

# Flame - retardant ABS

## | Product Introduction |

Kumho's flame-retardant ABS resin is approved by UL and CSA. The flame-retardant ABS resin, which has outstanding, impact strength, weather resistance and chemical resistance, is suitable for home electronics and office automation equipment that require flame- retardant quality, such as computer monitors and TV housings.

## | Characteristics & Applications |

| Grade             | Characteristics | Applications          |
|-------------------|-----------------|-----------------------|
| General Purpose   | HFA 703         | High Rigidity         |
|                   | HFA 707         | General Purpose       |
|                   | HFA 451         | High Flammability     |
|                   | HFA 452         | Low Flammability      |
| Weather Resistant | HFA 462         | Extrusion             |
|                   | HFA 705         | General Purpose       |
| Special Purpose   | HFA 700HT       | Super Heat Resistance |
|                   | HFA 456         | Non-Halogen           |

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| Test Item / Unit                             | Test Method (ASTM) | Test Condition                             | General Purpose          |                            |                              |                             |                      | Weather Resistance            | Special Purpose                    |                        |
|--|--------------------|--|--------------------------|----------------------------|------------------------------|-----------------------------|----------------------|-------------------------------|------------------------------------|------------------------|
|  |                    |  | HFA-703<br>High Rigidity | HFA-707<br>General Purpose | HFA-451<br>High Flammability | HFA-452<br>Low Flammability | HFA-462<br>Extrusion | HFA-705<br>Weather Resistance | HFA-700HT<br>Super Heat Resistance | HFA-456<br>Non-halogen |
| Tensile Strength [kg/cm <sup>2</sup> (psi)]  | D638               | 23°C                                       | 510<br>(7,250)           | 420<br>(5,970)             | 420<br>(5,970)               | 460<br>(6,540)              | 520<br>(7,367)       | 460<br>(6,540)                | 440<br>(6,260)                     | 520<br>(7,367)         |
| Elongation [%]                               | D638               | 23°C                                       | 30                       | 20                         | 20                           | 20                          | 25                   | 20                            | 15                                 | 20                     |
| Flexural Strength [kg/cm <sup>2</sup> (psi)] | D790               | 23°C                                       | 670<br>(9,530)           | 600<br>(8,530)             | 600<br>(8,530)               | 700<br>(9,960)              | 630<br>(8,960)       | 650<br>(9,250)                | 700<br>(9,950)                     | 700<br>(9,950)         |
| Flexural Modulus [kg/cm <sup>2</sup> (psi)]  | D790               | 23°C                                       | 24,000<br>(341,400)      | 23,000<br>(327,000)        | 23,000<br>(327,000)          | 26,000<br>(370,000)         | 25,000<br>(355,000)  | 24,000<br>(341,400)           | 27,000<br>(384,000)                | 27,000<br>(384,000)    |
| IZOD Impact strength [kg·cm/cm (ft·lb/in)]   | D256               | 3.2mm, Notched, 23°C(73°F)                 | 16<br>(2.9)              | 22<br>(4.1)                | 21<br>(4.0)                  | 15<br>(2.8)                 | 22<br>(4.1)          | 15<br>(2.8)                   | 15<br>(2.8)                        | 15<br>(2.8)            |
|  |                    | 6.4mm, Notched, 23°C(73°F)                 | 14<br>(2.6)              | 19<br>(3.5)                | 18<br>(3.3)                  | 14<br>(2.6)                 | 20<br>(3.7)          | 14<br>(2.6)                   | 14<br>(2.6)                        | 14<br>(2.6)            |
|  |                    | R scale                                    | 105                      | 100                        | 100                          | 102                         | 105                  | 102                           | 100                                | 100                    |
| Heat Distortion Temp. [°C(°F)]               | D648               | 18.6kg/cm <sup>2</sup> (264psi) Unannealed | 76(169)                  | 76(169)                    | 76(169)                      | 80(176)                     | 80(176)              | 78(172)                       | 87(189)                            | 76(169)                |
| Vicat Softening Temp. [°C(°F)]               | D1525              |  | 91(196)                  | 91(196)                    | 91(196)                      | 96(205)                     | 96(205)              | 96(205)                       | 101(214)                           | 91(196)                |
| Melt Flow Index [g/10min]                    | D1238              | 200°C, 5kg                                 | 3                        | 6                          | 6                            | 5.5                         | 1.6                  | 5                             | 2                                  | 5                      |
|  |                    | 220°C, 10kg                                | 30                       | 60                         | 60                           | 55                          | 16                   | 50                            | 1.5                                | 50                     |
|  |                    | 200°C, 21.6kg                              | 60                       | 120                        | 120                          | 110                         | 32                   | 90                            | 18                                 | 100                    |
| Molding Shrinkage [%]                        | D955               |  | 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                          |                        |
| Specific Gravity                             | D792               |  | 1.18                     | 1.18                       | 1.18                         | 1.07                        | 1.18                 | 1.18                          | 1.18                               | 1.06                   |
| Water Absorption [%]                         | D570               |  | 0.3                      | 0.3                        | 0.3                          | 0.3                         | 0.3                  | 0.3                           | 0.3                                | 0.3                    |
| Flammability                                 | UL94*              | 1.5mm                                      | V-0                      |                            | V-0                          | V-2                         | V-0                  |                               | V-0                                | V-2                    |
|  |                    | 2.1mm                                      |                          | V-0                        | V-0, 5VB                     |                             |                      | V-0                           |                                    |                        |
|  |                    | 3.0mm                                      | V-0                      | V-0, 5VB                   | V-0, 5VB                     |                             | V-0                  | V-0                           | V-0                                | V-2                    |

(\*UL File No. E65424 (CSA File No. LS66457) Note 1) These are typical property values, not specifications.  
Note 2) In case of colored products, the values could vary slightly by color.  
Note 3) Values are measured at 23°C and in RH of 50% on injection molded specimens.



# KUMHO ABS

Acrylonitrile Butadiene Styrene

