

# MULTIBASE™ SiMB Additives Boost Fiber Production

MULTIBASE™ additives bring multi-faceted benefits to yarn and fiber applications, as illustrated by a synthetic turf application.

## Challenges

- A leading artificial turf manufacturer sought to replace fluorinated lubricants with a more sustainable option without reducing yarn performance.
- The primary objectives were to:
  - Find a replacement for fluoro-based processing aids that maintained or enhanced yarn performance and processing
  - Ensure the new additive was economically viable with low dosage requirements
  - Achieve a cleaner operation with reduced water usage and wastewater discharge

## Solution

- DuPont proposed the use of MULTIBASE™ MB50-313, a 50% polydimethylsiloxane (PDMS) in linear low-density polyethylene (LLDPE) as an alternative yarn finish.
- The key benefits of this solution enable:
  - **Fluoro-free composition:** Aligns with the manufacturer's sustainability initiative by eliminating fluorinated additives.
  - **Reduced environmental impact:** The "dry" lubricant nature of MB50-313 reduces water usage and wastewater discharge during the manufacturing process.
  - **Enhanced productivity:** The additive reduces melt fracture and die drool, improves extrusion line speed, and extends die cleanup intervals up to 72 hours.
  - **Improved yarn quality:** Topical additive usage is reduced by up to 40%; it also reduces carpet soiling, provides more consistent yarn quality with less dusting, and improves water repellency.



## Result

The collaboration between DuPont and this manufacturer yielded positive outcomes:

- **Successful implementation:** Adopting MULTIBASE™ MB50-313 for its artificial turf yarn production enabled the company to replace the previously used fluoropolymer processing aids in LLDPE turf without any performance tradeoffs.
- **Optimized costs:** The low dosage MULTIBASE™ MB50-313 solution helped to meet target economic requirements.
- **Sustainable impact:** We can include the water during manufacturing. The shift to the DuPont solution supports the manufacturer's sustainability objectives.

## Conclusion

This case study exemplifies the potential for innovation in the manufacturing sector to meet sustainability goals without sacrificing product performance. The successful replacement of PFAS-containing lubricants with a more environmentally friendly alternative highlights the importance of collaboration between material suppliers and manufacturers in driving positive change in the industry.

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