

TECHNICAL REFERENCE · PRINT & KEEP

Caster Load Ratings vs Real-World Duty Cycles

One-page quick reference · Full engineering guide + live tools at the QR codes below

Quick answer. A caster load rating is the maximum weight one caster supports under controlled ICWM and ANSI MH31.1 test conditions. Real-world duty cycles reduce usable capacity to roughly 50 to 75 percent of the published rating once speed, shift hours, floor condition, and shock loads are factored. Spec casters against duty cycle, not the label rating alone.

Duty Cycle Categories

Duty Cycle	Rolling Time	Events per Shift	Typical Application	Service Life (Years)
Intermittent	< 2 hrs/shift	5-20	Office, light assembly	8-12
Moderate	2-4 hrs/shift	20-100	Cart fleet, warehouse	5-8
Heavy	4-6 hrs/shift	100+	Tow line, continuous rolling	3-5
Continuous	> 6 hrs/shift	Always rolling	AGV, AMR, production line	2-4 (replace on schedule)

Derating for Real-World Conditions

Condition	Derating Factor	Rationale
Smooth indoor concrete	1.0 (baseline)	ICWM test condition
Expansion joints every 20 ft	x 0.8	Shock load increase
Unsealed/dusty concrete	x 0.85	Bearing life decrease
Outdoor asphalt/composite	x 0.7	Irregular surface shock
Speed over 3 mph	x 0.8	Heat build-up in bearings
Temperature over 100°F	x 0.9	Tread compound softening
Temperature below -20°F	x 0.85	Compound brittleness



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