TIRE SELECTION GUIDE

- TIRE BASICS
- CHOOSING THE RIGHT TIRE
- PROPER TIRE CARE
- WHEN TO REPLACE
- REDUCING TIRE COSTS

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FORKLIFTS | MICHIGAN

TIRE BASICS SECTION 1

Forklift tires are not all created equal. Starting with a quality tire is important, but selecting the right tire for your application is equally as important. This comprehensive TIRE SELECTION GUIDE is designed to help you increase safety, prolong tire-life, reduce fuel consumption and **improve productivity – Up to 45%**. We will help you to identify when you should replace tires and provide you with cost-reduction suggestions.

80% of the USA Material Handling market is made up of Press-Ons

TIRE OPTIONS : PRESS-ON

Press-On tires are also known as Cushion tires. They are made of solid rubber molded to a steel band. These tires are very durable and are best suited for indoor or light outdoor use on smooth surfaces.

SMOOTH TIRES

Smooth tires generally work best in most indoor applications and give you the best overall footprint and stability.

NON-MARKING TIRES

Non-marking tires are used in applications that require clean floors such as food, textile and paper industries *(see chart on page 6)*. Non-marking tires are prone to cause static electricity and require the installation of an anti-static strip onto the forklift.
Generally speaking, non-marking tires have a shorter life span.

TRACTION TIRES

Traction tires are necessary in moist conditions or when you have ramps and other variances. Traction tires provide the best footprint and stability in these conditions.

POLYURETHANE TIRES

Polyurethane press-ons are mainly used on class 2 & 3 forklifts. They can carry up to twice as much weight as conventional, rubber tires, and are non-marking. They have excellent stability, especially in tight aisle spaces, and are resistant to certain chemicals.

20% of the USA Material Handling market is made up of Pneumatics

TIRE OPTIONS : PNEUMATICS

Pneumatic tires are made of rubber and are best suited for outdoor use.

NEXEN GS SOLID

SOLID PNEUMATIC TIRES - RESILIENTS

Solid pneumatic tires, also known as resilients, last up to four times longer than traditional pneumatic tires. They cannot be punctured like a traditional pneumatic tire can, thus eliminating flats and downtime. They are ideal for industries and applications with sharp debris *(see chart on page 6)*.

NOTE: All of our solid pneumatic tires are 3 stage which guarantee the ultimate in riding and handling quality. They are equipped with a wire heal base to eliminate wheel slippage when maximum torque is required.

TRADITIONAL PNEUMATIC TIRES

Traditional pneumatic tires are made of rubber and are filled with compressed air. Like a car tire, and they can be punctured. Traditional pneumatic tires are best suited for outdoors when the work area is free of sharp objects *(see chart on page 6)*.

IT 45 BIAS PLY

NOTE: The IT45 is an excellent general service pneumatic material handling tire. It should be used in approximately 70% of your outdoor, sharp object-free applications.

IT 30 BIAS PLY

NOTE: The IT30 provides you with the highest quality bias-ply pneumatic tire in the material handling industry. It should be used in applications that are more extreme than normal conditions.

COMPARISON CHART

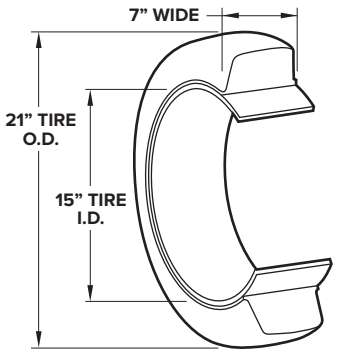
	PRESS-ON (CUSHION)	POLYURETHANE	SOLID PNEUMATIC	PNEUMATIC
Indoor	Yes	Yes	Yes	Yes
Outdoor *(Light)*	Yes	No	Yes	Yes
Outdoor *(Rough Terrain)*	No	No	Yes	Yes
Debris In Work Area	No	No	Yes	No
Lifespan	Medium	Long	Long	Medium
Durability	High	High	High	Medium

Comparison charts are based on general data. Lifespan, durability and cost will depend on the operator, application and usage.

HOW TO READ TIRE SIZES

The tire size is usually printed on the sidewall. If it isn't printed on the tire or it has worn off then you'll need three measurements to determine the correct size tire for your equipment. You'll need to measure: Outside Diameter, Width of the Steel Band, and Inside Diameter.

If you're still unsure about the size of your forklift tires then call us and we'll be happy to come to your location and inspect your machine for free!



21 x 7 x 15 Tire Example:
- 21" is the outside diameter
- 7" is the width of the steel band, not the width of the tread
- 15" is the inside diameter (When measuring the inside diameter measure from the inside of the band and not from where the rubber meets the band.)

TIRE ANATOMY

Sidewall – Provides information on the tire's brand, size, tire type and wear line

Tread – The rubber that contacts the ground

Rim – Metal component of the wheel that holds the tire onto the forklift

CHOOSING THE RIGHT TIRE

SECTION 2

Choosing the right tire will help your forklift obtain optimal performance, maximum safety and longer tire-life. Three factors you must consider: application, work environment and the type of forklift you have. This section will provide you with some general guidelines for application and workplace. When it comes to your forklift, it was designed for a specific tire type - usually pneumatic or press-on (cushion). It is not recommended to switch from one tire type to another.

APPLICATION RECOMMENDATIONS

Press-on (cushion) tires are the best choice for **Indoor applications** where there is no floor debris. Improved traction will increase safety and these tires will last longer.

Solid pneumatic or pneumatic tires are the best choice for **outdoor and rough-terrain applications**. Improved traction and stability will increase safety. Use solid pneumatics if the work area has sharp objects.

Polyurethane tires are mainly used on class 2 & 3 forklifts within **warehousing applications**. They have excellent stability, especially in tight aisle spaces.

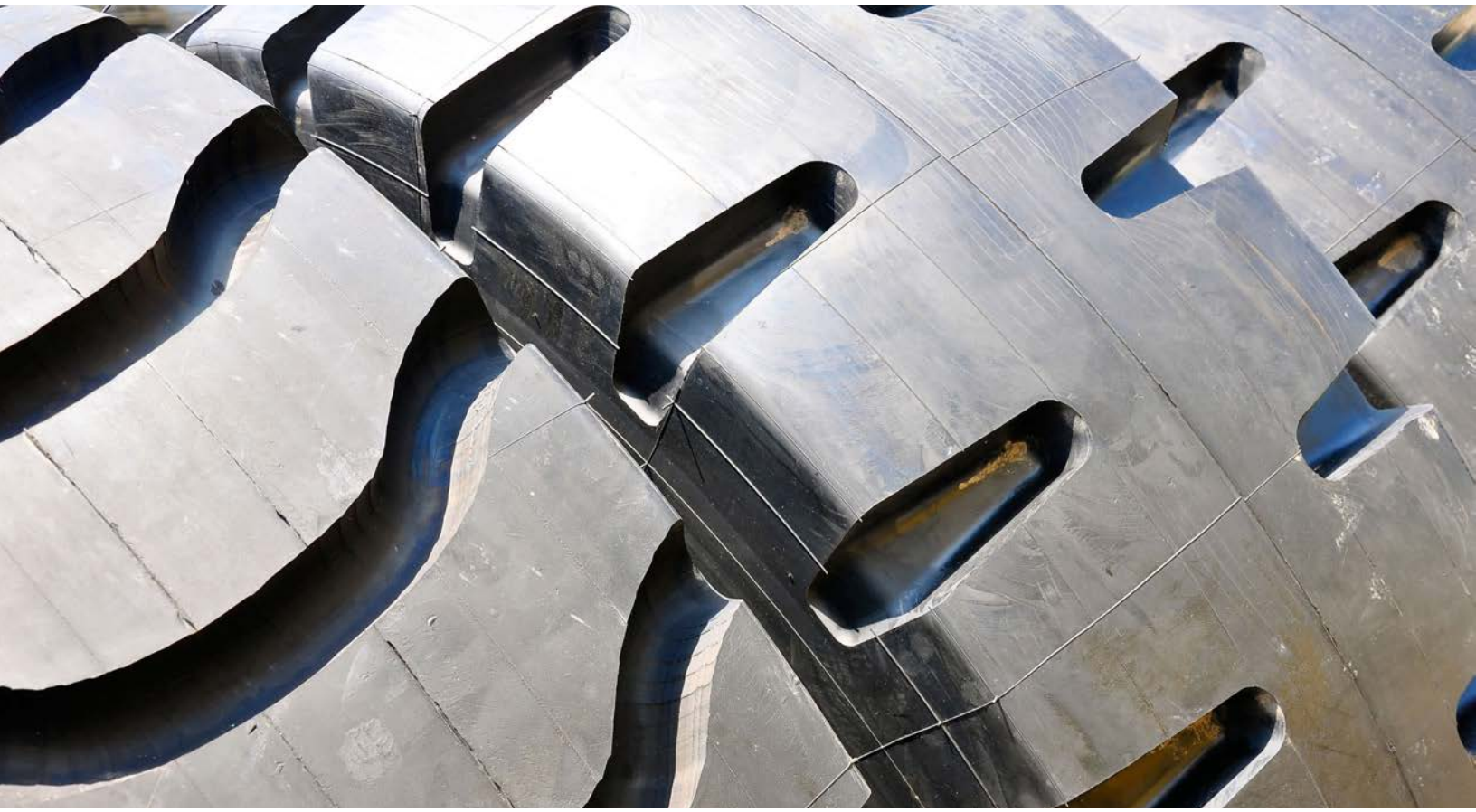
Non-marking tires are used in **applications that require clean floors** such as food, textile and paper industries.

	PRESS-ON (CUSHION)	POLYURETHANE	SOLID PNEUMATIC	PNEUMATIC
Agriculture			●	●
Airport			●	●
Beverage		●		
Brick, Block, Pipe			●	
Cold Storage		●		
Concrete	●		●	●
Distribution	●	●	●	
Factory	●		●	
Food Processing	○	●		
Food Storage	○	●		
Forging, Casting			●	
Intermodal / Port			●	
Lumber			●	●
Manufacturing-General	●			
Mining			●	
Oil / Gas			●	
Paper	○	●		
Rail Yard			●	
Retail	●			
Shipping Containers			●	●
Steel / Metal			●	
Textile	○			
Warehousing-General	●	●		

○ Indicates Non-Marking ● Used On Order Pickers

PROPER TIRE CARE

SECTION 3



Keeping your tires in good condition is easy if you follow a few basic operating practices and some routine maintenance. The benefits of these will be:

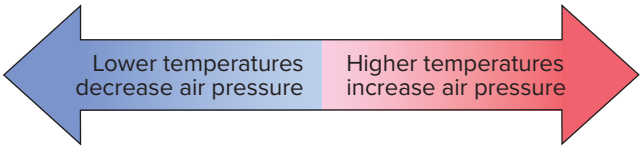
- Increased tire-life
- Improved productivity
- Optimal performance
- Less fuel consumption
- Reduced operator fatigue
- Safer workplace
- Better bottom-line

PROPER OPERATION

Proper forklift operation will ensure that your tires last as long as they are intended to. Operators should not drive at excessive speeds, corner too fast, spin tires, skid tires, overload the forklift, or run over debris.

AIR PRESSURE

Air pressure should be checked on pneumatic tires before each use because of fluctuating temperatures throughout the day. At a minimum, they should be checked daily. See the sidewall of the tire for the recommended PSI.



Under-inflated tires
= Poor traction
= Accidents

Over-inflated tires
= Blowouts
= Downtime

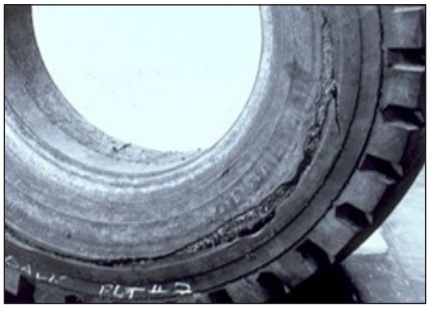
IDENTIFYING AND SOLVING PROBLEMS

Improper operating practice and lack of care can result in tire damage, shorter tire life, tire failure, equipment damage and unwanted downtime. Here are a few common examples of tire failure, the cause of the failure, and the solution to the problem.

BLOW-OUT
Even though resilient and press-on (cushion) tires are solid, they can blow-out.

Cause: Excessive heat build-up due to high duty cycle, heavy loads and long runs.

Solution: Larger tires where possible, special compounds (Lion / Expert) or operational changes.



BASE / CAP SEPARATION
Occurs in resilient tires where the base will separate from the cap. Looks similar to a blow-out.

Cause: Excessive heat build-up due to high duty cycle and long runs.

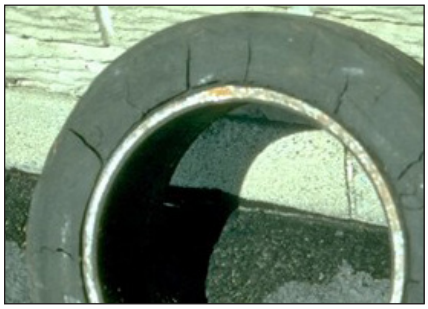
Solution: Production issue. Tire was not cured properly.

BOND SEPARATION
Occurs in press-on tires when the rubber separates from the steel band.

Cause: Excessive heat build-up due to high duty cycle and long runs.

Solution: Production issue. Tire was not cured properly.

IDENTIFYING AND SOLVING PROBLEMS - (CONTINUED)



RADIAL CRACKING
Cracks radiating on the sidewall of the tire.

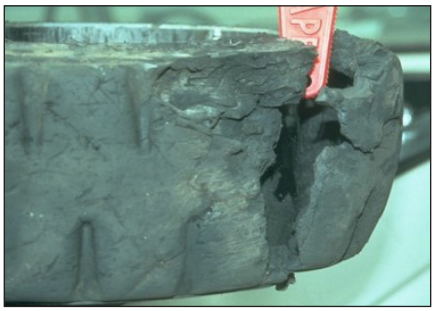
Cause: Overload. Loads exceeding the rated capacity of the tire.

Solution: Special compounds (Lion / Mono Thane) or wider tires where possible.

STEER TIRE OVERLOAD
Another form of radial cracking.

Cause: Overload. Loads exceeding the rated capacity of the tire.

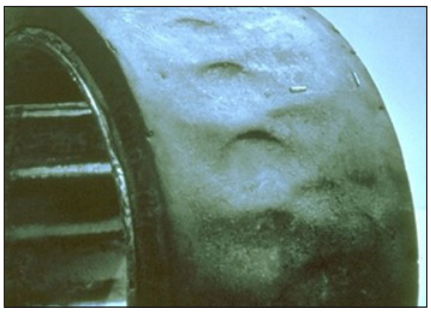
Solution: Special compounds (Lion / Mono Thane) or wider tires where possible.



CHIPPING AND CHUNKING
The tire has chips and/or larger chunks missing from it.

Cause: Running over litter, debris, broken floors, bad dock plates, etc.

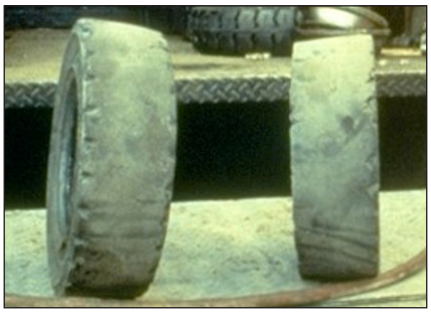
Solution: Floor maintenance, housekeeping programs, operator training, special tire compounds.



PITTING OR CUPPING
The tire has visible pitting or cupping.

Cause: Commonly a result of bearing problems.

Solution: Repair equipment.



UNEVEN WEAR
Uneven wear causing mis-shaped tires.

Cause: Misalignment of forklift axle(s).

Solution: Repair equipment.

FLAT SPOTS
Flat spots on the tire.

Cause: Operators spinning tires and skidding to stops.

Solution: Operator training, tires with higher traction compounds and tread design.

WHEN TO REPLACE

SECTION 4

Replacing tires at the appropriate time can save you a lot of trouble and money in the long run. New tires will improve fuel efficiency, help you avoid costly damage to your equipment and can help to reduce accidents.

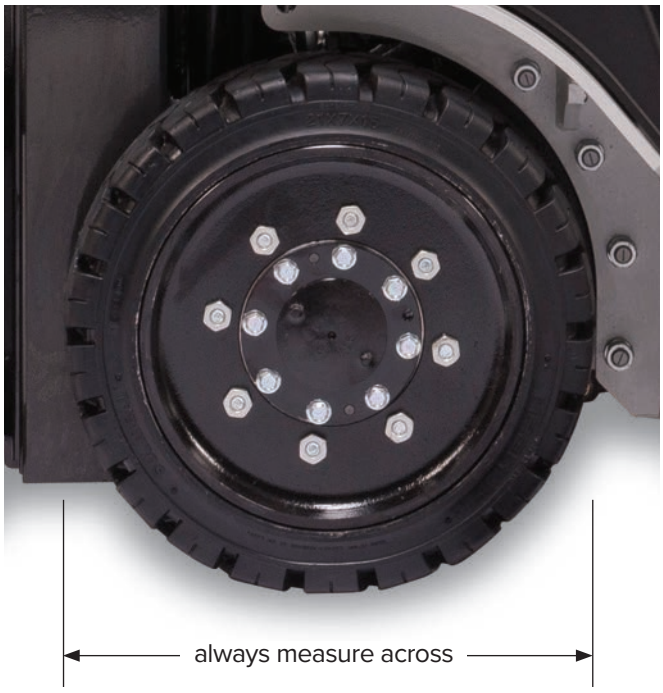
AREAS TO CHECK FOR TIRE REPLACEMENT

TIRE WEAR

One of the most important things you can do for your forklift is to check the wear of the tires. Driving a forklift with worn out tires is dangerous. Wear can be determined in multiple ways.

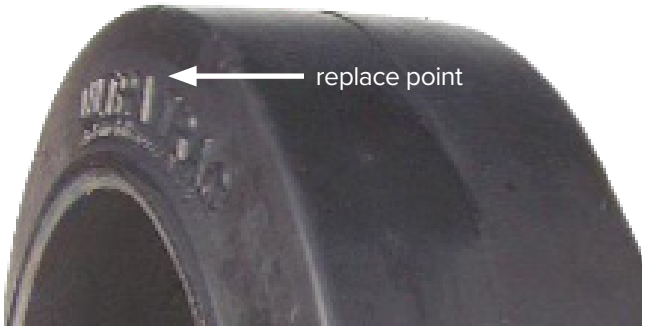
TWO-INCH RULE

This method applies to press-on (cushion) tires. The sidewall of the tire usually displays the original size. You can verify how much the tire has worn by measuring its current width (measure across - not up and down). If the current width is more than two inches lower than the original width, the tire needs replacing.



TIRE LETTERING

This method applies to press-on (cushion) tires. Replace tires before they have worn to the top of the lettering.



SAFETY LINE - OR WEAR LINE

Some tires have a safety line built into the side of the tire that tells you when it is time to replace the tire. You should replace the tire before it gets worn to the safety line.

TIRE TREAD

When it comes to pneumatic tires, it's important to keep an eye on tread wear. Once a pneumatic tire's tread has become worn to the point it is almost invisible or has bald spots, the tire is no longer safe to use.

Also, replace pneumatic tires with cuts and frayed cords immediately in order to avoid a blowout.

DAMAGED TIRES

Replace tires when you see damage in the form of chunking, tearing, cracking, pitting or cupping or if you see uneven wear or flat spots. Damaged tires threaten the safety of the machine and the operator and need to be replaced as soon as possible. Below are examples of tires that need to be replacement right away.

BENEFITS OF NEW TIRES

Here are some of the benefits you can expect when you replace worn and damaged tires with new tires:

- Improved productivity
- Optimal performance
- Less fuel consumption
- Lower maintenance costs
- Reduced operator fatigue
- Increased traction
- Improved safety
- Better bottom-line

REDUCING TIRE COSTS

SECTION 5

Never buy cheap tires or factory seconds. The money you think you saved will cost you far more in the long-run. Lower-quality tires break down far faster than higher-quality products and often fail quicker than expected.

This section will provide you with some good suggestions on how you can reduce tire costs without reducing tire quality, tire longevity and safety standards within your facility.

REDUCING TIRE COSTS

First and foremost, you can reduce tire costs by making sure you choose the right tires. As we discussed in section 2, the three factors you must consider are: application, work environment and the type of forklift you have.

The second way to reduce tire costs, as covered in section 3, is routine tire care and proper operation.

PRESS-ON (CUSHION) REPLACEMENT

Here are a few ways you can reduce your replacement costs for press-on (cushion) tires.

SMOOTH INSTEAD OF TRACTION

If your application is suited for it, use smooth cushion tires instead of traction tires. This can increase the consumable rubber by up to 12%. This is not an option in wet environments.

SMOOTH

TRACTION

INCREASE YOUR TIRE SIZE

Benefits of increasing your tire size:

- Extended tire-life
- Improved traction
- Greater shock absorption
- Improved stability
- Cooler running tires
- Increased load carrying capacity*

* *Increasing your tire size by one inch translates to 800 pounds (on average) in additional load carrying capacity.*

PNEUMATIC TIRE REPLACEMENT

Here are a few ways you can reduce your replacement costs for pneumatic tires.

CHOOSE SOLID PNEUMATIC - RESILIENTS

Benefits of choosing solid pneumatics (resilients) instead of traditional pneumatics:

- Extended tire-life - by up to (4) times
- Reduced downtime - no flat tires
- Improved stability

These are suggestions and not recommendations. Always consult your operator manual and speak to our tire specialists before making these changes.

Forklift tire replacement can be tricky. You should always leave this to trained and qualified forklift technicians. Experimenting on your own can be very dangerous and costly. For repairs and preventative maintenance in Western Michigan, call 616-455-2376 to schedule a FREE assessment.

For an estimate, collect the information below and then contact us. Each tire replacement service includes removal and installation of new tires as well as disposal of the old.

- Model
- Serial Number
- Size of the tire *(listed on the sidewall)*
- Compound *(we can usually figure it out by the color)*