

# KYNAR FLEX®

## 3120-10

Kynar Flex® resins are fluorinated thermoplastic copolymers.

Kynar Flex® 3120-10 resin is a pelletized, flexible, semi-crystalline copolymer. This product is NSF/ANSI/CAN 61 certified.

Kynar Flex® 3120-10 resin is a fluid grade that can be extruded or injection molded to make final products with a 150°C rating.

### Additional characteristics:

- Excellent thermal stability
- Excellent abrasion resistance
- UL RTI temperature rating of 150°C
- Impervious to UV degradation

| PROPERTIES                       | VALUE           | UNIT      | TEST STANDARD |
|----------------------------------|-----------------|-----------|---------------|
| RHEOLOGICAL PROPERTIES           |                 |           |               |
| Melt Volume-Flow Rate            | 4               | cm³/10min | ISO 1133      |
| Temperature                      | 232             | °C        | -             |
|                                  | 450             | °F        | -             |
| Load                             | 3.8             | kg        | -             |
|                                  | 8.38            | lb        | -             |
| Melt Flow Rate                   | 4 - 12          | g/10min   | ASTM D1238    |
| Temperature                      | 230             | °C        | -             |
| Load                             | 3.8             | kg        | -             |
| Melt Viscosity, 230°C, 100 s-1   | 5 - 13          | kPoise    | ASTM D3835    |
| MECHANICAL PROPERTIES            |                 |           |               |
| Tensile Modulus                  | 700             | MPa       | ISO 527-1/-2  |
|                                  | 102000          | psi       |               |
| Tensile Modulus, 73 °F           | 689 - 1170      | MPa       | ASTM D638     |
|                                  | 100000 - 170000 | psi       |               |
| Yield stress                     | 27              | MPa       | ISO 527-1/-2  |
|                                  | 3920            | psi       |               |
| Tensile Strength at Yield, 73 °F | 24.1 - 34.5     | MPa       | ASTM D638     |
|                                  | 3500 - 5000     | psi       |               |
| Yield strain                     | 15              | %         | ISO 527-1/-2  |
| Elongation at Yield, 73 °F       | 10 - 20         | %         | ASTM D638     |
| Nominal Strain at Break          | >50             | %         | ISO 527-1/-2  |
| Tensile Strength at Break, 73 °F | 34.5 - 48.3     | MPa       | ASTM D638     |
|                                  | 5000 - 7000     | psi       |               |

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|                                                   |                |                |                 |
|---------------------------------------------------|----------------|----------------|-----------------|
| Elongation at Break, 73 °F                        | 300 - 550      | %              | ASTM D638       |
| Taber Abrasion, CS 17 1000g:pad                   | 16 - 19        | mg/1000 cycles | ASTM-G195-13A   |
| Hardness, Shore D, 73 °F                          | 65 - 70        | -              | ASTM D2240      |
| Flexural Modulus, 73 °F                           | 621 - 827      | MPa            | ASTM D790       |
|                                                   | 90000 - 120000 | psi            |                 |
| Flexural Stength @ 5% Strain, 73 °F               | 20.7 - 34.5    | MPa            | ASTM D790       |
|                                                   | 3000 - 5000    | psi            |                 |
| Compressive Strength, 73 °F                       | 31 - 41.4      | MPa            | ASTM D695       |
|                                                   | 4500 - 6000    | psi            |                 |
| Charpy Notched Impact Strength, +23°C             | No Break       | kJ/m²          | ISO 179/1eA     |
| Unnotched Impact Strength, 73 °F                  | No Break       | kJ/m           | ASTM D256       |
| Notched Impact Strength, 73 °F                    | No Break       | kJ/m           | ASTM D256       |
| Coefficient of Friction, Static vs. Steel, 73 °F  | 0.31           | -              | ASTM D1894      |
| Coefficient of Friction, Dynamic vs. Steel, 73 °F | 0.3            | -              | ASTM D1894      |
| THERMAL PROPERTIES                                |                |                |                 |
| Melting Temperature, 10°C/min                     | 165            | °C             | ISO 11357-1/-3  |
| Melting Point, 73 °F                              | 161 - 168      | °C             | ASTM D3418      |
| Glass Transition Temperature, 10°C/min            | -40            | °C             | ISO 11357-1/-2  |
| Glass Transition Temperature (Tg)                 | -41.1 - -39.4  | °C             | ASTM D7028      |
|                                                   | -42 - -39      | °F             |                 |
| Temperature Rating                                | 150            | °C             | UL RTI          |
|                                                   | 302            | °F             |                 |
| Temp. of Deflection Under Load, 1.80 MPa          | 50             | °C             | ISO 75-1/-2     |
|                                                   | 122            | °F             |                 |
| Heat Deflection Temperature, 264 Psi, 248 °F/hr   | 43.3 - 54.4    | °C             | ASTM D648       |
|                                                   | 110 - 130      | °F             |                 |
| Heat Deflection Temperature, 66 Psi, 248 °F/hr    | 54.4 - 76.7    | °C             | ASTM D648       |
|                                                   | 130 - 170      | °F             |                 |
| Coefficient of Thermal Expansion, 73 °F           | 12.6 - 18.5    | 10E-5/°C       | ASTM D696       |
|                                                   | 7 - 10.3       | 10E-5/°F       |                 |
| Burning Behav. at 1.5 mm Nominal Thickness        | V-0            | class          | IEC 60695-11-10 |
| Thickness Tested                                  | 1.5            | mm             | -               |
|                                                   | 0.0591         | in             |                 |
| Yellow Card available                             | yes            | -              | -               |

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|                                        |              |                                |                    |
|----------------------------------------|--------------|--------------------------------|--------------------|
| Burning Behav. at Thickness h          | V-0          | class                          | IEC<br>60695-11-10 |
| Thickness Tested                       | 1.0          | mm                             | -                  |
|                                        | 0.0394       | in                             |                    |
| Yellow Card available                  | yes          | -                              | -                  |
| Burning Behav. 5V at Thickness h       | 5VA          | class                          | IEC<br>60695-11-20 |
| Thickness Tested                       | 1.0          | mm                             | -                  |
|                                        | 0.0394       | in                             |                    |
| Oxygen Index                           | 43           | %                              | ISO 4589-1/-2      |
| Limiting Oxygen Index, 73 °F           | 42           | %                              | ASTM D2863         |
| Thermal Conductivity                   | 0.144 - 0.18 | W/(m K)                        | ASTM D433          |
|                                        | 1 - 1.25     | BTU in /(hr ft <sup>2</sup> F) |                    |
| Specific Heat                          | 745 - 958    | J/(kg K)                       | DSC                |
|                                        | 0.28 - 0.36  | BTU/(lb·°F)                    |                    |
| Thermal Decomposition TGA, in air      | 375          | °C                             | 1% wt. loss        |
|                                        | 707          | °F                             |                    |
| Thermal Decomposition TGA, in nitrogen | 410          | °C                             | 1% wt. loss        |
|                                        | 770          | °F                             |                    |
| Relative Thermal Index, Mechanical     | 150          | °C                             | UL 746B            |
|                                        | 302          | °F                             |                    |
| Relative Thermal Index, Electrical     | 150          | °C                             | UL 746B            |
|                                        | 302          | °F                             |                    |
| ELECTRICAL PROPERTIES                  |              |                                |                    |
| Dielectric Constant, 1 kHz             | 3.2 - 10.2   | -                              | ASTM D150          |
| Dissipation Factor, 100 kHz            | 0.02 - 0.19  | -                              | ASTM D150          |
| Dielectric (Electric) Strength, 73°F   | 1.3 - 1.5    | kV/mil                         | ASTM D149          |
| OTHER PROPERTIES                       |              |                                |                    |
| Water Absorption                       | 0.03         | %                              | Sim. to ISO 62     |
| Water Absorption                       | 0.03 - 0.05  | %                              | ASTM D570          |
| Density                                | 1780         | kg/m <sup>3</sup>              | ISO 1183           |
|                                        | 1.78         | g/cm <sup>3</sup>              |                    |
| Specific Gravity, 73 °F                | 1.77 - 13.8  | -                              | ASTM D792          |
| OPTICAL PROPERTIES                     |              |                                |                    |
| Refractive Index @ sodium D line       | 1.41         | -                              | ASTM D542          |