# Toughblend® PP-1450

### Polypropylene Copolymer

#### Colour Image Plastic Compound Sdn. Bhd. (CIPC)

#### Message:

Toughblend<sup>®</sup> PP-1450 is a glass fiber reinforced coupled polypropylene copolymer compound. It's offering high rigidity and high heat deflection temperatures along with very good creep resistance.

| Features   Chemically Coupled     Copolymer   Good Creep Resistance     High Heat Resistance     High Impact Resistance     High Rigidity     Uses   Automotive Applications     Industrial Parts     Forms   Pellets     Processing Method   Injection Molding     Physical   Nominal Value   Unit     Specific Gravity   1.04   g/cm³   ASTM D792     Molding Shrinkage - Flow (3.20 mm)   0.20 to 0.70   %   ASTM D538     Tensile English Indigation (Gravity)   0.20 to 0.70   %   ASTM D538     Tensile English Indigation (Gravity)   0.20 to 0.70   %   ASTM D538     Flexural Modulus   63.0   MPa   ASTM D538     Flexural Modulus   63.0   MPa   ASTM D538     Flexural Modulus   83.0   MPa   ASTM D538     Flexural Modulus   130   J/m   ASTM D526     Tensile English Unagation (Braek)   Nominal Value   Unit   Test Method     Noticel Load Impact (23°C)   130   J/m   ASTM D538     Flexural Modulus   155   °C  | General Information                |                                 |       |             |  |
|---|------------------------------------|---------------------------------|-------|-------------|--|
| Copolymer<br>God Creep Resistance<br>High Haz Resistance<br>High Impact Resistance<br>High Impact Resistance<br>High RigidityVoteAutomotive Applications<br>InterviewFormsPelletsProcessing MethodInjection MoldingPhysicalNominal ValueUnitionTest MethodSpecific Gravity0.20 to 0.70Molding Vote<br>Specific Gravity0.20 to 0.70Moninal ValueUnitMoninal ValueGravitaMoninal ValueGravitaMoninal ValueUnitMoninal ValueSpecific GravityMolding Specific Gravity0.20 to 0.70Molding MoldingGravityFrankel Endongton (Bresk)4.30Automotive ApplicationsMarcaReside Specific Gravity0.20 to 0.70Nominal ValueUnitNominal ValueUnitMolding Classications1.50Molding Classications1.50Molding Classications1.50Molding Classications1.50Molding Classications1.50Molding Classications1.50Mold | Filler / Reinforcement             | Glass Fiber,20% Filler by Weigh | it    |             |  |
| Good Creep Resistance<br>High Heat Resistance<br>High RejditivUtersAutomotive Applications<br>Industrial PartsUtersAutomotive Applications<br>Industrial PartsForcessing MethodPelletsProcessing MethodInjection ModingPhysicalNominal ValueVinitProfection Concessing Method02 to 0.70% Can ApplicationsSpecific Gravity0.40g/cm <sup>2</sup> ASTM D792MethanicadNominal ValueVinitTest MethodMethanicadSocialMPaASTM D638Tensile Elongation (Break)4.04% ApplicationsResural Modulus6.0MPaASTM D638Februard Modulus6.0MPaASTM D638Februard Modulus6.0MPaASTM D638Februard Modulus10MethodMethodInstant Can ApplicationsJoninal ValueVinitTest MethodInstant Can ApplicationsJoninal ValueMaintMethodInstant Can ApplicationsJoninal ValueMethodMethodInstant Card MethodJoninal ValueMethodMethodInstant Card MethodJoninal ValueMethodMethodInstant Card MethodSint DesideSint DesideMethodInstant Card MethodJoninal ValueMethodMethodInstant Card MethodJoninal ValueMethodMethodInstant Card MethodSint DesideMethodMethodInstant Card MethodJoninal ValueMethodMethodIn  | Features                           | Chemically Coupled              |       |             |  |
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| High Impact Resistance<br>High RigidityUsesAutomotive Applications<br>Industrial PartsFormsPeletsProcessing MethodInjection MoldingPhysicalNominal ValueUnitPhysicalNominal ValueGromanMolding Shrinkage - Flow (3.20 mm)0.20 to 7.0% and moltageModenicalNominal ValueUnitTest MethodTensile Elongation (Break)0.20 to 7.0% and moltageFlexural Strength6.3.0MPaASTM D638Flexural Modulus6.3.0MPaASTM D638Flexural Modulus8.50MPaASTM D638Flexural Strength0.90MPaASTM D638Nominal ValueUnitTest MethodNorminal ValueUnitTest MethodNorminal ValueUnitTest MethodNorminal ValueUnitTest MethodNorticed Izon Timper LagoJonASTM D790TermalNorminal ValueUnitTest MethodNorticed Izon Timper LagoJonSTM D648Test MethodIsoC1.8 MPa, Unanneeled, 4.00 mm15C1.8 MPa, Unanneeled, 4.00 mm137CTest MethodIsoVNorticeFlexural StrengthIsoVNortice1.8 MPa, Unanneeled, 4.00 mm137CTest MethodIsoVNorticeFlexural LagoIsoVNorticeTest MethodIsoVV </td <td></td> <td>Good Creep Resistance</td> <td></td> <td></td>   |                                    | Good Creep Resistance           |       |             |  |
| High RigidityUsesAutomotive Applications<br>Industrial PartsFormsPelletsProcessing MethodInjection MoldingPhysicalNominal ValueUnitPhysicalNominal ValueGromanMolding Shrinkage - Flow (3.20 mm)0.20 to 0.70% andModing Shrinkage - Flow (3.20 mm)0.20 to 0.70% andModing Shrinkage - Flow (3.20 mm)0.20 to 0.70% andMothanicalNominal ValueUnitTest MethodTensile Strength63.0MPaASTM D58Tensile Strength63.0MPaASTM D638Flexural Strength89.0MPaASTM D638Flexural Strength10VintTest MethodImpactNominal ValueUnitTest MethodNothed Izod Impact (23°C)130JonanASTM D790Termal137CCASTM D649137CCTest Method137CCTest Method137CCFlemanbiltyMominal ValueUnitTest MethodFlemanbilty18CCCFlemanbiltyNominal ValueUsTest MethodFlemanbiltyNominal ValueUsTest MethodFlemanbiltyNominal ValueCTest MethodFlemanbiltyNominal ValueUsTest MethodFlemanbiltyNominal ValueCTest MethodFlemanbiltyNominal ValueUsTest MethodF  |                                    | High Heat Resistance            |       |             |  |
| Uses   Automotive Applications<br>Industrial Parts     Forms   Pellets     Processing Method   Injection Molding     Physical   Nominal Value   Unit   Test Method     Specific Gravity   1.04   g/cm³   ASTM D792     Molding Shrinkage - Flow (3.20 mm)   0.20 to 0.70   % 0   ASTM D792     Modenarical   Nominal Value   Unit   Test Method     Tensile Strength   63.0   MPa   ASTM D638     Tensile Elongation (Break)   4.0   % 0   ASTM D638     Flexural Modulus   2850   MPa   ASTM D638     Flexural Strength   89.0   MPa   ASTM D790     Impact   Nominal Value   Unit   Test Method     Notched Izod Impact (23°C)   130   J/m   ASTM D536     Otfstmergerature Under Load   155   °C   C     0.45 MPa, Unannealed, 4.00 mm   137   °C   Test Method     1.8 MPa, Unannealed, 4.00 mm   137   °C   Test Method     1.8 MPa, Unannealed, 4.00 mm   137   °C   Test Method     1.8 MPa, Unannealed, 4.00 mm   137   °   |                                    | High Impact Resistance          |       |             |  |
| Industrial PartsFormsPelletsProcessing MethodInjection MoldingPhysicalNominal ValueUnitSpecific Gavity1.04gcm³Molding Shrinkage - Flow (3.20 mm)0.20 to 0.70%MochanicalNominal ValueUnitMechanicalNominal ValueUnitTensile Strength6.3.0MPaA STM D595STM D695Flexural Modulus2850MPaFlexural Strength8.0.0MPaNotinal ValueUnitTest MethodInternationNominal ValueMPaNothed Izol Inpact (23°C)130MarkNothed Izol Inpact (23°C)150°CA STM D68°CStM D68Internation151°CIndex Jamenated, 4.00 mm15°CInstruct Internation161°CIsolar StrengthMeinal Value'CIsolar StrengthMeinal Value'CIsolar StrengthMeinal Value'CIsolar StrengthMeinal Value'CIsolar StrengthMeinal Value'UIsolar StrengthMeinal Value'UIsola   |                                    | High Rigidity                   |       |             |  |
| Industrial PartsFormsPelletsProcessing MethodInjection MoldingPhysicalNominal ValueUnitSpecific Gavity1.04gcm³Molding Shrinkage - Flow (3.20 mm)0.20 to 0.70%MochanicalNominal ValueUnitMechanicalNominal ValueUnitTensile Strength6.3.0MPaA STM D595STM D695Flexural Modulus2850MPaFlexural Strength8.0.0MPaNotinal ValueUnitTest MethodInternationNominal ValueMPaNothed Izol Inpact (23°C)130MarkNothed Izol Inpact (23°C)150°CA STM D68°CStM D68Internation151°CIndex Jamenated, 4.00 mm15°CInstruct Internation161°CIsolar StrengthMeinal Value'CIsolar StrengthMeinal Value'CIsolar StrengthMeinal Value'CIsolar StrengthMeinal Value'CIsolar StrengthMeinal Value'UIsolar StrengthMeinal Value'UIsola   |                                    |                                 |       |             |  |
| Forms   Pelets     Processing Method   Injection Molding     Physical   Nominal Value   Unit   Test Method     Specific Gravity   0.44   g/cm³   ASTM D792     Molding Shrinkage - Flow (3.20 mm)   0.20 to 0.70   %   ASTM D955     Mechanical   Nominal Value   Unit   Test Method     Tensile Strength   63.0   MPa   ASTM D638     Tensile Elongation (Break)   2850   MPa   ASTM D638     Flexural Modulus   2850   MPa   ASTM D790     Impact   Nominal Value   Unit   Test Method     Notched Izod Impact (23°C)   130   MPa   ASTM D638     Notched Izod Impact (23°C)   130   /ma   ASTM D790     Outsched Izod Impact (4.00 mm)   155   G   /ma   STM D648     Nominal Value   Vinit   Test Method   Imagementation   Model     0.45 MPa, Unannealed, 4.00 mm   155   °C   Test Method   Imagementation     1.8 MPa, Unannealed, 4.00 mm   137   °C   Test Method     Flearmability   Nominal Value   C   U   | Uses                               | Automotive Applications         |       |             |  |
| Processing Method     Injection Molding       Physical     Nominal Value     Unit     Test Method       Specific Gravity     1.04     g/cm³     ASTM D792       Molding Shrinkage - Flow (3.20 mm)     0.20 to 0.70     %     ASTM D955       Mechanical     Nominal Value     Unit     Test Method       Tensile Strength     63.0     MPa     ASTM D638       Tensile Elongation (Break)     4.0     %     ASTM D638       Flexural Modulus     2850     MPa     ASTM D790       Impact     Nominal Value     Unit     Test Method       Notched Izod Impact (23°C)     130     MPa     ASTM D790       Oteffection Temperature Under Load     'Soft Mola     Mortinal Value     Mortinal Value       0.45 MPa, Unannealed, 4.00 mm     155     °C     Strengen       1.8 MPa, Unannealed, 4.00 mm     137     'C     Strengen       Fleam Rating (1.60 mm)     HB     UL 94     UL 94       Injection     Nominal Value     Unit     Strengen  |                                    | Industrial Parts                |       |             |  |
| Processing Method     Injection Molding       Physical     Nominal Value     Unit     Test Method       Specific Gravity     1.04     g/cm³     ASTM D792       Molding Shrinkage - Flow (3.20 mm)     0.20 to 0.70     %     ASTM D955       Mechanical     Nominal Value     Unit     Test Method       Tensile Strength     63.0     MPa     ASTM D638       Tensile Elongation (Break)     4.0     %     ASTM D638       Flexural Modulus     2850     MPa     ASTM D790       Impact     Nominal Value     Unit     Test Method       Notched Izod Impact (23°C)     130     MPa     ASTM D790       Oteffection Temperature Under Load     'Soft Mola     Mortinal Value     Mortinal Value       0.45 MPa, Unannealed, 4.00 mm     155     °C     Strengen       1.8 MPa, Unannealed, 4.00 mm     137     'C     Strengen       Fleam Rating (1.60 mm)     HB     UL 94     UL 94       Injection     Nominal Value     Unit     Strengen  |                                    |                                 |       |             |  |
| PhysicalNominal ValueUnitTest MethodSpecific Gravity1.04g/cm³ASTM D792Molding Shrinkage - Flow (3.20 mm)0.20 to 0.70%ASTM D955MechanicalNominal ValueUnitTest MethodTensile Strength63.0MPaASTM D638Tensile Elongation (Break)4.0%ASTM D638Flexural Modulus2850MPaASTM D790Flexural Modulus89.0MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Izod Impact (23°C)130J/mASTM D256ThermalNominal ValueUnitTest Method0.45 MPa, Unannealed, 4.00 mm155°C   | Forms                              | Pellets                         |       |             |  |
| Specific Gravity1.04g/cm³ASTM D792Molding Shrinkage - Flow (3.20 mm)0.20 to 0.70%ASTM D955MechanicalNominal ValueUnitTest MethodTensile Strength63.0MPaASTM D638Tensile Elongation (Break)4.0%ASTM D638Flexural Modulus2850MPaASTM D790Flexural Strength89.0MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Izod Impact (23°C)130J/mASTM D256ThermalNominal ValueUnitTest Method0.45 MPa, Unannealed, 4.00 mm155°CSTM D6480.45 MPa, Unannealed, 4.00 mm137°CTest MethodFlame Rating (1.60 mm)HBUnitTest MethodInjectionNominal ValueUnitTest MethodFlame Rating (1.60 mm)130°CTest MethodInjectionNominal ValueUnitTest MethodInjectionImpact100°C  | Processing Method                  | Injection Molding               |       |             |  |
| Molding Shrinkage - Flow (3.20 mm)     0.20 to 0.70     %     ASTM D955       Mechanical     Nominal Value     Unit     Test Method       Tensile Strength     63.0     MPa     ASTM D638       Tensile Elongation (Break)     4.0     %     ASTM D638       Flexural Modulus     2850     MPa     ASTM D790       Impact     Nominal Value     Unit     Test Method       Notched Izod Impact (23°C)     130     J/m     ASTM D256       Thermal     Nominal Value     Unit     Test Method       0.45 MPa, Unannealed, 4.00 mm     155     °C   | Physical                           | Nominal Value                   | Unit  | Test Method |  |
| MechanicalNominal ValueUnitTest MethodTensile Strength63.0MPaASTM D638Tensile Elongation (Break)4.0%ASTM D638Flexural Modulus2850MPaASTM D790Flexural Strength89.0MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Izod Impact (23°C)130J/mASTM D256ThermalNominal ValueUnitTest MethodDeflection Temperature Under Load155°CSTM D6480.45 MPa, Unannealed, 4.00 mm137°CSTM D648FlammabilityNominal ValueUnitTest MethodFlam Rating (1.60 mm)HBUnitUl 94InjectionNominal ValueUnitStel MethodInjection100°CStel MethodDrying Temperature100°CStel Method  | Specific Gravity                   | 1.04                            | g/cm³ | ASTM D792   |  |
| Tensile Strength63.0MPaASTM D638Tensile Elongation (Break)4.0%ASTM D638Flexural Modulus2850MPaASTM D790Flexural Strength89.0MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Izod Impact (23°C)130J/mASTM D256ThermalNominal ValueUnitTest MethodDeflection Temperature Under Load155°CSTM D6480.45 MPa, Unannealed, 4.00 mm137°CTest MethodFlam Rating (1.60 mm)HBUnitTest MethodInjectionNominal ValueUnitTest MethodInjectionIng100°C   | Molding Shrinkage - Flow (3.20 mm) | 0.20 to 0.70                    | %     | ASTM D955   |  |
| Tensile Elongation (Break)4.0%ASTM D638Flexural Modulus2850MPaASTM D790Flexural Strength89.0MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Izod Impact (23°C)130J/mASTM D256ThermalNominal ValueUnitTest MethodDeflection Temperature Under Load*ASTM D6480.45 MPa, Unannealed, 4.00 mm155°C1.8 MPa, Unannealed, 4.00 mm137°CFlarmabilityNominal ValueTest MethodFlarmabilityHBUnitUl 94InjectionNominal ValueUnitInjectionNominal ValueUnitInjectionNominal ValueUnitInjectionNominal ValueUnitInjectionNominal ValueUnitInjectionNominal ValueVinitInjectionNominal ValueVinit   | Mechanical                         | Nominal Value                   | Unit  | Test Method |  |
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| Flexural Strength89.0MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Izod Impact (23°C)130J/mASTM D256ThermalNominal ValueUnitTest MethodDeflection Temperature Under Load'CASTM D6480.45 MPa, Unannealed, 4.00 mm155°CTest Method1.8 MPa, Unannealed, 4.00 mm137°CTest MethodFlammabilityNominal ValueTest MethodUl 94InjectionMominal ValueUnitTest MethodInjectionNominal ValueInjectionYeInjectionNominal ValueInjectionYeInjectionNominal ValueInjectionYeInjectionNominal ValueYeYeInjectionNominal ValueYeYeInjectionNominal ValueYeYeInjection <td>Tensile Elongation (Break)</td> <td>4.0</td> <td>%</td> <td>ASTM D638</td>   | Tensile Elongation (Break)         | 4.0                             | %     | ASTM D638   |  |
| ImpactNominal ValueUnitTest MethodNotched Izod Impact (23°C)130J/mASTM D256ThermalNominal ValueUnitTest MethodDeflection Temperature Under Load-ASTM D6480.45 MPa, Unannealed, 4.00 mm155°C-1.8 MPa, Unannealed, 4.00 mm137°C-FlammabilityNominal ValueTest MethodFlame Rating (1.60 mm)HBUnitUL 94InjectionNominal ValueUnitDrying Temperature100°C  | Flexural Modulus                   | 2850                            | MPa   | ASTM D790   |  |
| Notched Izod Impact (23°C)130J/mASTM D256ThermalNominal ValueUnitTest MethodDeflection Temperature Under Load55°CASTM D6480.45 MPa, Unannealed, 4.00 mm155°CC1.8 MPa, Unannealed, 4.00 mm137°CTest MethodFlammabilityNominal ValueTest MethodFlame Rating (1.60 mm)HBUL 94InjectionNominal ValueUnitDrying Temperature100°C   | Flexural Strength                  | 89.0                            | MPa   | ASTM D790   |  |
| Thermal   Nominal Value   Unit   Test Method     Deflection Temperature Under Load   ASTM D648     0.45 MPa, Unannealed, 4.00 mm   155   °C     1.8 MPa, Unannealed, 4.00 mm   137   °C     Flammability   Nominal Value   Test Method     Flame Rating (1.60 mm)   HB   UL 94     Injection   Nominal Value   Unit     Drying Temperature   100   °C   | Impact                             | Nominal Value                   | Unit  | Test Method |  |
| Deflection Temperature Under LoadASTM D6480.45 MPa, Unannealed, 4.00 mm155°C1.8 MPa, Unannealed, 4.00 mm137°CFlammabilityNominal ValueTest MethodFlame Rating (1.60 mm)HBUL 94InjectionNominal ValueUnitDrying Temperature100°C   | Notched Izod Impact (23°C)         | 130                             | J/m   | ASTM D256   |  |
| 0.45 MPa, Unannealed, 4.00 mm155°C1.8 MPa, Unannealed, 4.00 mm137°CFlammabilityNominal ValueTest MethodFlame Rating (1.60 mm)HBUL 94InjectionNominal ValueUnitDrying Temperature100°C   | Thermal                            | Nominal Value                   | Unit  | Test Method |  |
| 1.8 MPa, Unannealed, 4.00 mm137°CFlammabilityNominal ValueTest MethodFlame Rating (1.60 mm)HBUL 94InjectionNominal ValueUnitDrying Temperature100°C   | Deflection Temperature Under Load  |                                 |       | ASTM D648   |  |
| Flammability Nominal Value Test Method   Flame Rating (1.60 mm) HB UL 94   Injection Nominal Value Unit   Drying Temperature 100 °C   | 0.45 MPa, Unannealed, 4.00 mm      | 155                             | °C    |             |  |
| Flame Rating (1.60 mm) HB UL 94   Injection Nominal Value Unit   Drying Temperature 100 °C  | 1.8 MPa, Unannealed, 4.00 mm       | 137                             | °C    |             |  |
| Injection Nominal Value Unit   Drying Temperature 100 °C  | Flammability                       | Nominal Value                   |       | Test Method |  |
| Drying Temperature 100 °C   | Flame Rating (1.60 mm)             | НВ                              |       | UL 94       |  |
|   | Injection                          | Nominal Value                   | Unit  |             |  |
| Drying Time 2.0 to 4.0 hr   | Drying Temperature                 | 100                             | °C    |             |  |
|   | Drying Time                        | 2.0 to 4.0                      | hr    |             |  |

| Rear Temperature       | 190 to 200   | °C |
|------------------------|--------------|----|
| Middle Temperature     | 200 to 210   | °C |
| Front Temperature      | 210 to 220   | °C |
| Nozzle Temperature     | 220 to 230   | °C |
| Processing (Melt) Temp | 190 to 230   | °C |
| Mold Temperature       | 60.0 to 70.0 | °C |

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#### Recommended distributors for this material

## Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China

