

# SHOP MANUAL



## **GUIDANCE FOR REUSABLE PARTS**

# **OFF-THE-ROAD-TIRES**



GUIDANCE FOR REUSABLE PARTS  
**KOMATSU**

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# INTRODUCTION

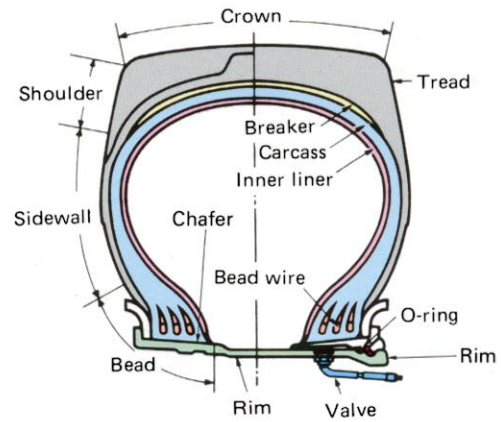
This Guide for Reusable Parts describes the causes of tire damage on construction equipment and provides photographs to help judge whether damaged tires can be reused.

In recent years there has been a trend for construction equipment to get larger, so when the tires become damaged, the machine's availability will decline and there will be a greater possibility of a major accident occurring.

We at Komatsu will be extremely pleased if this Guide can be actively used by people involved in diagnosis and repair, if it can help reduce repair costs by giving appropriate technical judgements about whether the tires can be reused or must be replaced, and if appropriate measures can be taken to prevent recurrence of failures through an accurate grasp of the causes of damage.

# CAUSES OF TIRE DAMAGE AND DAILY INSPECTIONS

## Tire Nomenclature



## Causes of Tire Damage and Action to Take

Major cause Category of damage	Lack of inflation pressure (for valve)	Too much air pressure	Excessive load	Speeding	Spinning wheels, slippage	Excessive braking	Poor water drainage at jobsite	Improper or defective rim	Remedy for damaged tire
External damage to tread, piercing		○	○	○	○		○		Local repair, rebuild, or scrap
Missing tread rubber		○	○		○	○	○		Local repair, or rebuild
Cracked tread		○	○	○	○	○	○		Local repair, or rebuild
Premature wear of tread		○	○	○	○	○	○		Rebuild
Cracks or external damage to rubber of sidewalls	○		○				○		Local repair, rebuild, or scrap
Separation of tread and carcass	○		○	○					Scrap
Peeling between carcass	○		○	○					Scrap
(1)Destroyed bead (2)Chafer peeling	○		○	○	○	○		○	(1)Scrap (2)Repair locally scrap
Cutting of cord caused by shocks		○	○	○			○		Local repair, rebuild, or scrap
Cutting of internal cords in direction around circumference	○		○						Scrap

# Inspection of Tires

To prevent tire damage and extend tire service life, be sure to measure the inflation pressure and check for deformation of the rims and valves, wear and depth of scratches in the tread, and deformation (swelling) of the tires themselves.

## Tire Inspection List

	Check list	Remedy for abnormality
Tire tread	Noticeable one-sided wear	Change positions, inspect vehicle
	Cuts or tipping	Inspect steering function and brakes, repair tires if cut extends to the breaker
	Pierced by rocks or bolts	Remove the rock or bolts. If repair is required, remove the tire
	Swells or lumps (separation)	Replace tire, judge if repair is possible
	Part of cord exposed	
	Damage from contact with chassis	Report to person in charge of machine, and inspect machine. If tire is severely damage, repair it.
	Adherence of grease or oil	Wash off
Tire sidewall	Cuts	If cut extends to carcass, remove the tire and repair.
	Cracks	
	Adherence of grease or oil	Wash off
Double wheels	Stones stuck between wheels	Remove the stone and remove the tires if repair is necessary
	Bent rock ejector	Report to person in charge of machine and replace or repair
Rim, wheel	Damage, bends, deformation	Replace with new part
Valve, stem	Missing valve cap	Install new cap
	Bend in stem or extension	Check for air leakage and replace if there is leakage.
Inflation pressure	Improper inflation pressure	Adjust the inflation pressure. If you cannot stop the air leakage, find the cause and take appropriate countermeasure.

# BASIC JUDGEMENT CRITERIA

## Criteria for Reuse

Tire with the damage shown below can not be reused.

1. Separation



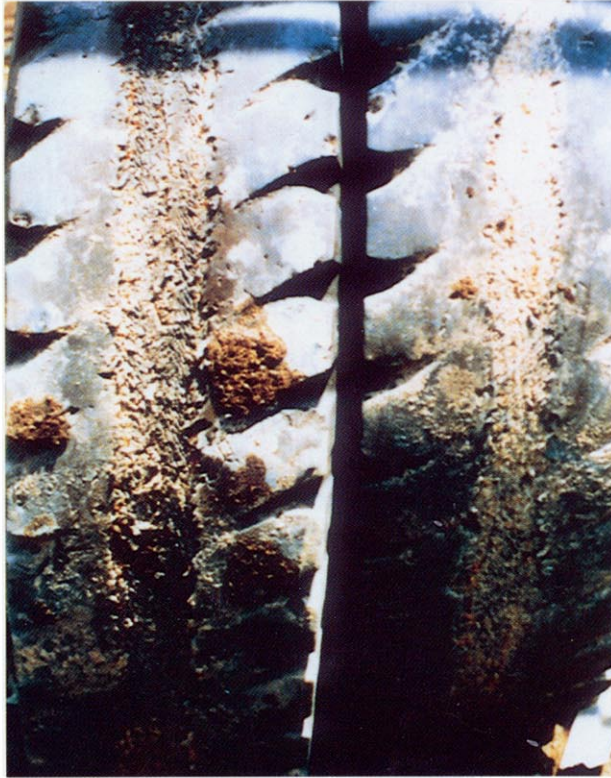
2. Piercing



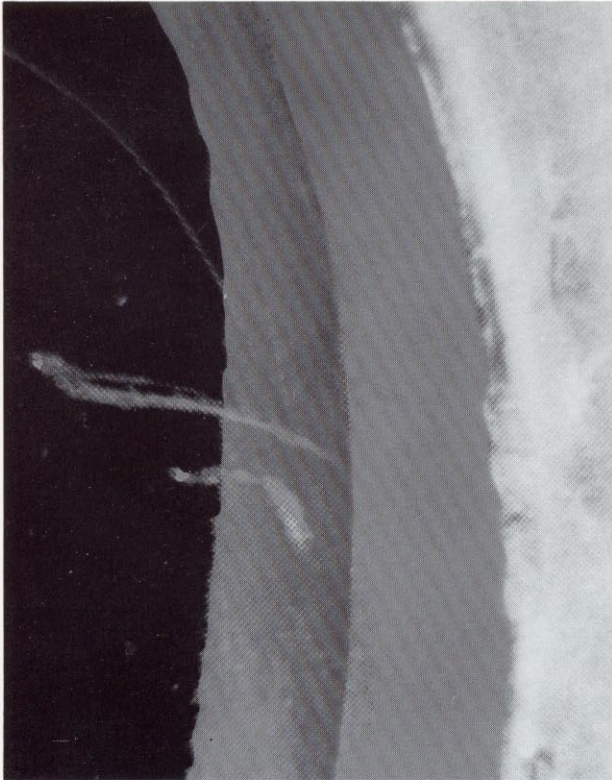
3. Burst



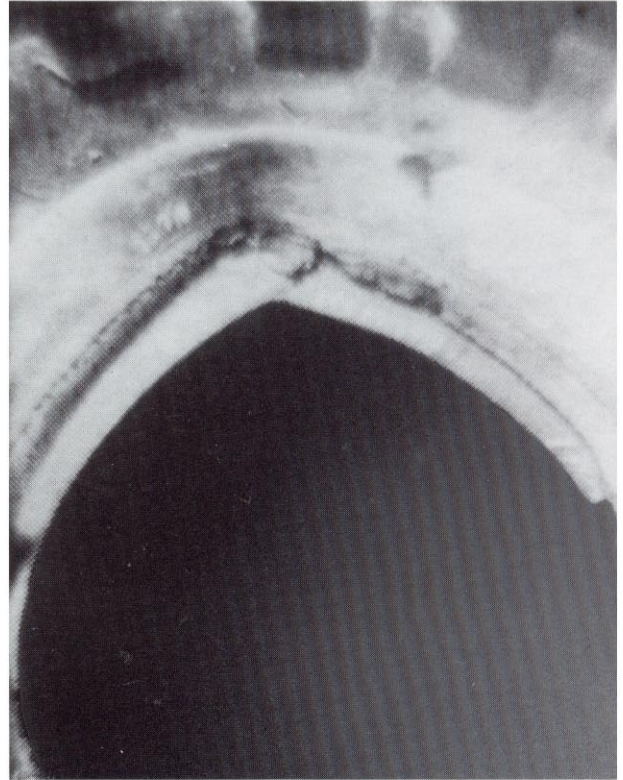
4. Exposed carcass



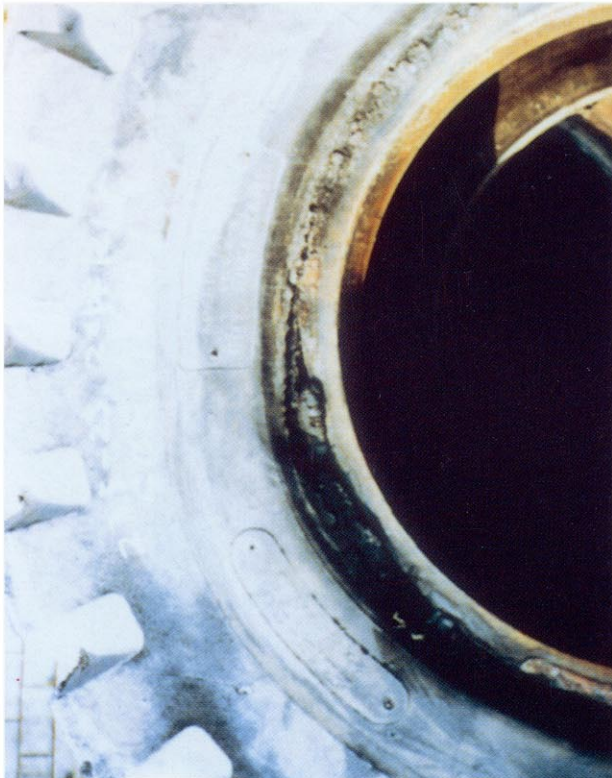
**5. Exposed bead wire**



**6. Bending or deformation of bead wire**



**7. Damage near bead rim line**



**8. Cord drag on inner face of tire**



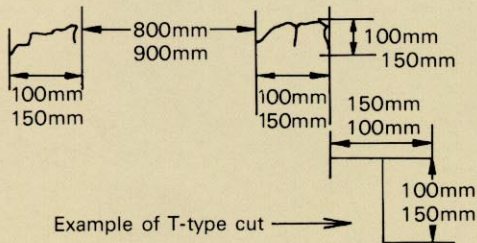
If the types of damage shown below are within the standard limits, the tire can be repaired.

**Piercing**

Tire Size	18.00-25 max.	21.00-35 min.
Length	100 mm max.	150 mm max.
Interval	800 mm min.	900 mm min.
Number	5 max.	4 max.

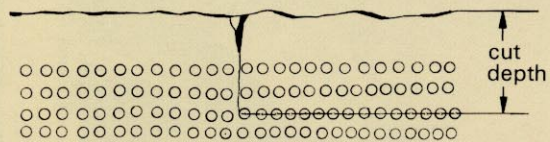
- Scratches on the tread and shoulder and damage on the inner face of the liner must be within standard.

**Interval between scratches**



- The following depths of cuts in the tire cord will lead to piercing.

Tire Size	18.00-25 max.	21.00-35 min.
Cut Depth	10 mm min.	15 mm min.



**Judgement Categories**

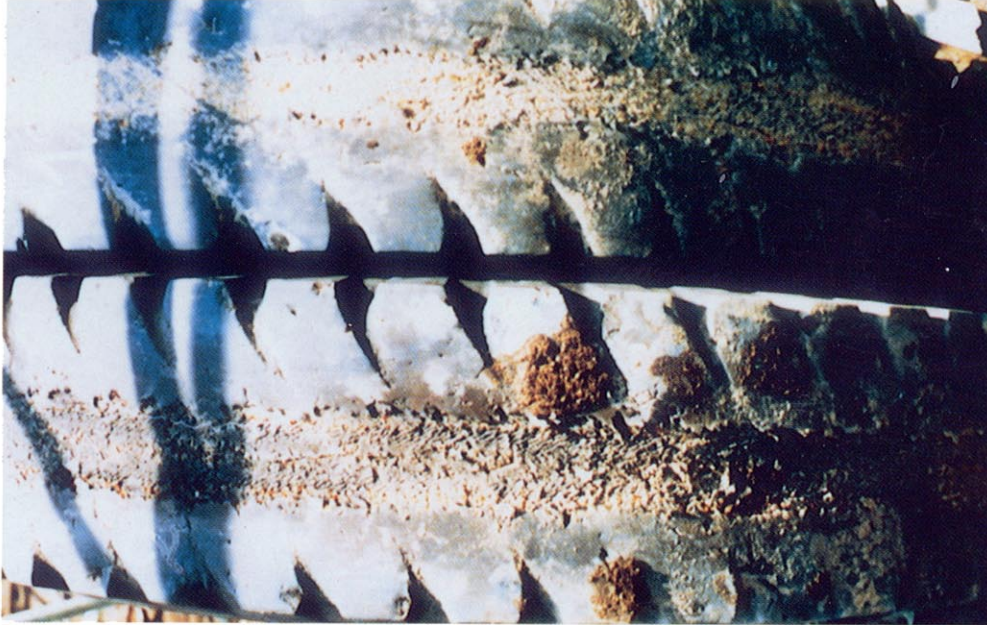
Judgement Category	Judgement Standard	Remedy
<b>A</b>	No problem with the functions of the tire	Can be reused as is
<b>B</b>	The functions of the tire can be recovered through repair	Can be reused after repair
<b>C</b>	Heavy or fatal damage or tire life near its end; major damage likely to occur even if repair is made.	Can not be reused



# EXAMPLES OF DAMAGE

## Tread

1



**Category: C**

**Condition**

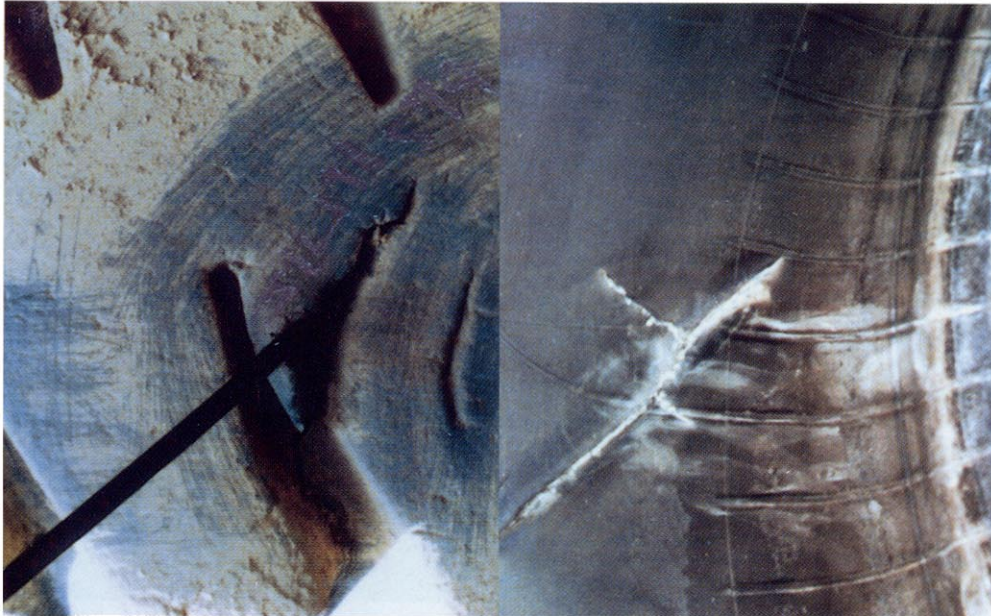
- Wear in central portion of tread, breaker exposed

**Cause**

- Excessive inflation pressure

Condition of inner liner face

2



**Category: B or C**

**Condition**

- Piercing cut

**Cause**

- Cut by rock or other object

3

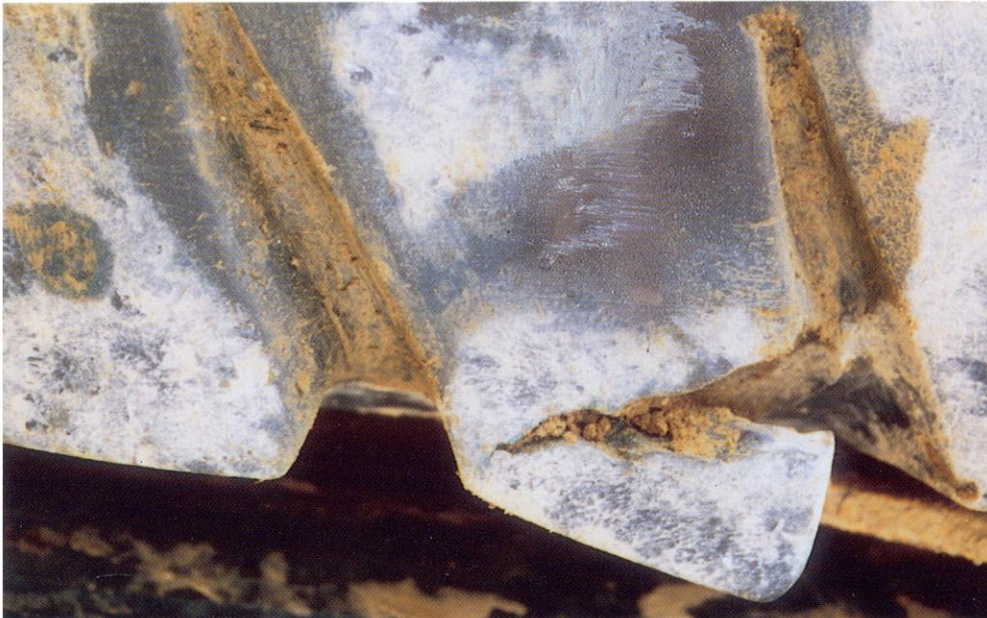


**Category: C**

**Condition**

- Exposed breaker because of local wear

4



**Category: A**

**Condition**

- Breakage caused by tread cut

5



**Category: C**

**Condition**

- Burst (cut burst)

**Cause**

- Cut by rock or other object

## Sidewall

6



**Category: C**

**Condition**

- Burst

**Cause**

- Collision with rock or other object, excessive inflation pressure, fatigue of tire inner face because of excessive load

7



**Category: C**

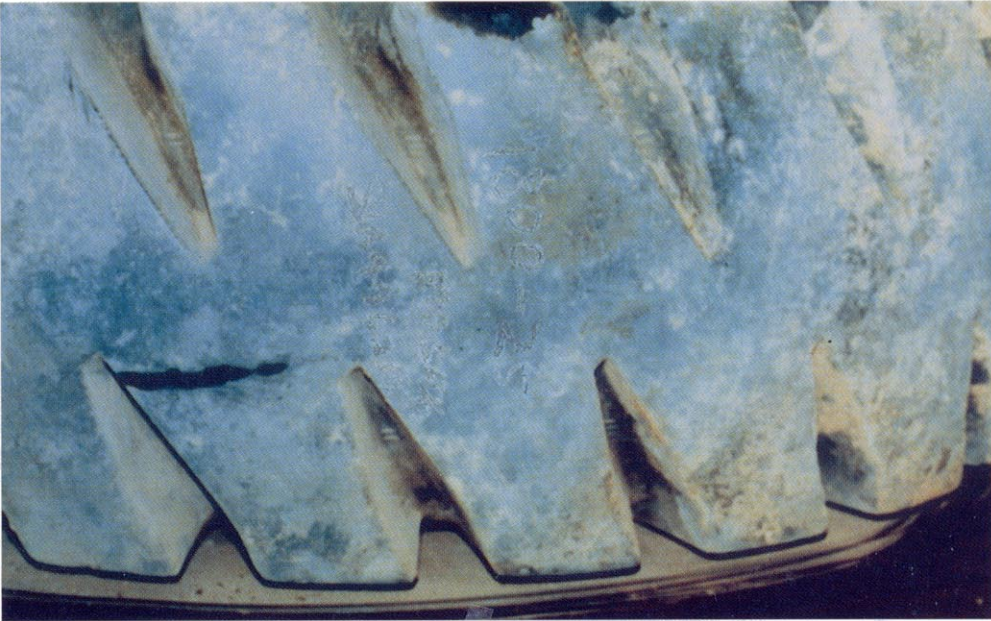
**Condition**

- Piercing cut

**Cause**

- Rocks or other material falling from work equipment, contact with protruding objects rocks, contact with part of machine body, catching of rocks between tires

8



**Category: C**

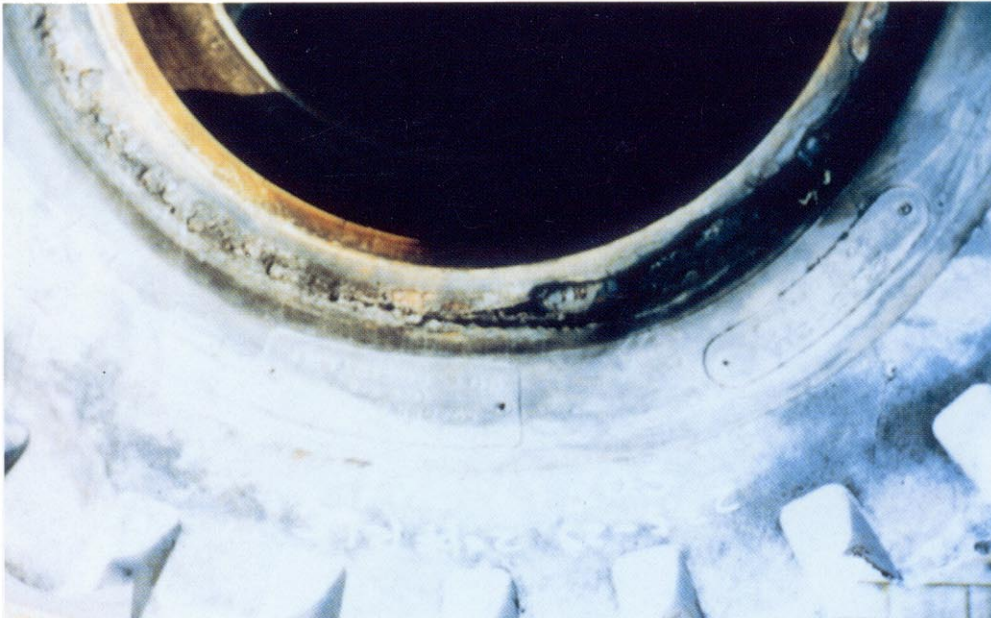
**Condition**

- Separation

**Cause**

- Low inflation pressure, excessive load, high-speed travel (heat generation inside tire), use of inappropriate tires.

9



**Category: C**

**Condition**

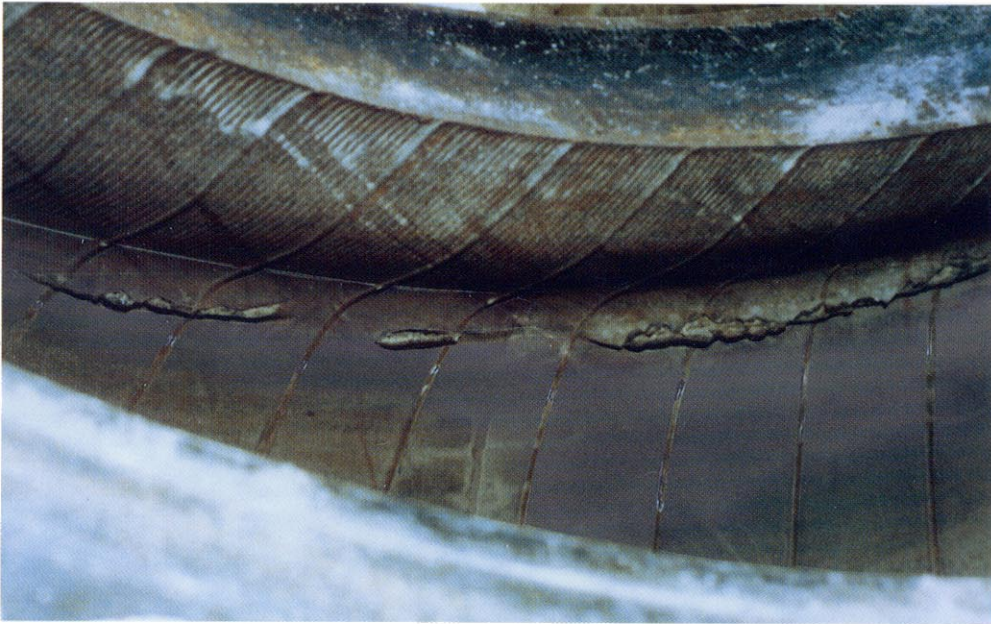
- damage near rim line

**Cause**

- Low inflation pressure, excessive load, sudden braking, sudden acceleration

## Inner Liner

10



**Category: C**

**Condition**

- Dragging of cord

**Cause**

- Low inflation pressure, excessive load

