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Caster Wheel Material Compatibility Chart + Selector

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Quick answer. Match caster wheel material to the floor and environment first, then adjust for debris, duty cycle, and push force. Polyurethane is the default on smooth indoor concrete, rubber or non-marking polyurethane protects finished floors, and washdown service requires sealed bearings. Size each caster for total load divided by 3, since one caster may be unloaded.

Wheel Material Compatibility Chart

Floor / condition	Best starting materials	Usually avoid	Common failure when wrong
Smooth concrete (clean indoor)	Polyurethane, Rubber (quiet)	Very soft rubber under heavy static loads	Flat spotting, high push force if undersized
Rough / imperfect concrete, expansion joints	Harder polyurethane, larger diameter	Small diameter, soft tread	Chunking, bearing damage, operator strain
Epoxy / coated floors	Non-marking polyurethane, Rubber (non-marking)	Hard nylon/phenolic when floor protection matters	Marring, chatter, vibration complaints
Tile / smooth finished surfaces	Rubber, Non-marking polyurethane	Very hard wheels when noise/floor risk matters	Noise, marring, traction issues
Outdoor asphalt / mixed terrain	Pneumatic, Terrain-rated polyurethane	Hard small wheels	Shock failures, poor mobility, bearing wear
Debris routes (chips, slag, gravel)	Chip-resistant polyurethane, larger diameter	Soft rubber, small diameter	Gouging, chunking, swivel lockup
Washdown / wet / corrosive	Washdown-safe polyurethane + sealed design	Unprotected bearings / mild steel hardware	Corrosion, seized swivel, bearing failure
Freezer / cold	Low-temp polyurethane, Nylon (clean floors)	Rubber that stiffens, soft treads that flat spot	Flat spotting, cracking, high push force



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