

McLaren Mastercard Formula 1® Team Taps Greene Tweed Advanced Sealing Technology to Boost Differential Performance

Metal-Spring-Energized seals enhance reliability in the critical F1 racecar application

LANSDALE, PA, UNITED STATES, February 10, 2026 /EINPresswire.com/ -- [Greene Tweed](#), a global leader in advanced materials and high-performance solutions, announced the successful development and deployment of its Metal-Spring-Energized (MSE®) seals for McLaren Mastercard Formula 1® Team's limited-slip differential clutch pack. The collaboration represents a significant milestone in the ongoing partnership between Greene Tweed and McLaren Racing, which continues to fuel groundbreaking advancements in motorsports engineering.

As the standing Formula 1 (F1) Constructors' Champions, McLaren recognizes that incremental gains in every component deliver a competitive advantage. McLaren turned to Greene Tweed for an [advanced sealing solution](#) for the hydraulic actuator that clamps the friction clutch inside the differential. This system optimizes torque distribution for maximum traction and cornering speed. Seal integrity is paramount, as significant



Finger Spring



MCL - F1

leakage would cause a catastrophic loss of system function and force the car to be retired.

“This project was a true example of collaborative engineering at its best,” said Matthew James, Director of Engineering and Product Design at Greene Tweed. “Our teams worked side-by-side to validate seal behavior under real operating conditions, refining the design through testing and iteration. The result is a robust, leak-free sealing solution that supports McLaren’s pursuit of marginal gains while meeting the long-term demands of Formula 1 racing.”

Greene Tweed developed two MSE® seal assemblies featuring a unique C-shaped profile and a corrosion-resistant metal spring to provide uniform sealing force. Designed to operate under the application’s extreme conditions, including temperatures up to 150°C (302°F), pressures from 5 to 250 bar (72.5–3,625 psi), and exposure to aggressive fluids, the seals use Greene Tweed’s proprietary Avalon® 44 (PTFE). This material ensures superior wear resistance, high strength, and low friction, meeting the exacting demands of mission-critical industries – from motorsports and aerospace to semiconductor manufacturing and energy – where reliability and precision are crucial.

“Given Greene Tweed's longstanding reputation for excellent quality, choosing them was an obvious choice for us,” said James Manning, Head of Transmission at McLaren Mastercard Formula 1® Team. “The MSE Seal has consistently demonstrated its durability and reliability within our system. We’re confident this is only the beginning of a long-term collaboration to drive even greater performance in future seasons.”

Following rigorous testing on a dynamic transmission test rig, Greene Tweed and McLaren engineers have successfully qualified the next-generation MSE® sealing system for the 2026 season. This more robust version, reinforced with backup ring support and a 301SS finger spring, has enabled McLaren to develop a more compact version of their system for future performance gains.

To learn more about the MSE® Seal application in McLaren Racing’s 2025 F1 racecars, visit Greene Tweed’s latest case study: www.gtweed.com/mclaren-racing-sealed-for-speed.

About Greene Tweed

Greene Tweed is a leading global manufacturer of high-performance thermoplastics, composites, seals, and engineered components that outperform and outlast in the world’s harshest environments. For 160 years, we have served clients in semiconductor, oil and gas, aerospace, defense, chemical and pharmaceutical processing, and other industries where failure is not an option. Greene Tweed products are sold and distributed worldwide. For additional information, call +1.215.256.9521, or visit our website at www.gtweed.com.

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