# Pinnacle PP 4211

## Pinnacle Polymers - Polypropylene Impact Copolymer

Tuesday, November 5, 2019

### General Information

**Product Description**

11 MELT FLOW HIGH IMPACT COPOLYMER FOR INJECTION MOLDING

Pinnacle Polymers Polypropylene 4211 is made via UNIPOL™ PP technology, which utilizes gas-phase fluidized bed reactors with a high activity catalyst system to ensure uniform physical properties and lot-to-lot consistency.

This product is intended for injection molding of automotive, appliance, lawn and garden products, consumer and industrial applications. Provides an excellent base stock for compounding of filled and reinforced grades.

The 4211 product provides:

- Wet/Dry environment resistance
- Superior balance of stiffness and impact strength
- Excellent color and processing stability
- Enhanced weld-line strength

It is characterized by its easy mold flow and high impact at both room and sub ambient conditions.

Pinnacle's 4211 polypropylene is covered under US FDA Food Contact Notification 864. As such, this polymer can be used in contact with all food types under Conditions of Use A-H, as described in 21 CFR 176.170, Tables 1 and 2. This polymer also complies with 21 CFR 177.1520(c), items 3.1(a) and 3.2(a).

| General | | | |
|---|---|---|---|
| Material Status | • Commercial: Active | | |
| Availability | • Europe | • North America | |
| Features | • Food Contact Acceptable<br>• Good Color Stability<br>• Good Flow | • Good Processing Stability<br>• High Impact Resistance<br>• Impact Copolymer | • Low Temperature Impact Resistance<br>• Weldable |
| Uses | • Appliances<br>• Automotive Applications | • Compounding<br>• Consumer Applications | • Industrial Applications<br>• Lawn and Garden Equipment |
| Agency Ratings | • FDA 21 CFR 176.170 Table 1 & 2, Cond A-H | • FDA 21 CFR 177.1520(c) 3.1a | • FDA 21 CFR 177.1520(c) 3.2a |
| Forms | • Pellets | | |
| Processing Method | • Compounding | • Injection Molding | |

### ASTM & ISO Properties [1]

| Physical | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Density | 0.900 | g/cm³ | ASTM D1505 |
| Melt Mass-Flow Rate (230°C/2.16 kg) | 11 | g/10 min | ASTM D1238 |
| Molding Shrinkage - Flow | 0.013 | in/in | ASTM D955 |
| **Mechanical** | **Nominal Value** | **Unit** | **Test Method** |
| Tensile Strength [2] (Yield, 0.126 in, Injection Molded) | 3410 | psi | ASTM D638 |
| Tensile Elongation [2] (Yield, 0.126 in, Injection Molded) | 7.0 | % | ASTM D638 |
| Flexural Modulus - 1% Secant [3] (0.126 in, Injection Molded) | 150000 | psi | ASTM D790A |
| **Impact** | **Nominal Value** | **Unit** | **Test Method** |
| Notched Izod Impact [4] (73°F, 0.126 in, Injection Molded) | > 10 | ft·lb/in | ASTM D256 |

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| Impact | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Notched Izod Impact (Area) [4] | | | ASTM D256 |
| 73°F, 0.126 in, Injection Molded | > 24.7 | ft·lb/in² | |
| Gardner Impact [5] (-22°F) | 312 | in·lb | ASTM D5420 |
| **Thermal** | **Nominal Value** | **Unit** | **Test Method** |
| Deflection Temperature Under Load (66 psi, Unannealed) | 185 | °F | ASTM D648 |

### Notes

[1] Typical properties: these are not to be construed as specifications.

[2] Type I, 2.0 in/min

[3] Type I, 0.050 in/min

[4] Type I

[5] Method G, Geometry GC