

I Product introduction I

KUMHO EP has better mechanical properties and heat resistance than ordinary plastics. So it can be used as structural material and substitute for metals or thermosetting resins. And it is widely used in the manufacture of automobile parts, electric and electronic parts.

I Characteristics & Applications I

| Classification | Grade      | Characteristics                     | Applications                                                        |
|----------------|------------|-------------------------------------|---------------------------------------------------------------------|
| ABS/PC Alloy   | HAC 8240B  | Blow Molding                        | Automobile bumper, Blow molding parts, etc                          |
|                | HAC 8244   | High Impact Strength, Plating       | Automobile parts (Panel, Mesh bumpers), Helmets, Plating parts, etc |
|                | HAC 8250   | High Impact Strength                | Head lamp housing, Phone booth, Computer housing                    |
|                | HAC 8250W  | Weather Resistant                   |                                                                     |
|                | HAC 8265   | High Impact and High Heat Resistant | Automotive glove box, Instrument panel                              |
|                | HAC 8270   | High Impact and High Heat Resistant | Automotive Instrument panel, Center panel                           |
|                | HAC 8250FR | Flame Retardancy                    | Computer housing                                                    |
|                | HAC 8250NH | Non-Halogen Flame Retardancy        |                                                                     |
|                | HAC 8285NH | Non-Halogen Flame Retardancy        |                                                                     |
|                | HAC 8290NH | Non-Halogen Flame Retardancy        | LCD TV, Monitor, Housings for electrical appliances                 |
|                | HAC 8260H  | High Rigidity                       | Mobile Phone housing                                                |

| Classification                    | Grade       | Characteristics                                                 | Applications                                                                                                                    |
|-----------------------------------|-------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| ABS/PBT Alloy                     | HAB 8740    | General Purpose High Impact<br>Blow Molding<br>Flame Retardancy | 1) Automobile bumper, Lamp case, Wheel cap                                                                                      |
|                                   | HAB 8740B   |                                                                 | 2) Copy machine housing                                                                                                         |
|                                   | HAB 8710NH  |                                                                 | 3) Electric & electronic parts (CD-ROM tray)                                                                                    |
| Ultra High-Heat Resistance Resins | HGX 4500    | Easy Flow, Ultra High Heat Resistance                           | 1) Instrument panels, Cluster housing, Grills, etc<br>2) Hair dryer, Coffee port, etc                                           |
| ABS/PBT/GF                        | HBG 5710    | General Purpose                                                 | 1) Fuse box, Switch parts, Fuel rid<br>2) Hair dryer, Printer bezel, Connector, Socket<br>3) Camera body, Button, Container cap |
| SAN/GF                            | HSG 5124    | High Impact, High Rigidity                                      | Air conditioner, Fan blower                                                                                                     |
| ABS/GF                            | HAG 5220    | Standard, High Heat Resistance                                  | Meter case, Automobile parts, etc                                                                                               |
|                                   | HAG 5220FR  | Flame Retardancy                                                | Hair dryer, Electric & electronic parts, etc                                                                                    |
| AES                               | AES HW 600G | High Weather Resistance, Easy Flow                              | Automobile side mirror, Door garnish, Air conditioner outlet, Road signs                                                        |
| MPPO                              | HSP 8340G   | Glass Fiber Reinforced                                          | Electric & electronic parts, Water line components                                                                              |
|                                   | HSP 8340T   | Mineral Reinforced                                              | Electric & electronic parts (LED Display Cover)                                                                                 |
|                                   | HSP 8344    | Easy Flow                                                       | Semiconductor Rill parts                                                                                                        |
|                                   | HSP 8390    | Ultra High Heat Resistance                                      | Electric & electronic parts, Cases, Trays                                                                                       |
|                                   | HSP 8340NH  | Non-Halogen Flame Retardancy                                    | Housings for electrical appliances, OA equipment                                                                                |
|                                   | HSP 8370NH  | Non-Halogen Flame Retardancy                                    | Electric & electronic parts, Cases                                                                                              |
| ABS/ PA Resins                    | HAN 8654    | Easy Flow                                                       | Automobile Parts, Speakers, Grills                                                                                              |
| High Gloss Resins                 | HAM 8560A   | High Impact, High Gloss                                         | LCD TV Housing<br>Housings for electrical appliances(Water purifier , Speaker, Bidet, etc)                                      |
| High Impact PC Resins             | HCA 8190    | High Impact, High Resistance                                    | Mobile Phone Housing                                                                                                            |

I Typical Properties I

| Typical Properties                                             |       |                                               |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     | Typical Properties  |                     |                     |                     |                     |                     |                     |                    |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|----------------------------------------------------------------|-------|-----------------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Properties/Unit                                                | ASTM  | Test Condition                                | HAC Series          |                     |                     |                     |                     |                     |                     |                     |                     | HAB Series          |                     |                     | HGX Series          | HSG Series          | HAG Series          |                     | HSG Series          | AES Series         | HSP Series (MPPO)   |                     |                     |                     |                     |                     |                     |                     | HAM Series          | HCA Series          |
|                                                                |       |                                               | 8240B               | 8244                | 8250                | 8250W               | 8260H               | 8265                | 8270                | 8250FR              | 8250NH              | 8285NH              | 8290NH              | 8740                | 8740B               | 8710NH              | 4500                | 5124                | 5220                | 5220FR             | 5710                | HW600G              | 8340G               | 8340T               | 8344                | 8390                | 8340NH              | 8370 NH             | 8560A               | 8190                |
| Tensile Strength(kg/cm <sup>2</sup> (psi))                     | D638  | 23℃                                           | 450<br>(6,400)      | 440<br>(6,260)      | 550<br>(7,820)      | 550<br>(7,820)      | 560<br>(7,960)      | 550<br>(7,820)      | 550<br>(7,820)      | 550<br>(7,820)      | 540<br>(7,670)      | 600<br>(8,530)      | 540<br>(7,670)      | 470<br>(6,680)      | 460<br>(6,540)      | 470<br>(6,680)      | 500<br>(7,100)      | 1,000<br>(14,220)   | 800<br>(11,370)     | 800<br>(11,370)    | 800<br>(11,370)     | 550<br>(7,820)      | 740<br>(10,500)     | 580<br>(8,200)      | 420<br>(5,500)      | 730<br>(10,400)     | 420<br>(5,900)      | 580<br>(8,200)      | 520<br>(7,390)      | 565<br>(8,030)      |
| Flexural Strength(kg/cm <sup>2</sup> (psi))                    | D790  | 23℃                                           | 610<br>(8,670)      | 600<br>(8,530)      | 780<br>(11,090)     | 750<br>(10,660)     | 780<br>(11,660)     | 780<br>(11,090)     | 780<br>(11,090)     | 700<br>(9,950)      | 750<br>(10,660)     | 900<br>(12,800)     | 750<br>(10,660)     | 650<br>(9,240)      | 640<br>(9,100)      | 620<br>(8,820)      | 670<br>(9,514)      | 1,150<br>(16,450)   | 1,100<br>(15,700)   | 1,000<br>(14,220)  | 900<br>(12,780)     | 660<br>(9,380)      | 1,070<br>(15,190)   | 950<br>(13,490)     | 560<br>(7,500)      | 900<br>(12,780)     | 530<br>(7,500)      | 850<br>(12,070)     | 680<br>(9,670)      | 780<br>(11,090)     |
| Flexural Modulus<br>(kg/cm <sup>2</sup> (psi))                 | D790  | 23℃                                           | 17,500<br>(248,780) | 17,000<br>(241,670) | 22,000<br>(312,750) | 20,000<br>(284,320) | 23,000<br>(326,960) | 22,000<br>(312,750) | 22,000<br>(312,750) | 20,000<br>(284,320) | 23,000<br>(326,960) | 25,000<br>(355,400) | 23,000<br>(326,960) | 17,000<br>(241,670) | 18,500<br>(262,990) | 19,000<br>(270,100) | 23,000<br>(326,600) | 50,000<br>(710,790) | 40,000<br>(568,630) | 4,000<br>(568,630) | 40,000<br>(568,630) | 23,000<br>(326,960) | 39,700<br>(563,700) | 29,000<br>(411,800) | 17,800<br>(253,300) | 27,500<br>(390,500) | 21,800<br>(309,000) | 24,700<br>(350,740) | 22,000<br>(312,750) | 19,000<br>(270,100) |
| Rockwell Hardness                                              | D785  | R scale                                       | 105                 | 100                 | 116                 | 115                 | 118                 | 115                 | 115                 | 110                 | 115                 | 116                 | 116                 | 105                 | 106                 | 104                 | 110                 | 120                 | 108                 | 107                | 115                 | 104                 | 118                 | 120                 | 103                 | 123                 | 113                 | 119                 | 114                 | 115                 |
| Tensile Elongation(%)                                          | D638  |                                               | 100                 | 110                 | 100                 | 100                 | 105                 | 105                 | 105                 | 50                  | 50                  | 40                  | 80                  | 150                 | 140                 | 40                  | 10                  | 5.0                 | 7.0                 | 6.0                | 10                  | 22                  | 10                  | 35                  | 15                  | 30                  | 30                  | 40                  | 35                  | 110                 |
| IZOD Impact Strength<br>(kg · cm/cm <sup>2</sup> (ft · lb/in)) | D256  | 3.2mm, Notched<br>23℃(73°F)                   | 68<br>(13.0)        | 60<br>(11.0)        | 60<br>(11.0)        | 60<br>(11.0)        | 65<br>(12.0)        | 70<br>(13.0)        | 65<br>(12.0)        | 65<br>(12.0)        | 60<br>(11.0)        | 12<br>(2.2)         | 60<br>(11.0)        | 70<br>(13.0)        | 65<br>(12.0)        | 15<br>(2.8)         | 2.3<br>(4.2)        | 7.0<br>(1.4)        | 9.0<br>(1.7)        | 6.5<br>(1.2)       | 6.5<br>(1.2)        | 13.0<br>(2.4)       | 3<br>(0.6)          | 7<br>(1.3)          | 6<br>(1.1)          | 6<br>(1.1)          | 5.5<br>(1.0)        | 14<br>(2.6)         | 14<br>(2.6)         | 78<br>(14.3)        |
|                                                                |       | 6.4mm, Notched<br>23℃(73°F)                   | 55<br>(10.0)        | 50<br>(9.0)         | 45<br>(8.3)         | 50<br>(9.0)         | 50<br>(8.8)         | 55<br>(10.0)        | 50<br>(9.0)         | 30<br>(5.5)         | 30<br>(5.5)         | 10<br>(1.8)         | 40<br>(7.3)         | 60<br>(11.0)        | 55<br>(10.0)        | 10<br>(1.8)         | 19<br>(3.5)         | 6.5<br>(1.2)        | 80<br>(1.5)         | 6.0<br>(1.1)       | 6.5<br>(1.2)        | 15.0<br>(2.8)       | 4<br>(0.7)          | 6<br>(1.1)          | 6<br>(1.1)          | 5<br>(0.9)          | 5.0<br>(0.9)        | 13<br>(2.4)         | 13<br>(2.4)         | 68<br>(12.5)        |
| Melt Index(g/10min)                                            | D1238 | 200℃, 21.6kg                                  | -                   | -                   | -                   | -                   | -                   | -                   | -                   | 20                  | 80                  | 60                  | -                   | -                   | -                   | 50                  | -                   | -                   | -                   | -                  | -                   | 30                  | 70                  | -                   | -                   | -                   | 15                  | -                   | 28                  | 17                  |
|                                                                |       | 230℃, 21.6kg                                  | 25                  | 40                  | 56                  | 45                  | 70                  | 38                  | 50                  | -                   |                     | (220℃*10Kg)         | 60                  | 80                  | 30                  | -                   | 30                  | 50                  | 80                  | 120                | 100                 | -                   | 200                 | 55                  | 25                  | 5                   | -                   | 83                  | (220℃*10Kg)         | (250℃*10Kg)         |
| Heat Distortion Temp<br>(℃(°F))                                | D648  | 18.6kg/cm <sup>2</sup> (264psi)<br>Unannealed | 100<br>(212)        | 100<br>(212)        | 106<br>(223)        | 104<br>(219)        | 108<br>(226)        | 110<br>(230)        | 112<br>(233)        | 100<br>(212)        | 80<br>(178)         | 82<br>(178)         | 90<br>(194)         | 90<br>(194)         | 90<br>(194)         | 85<br>(185)         | 110<br>(230)        | 97<br>(207)         | 100<br>(212)        | 95<br>(203)        | 110<br>(230)        | 90<br>(194)         | 100<br>(212)        | 118<br>(244)        | 107<br>(225)        | 160<br>(320)        | 72<br>(162)         | 107<br>(225)        | 86<br>(187)         | 127<br>(261)        |
| Vicat Softening Point<br>(℃(°F))                               | D1525 |                                               | 116<br>(241)        | 116<br>(241)        | 116<br>(241)        | -                   | 118<br>(244)        | 125<br>(257)        | 125<br>(257)        | -                   | 113<br>(235)        | -                   | -                   | -                   | -                   | -                   | 120<br>(248)        | 107<br>(225)        | 115<br>(239)        | 112<br>(234)       | -                   | -                   | -                   | -                   | -                   | -                   | -                   | -                   | -                   | -                   |
| Specific Gravity                                               | D792  | 23℃                                           | 1.12                | 1.12                | 1.13                | 1.13                | 1.13                | 1.14                | 1.14                | 1.17                | 1.17                | 1.19                | 1.19                | 1.13                | 1.15                | 1.08                | 1.04                | 1.21                | 1.12                | 1.25               | 1.15                | 1.04                | 1.24                | 1.22                | 1.04                | 1.05                | 1.09                | 1.11                | 1.06                | 1.18                |
| Molding Shrinkage(%)                                           | D955  |                                               | 0.4~0.6             | 0.4~0.6             | 0.5~0.7             | 0.5~0.7             | 0.5~0.7             | 0.5~0.7             | 0.5~0.7             | 0.4~0.6             | 0.4~0.6             | 0.4~0.6             | 0.4~0.6             | 0.5~0.8             | 0.5~0.8             | 0.5~0.8             | 0.5~0.8             | 0.1~0.3             | 0.1~0.3             | 0.1~0.3            | 0.3                 | 0.4~0.7             | 0.3~0.5             | 0.3~0.5             | 0.5~0.7             | 0.5~0.7             | 0.5~0.7             | 0.5~0.7             | 0.4~0.7             | 0.4~0.7             |
| Flammability                                                   | UL*   | 1/16"(1.6mm)                                  | HB                  | HB                  | HB                  | HB                  | HB                  | HB                  | HB                  | V-0                 | V-0                 | V-0                 | V-0                 | HB                  | HB                  | V-2                 | HB                  | HB                  | HB                  | V-O                | HB                  | HB                  | HB                  | HB                  | HB                  | HB                  | V-O                 | V-O                 | HB                  | HB                  |

(\*JUL 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℃ and in RH of 50% on injection molded specimens.



# KUMHO EP

Engineering Plastics



KUMHO PETROCHEMICAL



KUMHO PETROCHEMICAL

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