HIDURA® MED

# Optimizing processing conditions for nylon 6,6 (PA66)

## A Hidura® MED Guide

Nylon 6,6 (PA66) is a high-performance thermoplastic valued for its strength, chemical resistance, and thermal stability. However, successful injection molding requires disciplined process control and smart material selection. This guide provides OEMs and molders with practical tools to troubleshoot and prevent common issues while taking advantage of Hidura® MED medical-grade PA66.

Hidura MED grades offer seamless integration into existing operations. They are designed for compatibility with current processing windows and engineered to minimize requalification needs.

## Common Processing Challenges

Typical molding issues include:

- Blisters
- Brittleness
- Burn marks
- Silver streaks
- Nozzle drool
- Part sticking
- Shrinkage, sinks, voids
- Warpage and weld lines

## Troubleshooting & Optimization Guidelines

**Table 1. Processing Parameters and Best Practices**

| Category | Guideline | Purpose |
|---|---|---|
| Melt Temperature | 270°C – 300°C | Ensures flow, prevents degradation |
| Drying | 0.08% – 0.20% moisture | Prevents voids, blisters, silver streaks |
| Injection Speed | Medium-to-high | Improves packing, weld line strength |
| Venting | Every 2 in., 0.0005 – 0.0015 in deep | Avoids air entrapment, burn marks |
| Mold Temp | 65°C – 95°C | Controls shrinkage, improves ejection |
| Draft Angle | ≥ 1.5° | Reduces part sticking |



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## Processing Setup Checklist

- Verify resin drying (0.08 – 0.20% moisture)
- Confirm melt temperature (270°C – 300°C)
- Check mold surface temperature (65°C – 95°C)
- Calibrate injection speed and holding pressure
- Inspect venting and ejector system
- Run short shots to validate cavity balance

## Material Selection: Why Hidura MED

Hidura MED offers:

- Medical-grade certifications: ISO 10993, USP Class VI
- Sterilization compatibility: Resistant to EtO, fair resistance to gamma and E-beam radiation, and limited to a few autoclave cycles
- Consistency: tighter viscosity control for repeatability
- Sustainability options: bio-based PA66 grades available via mass balance
- Designed for compatibility: minimizes requalification needs when switching from fossil-based PA66

## Advanced Troubleshooting Tips

- Silver streaks? Check moisture content and rear zone temps
- Weak weld lines? Increase mold temperature or adjust injection velocity
- Sinks/voids? Improve pack/hold pressure and gate design
- Brittleness? Confirm regrind quality and check for resin degradation
- Warpage? Balance cavity fill and optimize gate locations


## Case Example: Reducing Scrap in Thin-Wall Parts

A medical device molder experienced recurring surface blisters in thin-wall housings. By following Ascend's guidelines:

- Adjusted injection speed (–15%)
- Reduced melt decompression
- Improved localized cooling near gates
- Optimized venting depth
- Dried resin to 0.1% moisture

Result: 98% scrap reduction and consistent cycle times — achieved without requalification

## Conclusion

Successful molding of PA66 depends on processing discipline, material handling, and tool design. Hidura MED makes the transition easier for medical OEMs by providing:

- Certified medical compliance
- Sustainable material options
- Technical support from Ascend's global team
- Seamless integration into existing processes with minimized requalification needs

To learn more about Ascend's Hidura MED and medical-grade PA66 processing support, contact us at ascendmaterials.com.