



# bulk molding compounds

## > bmc

IDI Composites International thermoset bulk molding compounds (BMC) exhibit an outstanding mix of physical, chemical, and thermal properties, making them an ideal replacement for metals such as steel and die-cast aluminum. BMC exhibits superior strength-to-weight ratios, and is suited for high stress, high humidity, and high temperature environments, as they will not rust or corrode. And because many components can be molded along with the part, and require little to no final finishing, they are often more economical from a total manufacturing standpoint.

BMC is a thermoset plastic resin blend of various inert fillers, fiber reinforcement, catalysts, stabilizers, and pigments that form a viscous, 'puttylike' compound. BMC is highly filled and reinforced with short fibers. Glass reinforcement represents between 10% and 30%, with glass length typically between 1/32-inch and 1/2-inch (12.5mm).

Depending on the end-use application, compounds are formulated to achieve close dimensional control, flame and track resistance, high dielectric strength, corrosion and stain resistance, UV resistance, superior mechanical

properties, low shrink, and color stability. Its excellent flow characteristics and electrical and flame resistant properties make BMC well-suited to a wide variety of applications requiring precision in detail and dimensions.

In addition to performance, BMC is also aesthetically appealing. The material can be molded in a wide variety of colors. Alternately, BMC can tolerate powder-coat or water-based paint.

BMC is available in various grades and flow ranges for compression, injection, transfer, and runnerless injection compression molding. Teaming with IDI early in the design process will yield the many benefits of molding parts and sub-assemblies from thermoset BMC. Find out why BMC is fast becoming the material of choice for design engineers looking to reduce cost in new high-performance applications.



*BMC has many beneficial properties including dimensional stability, corrosion and UV resistance, low shrink, and color stability*

# engineered for performance

| Property                                  | Unit                | Test Method | 44-1        | 44-10       | 44-10MW       | 44-10HGM    | 46-3         | 46-09       | 46-12       | 46-16 | 48-50       |
|---|---------------------|-------------|-------------|-------------|---------------|-------------|--------------|-------------|-------------|-------|-------------|
| <b>Physical and Mechanical Properties</b> |                     |             |             |             |               |             |              |             |             |       |             |
| Impact Strength                           | FT-LBS/IN           | ASTM D 256  | 3-4         | 4-5         | 3-4           | 9-11        | 1.5-2.0      | 2.7         | 8-10        | 14    | 4-5         |
| Flexural Strength                         | 10 <sup>3</sup> PSI | ASTM D 790  | 15-18       | 15-17       | 13-15         | 20-22       | 8-10         | 10.4        | 19-22       | 18    | 14-16       |
| Flexural Modulus                          | 10 <sup>6</sup> PSI | ASTM D 790  | 1.9         | --          | --            | --          | --           | --          | --          | --    | 2.0         |
| Tensile Strength                          | 10 <sup>3</sup> PSI | ASTM D 638  | 5-7         | 6           | 5-6           | 9-11        | 3-4          | 3           | 7-9         | 8     | 6           |
| Compressive Strength                      | 10 <sup>3</sup> PSI | ASTM D 695  | 22          | 21          | 18-20         | 21-24       | 13           | 16          | 23          | 26    | 24          |
| Water Absorption                          | %                   | ASTM D 570  | 0.15        | 0.15        | 0.07          | 0.24        | 0.15         | 0.15        | 0.15        | 0.15  | 0.11        |
| Specific Gravity                          | G/CM <sup>3</sup>   | ASTM D 792  | 1.95        | 1.96        | 1.90          | 1.80-1.86   | 1.80         | 1.70        | 1.78        | 1.80  | 1.93        |
| Shrinkage                                 | IN/IN               | ASTM D 955  | 0.001-0.003 | 0.001-0.003 | 0.0005-0.0015 | 0.001-0.003 | 0.0005-0.002 | 0.001-0.003 | 0.001-0.003 | --    | 0.001-0.003 |
| Hardness                                  | Barcol              | ASTM D 2583 | 30-40       | 40-50       | 25-35         | --          | 20-30        | 10-20       | 30-50       | 45-55 | 40-50       |
| Bulk Factor App.                          | --                  | ASTM D 1895 | 1           | 1           | 1             | 1           | 1            | 1           | 1           | 1     | 1           |

#### Electrical Properties

|                     |         |            |      |      |    |      |      |      |      |     |     |
|---------------------|---------|------------|------|------|----|------|------|------|------|-----|-----|
| Dielectric Strength | KV/IN   | ASTM D 149 | 270  | --   | -- | 300  | --   | 310  | 290  | 290 | 320 |
| Arc Resistance      | Seconds | ASTM D 495 | 180+ | 180+ | -- | 180+ | 180+ | 180+ | 180+ | 187 | 190 |

#### Thermal and Flame Retardant Properties

|                             |             |            |       |       |      |       |      |      |      |      |       |
|-----------------------------|-------------|------------|-------|-------|------|-------|------|------|------|------|-------|
| Heat Deflection Temperature | @264PSI, °F | ASTM D 648 | >500  | >500  | >500 | >500  | >400 | >400 | >500 | >500 | >500  |
| Flame Resistance            | @1/16"      | UL 94      | 94-HB | 94-HB | HB   | 94-HB | V-0  | V-0  | V-0  | --   | 94V-0 |
|                             | @1/8"       | UL 94      | 94-HB | 94-5V | HB   | 94V-0 | V-0  | V-0  | V-0  | --   | 94V-0 |
|                             | @1/4"       | UL 94      | 94V-0 | 94-5V | HB   | 94V-0 | V-0  | V-0  | V-0  | --   | 94V-0 |

| Property                                  | Unit                | Test Method | W-102 | W-103 | M-102 | M-104 | M-106 | C-103 | C-105 | C-108 |
|---|---------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>Physical and Mechanical Properties</b> |                     |             |       |       |       |       |       |       |       |       |
| Impact Strength                           | FT-LBS/IN           | ASTM D 256  | 3-4   | 7     | 3     | 7     | 10    | 6     | 10    | 14    |
| Flexural Strength                         | 10 <sup>3</sup> PSI | ASTM D 790  | 13-15 | 18    | 12    | 21    | 28    | 18    | 22    | 26    |
| Flexural Modulus                          | 10 <sup>6</sup> PSI | ASTM D 790  | --    | --    | 1.3   | 1.5   | 1.7   | 1.7   | 1.8   | 2.0   |
| Tensile Strength                          | 10 <sup>3</sup> PSI | ASTM D 638  | 5-6   | 8.5   | 7     | 10    | 14    | 6     | 10    | 12    |
| Compressive Strength                      | 10 <sup>3</sup> PSI | ASTM D 695  | 18-20 | 25    | 22    | 25    | 28    | 24    | 27    | 30    |
| Water Absorption                          | %                   | ASTM D 570  | 0.07  | 0.06  | 0.09  | 0.10  | 0.12  | 0.06  | 0.07  | 0.09  |
| Specific Gravity                          | G/CM <sup>3</sup>   | ASTM D 792  | 1.90  | 1.90  | 1.89  | 1.84  | 1.78  | 1.90  | 1.90  | 1.65  |
| Shrinkage                                 | IN/IN               | ASTM D 955  | 0.001 | 0.001 | 0.002 | 0.002 | 0.001 | 0.002 | 0.002 | 0.002 |
| Hardness                                  | Barcol              | ASTM D 2583 | 25-35 | 30-40 | --    | --    | --    | 30-40 | 30-40 | 40-50 |
| Bulk Factor App.                          | --                  | ASTM D 1895 | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1     |

#### Electrical Properties

|                     |         |            |     |     |     |     |     |    |    |    |
|---------------------|---------|------------|-----|-----|-----|-----|-----|----|----|----|
| Dielectric Strength | KV/IN   | ASTM D 149 | 320 | 300 | 320 | 290 | 260 | -- | -- | -- |
| Arc Resistance      | Seconds | ASTM D 495 | --  | --  | --  | --  | --  | -- | -- | -- |

#### Thermal and Flame Retardant Properties

|                             |             |            |      |      |       |       |       |       |       |       |
|-----------------------------|-------------|------------|------|------|-------|-------|-------|-------|-------|-------|
| Heat Deflection Temperature | @264PSI, °F | ASTM D 648 | >500 | >500 | >450  | >450  | >450  | --    | --    | --    |
| Flame Resistance            | @1/16"      | UL 94      | HB   | HB   | 94-HB | 94-HB | 94-HB | 94-HB | 94-HB | 94-HB |
|                             | @1/8"       | UL 94      | HB   | HB   | 94V-2 | 94V-2 | 94V-2 | 94-HB | 94-HB | 94-HB |
|                             | @1/4"       | UL 94      | HB   | HB   | 94V-0 | 94V-0 | 94V-0 | 94-HB | 94-HB | 94-HB |

[www.idicomposites.com](http://www.idicomposites.com)

#### The Americas

IDI Composites International  
407 S. 7th Street  
Noblesville, IN 46060 U.S.A.  
317-773-1766  
Fax: 317-773-3877  
info@idicomposites.com

IDI Composites International  
P.O. Box 400  
Road #3, KM 151.8  
Aguirre, Puerto Rico 00704  
787-853-2186  
Fax: 787-853-2187  
idicomposites@coqui.net

#### Asia/Pacific

IDI Composites International  
No. 8, Lane 275, QianPu Road  
New Eastern Section of  
Sonjiang Industrial Park  
Shanghai, 201611 China  
86-21-51096910  
Fax: 86-21-67601689  
rrodriguez@idicomposites.com

IDI Composites International  
Shenzhen Company, LTD.  
P.O. Box 107  
Fucheng Industrial Park  
Hongtian, Xinqiao, Sajing Town  
Bao An, Shenzhen, 518125 China  
86-755-27229550  
Fax: 86-755-27229554  
rrodriguez@idicomposites.com

#### Europe

IDI Composites International  
Unit One, Oldbury Park  
Popes Lane  
Oldbury, West Midlands  
B69 4RG U.K.  
44-121-552-0038  
Fax: 44-121-543-5377  
pgarland@idicomposites.co.uk