McCARTHY
TIRE SERVICE

Family Owned Since 1926

PA NJ NY MD WV VA NC SC

Tires are put together and cured with:

- HEAT
- PRESSURE

Tires Come ***Apart*** with:

- Too Much **HEAT – Steel, rubber, oil, synthetics begin to separate**

- Too Little PRESSURE – Components over flex and break down bond. Over flexing creates

  HEAT!!

Tires do not carry the load

- A tire is a pressure vessel, it does not support the load of vehicle.
- **AIR** supports the weight of vehicle and load.

775 Haul Truck – 24.00R35 Tires

- Load carrying capacity comparison:

- 102 psi = 40,800 pounds per tire
- 90 psi = 37,500 pounds per tire
- 80 psi = 34,000 pounds per tire
- 70 psi = 30,000 pounds per tire

At 80 PSI on (6) 24.00R35 tires, loss of weight carrying capacity is 40,800 total.

A tire requiring 100 psi is considered flat at what pressure???

90 psi

80 psi

70psi

60psi

50psi

40psi

30 psi

20 psi

Answer:

80 PSI

The tires will wear out faster.

- Tires requiring 100psi operating at 80psi will wear out 20-25% faster.
- Instead of running 7,000 hours they will be removed at 5,000 hours, and possibly damaging casings for future retread.

Fuel consumption:

- The same tire at 80 psi will use 5-10% more fuel than properly inflated tire.
- If a company spends one million dollars a year on fuel, the savings could be $100,000 with proper tire inflations.

Do Not air up a flat tire.

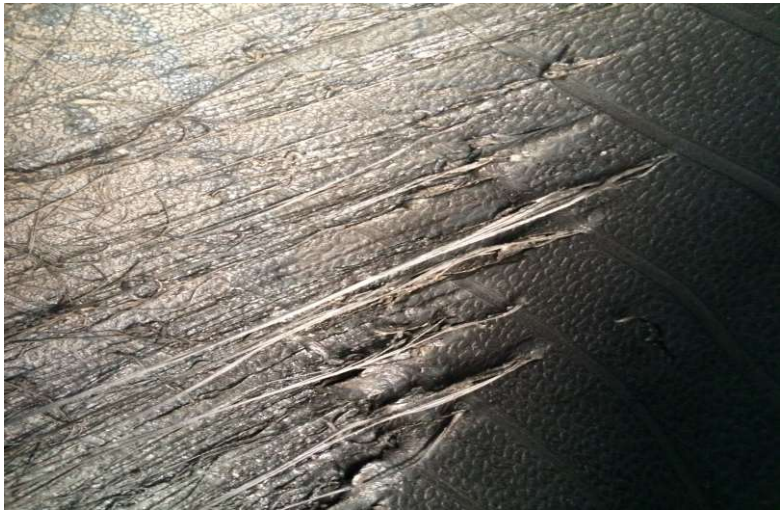
Wheel attaching parts can become unseated, can be cracked or broken. The tire can have internal damage.

This was the result of a 2700X49 being aired up so a jack could be placed under the axle.

Customer had been adding air to tire for about a month. It was low every morning.

If air pressure has to be continuously maintained, the tire must be removed, inspected and repaired or replaced.

Do not inflate a tire that has been run flat without dismounting and inspecting it internally.



Inflation

Ken-Tool®

WHEREVER TIRES ARE CHANGED™

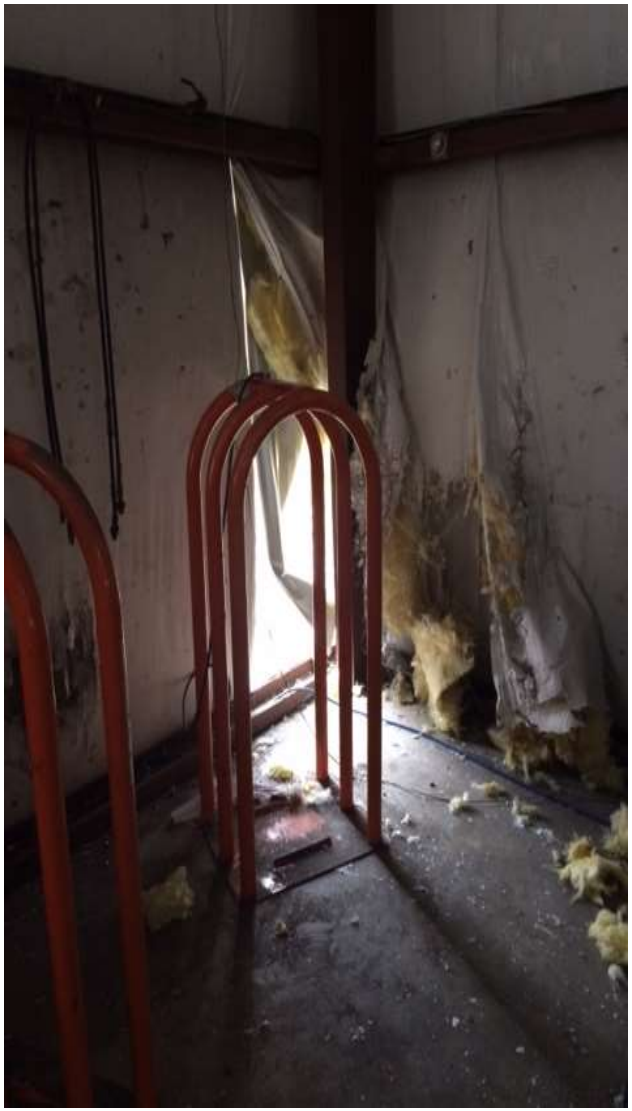
EARTHMOVER TIRE

CAGE TEST

8/23/2012

McCARTHY
TIRE & AUTOMOTIVE CENTERS

Inflation



HEAT

Heat – Never apply to wheels, axles, drums, or hubs with mounted tires

- Pyrolysis – Thermochemical reaction started by heat source, and is irreversible.
- Even with valve cores removed, pyrolysis can start, and create too much heat and pressure to escape through valve.

The following tire and rim
assembly exploded in the maintenance shop of
a mine in Northern Ontario in December of 2000.
The maintenance mechanic and a co-worker
used the torches to remove a piece of the rim base
to make room for the socket to
access the nut in order to remove
the rim from the axle of a haul truck.

The resulting explosion killed the mechanic
and seriously injured his co-worker.

The tire was
NOT DEFLATED!


58399

MSHA Regulations

- When removing tires from equipment, air must be removed from both duals.
- Cracked wheels, rings, tires, or components, may fail after wheel is removed and severe injury or death is possible

Safety Alert

Safety Alert – Tire Explosion During Equipment Fire

On **Friday, June 14, 2024**, at **1356 hours** a Truck/RV Fire response was dispatched to a sand and gravel quarry in the City of Palmdale, California. The wheel loader operator discharged a 20 lb. dry chemical fire extinguisher into the engine compartment in an attempt to extinguish the fire and then exited the vehicle. When quarry personnel arrived, they attempted to extinguish the fire using the quarry's 3000-gallon water truck. This did not extinguish the fire, so all quarry personnel were evacuated approximately 120 feet from the equipment. At approximately 1402, the right-rear tire exploded, sending debris approximately 120 feet. The debris broke the left windshield of a quarry vehicle. At this time, the quarry personnel were move 200 feet away from the equipment. The first engine arrived at 1406 hours, deployed two hand lines, and began applying water on a burning wheel loader. The left-rear wheel loader tire exploded 2 minutes and 19 seconds after the fire department arrived, which resulted in a fatality of a firefighter. This firefighter was positioned on the left side of the wheel loader near the tire. This explosion expelled debris; rubber and steel components of the sidewall up to 350 feet away from the left-rear tire. The multi-piece rim assembly remained intact.



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Safety Alert

Key Investigation Take Aways

1. Quarry personnel were notified of the equipment fire and emergency personnel were contacted.
2. Prior to the tire explosion, quarry personnel were approximately 120 feet away from the equipment while it was on fire. They moved to 200 feet away after the first tire explosion and then 350 feet away after the second tire explosion.
3. The firefighters positioned themselves near the equipment while it was on fire. The firefighter who was fatally injured, was positioned near the left-rear tire at the time of the tire explosion.

Bridgestone OTR Protocol for a Tire During Equipment Fire

1. Do not attempt to extinguish the tire fire with a hand-held extinguisher.
2. Evacuate to 1,000 feet or more away from the equipment on fire.
3. Immediately notify site emergency personnel of the fire and call 911.
4. Notify your Manager and Corporate Safety as soon as possible.
5. Stay at least 1,000 feet away from the equipment for at least 24 hours after the fire has been fully extinguished and firefighters have confirmed that the fire was fully extinguished before approaching the equipment.
6. After the fire has been extinguished, the tire, rim, and wheel that was involved in the fire should be considered hazardous.
7. When it is safe to do so, the tires should be deflated, dismounted, and disposed of. If you do not know whether it is safe to begin work on tires, contact firefighting professionals for guidance.
8. Always follow all applicable MSHA safety rules and protocols.

Reference: MSHA Safety Alert: Tire Explosion During Equipment Fire (June 14, 2024)

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Preshift Inspection

- include tires and rims as part of your preshift inspection
- check rim components for cracks
- check tires for cuts into cords and separation
- replace rim parts which are:
  * cracked
  * badly worn
  * damaged
  * severely rusted

Reason:

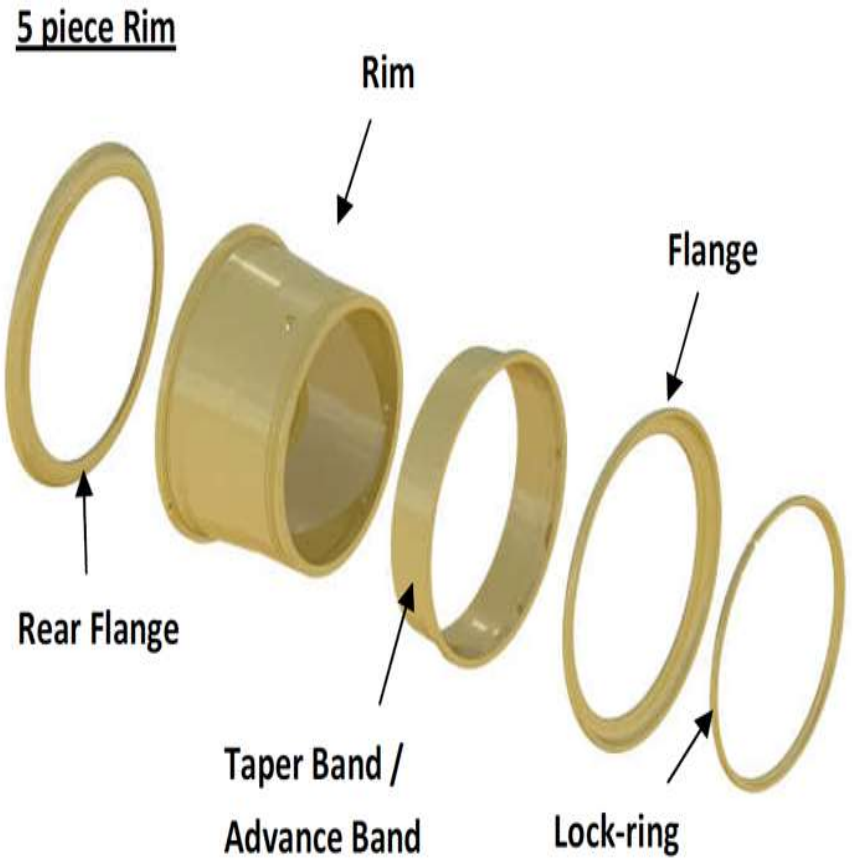
- parts that are cracked, damaged or excessively rusted are weakened

- bent or repaired parts may not seat properly on the rim base

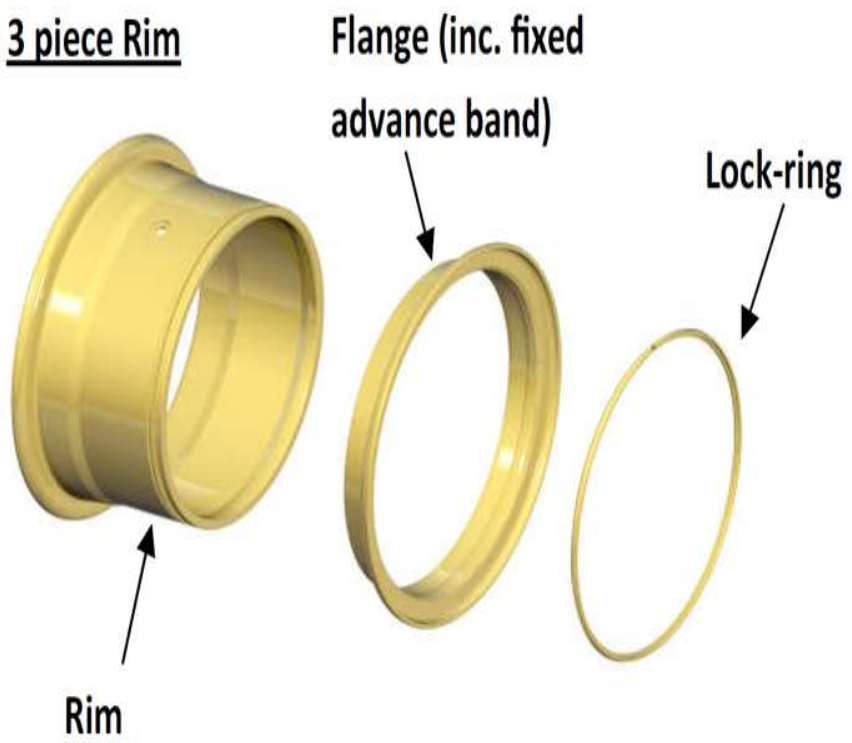
- **<u>Safety Equipment</u>**

Wheel Types

5 Piece



3 Piece



WORN WHEEL COMPONENTS


16/06/2014


RTHY TIRE S


BRIDGESTONE

Cracked Flanges

Cracked Flanges

Bent Flange

Burr on flange damaging sidewall

Loose Lug Nuts

Flange Lock

Rock ejectors

- Rock ejectors wear over time and become very sharp. As they bounce off the sidewall of the tires, they will cut into sidewalls creating damage. Rock ejectors need to be inspected quarterly.

Rock Ejectors

Rock Ejectors

Tire Damage

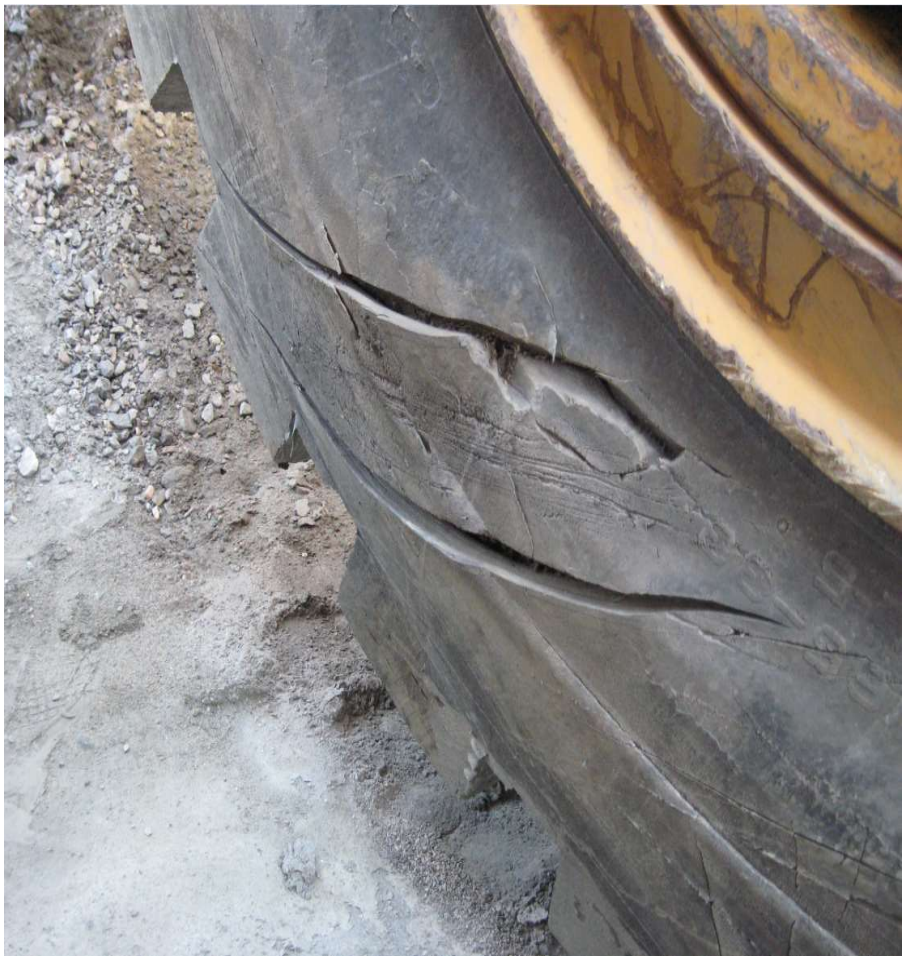
- Any cuts, bubbles, separations, or gouges, should be looked at by tire representative. Injuries will continue to grow lessening the strength and capability of the tire.
- Tires contain an extreme amount of energy and explosive force. Severe bodily harm, or fatal injuries may result from explosion.
- 11R22.5 truck tire has enough explosive force to throw 16 pound bowling ball over Empire State Building. Large loader tire has enough force to throw 200 pound man same distance.

When should a tire be removed?

Sidewall

Sidewall

Sidewall



Sidewall

Separation on Sidewalls

Outside of tire

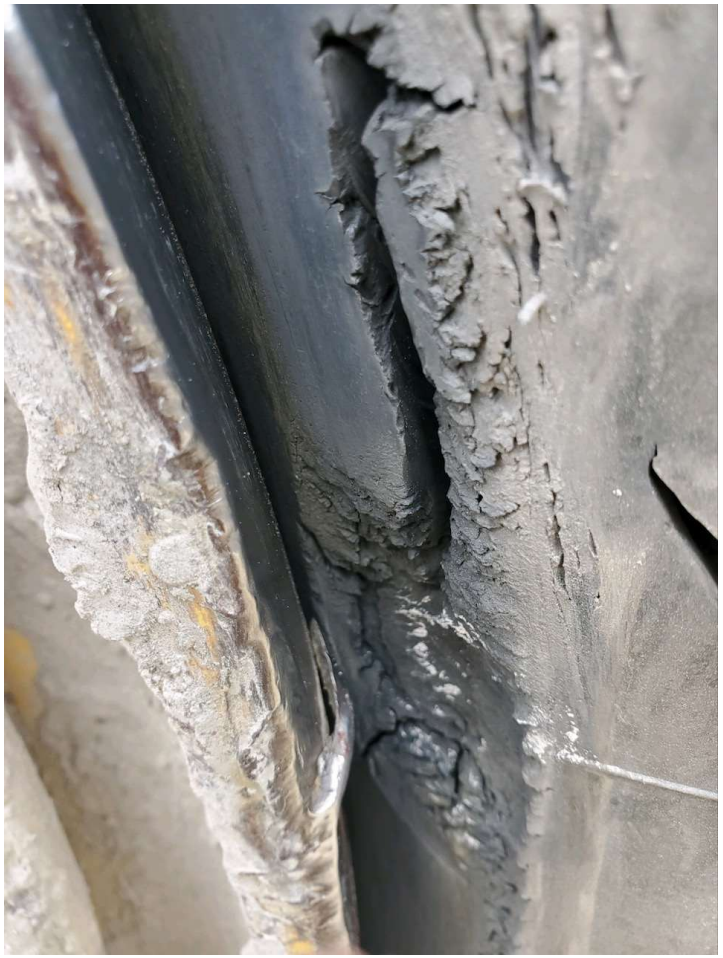
Inside of tire

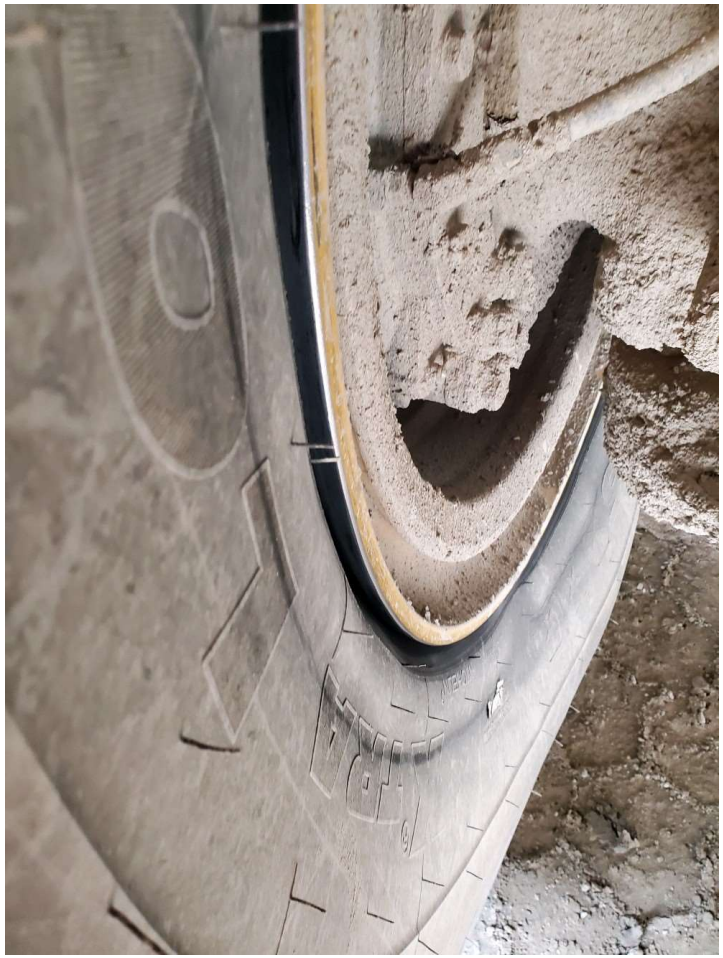

Caution


CATERPILLAR
G-1
12G

Tread

Bead





Questions?????

Thank you!!