HiDURA® MED

Mass balance and bio-based polyamides

Seamless Integration for a Greener Future

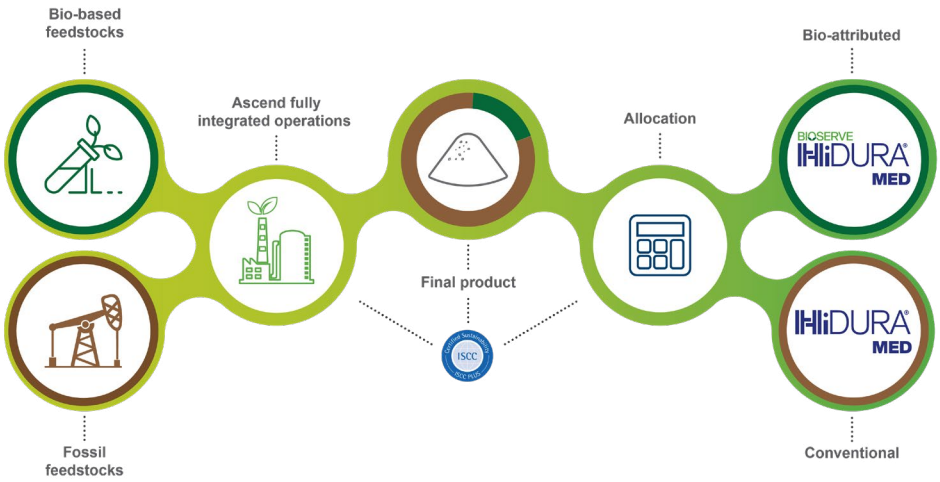
Sustainability is becoming a central priority in the healthcare industry. Medical OEMs are increasingly seeking materials that reduce environmental impact without compromising performance or compliance. This white paper explains how mass balance methodology enables the introduction of bio-based polyamides, helping medical manufacturers meet sustainability goals while maintaining the trusted performance of PA66. Importantly, this transition is designed for compatibility with existing processes and engineered to minimize requalification needs.

What Is Mass Balance and Why It Matters

Mass balance is a chain-of-custody method that integrates bio-derived feedstocks (soybean oil, used cooking oil, tall oil) into polymer production without requiring segregation. Through certified bookkeeping, bio-content can be allocated to specific products.

- Medical-grade PA66 produced by mass balance retains identical performance to fossil-based PA66 — ensuring regulatory compliance and processing reliability.
- Designed for compatibility — minimizes requalification needs while supporting regulatory consistency.

Figure 1. How mass balance integrates renewable content without sacrificing performance



ASCEND® PERFORMANCE MATERIALS

Why Bio-based Polyamides are Ideal for Medical OEMs

- Compatible with existing specifications
- Designed to minimize requalification needs
- Minimized risk in part performance and qualification
- Supports corporate sustainability and ESG goals
- Traceable sourcing via ISCC+ certification

Environmental and Strategic Impact

Bio-based feedstocks:
- Reduce reliance on fossil fuels
- Lower Scope 3 emissions
- Support long-term supply security

Table 1. Carbon Footprint Reductions (Mass Balance PA66 vs. Fossil PA66)

Material	Product Carbon Footprint (PCF)	Reduction vs. Fossil
Fossil-based PA66	Baseline (100%)	-
Mass Balance PA66	~54% of baseline	46% reduction
Future Bio-Feedstock PA66	Target ~35% of baseline	65% reduction (projected)

Roadmap: Future Bio-Feedstocks

Table 2. Bio-Based Feedstock Implementation Roadmap (2024–2028)

Year	Bio-Feedstock Implementation	Bio-Content Target
2024	Bio-propylene	46%
2025	Bio-phenol (pilot)	60%
2026	Blue ammonia	70%
2027	Expanded bio-phenol	85%
2028	Full-scale feedstock conversion	100%

Case Example: Aligning with ESG in Medical Devices

A global medical OEM integrated Ascend's bio-based PA66 via mass balance for a high-volume component.

The result:
- Carbon footprint cut by 40% without requalification
- Supply security ensured via Ascend's integrated model
- Regulatory compliance maintained (ISO 10993, USP Class VI)

Conclusion

Mass balance bio-based PA66 is a transformative opportunity for medical OEMs to:
- Align with global sustainability goals
- Ensure certified traceability
- Secure supply reliability
- Maintain regulatory compliance
- Achieve this with materials designed for compatibility and minimal requalification needs

Ascend Performance Materials is committed to helping customers design a more sustainable future without compromise on performance or compliance.

To learn more about Ascend's sustainable and medical-grade PA66 offerings, contact us at ascendmaterials.com.