WILWOOD DISC BRAKES

Brake Pad Information

www.wilwood.com

Pad Compound Selection Guide

Wilwood brake pad compounds are the results of three decades of experience and continual development to provide optimized braking and driver feel for all types of motor sport and competition applications. This selection guide is intended to provide general characteristics and applications for each compound. The graphs on page 4 illustrate the differences in friction values and temperature ranges. On-track testing and driver evaluation however, will always remain the determining factor to final pad selection.

Compound	Characteristics	Applications
A PolyMatrix	• Ultimate high friction compound with aggressive initial response. • Long wear rate for severe duty, sustained high temperature braking. • Immediate low temperature response for qualifying laps, restarts, and any other applications requiring high response at low temperatures. • Compatible with iron, steel, and titanium rotors.	• Race ONLY compound used in ARCA, ASA, ALMS, Grand-AM, NASCAR, REMAX, SCCA, USAC, and other severe duty oval, road course, and off-road series that require an aggressive response and durability in the highest temperature ranges. • Lightweight sprints and club sport racers using steel plate rotors that require fast response at low temperatures with resistance to fade during periodic or temporary high temperature spikes.
H PolyMatrix	• High friction compound with smooth initial response a steady rise in friction as temperature and pedal pressure increases. • Long wear rate for severe duty, sustained high temperature braking. • Compatible with iron, steel, and titanium rotors. • Performs best when initially bedded on new rotors or used rotors that have only been run with H compound.	• Race ONLY compound for long wear in sustained high heat on hard braking ovals and road courses. • Trail braking or "touch and go" tracks. • Endurance applications.
B PolyMatrix	• Medium-high friction compound with good cold response and a gently rising friction curve as temperature increases. • Smooth, predictable engagement with excellent control over a wide range of applications. • Long wearing pad in the middle temperature ranges with moderate wear in sustained high heat conditions. • Easily bedded without abrasion on new iron or steel rotors.	• Race ONLY compound is a value priced, proven workhorse for most weekly category asphalt late models, sprints, modifieds, and sportsman divisions. • Hard braking dirt late models, DIRT modifieds, and rear inboard sprint brakes with vented iron or steel rotors. • SCCA club racers, rally, and auto-cross. • High MPH drag cars if high end fade occurs with lower temperature pads.
C PolyMatrix	• Medium to medium high friction compound with soft middle temperature response and a gradual rise to a flat torque curve as temperatures increase. • Long wear rate for severe duty, sustained high temperature braking . • Reduced friction alternative to B.	• Race ONLY compound commonly used to reduce bias against A, B, or H compounds when additional hydraulic adjustments are not available. • Use on any lightweight vehicle, including dirt applications, with high mechanical advantage brakes to prevent wheel lock-up in marginal traction conditions.
E PolyMatrix	• Medium friction compound with the highest effective range in the medium temperature pad group. • Smooth engagement with consistent response from a flat torque curve throughout its entire effective temperature range. • Best overall wear properties in the medium temperature pad group. • Beds quickly and provides fast response without excessive abrasion on iron or steel rotors.	• Most dirt track applications including super late models, modifieds, and rear inboard sprints using vented iron rotors. • Light to medium duty road racing and track day events. • Drag racing with iron or steel rotors. • Performance street category competition.
CM Composite Metallic	• Medium to high friction compound with a steadily increasing torque curve as temperatures rise. • Good wear and friction properties with high fade resistance for special applications where intermittent high temperature spikes are observed between periods of moderate temperature braking.	• Race ONLY compound for specialty alloy rotors such as titanium and light weight steel. • Sprint cars with titanium rotors, speedway cars with plate steel rotors, and other specialized vehicles where high temperature fade and wear resistance are necessary to offset diminished cooling capacity due to rotor material and configuration.

Pad Compound Selection Guide

Compound	Characteristics	Applications
BP-10 Smart Pads	• Medium friction compound with the low noise and low dust of a street performance compound and the increased friction characteristics of a semi-metallic race compound. • Smooth engagement with consistent response from a flat torque curve throughout its entire effective temperature range. • Good low to middle temperature wear rates. • Beds quickly and provides fast response without excessive abrasion on vented iron rotors.	• High performance street / strip, drag race, and track day categories using vented iron rotors. • Light to medium braking on dirt tracks including late models, modifieds, sportsman, and street stocks. • Disc brake conversions on street rods and muscle cars.
BP-20 Smart Pads	• Provides increased friction levels with extended temperature range over BP-10. • Has a progressive response rate as pedal pressure and temperature increase to provide confident, repeated stops and outstanding modulation characteristics. • Unique metallic composite formulation provides an agressive feel without the harsh noise, high rotor abrasion and extreme dust levels associated with high metallic based compounds.	• Medium to heavy braking dirt tracks. • Advanced level track day and club sport competition. • Extreme duty dual purpose street/track vehicle. • High speed or heavy weight drag cars. • Hobby or sportsman category asphalt racing
BP-30 Smart Pads	• Newest racing pad from Wilwood • Medium-high friction compound with good cold response. • Smooth, predictable engagement with excellent control over a wide range of applications. • Long wearing pad in the middle temperature ranges with moderate wear in sustained high heat conditions. • Easily bedded without abrasion on new iron or steel rotors.	• Race ONLY compound is a value priced, proven workhorse for most weekly category asphalt late models, sprints, modifieds, and sportsman divisions. • Hard braking dirt late models, DIRT modifieds, and rear inboard sprint brakes with vented iron or steel rotors. • SCCA club racers, rally, and auto-cross. • High MPH drag cars if high end fade occurs with lower temperature pads.
Q PolyMatrix	• Enhanced friction ceramic formula features the lowest noise and dust properties available from a performance compound pad. • Improved friction over OE replacement pad compounds-smooth engagement, long service life, increased fade resistance, & quick recovery time. • Best compound for specialized application aluminum rotors, and compatible with all vented iron rotors.	• Sprint cars with aluminum rotors. • Disc brake conversions on street rods, muscle cars, custom show cars, and all moderate performance applications where low noise and dust are important.
PM ProMatrix	• Specially selected compounds for enhanced performance through increased friction properties and extended temperature range.	• Application specific compounds are elements of Wilwood ProMatrix pad and rotor upgrade kits. • Where available, ProMatrix compounds are designated for use in the OE calipers on OE or performance upgraded rotors.

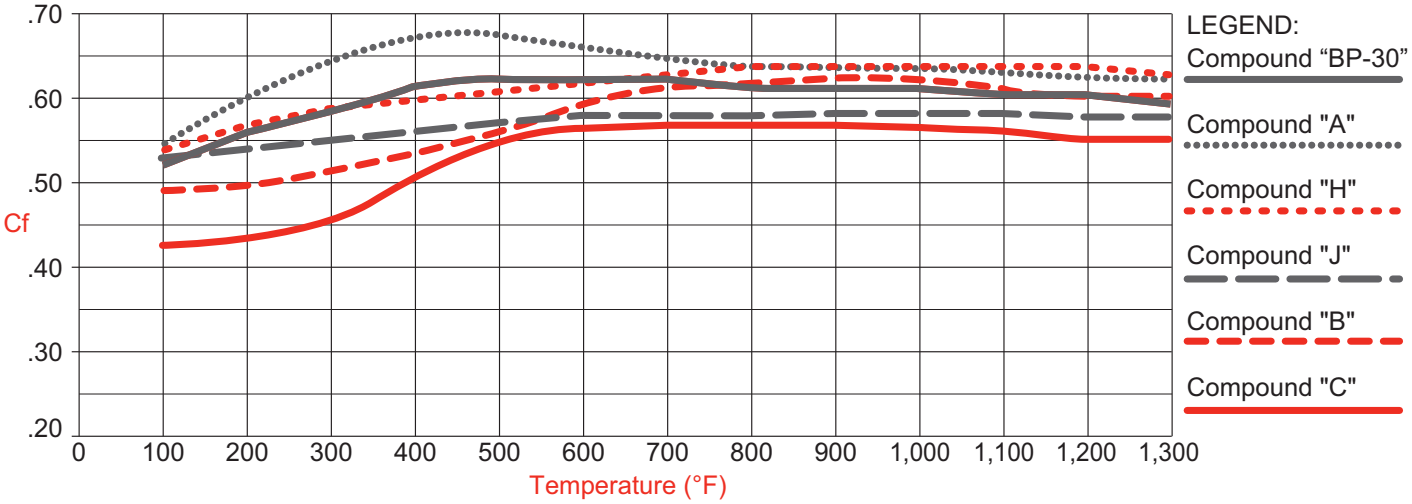
Pad Selection Tips

Temperature range and overall friction value are the primary considerations for pad selection. The pads must be capable of maintaining the proper amount of friction for stopping power within the temperatures that will be realized on the track during the event. Then, overall wear rate must be considered. For most asphalt and road race applications, compounds in the high temperature ranges over 1000°F range are usually necessary. Dirt track, drag race, and street performance applications usually operate at temperatures between 500° and 1000°F. Keep in mind that these are general ranges, and not absolute values. Many factors and unforeseen influences can affect brake temperatures. The best indicator for pad selection will always be on track performance. If pad fade (friction loss) due to overheating occurs, then improved cooling, a heavier rotor, or a higher temperature range pad may all become necessary.

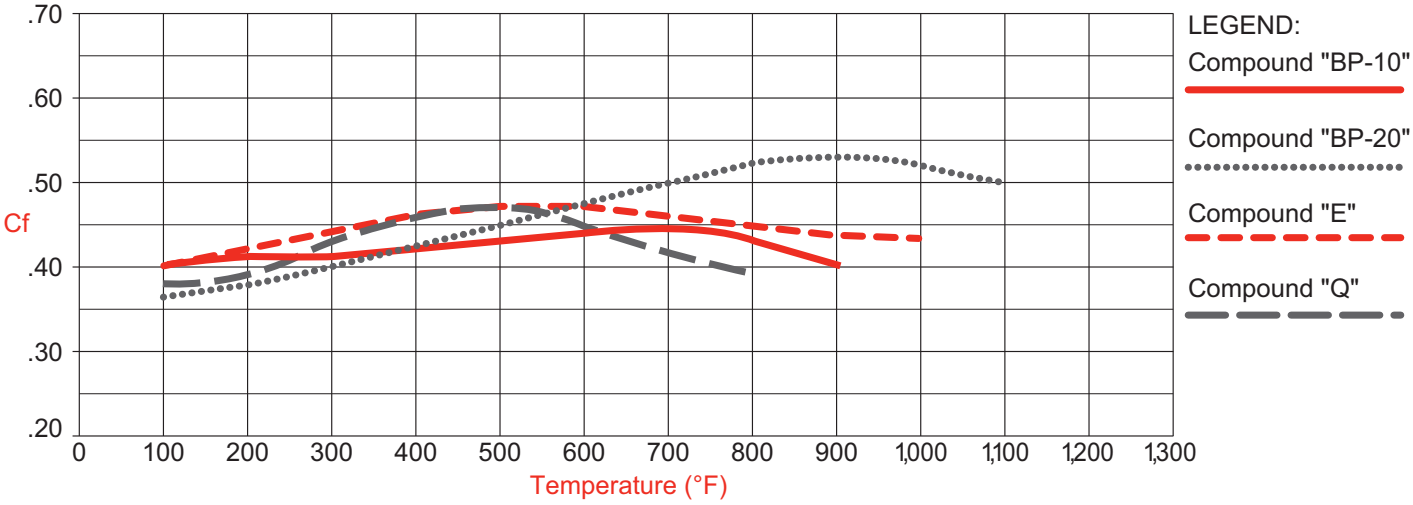
Pad Compound Graphs

The graphs below illustrate the differences in temperature range and torque values for each Wilwood brake pad compound. The graphs are divided into similar heat range categories.

Compounds “BP-30”, “A”, “H”, “J”, “B”, and “C”



Compounds “BP-10”, “BP-20”, “E”, and “Q”



Brake pads bedded on Wilwood's in-house brake dyno

Pad and Rotor Bedding

Bedding is a "real conditions" heat cycle and the final step in preparing the pads and rotors for service. All pads, even OE stock replacement parts, will benefit from a proper bedding cycle. All rotors, especially cast iron rotors that will be operated at sustained high temperatures, will provide longer service life and smoother braking when properly bedded. Bedding can be done either in the vehicle, or on a special bedding dyno that can realistically duplicate the torque loads, pressure, and temperature that will be realized in the vehicle.

Rotor Bedding

Rotor bedding is an essential element to high level performance and durability. It is most critical with cast iron rotors. Cast iron is extremely well suited to use as a brake rotor, but it can be susceptible to thermal stress, distortion, and even cracking if subjected to rapid changes in temperature when it's new. The cracking sound that you may hear when pouring a favorite beverage over a glass of ice is thermal shock. A proper bedding cycle will gradually bring the rotors up to temperature and then allow them to cool slowly and completely in order to "season" and relieve any remaining stresses from the casting and machining processes. With some compounds, a layer of pad material may also be embedded onto the rotor face. It is important that this "transfer layer" be deposited slowly and smoothly. Otherwise, pedal pulsing and compromised friction values can result.

Pad Bedding

The bedding process is the final "heat cure" for the pads. This final bedding cure differs from an oven heat cure in such that the oven heat cure does not include the pressure, torque, and elevated surface temperatures that are necessary to properly condition the pad for service. As it is with the rotors, new pads must be gradually brought up to temperature and then slowly cooled. If the pads are put into hard service right from the start, damage from fractures or accelerated deterioration due to extreme temperature variations between the surface and the body of the pad can occur. Overall poor performance with the potential for rotor damage are often the results.

Bedding Steps

Once the brake system has been tested and determined safe to operate the vehicle, follow these steps for bedding of all pad materials and rotors.

1. Begin with a series of 8-10 light stops from approximately 30 MPH down to 15 MPH allowing 20-30 seconds for cooling between each stop.
2. Progress with a series of 8-10 moderate stops from around 45 MPH down to 30 MPH allowing a 20-30 second cool down period between each stop.
3. Proceed with a series of 8-10 hard stops from 55-65 MPH down to 25 MPH allowing 20-30 seconds of cool down time between each stop.
4. Drive at a moderate cruising speed, with the least amount of brake contact possible, until most of the heat has dissipated from the brakes. Avoid sitting stopped with the brake pedal depressed to hold the car in place during this time. Park the vehicle and allow the brakes to cool to ambient air temperature.

Notes:

During the bedding process, a more positive feel from the brakes should develop. This is an indication that the bed in process is working. If any level of brake fade is observed during the hard stops, it may be an indication that the brakes have been more than adequately heated. Begin cooling the brakes with light driving and without brake contact immediately.

Wilwood Dyno Bedding Service

Wilwood offers computer controlled dyno bedding on many popular pads and rotors used in high temperature racing applications. Contact a dealer or factory representative for details.