WHEEL SELECTION CRITERIA

Choosing the type of wheel that best suits your application is an important requirement. Each wheel type may have characteristics that make it excellent for one job but unworkable for another. This chart provides general information you may find useful in choosing a wheel. If further guidance is required, please consult the factory.

Other factors to consider in choosing a wheel type include:

- Type of bearings can have a major impact on rollability, durability, maintenance schedules, and capacity.
- Floor conditions: The presence of obstacles, debris, oil and/or chemicals can have a significant impact on the life and performance of a wheel. A general rule is that softer treads are better for obstacle laden floors, floor protection and quiet operation. Harder treads are best for rollability on smooth floors but offer less floor protection and cushioning.
- Maintenance: The expectation that wheels will or will not be properly maintained is another factor in choosing wheels/bearings.
- Manual vs Power Tow: Generally, power tow requires durability and quiet operation, whereas manual operation requires rollability and ease of swiveling.
- Properly matching wheels to specific applications can involve factors too numerous to list completely. Please consult Acorn™ for further information.

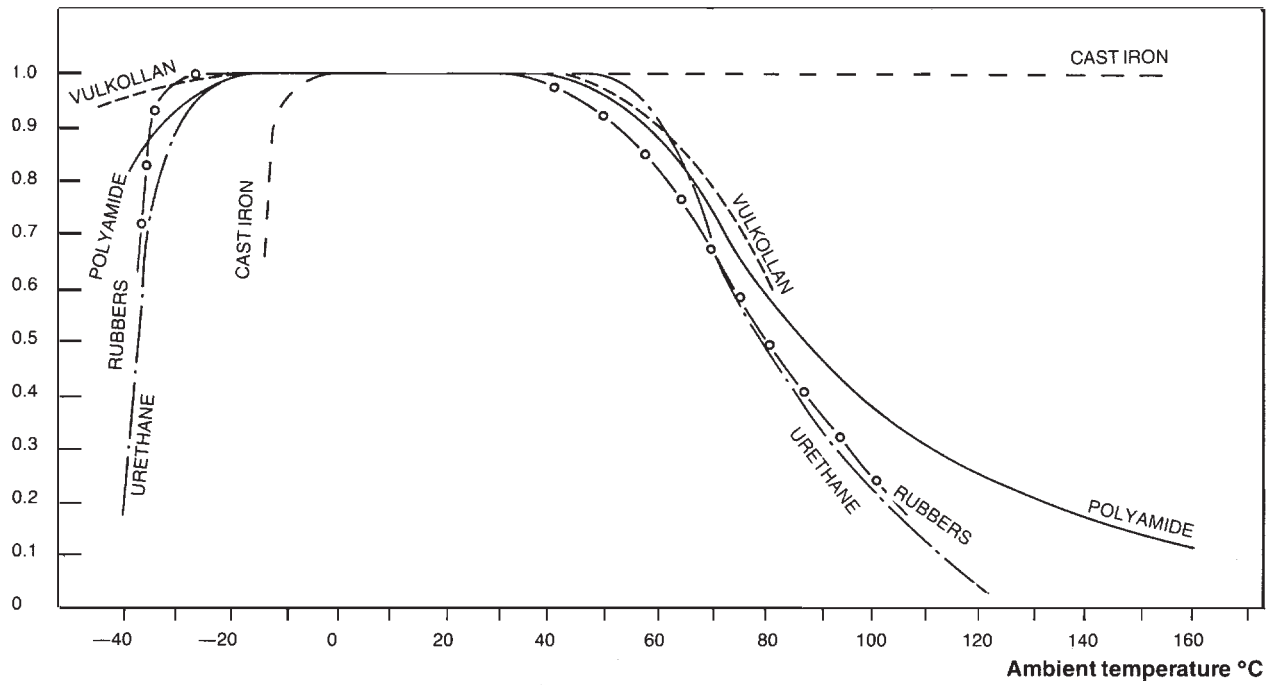
WHEEL SELECTION GUIDE

Wheel Type	Ease of Rolling	Quiet Operation	Floor Protection	Impact Resistance	Abrasion Resistance	Temperature Range °F
Urethane on Iron	Good	Good	Excellent	Good	Excellent	0° to 180°
Urethane on Heavy Duty Iron	Fair	Excellent	Excellent	Excellent	Excellent	0° to 180°
Urethane on Forged Steel	Fair	Excellent	Excellent	Excellent	Excellent	0° to 180°
Soft Urethane on Iron	Good	Excellent	Excellent	Excellent	Excellent	0° to 180°
Urethane on Aluminum	Good	Good	Excellent	Good	Excellent	0° to 180°
Rubber on Iron, Standard	Fair	Excellent	Excellent	Good	Fair	-40° to 160°
Rubber on Iron, Extra Hard	Good	Good	Excellent	Good	Fair	-40° to 200°
Rubber on Iron, Neoprene	Fair	Excellent	Excellent	Good	Fair	-40° to 200°
Rubber on Iron, Low Profile	Good	Good	Excellent	Fair	Fair	-40° to 160°
Semi Steel	Excellent	Poor	Poor	Fair	Excellent	-40° to 600°
Forged Steel	Excellent	Poor	Poor	Excellent	Excellent	-40° to 600°
Solid Premium Urethane	Excellent	Fair	Good	Excellent	Excellent	0° to 180°
Phenolic (Texite)	Excellent	Fair	Fair	Good	Good	-40° to 260°
Nylacron™	Excellent	Good	Good	Excellent	Excellent	-40° to 400°

Wheel Selection Correction Criteria

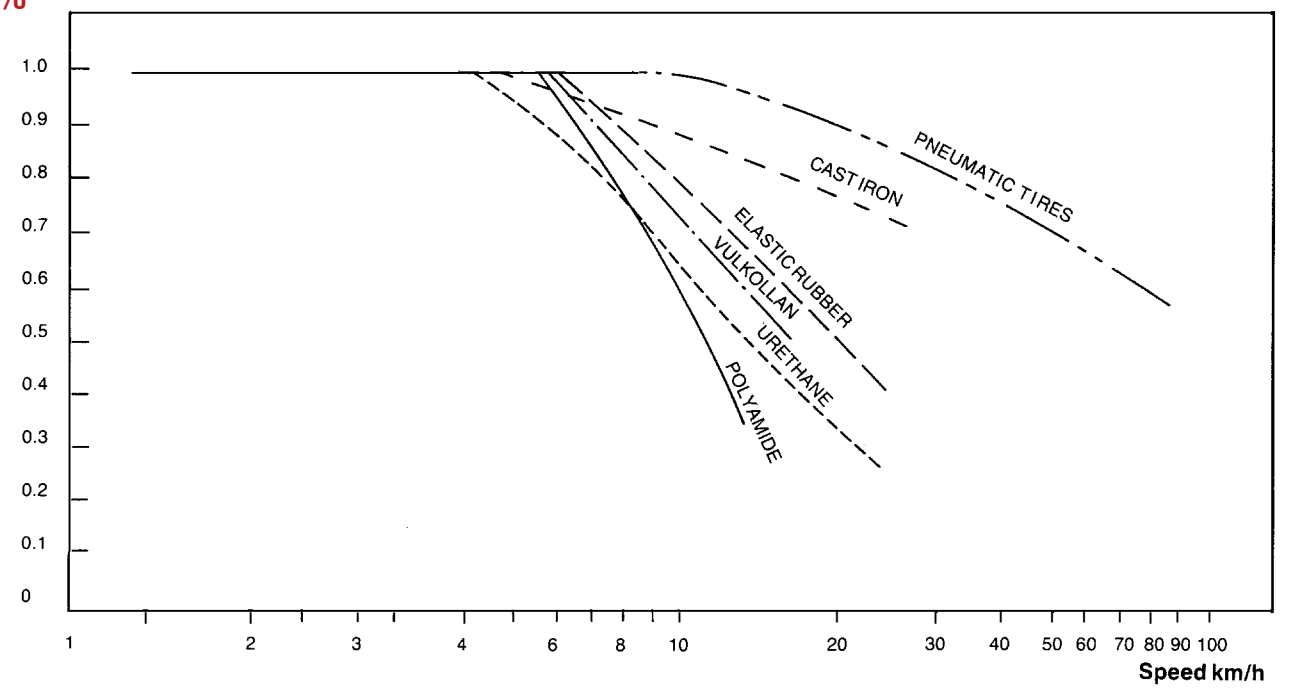
① TEMPERATURE CORRECTION FACTOR (T%) (F deg = 9/5 C + 32)

T%



② SPEED CORRECTION FACTOR (V%) (M.p.h. = 0.6214 x KM/H)

V%



Wheel Selection Correction Criteria

③

OPERATING ENVIRONMENT FACTOR (E%)

E%

Ideal	Normal	Rough	Extreme	
1.1	1.0	0.9	0.8	**Vulkollan™ with cast iron core**
1.05	1.0	0.95	0.85	**Elastic rubber aluminum core**
1.05	1.0	0.9	0.8	**Elastic rubber polyamide core**
1.0	1.0	0.85	0.75	**Polyurethane tread with polyamide core**
1.1	1.0	0.8	0.65	**Nylacron™ wheels**
1.1	1.0	0.85	0.7	**Cast iron wheels**

OPERATING CONDITIONS:

IDEAL:

good, flat floors without holes thresholds or grooves; manually driven to approx. 4 km/h; no differences in height due to loading platforms etc.: careful handling during loading and unloading.

NORMAL:

reasonable good floors with an occasional obstacle that is no higher than 2.5% of the wheel diameter; manual or mechanical propulsion e.g. by means of pulley or chain; wheel tread wider than grooves in the floor, speeds up to 6 km/h, loading and unloading by means of forklift trucks.

ROUGH:

uneven floors with obstacles up to 5% of the wheel: mainly propulsion driven by means of pulleys or chains; frequent use on loading platforms; rough handling.

EXTREME:

all floor types, unequal levels large sharp obstacles (rails, chain grooves); mechanically driven by means of pulleys or chains; moving with the aid of a forklift truck scoop; shock exposure due to loading by means of e.g. cranes or forklift trucks; regular transportation by road or rail; or continuous duty applications.

① ② ③

ADJUSTED WHEEL LOAD CAPACITY = T% x V% x E% x NORMAL LOAD which means wheel load capacity has to be derated accordingly

GUIDELINES FOR SELECTING WHEEL DIAMETERS WITH PRECISION BEARINGS

Total Load Including Cart (lbs)	50 to 250 #	250 to 500 #	500 to 1000 #	1000 to 1500 #	1500 to 2000 #	2000 to 3000 #
Wheel Diameters (in)	3 "- 4"	4" - 6"	5" - 8"	6" - 10"	8" - 12"	10" - 12"

The larger the wheel diameter and wheel bearing, the easier it is to roll under the same load.