FULL SYNTHETIC VS. BLENDED SYNTHETIC

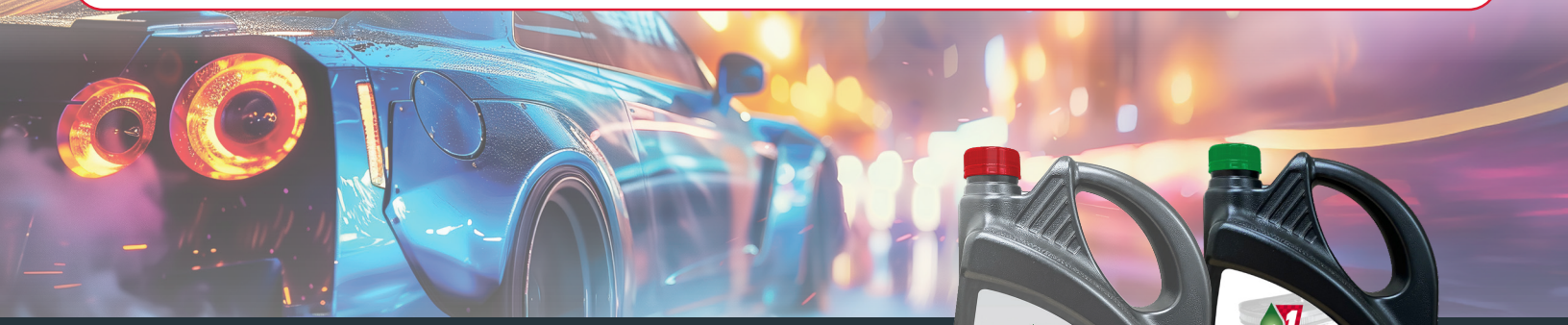
The Evolution of Engine Technology

FROM CLASSIC MUSCLE TO MODERN PRECISION

Engines have transformed dramatically. PennGrade 1® Synthetic Blend (SB) was built for classic, lower-revving engines — where film strength and zinc protection were key. PennGrade 1® Full Synthetic (FS) is engineered for today's high-revving, high-heat, high-pressure engines.

ENGINE DESIGN EVOLUTION

Older Engine Design (SB)	Modern Engine Design (FS)
Larger displacement, lower RPM	Smaller displacement, high RPM
Flat-tappet camshafts	Roller followers and variable valve timing
Moderate operating temperatures	High operating temperatures and pressures
Wide internal clearances	Tight bearing and piston clearances
Carbureted fuel systems	Direct fuel injection, lean-burn combustion
Naturally aspirated	Turbocharged/supercharged



TWO FORMULATIONS. ONE HERITAGE.

Full Synthetic doesn't replace Synthetic Blend — it extends the line. Each serves distinct engines and drivers.

PERFORMANCE COMPARISON

Attribute	PennGrade 1® Full Synthetic (FS)	PennGrade 1® Synthetic Blend (SB)
Base Oil Type	Full Synthetic	Mixture of Conventional and Synthetic
Operating Temp Range	Extended range for low and high temperature performance	Optimized for moderate to high temperatures
Film Strength	Ultra-stable film for high RPM & load	Proven strength for classic, flat-tappet engines
Oxidation Resistance	Exceptional; resists breakdown	Strong, but less resistant under extreme heat
Volatility/Oil Consumption	Very low	Slightly higher
Detergency/Cleanliness	Outstanding sludge and deposit control	Good cleanliness for legacy designs
Seal Compatibility	Optimized for modern seals and gaskets	Compatible with older seal materials
Intended Use	High-revving, turbocharged, modern performance engines	Classic, vintage, muscle, or flat-tappet engines

PENNGRADE | BRAD PENN PRODUCT

WHY WE INTRODUCED FULL SYNTHETIC

EVOLVING CHEMISTRY FOR EVOLVING ENGINES

- **Built for Modern Powertrains:** Handles leaner, hotter, faster engines.
- **Expanding Our Reach:** Connecting with a new generation of drivers and brands while keeping our heritage base.
- **Lubrication Science:** Advanced Full Synthetic base oils + additives for unmatched protection.
- **Durability & Performance:** Longer intervals, more horsepower, better efficiency.

CONSUMER BENEFITS: WHY PENNGRADE 1® STANDS OUT

- **Evolution:** Engines evolved — and so has PennGrade 1®. FS delivers next-gen protection.
- **Two Formulas, One Philosophy:** SB built our reputation. FS defines our future.
- **Brand Continuity:** Same heritage. Advanced chemistry.
- **Performance:** For maximum protection, power and longevity — choose PennGrade 1®.

MADE IN USA

THE FUTURE OF THE ORIGINAL GREEN OIL®

PennGrade 1® Full Synthetic is the next evolution of The Original Green Oil® — built for today's high-revving, high-heat performance engines while honoring the heritage that made it legendary.

D-A LUBRICANT COMPANY®

D-A TRUSTED SINCE 1919

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