

High and low temperature

The normal temperature limit of our standard wheels and castors is 0°C to 60°C (0°C to 140°F). Within this range our products work normally for their full working life. In colder or hotter conditions they behave differently and may need to be modified to work efficiently.

High temperature use:

Above 60°C (140°F) you must specify temperature of use at the time of ordering. As temperatures increase, tyre materials become softer, and this lowers the load capacity. At still higher temperatures (and when hot for longer periods) the materials begin to deteriorate, which shortens working life.

Polypropylene and rubber wheels begin to lose considerable strength between 60°C (140°F) and 100°C (212°F).

Polyurethane tyres retain most of their properties up to 90°C (194°F) even for long periods (apart from a gradual lowering of load capacity) and can be used for short periods at even higher temperatures. However, caution is needed. For example, at 100°C (212°F) they lose only 5% of their tensile strength after 20 days, but at 120°C (248°F) they are down to 50% in 20 days, while at 150°C (302°F) they are down to only 15% in 5 days. Fibreglass reinforced nylon wheels are the preferred wheel for extended periods up to 210°C (410°F) (assuming most of their life is spent outside the oven), and for short periods up to 230°C (446°F). Phenolic wheels (with special inorganic fillers and PTFE bushes) are preferred for extended periods up to 280°C (536°F) (assuming most of their life is spent outside the oven), and for short periods up to 300°C (572°F). These have a thick cross section, but are more brittle than either nylon or ordinary grades of phenolic.

For sustained high temperature use, we offer a range of cast iron wheeled castors (caution is needed as cast iron wheels will damage concrete floors), used with high temperature grease. This grease can be used up to 230°C (446°F) for long periods. Above 230°C (446°F) even more exotic greases need to be used - consult with a Fallshaw representative.

Low temperature use:

Below 0°C you must specify temperature of use at the time of ordering. The standard grease we use in our castors is a lithium complex grease. This has excellent water resistance, bearing retention and long life. But below 5°C (41°F) it begins to stiffen quickly, and will soon freeze the bearings so that neither the castor swivels nor the wheel bearings revolve. If specified at the time of ordering, we use a special aeronautical grease which is a synthetic oil with a microgel thickener. This is compounded for use down to -30°C (-86°F), and will need to be refreshed every 6 - 12 months, but will continue to work effectively in chilling rooms, freezing stores and outdoor winter use in northern countries where ordinary greases would be useless.

As the temperature becomes lower, the softer rubber and polyurethane treads on our wheels become less elastic. For example, the polyurethane used on the 'H' series slowly stiffens from +20°C (+68°F) down to -20°C (-68°F), but then rapidly stiffens until at -50°C (-122°F) it becomes brittle.

As temperature goes below 0°C, nylon can become brittle (particularly if it is kept for long periods in the very dry air in freezing rooms). At such times we recommend fibreglass reinforced wheel, which can be used down to -30°C (-86°F).

High/Low Temperature M series						Fork Options			
<ul style="list-style-type: none"> •Wheel and castors for extreme temperatures •See M page for fork and mounting information • Fitting option information 	 Tyre Material	 Capacity per each	 Diameter X Width mm / inch	 Hub Width X Bore mm / inch	Fork Type	Plate Swivel	Bolt hole Swivel	Plate Fixed	
					 Wheel Only	 /MZF	 /MZH	 /MZF	
Wheel Options	 Nylon glass reinforced (lighter hub)	Plain	70kg @ 150°C 155lb @ 300°F	75x32 3x1 ¹ / ₈ "	40x12 1 ⁹ / ₁₆ "x12mm	MHH75	MHH75/MZP	MHH75/MZH	MHH75/MZF
			80kg @ 150°C 175lb @ 300°F	100x32 4x1 ¹ / ₄ "	40x12 1 ⁹ / ₁₆ "x12mm	MHH100	MHH100/MZP	MHH100/MZH	MHH100/MZF
	 Phenolic K (high temp)	Plain	125kg @ 100°C 275lb @ 212°F 100kg @ 250°C 220lb @ 480°F 40kg @ 300°C 90lb @ 570°F	100x35 4x1 ³ / ₈ "	40x12 1 ⁹ / ₁₆ "x12mm	MKT100	MKT100/MZP	MKT100/MZH	MKT100/MZF
 Phenolic W (very high temp)	Plain	125kg @ 200°C 275lb @ 390°F 100kg @ 300°C 220lb @ 570°F	100x35 4x1 ³ / ₈ "	45x10 4 ³ / ₄ "x10mm	MWW100	MWW100/MZP	MWW100/MZH	MWW100/MZF	