

TECHNICAL REFERENCE · PRINT & KEEP

Safety Factor for Casters Guide

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

Quick answer. Use a 1.5x safety factor for manual push on smooth floors, 2x for floors with seams or thresholds, 2.5x for dock and impact-loaded applications, and 3x for critical-safety loads. Apply the multiplier to peak working load per caster, after accounting for uneven load distribution, then compare the result to the caster's dynamic rating.

Environment-Based Safety Factor Multipliers

Environment	Safety Factor	Example Application
Powered tow, smooth floor	1.25x	AGV on epoxy floor
Manual push, smooth floor	1.5x	Tool cart in assembly plant
Manual push, seams/thresholds	2.0x	Warehouse cart on concrete
Dock/truck loading	2.5x	Freight cart on loading dock
Life-safety or overhead	3.0x	Overhead tool cart, medical gas
Outdoor yard cart	2.0x	Asphalt, gravel, seam hits

Shock and Impact Loading

Impact Type	Typical Load Spike	Safety Factor
Floor seam (1/8 inch)	1.5x steady-state	1.5x
Threshold (1/4-1/2 inch)	2-3x steady-state	2.0x
Dock transition (1-2 inch)	2.5-3x steady-state	2.5x
Drop event	3x+ steady-state	3.0x
Smooth epoxy, no seams	1.1x steady-state	1.25x



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