | 15-25                              | —           |
| ELECTRICAL                                     |  |                          |                                    |             |
| IEC243   | Dielectric strength (kV/mm)<br>Short time, 3.1 mm thk      | 13.8-19.7                | 11.8-15.7                          | —           |
| IEC250   | Dielectric constant<br>At 1 kHz 3.0-3.8                    | 4.0-8.0                  | —                                  | —           |
| IEC250   | Dissipation factor<br>At 1 kHz 0.009-0.017                 | 0.07-0.16                | —                                  | —           |
| IEC93  | Volume resistivity (ohm-cm)<br>At 23°C, 50% RH             | >10 <sup>16</sup>        | 10 <sup>11</sup> -10 <sup>15</sup> | —           |
| ASTM D495                                      | Arc resistance (s)   | 60-80                    | —                                  | —           |