SBD PRODUCT GUIDE

CCM vs CCB Carbon Ceramic Discs

How to choose the right Speed By Design carbon-ceramic disc for street, mixed use, and track.

Speed By Design offers both CCM and CCB discs because they do different jobs. They share the same C/SiC carbon-ceramic core family, T700 carbon fiber, and a large unsprung-weight cut versus iron. They do not share the same friction face — and that face is what changes wear, weather behavior, noise, pad life, and which kit fits your car.

1. The difference in one sentence

CCM is an uncoated carbon-ceramic disc. The pad works directly on the C/SiC matrix.

CCB is the same core family with a dense silicon carbide (SiC) friction layer on both faces. That layer is the wear surface and an oxygen / corrosion barrier.

CCB is not “real carbon ceramic” and CCM is not a cheaper fake. Both are carbon-ceramic. CCB adds a sacrificial SiC skin. CCM leaves the matrix exposed so there is nothing to peel and peak hot friction stays very direct.

2. What both SBD discs give you

- ~40–50% weight reduction versus typical OEM iron rotors of the same diameter (application-dependent).
- Much higher fade resistance than iron. Stable friction at temperatures where iron is already in trouble.
- No rust film. Near-zero dark metallic dust compared with iron.
- T700 carbon-fiber reinforcement for strength at low mass.
- 7075-T6 billet hats and new hardware on SBD two-piece assemblies.
- Must be used with carbon-ceramic-specific pads and bedded to the SBD procedure. Wrong pads will destroy either disc.

If you only wanted lighter, cleaner, and longer-lasting than iron, either disc can deliver that on a street car. The choice is about how you drive, where you live, and how much you care about noise and first-bite.

3. Side-by-side snapshot

Topic	SBD CCM — Uncoated matrix	SBD CCB — SiC-faced
Friction surface	Exposed C/SiC matrix	Dense SiC coating on both faces
Best overall fit	Track / HPDE, lightweight builds, drivers who want peak hot bite and no coating to manage	Street, daily + canyon, coastal / winter salt, owners who want quiet, clean, long face life
Street disc life*	Approx. 250,000–400,000 km (155k–250k mi) with correct pads	About 15–30% longer face life than SBD CCM under the same street use
Track / race duty*	Approx. 80,000–120,000 km equivalent; no coating to crack or peel under thermal shock	Longer while the SiC layer is intact; coating can micro-crack under extreme heat cycling
Oxidation barrier	Good baseline. Matrix micropores can take on oxygen at very high temperature	Dense layer isolates the core; SBD rates oxidation resistance to roughly 1000–1300°C while the coating is intact

Topic	SBD CCM — Uncoated matrix	SBD CCB — SiC-faced
Corrosion / climate	No peel risk. Surface micropores can show spotting in heavy salt / coastal use	Best choice for salt, coast, humidity, and winter roads — coating blocks media from the core
Cold / wet bite	Needs a longer bed-in. First wet stop can feel slightly delayed until water is wiped	Short bed-in, stronger first-bite, more consistent dry/wet friction
Hot friction	Very direct at extreme temperature; fade under 5% above 900°C after bed-in (SBD bench)	Excellent linearity; high-temp fade a few points higher than CCM above ~1000°C
NVH / pedal	Can squeal lightly at low speed; slightly softer pedal. Less harsh under panic stops	Quieter, flatter face, more precise pedal. Preferred for daily-driven cars
Pad wear	Generally kinder to a matched CCM pad	Harder face; expect about 10–20% more pad wear. Use quality CCB-compatible pads only
Mass	~150 g lighter per disc than the coated sibling (coating thickness dependent)	Slightly heavier than CCM. Still far lighter than iron
Main risk	Wrong pads, worn pads to backing plate, grit in surface pores, high-temp oxidation on track	Wrong / cheap pads, coating chips from mishandling, coating micro-cracks after brutal heat cycles

**Life figures are SBD application guidance from internal comparison data, assuming SBD or equivalent carbon-ceramic pads, correct bedding, and no physical damage. Track life is not a mileage guarantee — cooling, pad compound, and time-at-temperature decide it. Carbon-ceramic wear is often checked by weight and surface condition, not thickness alone.*

4. Compare and contrast

Wear and service life

On the street, both discs last far longer than iron. The SiC face on CCB is harder and non-porous, so abrasion is more even and the core is protected. SBD rates CCM street life about 15–30% shorter than the coated disc under the same duty.

That does not mean CCB always wins. On a dedicated track car, the coating is a consumable. Once it is worn through, chipped, or heat-cracked, the advantage is gone. CCM has no layer to lose, so thermal-shock and impact behavior stay simpler.

Heat and oxidation

Both materials are built for 600–750°C operation and can take brief peaks near 1000°C. CCM relies on the matrix itself. CCB's dense SiC skin blocks oxygen from the carbon fibers while it is intact — that is the main high-temperature durability gain, not a higher melting point of the core.

If you track hard with poor ducting, neither disc is "lifetime." Heat time, not the acronym, kills carbon-ceramic.

Weather, salt, and coast

This is CCB's cleanest win. CCM micropores can hold water, salt, and de-icer. That rarely rusts the disc the way iron rusts, but it can spot the face and roughen it over years in coastal or winter-salt climates. CCB's sealed face is the better daily disc for those owners.

Feel, noise, and first bite

CCM after a proper bed-in is very linear when hot and can feel more “direct” at the limit. It is also the one more likely to light-brake squeal and to feel a half-step late on the first wet stop.

CCB is the daily-driver disc: shorter bed-in, stronger cold bite, quieter, more consistent wet/dry, tighter pedal. At the extreme top of the temperature window, CCM keeps a slight edge in fade stability.

Pads — the part that actually ruins discs

Do not mix pad families. A metallic iron-rotor pad, a random “ceramic” street pad, or a worn pad down to the backing plate will glaze, groove, or oxidize either disc. CCB’s harder face also eats generic pads. Order the matching SBD CCM/CCB street or track pad with the rotor, and follow the SBD Professional Bedding-In Guide before the first hard stop.

5. Which disc fits you

Choose SBD CCM if you...	Choose SBD CCB if you...
• Track the car regularly (HPDE, time trial, club race) and will change pads on schedule. • Want the lightest disc and the most direct hot friction. • Do not want a coating that can chip, micro-crack, or wear through under brutal heat cycles. • Are replacing or mirroring an OEM CCM car (Corvette Z06/Z07, many Ferrari / McLaren / Nissan CCM systems). • Accept a longer bed-in and possible light low-speed squeal. • Live in a dry climate and store the car indoors.	• Daily-drive or street-drive the car most of the year, with occasional spirited or canyon use. • Want maximum disc life, cleaner wheels, and less dust. • Care about cold bite, wet first-stop, and low NVH. • Live on the coast, in humidity, or in a winter-salt state. • Are replacing or mirroring an OEM CCB / PCCB-style layered disc (Porsche, many Audi / Lambo / AMG / BMW M CCB cars). • Will use matching SBD pads and accept slightly higher pad wear.

Think twice about CCM if...	Think twice about CCB if...
• The car is a high-mileage daily in rain, salt, or sea air. • You hate any low-speed squeal. • You want the longest calendar life with the least surface maintenance.	• The car is a dedicated track weapon that will cook pads every weekend. • Every gram of rotating mass is being counted for drag or autox. • Installers are rough with rotors — a dropped CCB chips the face.

6. Quick pick by how you use the car

How you drive	Default pick	Why
Street / daily performance car	**CCB**	Quiet, clean, long face life, better wet/cold manners.
Street + 2–6 track days / year	**CCB**	Coating still earns its keep. Use track-capable CCB pads and change them early.
Serious HPDE / time attack	**CCM**	No coating to consume. Direct hot friction. Inspect by weight and surface after events.

Drag / rotating-mass hunt	**CCM**	Lightest SBD carbon-ceramic option. Pair with the correct pad, not a race metallic.
Coastal, humid, or winter-salt daily	**CCB**	Sealed face is the point of the upgrade over CCM.
Show / low-mile collector	**CCB**	Better parked appearance, less face spotting, quieter first drive after sitting.
OEM-style replacement on a CCM car	**CCM**	Keeps the friction system the car was calibrated around. CCB is an upgrade path if you also change pads to match.
OEM-style replacement on a CCB / PCCB car	**CCB**	Stay with a layered face unless you are converting the car to a track consumable.

7. Four questions that pick the disc

1. **How is the car used?** Daily and street → CCB. Dedicated track → CCM. Mixed with a few events → CCB unless you already cook pads.
2. **Where do you live and park?** Salt, coast, humidity → CCB. Dry garage queen that still sees heat → either; CCM if you want light and simple.
3. **Do you care about noise and first-bite?** Yes → CCB. You only care about hot laps → CCM.
4. **Will you use matching pads and follow bedding?** If not, stay on iron. A mismatched pad is how expensive rotors die in one weekend.

8. Ownership rules for both discs

- Install directional vanes correctly. SBD serial convention: odd = driver, even = passenger, unless the listing says otherwise.
- Never use metallic iron-rotor pads, cheap no-name “ceramic” pads, or worn pads down to the backing plate.
- Bed pads and discs with the SBD Professional Bedding-In Procedure before hard use.
- Do not hold the pedal at a stop on a glowing disc. Roll forward so the face is not printed.
- Handle like glass. A dropped disc is often scrap, especially CCB.
- Inspect visually at every pad change. Look for edge chips, deep cracks, coating loss (CCB), and unusual grooves.
- Where a minimum weight is marked on the hat, weigh the disc. Carbon-ceramic can lose mass to oxidation before thickness looks used up.
- pH-neutral wheel cleaner only. Acid wheel cleaners attack the system.
- Carbon-ceramic is not a shorter stopping-distance guarantee on street tires. Tires and ABS still set the limit. The gain is heat capacity, consistency, dust, corrosion, and rotating mass.

9. Honest expectations

These discs last a very long time on the street when pads and bedding are correct. They are not immortal on track. Do not treat “life of the car” as a promise if you heat-cycle them hard. SBD’s own comparison puts CCM street face life about 15–30% behind the coated CCB disc — not five times shorter.

If your real problem is replacement cost on a car you beat on every Saturday, a quality two-piece iron package can still be the rational choice. Carbon-ceramic earns its price on street and mixed cars, and on track cars that value heat capacity and mass over cheap consumables.

10. The short version

CCM: the track-capable, lightest, no-coating SBD carbon-ceramic. Best when heat cycles are frequent and you will maintain pads.

CCB: the street-and-mixed SBD carbon-ceramic. Best when you want longer face life, cleaner wheels, better weather manners, and less noise.

Street-driven car and you are unsure? Choose CCB with SBD pads. Dedicated track car and you are unsure? Choose CCM with SBD pads. Do not run either disc on the wrong pad.

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