

# Chimei ABS Polylac Properties

| Typical Properties          | ISO     | Condition          | Units             | General Purpose           |                           |                        |                            |                        |                        | High Flow                |                          |                          |                          |                              |                          |                        |                                | Electroplating                     |                            |
|-----------------------------|---------|--------------------|-------------------|---------------------------|---------------------------|------------------------|----------------------------|------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------|--------------------------|------------------------|--------------------------------|------------------------------------|----------------------------|
|                             |         |                    |                   | PA-707                    | PA-757                    | PA-717C                | PA-726                     | PA-747                 | PA-709                 | PA-737                   | PA-716                   | PA-757H                  | PA-746                   | PA-746H                      | PA-756                   | PA-756H                | PA-756S                        | PA-726M                            | PA-727                     |
| MVR                         | 1133    | 220°C x 10kg       | ml/10min          | 20                        | 18                        | 16                     | 17                         | 13                     | 5.0                    | 29                       | 33                       | 30                       | 28                       | 40                           | 40                       | 80                     | 62                             | 23                                 | 19                         |
| Mass Density                | 1183    | 23°C               | g/cm <sup>3</sup> | 1.06                      | 1.05                      | 1.04                   | 1.04                       | 1.03                   | 1.03                   | 1.04                     | 1.04                     | 1.04                     | 1.03                     | 1.03                         | 1.05                     | 1.05                   | 1.05                           | 1.04                               | 1.05                       |
| Tensile Strength            | 527     | 50mm/min, yield    | MPa               | 50                        | 47                        | 44                     | 44                         | 40                     | 40                     | 39                       | 42                       | 40                       | 40                       | 37                           | 45                       | 44                     | 41                             | 42                                 | 46                         |
|                             |         | 50mm/min, break    | MPa               | 36                        | 34                        | 33                     | 33                         | 30                     | 31                     | 32                       | 31                       | 31                       | 29                       | 27                           | 32                       | 33                     | 31                             | 32                                 | 34                         |
| Tensile Elongation          | 527     | 50mm/min           | %                 | 30                        | 30                        | 30                     | 40                         | 35                     | 35                     | 20                       | 25                       | 40                       | 30                       | 25                           | 30                       | 35                     | 35                             | 20                                 | 25                         |
| Flexural Strength           | 178     | 2mm/min            | MPa               | 79                        | 76                        | 69                     | 64                         | 58                     | 58                     | 60                       | 65                       | 61                       | 60                       | 54                           | 72                       | 65                     | 61                             | 63                                 | 71                         |
| Flexural Modulus            | 178     | 2mm/min            | GPa               | 2.3                       | 2.2                       | 1.9                    | 2.1                        | 1.8                    | 1.8                    | 1.9                      | 1.9                      | 2.0                      | 1.8                      | 1.7                          | 2.1                      | 2.2                    | 2.0                            | 2.1                                | 2.0                        |
| Izod Impact                 | 180/1 A | 23°C, Notched      | KJ/m <sup>2</sup> | 14                        | 19                        | 25                     | 24                         | 34                     | 40                     | 24                       | 25                       | 27                       | 28                       | 27                           | 16                       | 9                      | 15                             | 20                                 | 24                         |
|                             |         | -30°C, Notched     | KJ/m <sup>2</sup> | 7                         | 9                         | 12                     | 11                         | 23                     | 27                     | 10                       | 11                       | -                        | 12                       | 12                           | 8                        | 5                      | 7                              | 9                                  | 11                         |
| Charpy Impact               | 179     | 23°C, Notched      | KJ/m <sup>2</sup> | 15                        | 21                        | 27                     | 26                         | 36                     | 42                     | 25                       | 26                       | 29                       | 30                       | 29                           | 17                       | 10                     | 16                             | 22                                 | 25                         |
|                             |         | -30°C, Notched     | KJ/m <sup>2</sup> | 8                         | 10                        | 13                     | 12                         | 25                     | 29                     | 11                       | 12                       | -                        | 14                       | 14                           | 9                        | 5                      | 8                              | 10                                 | 12                         |
| Vicat Softening Temperature | 306     | 50°C/hr; 5kg       | °C                | 104                       | 104                       | 103                    | 104                        | 104                    | 105                    | 103                      | 104                      | 105                      | 103                      | 102                          | 104                      | 102                    | 102                            | 103                                | 105                        |
|                             |         | 50°C/hr; 5kg       | °C                | 100                       | 100                       | 98                     | 96                         | 96                     | 97                     | 96                       | 96                       | 101                      | 94                       | 94                           | 96                       | 95                     | 95                             | 95                                 | 98                         |
| Heat Deflection Temperature | 75/A    | 1.8MPa, unannealed | °C                | 83                        | 83                        | 82                     | 83                         | 82                     | 82                     | 81                       | 83                       | 83                       | 82                       | 81                           | 83                       | 82                     | 82                             | 81                                 | 83                         |
|                             |         | 1.8MPa, annealed   | °C                | 98                        | 98                        | 97                     | 98                         | 97                     | 98                     | 96                       | 97                       | 98                       | 96                       | 96                           | 98                       | 97                     | 97                             | 96                                 | 100                        |
| CTE                         | 11359   | -                  | -                 | 8.4 × 10 <sup>-5</sup>    | 8.6 × 10 <sup>-5</sup>    | 8.8 × 10 <sup>-5</sup> | 9.1 × 10 <sup>-5</sup>     | 9.3 × 10 <sup>-5</sup> | 9.3 × 10 <sup>-5</sup> | 9.0 × 10 <sup>-5</sup>   | 9.1 × 10 <sup>-5</sup>   | 8.6 × 10 <sup>-5</sup>   | 9.2 × 10 <sup>-5</sup>   | 9.2 × 10 <sup>-5</sup>       | 8.9 × 10 <sup>-5</sup>   | 8.9 × 10 <sup>-5</sup> | 8.8 × 10 <sup>-5</sup>         | 8.7 × 10 <sup>-5</sup>             | 8.8 × 10 <sup>-5</sup>     |
| Flammability                | -       | UL-94              | -                 | 1.5mm HB                  | 1.5mm HB                  | 1.5mm HB               | 1.5mm HB                   | 1.5mm HB               | 1.5mm HB               | 1.5mm HB                 | 1.5mm HB                 | 1.5mm HB                 | 1.5mm HB                 | 1.5mm HB                     | 1.5mm HB                 | 1.5mm HB               | 1.5mm HB                       | 1.5mm HB                           | 1.5mm HB                   |
| Mold Shrinkage              | 294-4   | -                  | %                 | 0.4 □ 0.7                 | 0.4 □ 0.7                 | 0.4 □ 0.7              | 0.4 □ 0.7                  | 0.4 □ 0.7              | 0.4 □ 0.7              | 0.4 □ 0.7                | 0.4 □ 0.7                | 0.4 □ 0.7                | 0.4 □ 0.7                | 0.4 □ 0.7                    | 0.4 □ 0.7                | 0.4 □ 0.7              | 0.4 □ 0.7                      | 0.4 □ 0.7                          | 0.4 □ 0.7                  |
| Symbol                      | 1043    | -                  | -                 | >ABS<                     | >ABS<                     | >ABS<                  | >ABS<                      | >ABS<                  | >ABS<                  | >ABS<                    | >ABS<                    | >ABS<                    | >ABS<                    | >ABS<                        | >ABS<                    | >ABS<                  | >ABS<                          | >ABS<                              | >ABS<                      |
| Product Description         |         |                    |                   | High gloss, High rigidity | High gloss, Medium impact | Medium impact          | Medium flow, Medium impact | High impact            | Super impact           | High flow, Medium impact | High flow, Medium impact | High flow, Medium impact | High flow, Medium impact | Super high flow, High impact | High rigidity, High flow | Super high flow        | Super high flow, Medium impact | Auto-motive parts, electro-plating | Medium flow, Medium impact |

All tests were run under laboratory conditions testing procedures. The test results obtained with respect to the products are for reference only. The above information should not be used as a warranty of any kind. Buyers must run their own tests and assume all risks of use. Chi Mei Corporation assumes no liability for any advice furnished by it, its employees and representatives. Chi Mei Corporation makes no warranties, whether express or implied, and assumes no liability in connection with any use of above information.

# Chimei ABS Polylac Properties

| Typical Properties          | ISO    | Condition          | Units    | Extrusion            |                         |                         |                        |                         |                            | Flame Retardant                   |                                    |                                    |   |   |   | High Heat                |                        |                      |                      |                                   |
|-----------------------------|--------|--------------------|----------|----------------------|-------------------------|-------------------------|------------------------|-------------------------|----------------------------|-----------------------------------|------------------------------------|------------------------------------|---|---|---|--------------------------|------------------------|----------------------|----------------------|-----------------------------------|
|                             |        |                    |          | PA-747R              | PA-747F                 | PA-747H                 | PA-747S                | PA-709S                 | PA-77SD                    | PA-763                            | PA-764                             | PA-764B                            | PA-765  | PA-765A   | PA-765B   | PA-777B                  | PA-777C                | PA-777D              | PA-777E              | PA-77NB                           |
| MVR                         | 1133   | 220°C x 10kg       | ml/10min | 2.5                  | 3.5                     | 3.0                     | 6.0                    | 4.0                     | 0.5                        | 27                                | 30                                 | 28                                 | 50  | 46  | 38  | 8.5                      | 7.0                    | 5.5                  | 4.5                  | 10                                |
| Mass Density                | 1183   | 23°C               | g/cm³    | 1.04                 | 1.05                    | 1.05                    | 1.03                   | 1.03                    | 1.06                       | 1.19                              | 1.19                               | 1.16                               | 1.19  | 1.17  | 1.16  | 1.03                     | 1.06                   | 1.06                 | 1.07                 | 1.06                              |
| Tensile Strength            | 527    | 50mm/min, yield    | MPa      | 41                   | 46                      | 46                      | 40                     | 37                      | 45                         | 38                                | 37                                 | 38                                 | 37  | 38  | 38  | 44                       | 44                     | 45                   | 45                   | 45                                |
|                             |        | 50mm/min, break    | MPa      | 30                   | 33                      | 35                      | 30                     | 29                      | -                          | 29                                | 28                                 | 29                                 | 28  | 29  | 29  | 34                       | 35                     | 33                   | 32                   | -                                 |
| Tensile Elongation          | 527    | 50mm/min           | %        | 25                   | 25                      | 25                      | 40                     | 30                      | 30                         | 15                                | 10                                 | 10                                 | 10  | 10  | 10  | 40                       | 44                     | 34                   | 29                   | 50                                |
| Flexural Strength           | 178    | 2mm/min            | MPa      | 61                   | 66                      | 63                      | 57                     | 51                      | 70                         | 58                                | 55                                 | 57                                 | 55  | 56  | 57  | 67                       | 69                     | 73                   | 74                   | 70                                |
| Flexural Modulus            | 178    | 2mm/min            | GPa      | 1.7                  | 1.9                     | 1.8                     | 1.7                    | 1.5                     | 2.2                        | 2.0                               | 1.7                                | 1.8                                | 1.8   | 1.8   | 1.8   | 2.2                      | 2.2                    | 2.3                  | 2.3                  | 2.2                               |
| Izod Impact                 | 180/1A | 23°C, Notched      | KJ/m²    | 37                   | 30                      | 33                      | 34                     | 40                      | 22                         | 21                                | 13                                 | 14                                 | 22  | 23  | 24  | 21                       | 18                     | 13                   | 12                   | 23                                |
|                             |        | -30°C, Notched     | KJ/m²    | 26                   | 20                      | 22                      | 23                     | 28                      | -                          | 11                                | 7                                  | 7                                  | 9   | 10  | 11  | 11                       | 9                      | 7                    | 6                    | -                                 |
| Charpy Impact               | 179    | 23°C, Notched      | KJ/m²    | 39                   | 32                      | 35                      | 36                     | 42                      | 20                         | 22                                | 13                                 | 13                                 | 23  | 24  | 26  | 22                       | 17                     | 14                   | 13                   | 21                                |
|                             |        | -30°C, Notched     | KJ/m²    | 28                   | 21                      | 24                      | 25                     | 30                      | -                          | 12                                | 7                                  | 7                                  | 10  | 10  | 11  | 11                       | 9                      | 7                    | 6                    | -                                 |
| Vicat Softening Temperature | 306    | 50°C/hr; 5kg       | °C       | 106                  | 106                     | 106                     | 103                    | 104                     | 125                        | 103                               | 101                                | 102                                | 91  | 93  | 94  | 114                      | 119                    | 124                  | 129                  | 115                               |
|                             |        | 50°C/hr; 5kg       | °C       | 101                  | 101                     | 101                     | 98                     | 98                      | 115                        | 96                                | 90                                 | 90                                 | 78  | 79  | 80  | 106                      | 112                    | 117                  | 121                  | 108                               |
| Heat Deflection Temperature | 75/A   | 1.8MPa, unannealed | °C       | 83                   | 84                      | 84                      | 81                     | 81                      | 95                         | 86                                | 82                                 | 83                                 | 74  | 76  | 77  | 86                       | 92                     | 97                   | 101                  | 86                                |
|                             |        | 1.8MPa, annealed   | °C       | 99                   | 100                     | 100                     | 96                     | 96                      | 115                        | 96                                | 92                                 | 93                                 | 83  | 84  | 85  | 106                      | 112                    | 117                  | 121                  | 106                               |
| CTE                         | 11359  | -                  | -        | $9.1 \times 10^{-5}$ | $8.7 \times 10^{-5}$    | $8.7 \times 10^{-5}$    | $9.2 \times 10^{-5}$   | $9.5 \times 10^{-5}$    | $8.3 \times 10^{-5}$       | $8.5 \times 10^{-5}$              | $8.5 \times 10^{-5}$               | $8.6 \times 10^{-5}$               | $8.4 \times 10^{-5}$                            | $8.5 \times 10^{-5}$                            | $8.6 \times 10^{-5}$                            | $8.4 \times 10^{-5}$     | $8.2 \times 10^{-5}$   | $8.3 \times 10^{-5}$ | $8.2 \times 10^{-5}$ | $8.4 \times 10^{-5}$              |
| Flammability                | -      | UL-94              | -        | 1.5mm HB             | 1.5mm HB                | 1.0mm HB                | 1.5mm HB               | 1.5mm HB                | 1.5mm HB                   | 1.5mmV-0<br>2.5mm 5VA             | 1.5mmV-0<br>1.5mm 5VB<br>2.5mm 5VA | 2.5mmV-0<br>2.5mm 5VB<br>3.0mm 5VA | 1.0mmV-1<br>1.5mm V-0<br>1.5mm 5VB<br>2.5mm 5VA | 1.5mmV-1<br>2.1mm V-0<br>2.1mm 5VB<br>2.5mm 5VA | 1.5mmV-2<br>2.5mm V-0<br>2.5mm 5VB<br>3.0mm 5VA | 1.5mm HB                 | 1.5mm HB               | 1.5mm HB             | 1.5mm HB             | 1.5mm HB                          |
| Mold Shrinkage              | 294-4  | -                  | %        | 0.4 □ 0.7            | 0.4 □ 0.7               | 0.4 □ 0.7               | 0.4 □ 0.7              | 0.4 □ 0.7               | 0.3 □ 0.6                  | 0.3 □ 0.6                         | 0.3 □ 0.6                          | 0.3 □ 0.6                          | 0.3 □ 0.6                                       | 0.3 □ 0.6                                       | 0.3 □ 0.6                                       | 0.3 □ 0.6                | 0.3 □ 0.6              | 0.3 □ 0.6            | 0.3 □ 0.6            | 0.3 □ 0.6                         |
| Symbol                      | 1043   | -                  | -        | >ABS<                | >ABS<                   | >ABS<                   | >ABS<                  | >ABS<                   | >ABS<                      | >ABS-FR(17)<                      | >ABS-FR(17)<                       | >ABS-FR(17)<                       | >ABS-FR(17)<                                    | >ABS-FR(17)<                                    | >ABS-FR(17)<                                    | >ABS<                    | >ABS<                  | >ABS<                | >ABS<                | >ABS<                             |
| Product Description         |        |                    |          | Extrusion            | Refrigerator, Extrusion | Refrigerator, Extrusion | High impact, Extrusion | Super impact, Extrusion | High heat, Extrusion, Blow | F.R, High heat, Weather resistant | F.R, Weather resistant             | F.R, Weather resistant             | F.R, High flow                                  | F.R, High flow                                  | F.R, Medium impact                              | Medium heat, High impact | High heat, High impact | Super high heat      | Ultra high heat      | Low emission, Low odor, Low gloss |

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## Chimei MABS Polylac Properties & PMMA Acryrex Properties

| Typical Properties          | ISO    | Condition          | Units             | Transparent          |                                 | Typical Properties          | ISO    | Condition          | Units             | PMMA Acryrex         |                          |                      |                      |
|-----------------------------|--------|--------------------|-------------------|----------------------|---------------------------------|-----------------------------|--------|--------------------|-------------------|----------------------|--------------------------|----------------------|----------------------|
|                             |        |                    |                   | PA-758               | PA-758R                         |                             |        |                    |                   | CM-205               | CM-205M                  | CM-207               | CM-211               |
| MVR                         | 1133   | 200°C x 5kg        | ml/10min          | 3.0                  | 2.2                             | MVR                         | 1133   | 230°C x 3.8kg      | ml/10min          | 1.9                  | 3.2                      | 8.5                  | 16                   |
| Mass Density                | 1183   | 23°C               | g/cm <sup>3</sup> | 1.08                 | 1.08                            | Mass Density                | 1183   | 23°C               | g/cm <sup>3</sup> | 1.19                 | 1.19                     | 1.19                 | 1.19                 |
| Tensile Strength            | 527    | 50mm/min, yield    | MPa               | 42                   | 45                              | Tensile Strength            | 527    | 5mm/min, yield     | MPa               | 70                   | 70                       | 67                   | 65                   |
|                             |        | 50mm/min, break    | MPa               | 33                   | 33                              |                             |        | 5mm/min, break     | MPa               | 70                   | 70                       | 67                   | 65                   |
| Tensile Elongation          | 527    | 50mm/min           | %                 | 40                   | 60                              | Tensile Elongation          | 527    | 5mm/min            | %                 | 12                   | 12                       | 8                    | 6                    |
| Flexural Strength           | 178    | 2mm/min            | MPa               | 57                   | 62                              | Flexural Strength           | 178    | 2mm/min            | MPa               | 103                  | 103                      | 97                   | 95                   |
| Flexural Modulus            | 178    | 2mm/min            | GPa               | 1.9                  | 2.1                             | Flexural Modulus            | 178    | 2mm/min            | GPa               | 2.8                  | 2.8                      | 2.7                  | 2.7                  |
| Izod Impact                 | 180/1A | 23°C, Notched      | KJ/m <sup>2</sup> | 14                   | 15                              | Izod Impact                 | 180/1A | 23°C, Notched      | KJ/m <sup>2</sup> | 2                    | 2                        | 2                    | 2                    |
|                             |        | -30°C, Notched     | KJ/m <sup>2</sup> | 7                    | 8                               |                             |        | 23°C, Notched      | KJ/m <sup>2</sup> | 2                    | 2                        | 2                    | 2                    |
|                             | 180/1C | 23°C, Unnotched    | KJ/m <sup>2</sup> | 55                   | 58                              |                             | 180/1C | 23°C, Unnotched    | KJ/m <sup>2</sup> | 21                   | 21                       | 18                   | 17                   |
|                             |        | -30°C, Unnotched   | KJ/m <sup>2</sup> | 40                   | 41                              |                             |        |                    |                   |                      |                          |                      |                      |
| Charpy Impact               | 179    | 23°C, Notched      | KJ/m <sup>2</sup> | 14                   | 15                              | Charpy Impact               | 179    | 23°C, Notched      | KJ/m <sup>2</sup> | 2                    | 2                        | 2                    | 2                    |
|                             |        | -30°C, Notched     | KJ/m <sup>2</sup> | 7                    | 8                               |                             |        | 23°C, unnotched    | KJ/m <sup>2</sup> | 26                   | 26                       | 20                   | 19                   |
|                             |        | 23°C, unnotched    | KJ/m <sup>2</sup> | 58                   | 62                              |                             |        |                    |                   |                      |                          |                      |                      |
|                             |        | -30°C, unnotched   | KJ/m <sup>2</sup> | 45                   | 48                              |                             |        |                    |                   |                      |                          |                      |                      |
| Vicat Softening Temperature | 306    | 50°C/hr; 1kg       | °C                | 104                  | 102                             | Vicat Softening Temperature | 306    | 50°C/hr; 1kg       | °C                | 115                  | 115                      | 107                  | 103                  |
|                             |        | 50°C/hr; 5kg       | °C                | 96                   | 94                              |                             |        | 50°C/hr; 5kg       | °C                | 107                  | 107                      | 99                   | 96                   |
| Heat Deflection Temperature | 75/A   | 1.8MPa, unannealed | °C                | 87                   | 85                              | Heat Deflection Temperature | 75/A   | 1.8MPa, unannealed | °C                | 95                   | 95                       | 89                   | 78                   |
|                             |        | 1.8MPa, annealed   | °C                | 97                   | 95                              |                             |        | 1.8MPa, annealed   | °C                | 104                  | 104                      | 100                  | 98                   |
| CTE                         | 11359  | -                  | -                 | $9.0 \times 10^{-5}$ | $8.7 \times 10^{-5}$            | CTE                         | 11359  | -                  | -                 | $6.0 \times 10^{-5}$ | $6.0 \times 10^{-5}$     | $6.0 \times 10^{-5}$ | $6.0 \times 10^{-5}$ |
| Flammability                | -      | UL-94              | -                 | 1.5mm HB             | 1.5mm HB                        | Flammability                | -      | UL-94              | -                 | 1.5mm HB             | 1.5mm HB                 | 1.5mm HB             | 1.5mm HB             |
| Mold Shrinkage              | 294-4  | -                  | %                 | 0.3 □ 0.7            | 0.3 □ 0.7                       | Mold Shrinkage              | 294-4  | -                  | %                 | 0.2 □ 0.6            | 0.2 □ 0.6                | 0.2 □ 0.6            | 0.2 □ 0.6            |
| Symbol                      | 1043   | -                  | -                 | >MABS<               | >MABS<                          | Symbol                      | 1043   | -                  | -                 | >PMMA<               | >PMMA<                   | >PMMA<               | >PMMA<               |
| Product Description         |        |                    |                   | Transparent          | Transparent, Chemical resistant | Product Description         |        |                    |                   | High viscosity       | High viscosity High flow | Medium viscosity     | Low viscosity        |

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