

National Transportation Safety Board Tire Safety Symposium Washington D.C.

12/9/2014



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Today's Topics

Tire Construction – The Laminate Pieces



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Tire Construction – The laminate pieces

Overview of Common Failure Modes



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Tire Construction – The laminate pieces

Overview of Common Failure Modes

What can Vehicle Owners do?

Today's Topics

Tire Construction – The laminate pieces

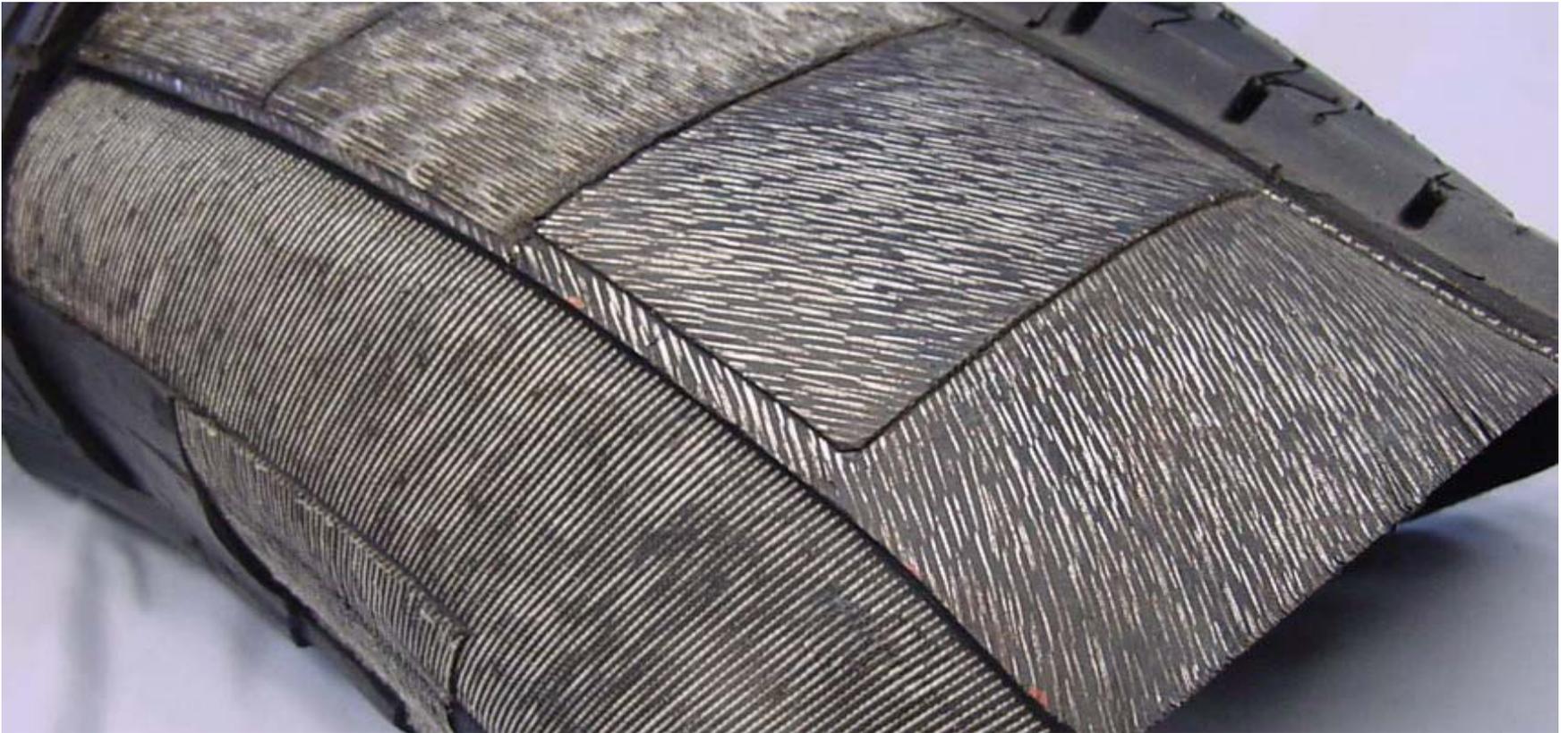
Overview of Common Failure Modes

What can everyone do?

Appearances are Not Deceiving

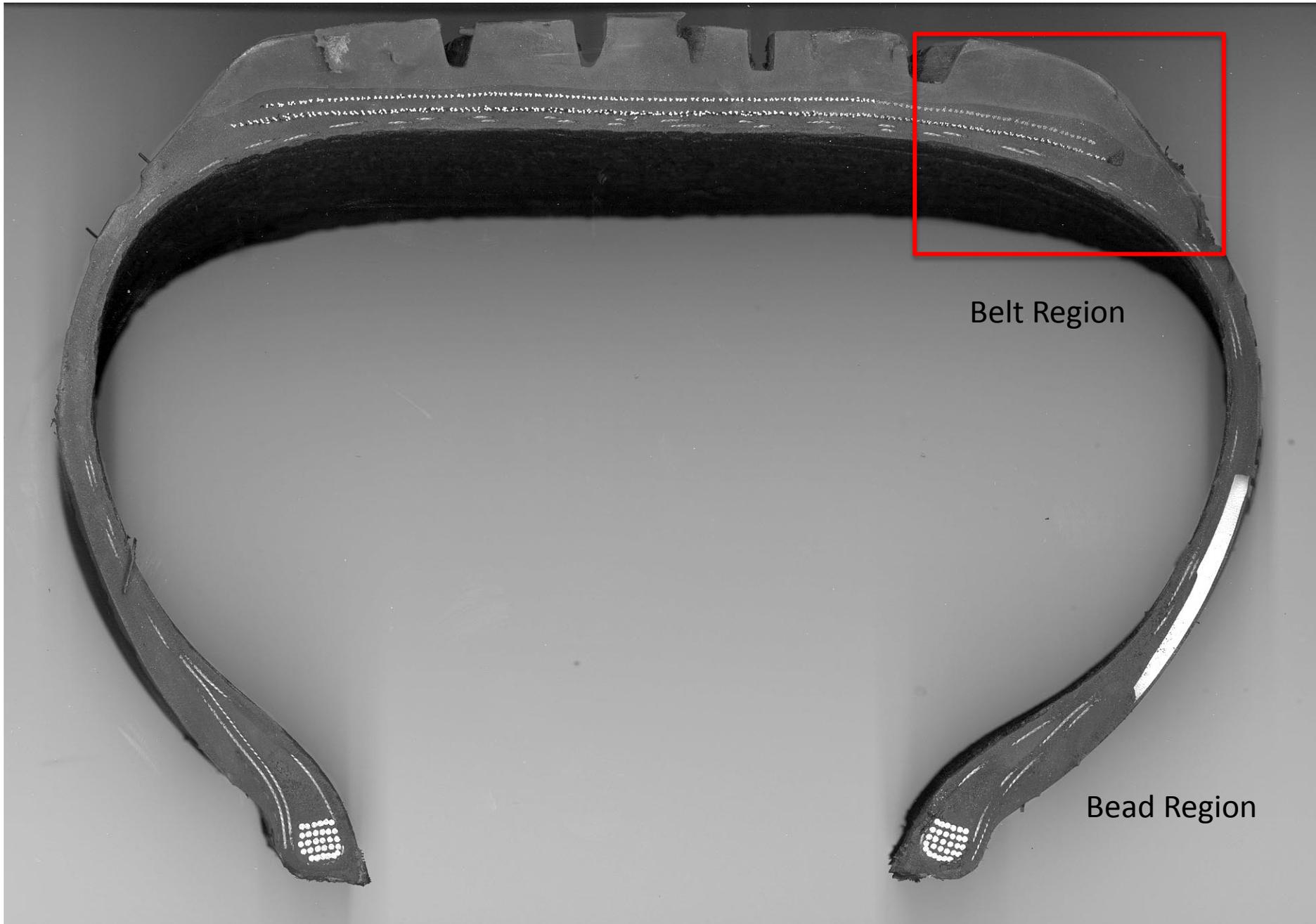


Step-down Passenger Tire



Step-down Passenger Tire

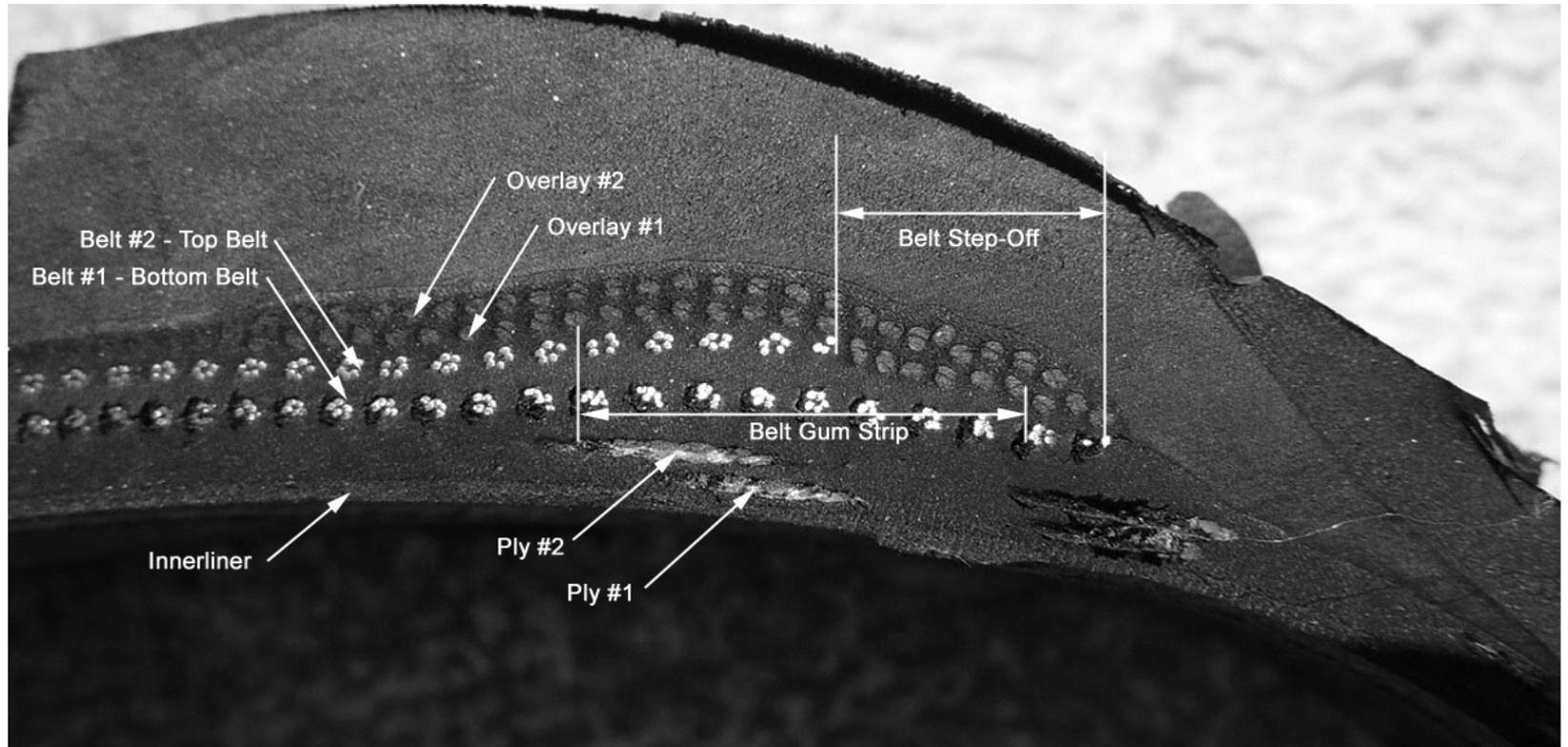




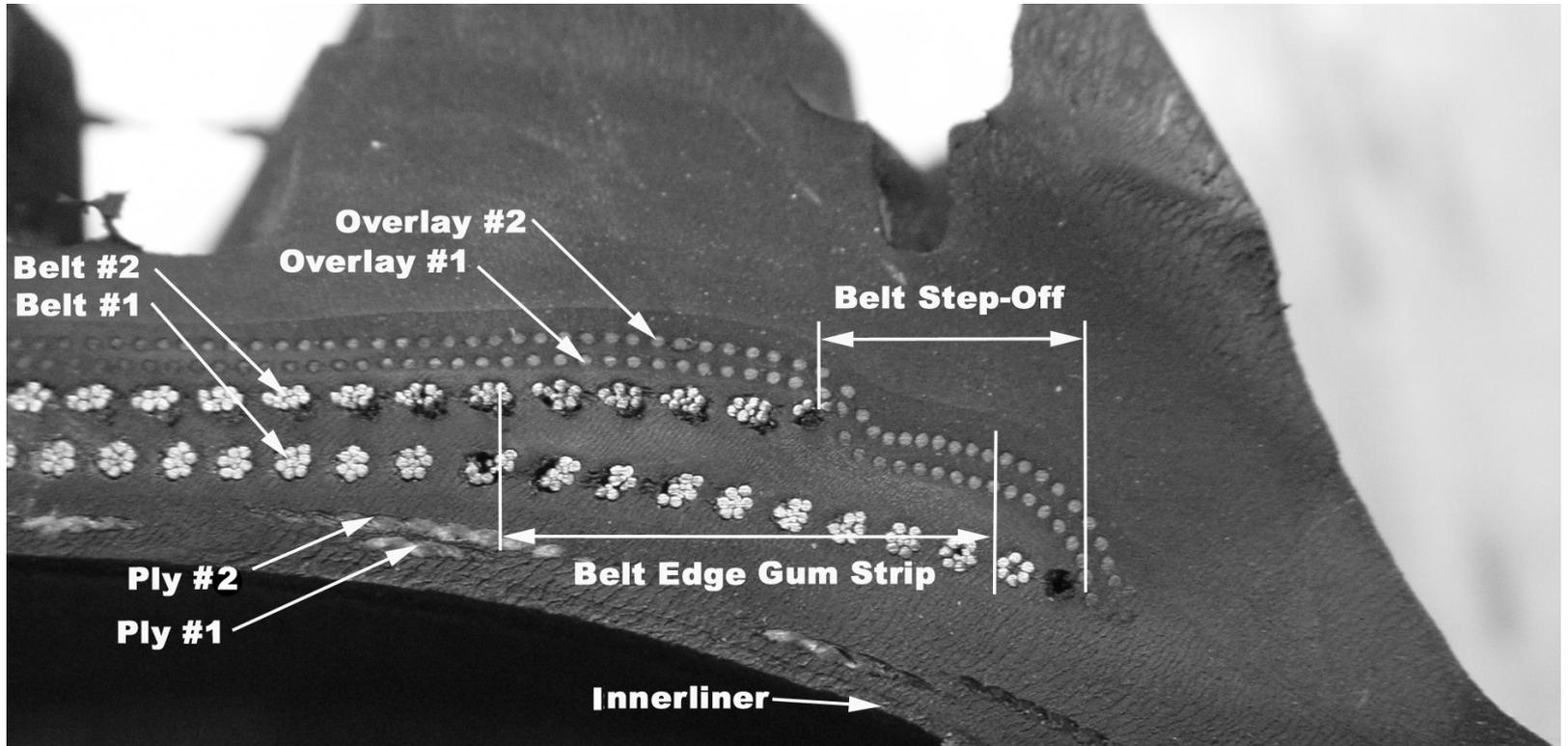
Belt Region

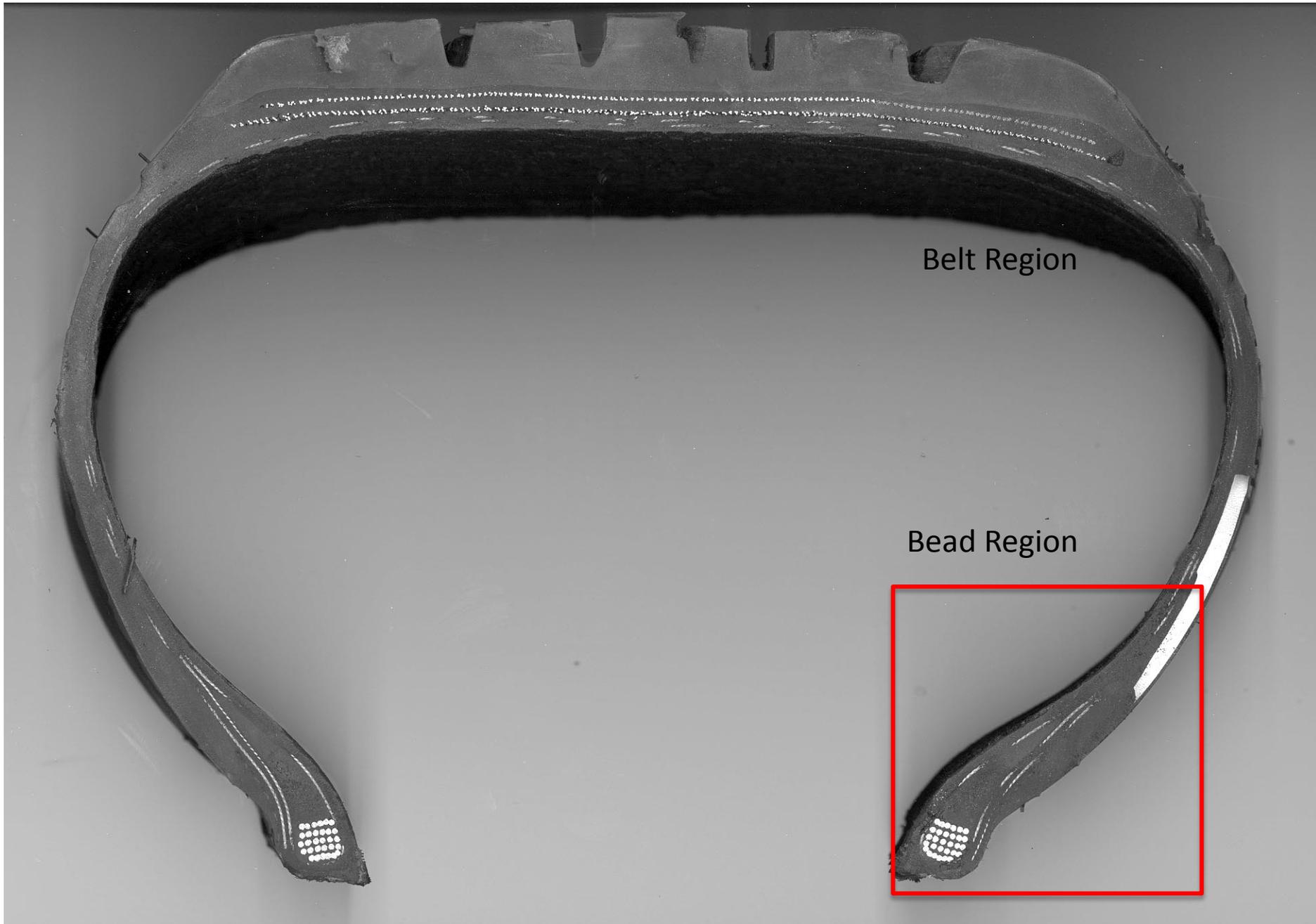
Bead Region

- Belt Structure – Passenger



- Belt Structure – Light Truck



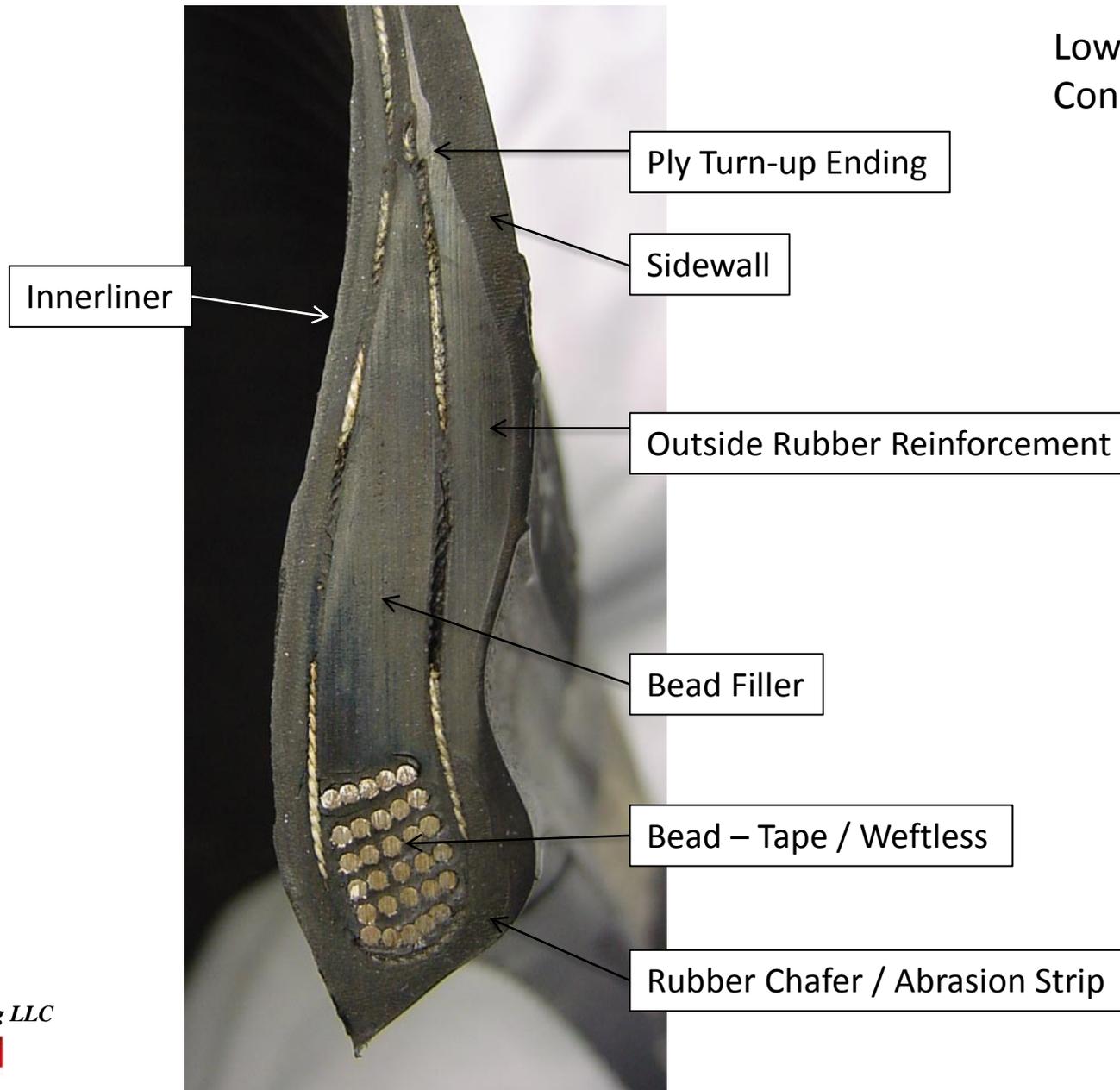


Belt Region

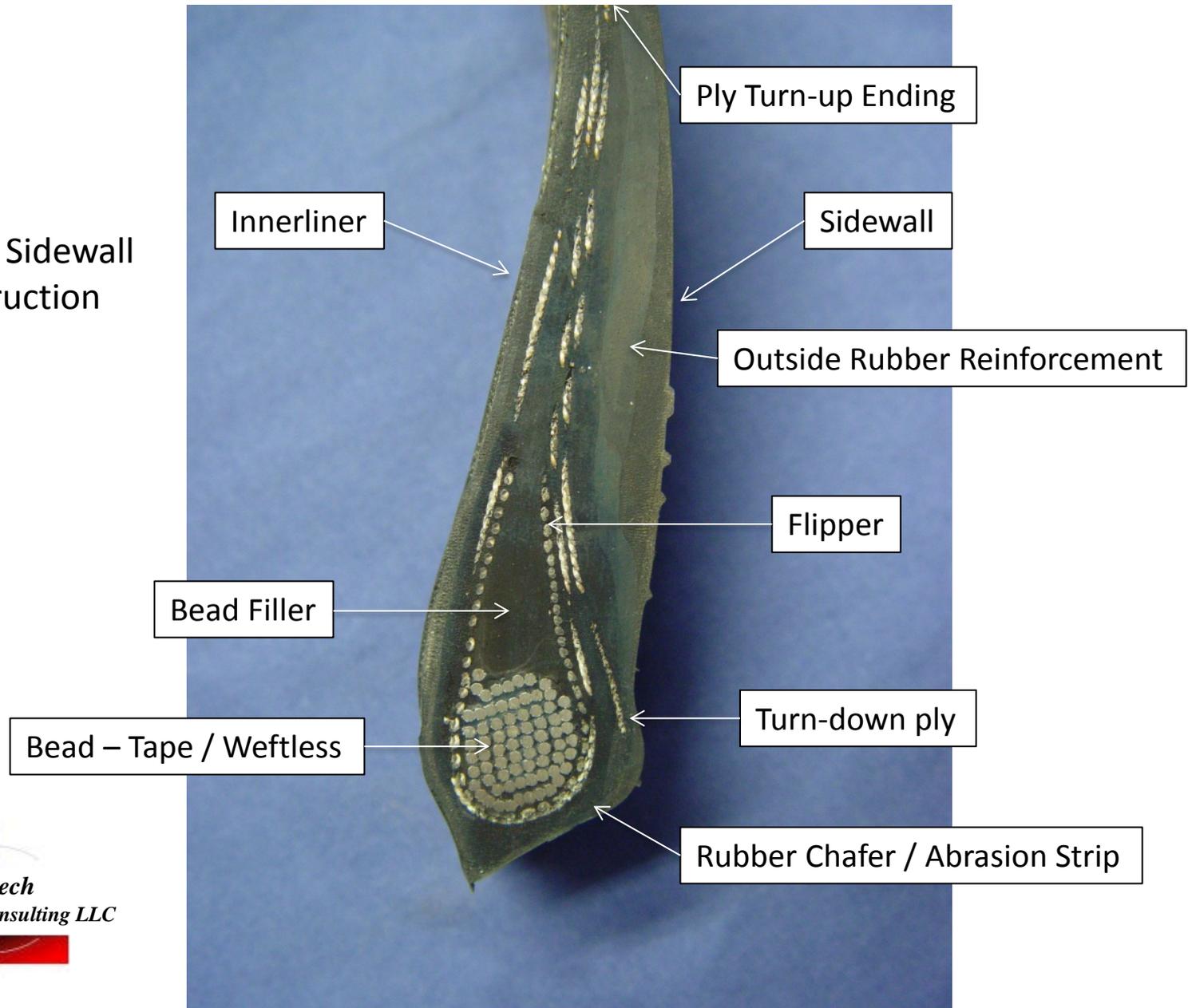
Bead Region



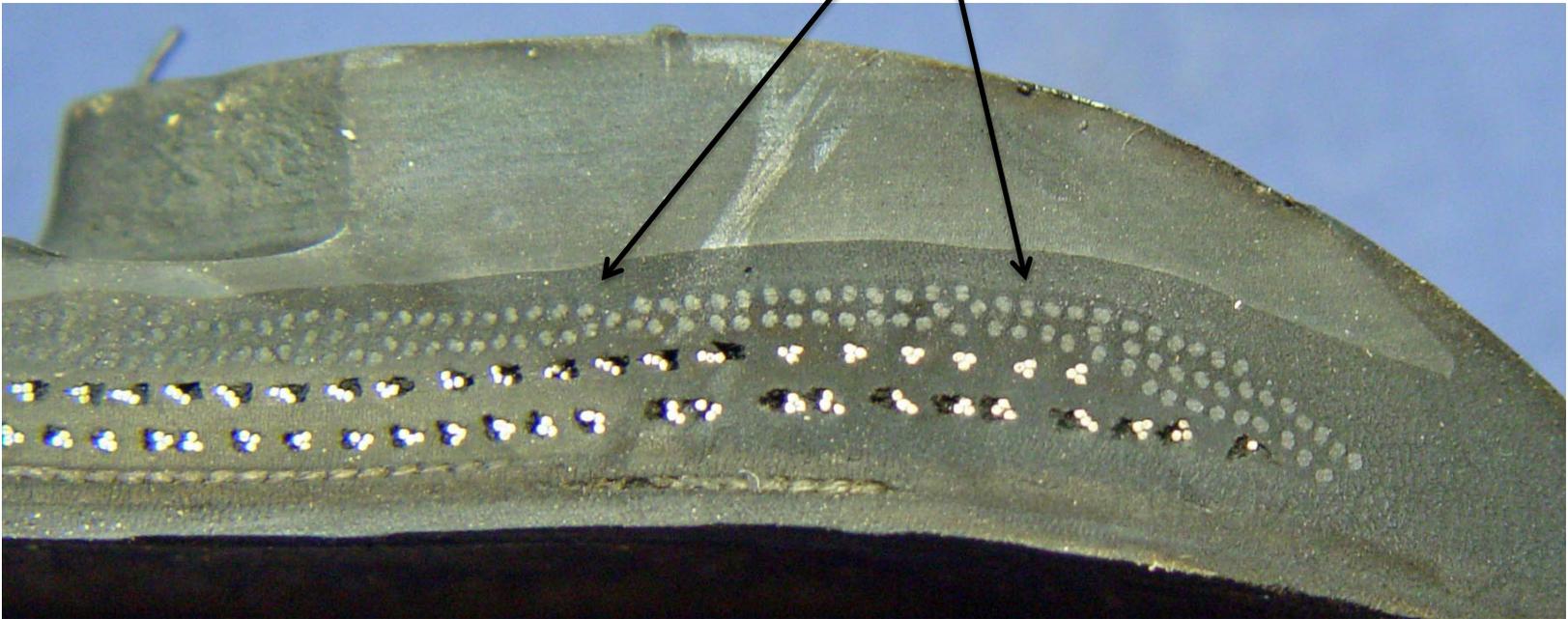
Lower Sidewall Construction



Lower Sidewall Construction



Nylon Overlay Strips



Step-down Passenger Tire Overlay Strips and Belts



Most Common Failure Modes

- Overdeflection
 - Underinflation / Overload
- Impact Related
 - Immediate or after Time/Miles
- ICP (Intra-Carcass Pressurization)
 - Breach of the Innerliner
- Puncture / Poor Repair
 - Plugs with no Patches, Patches with no Plugs or Incorrect Location
- Environmental
 - Don't abuse the tire
- Physiological Damage
 - Loss of Elasticity in the Tire



Belt to Belt Separation

Double Parabola followed by
tread/belt detachment





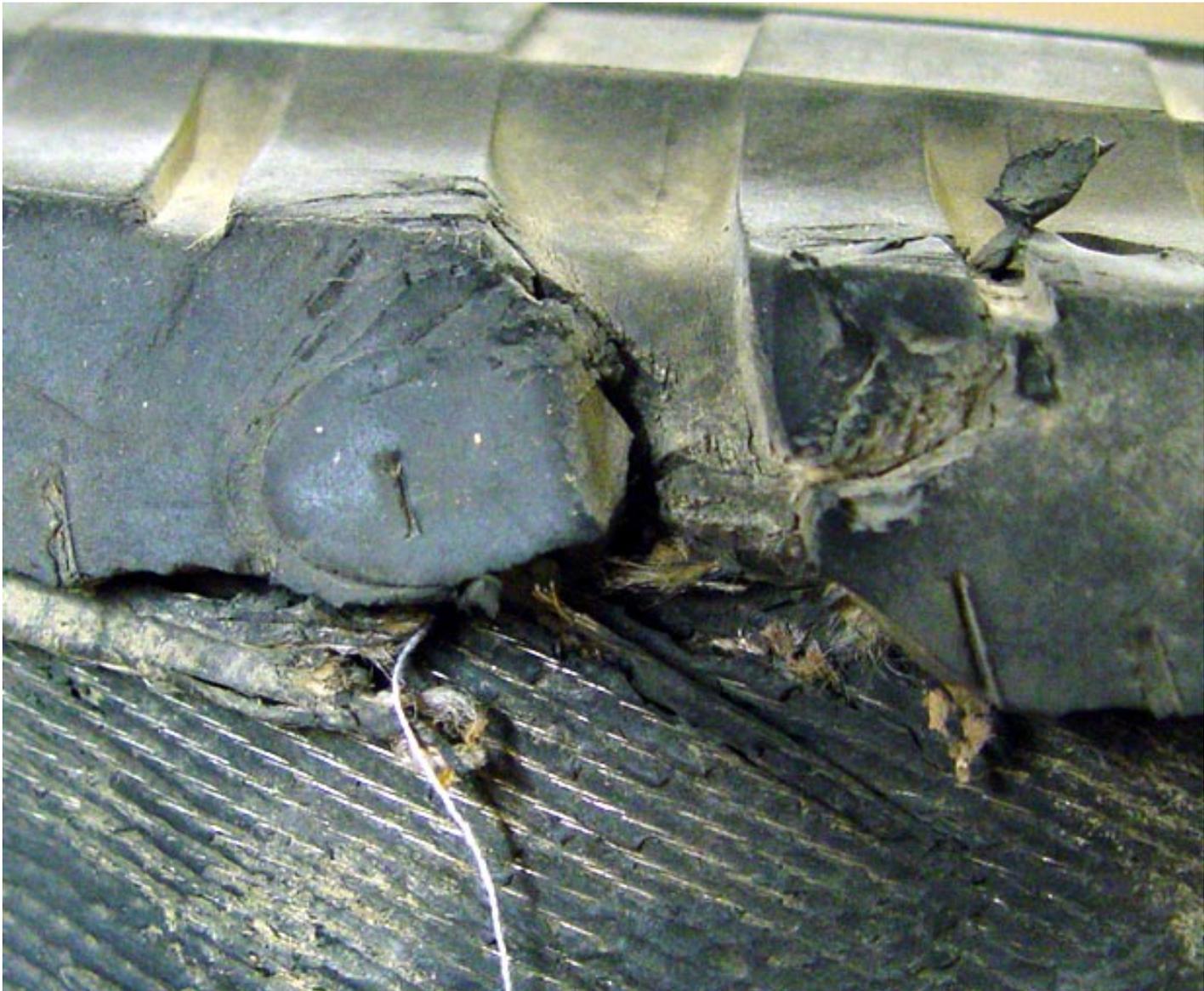
Overdeflection noted at the Compression Groove

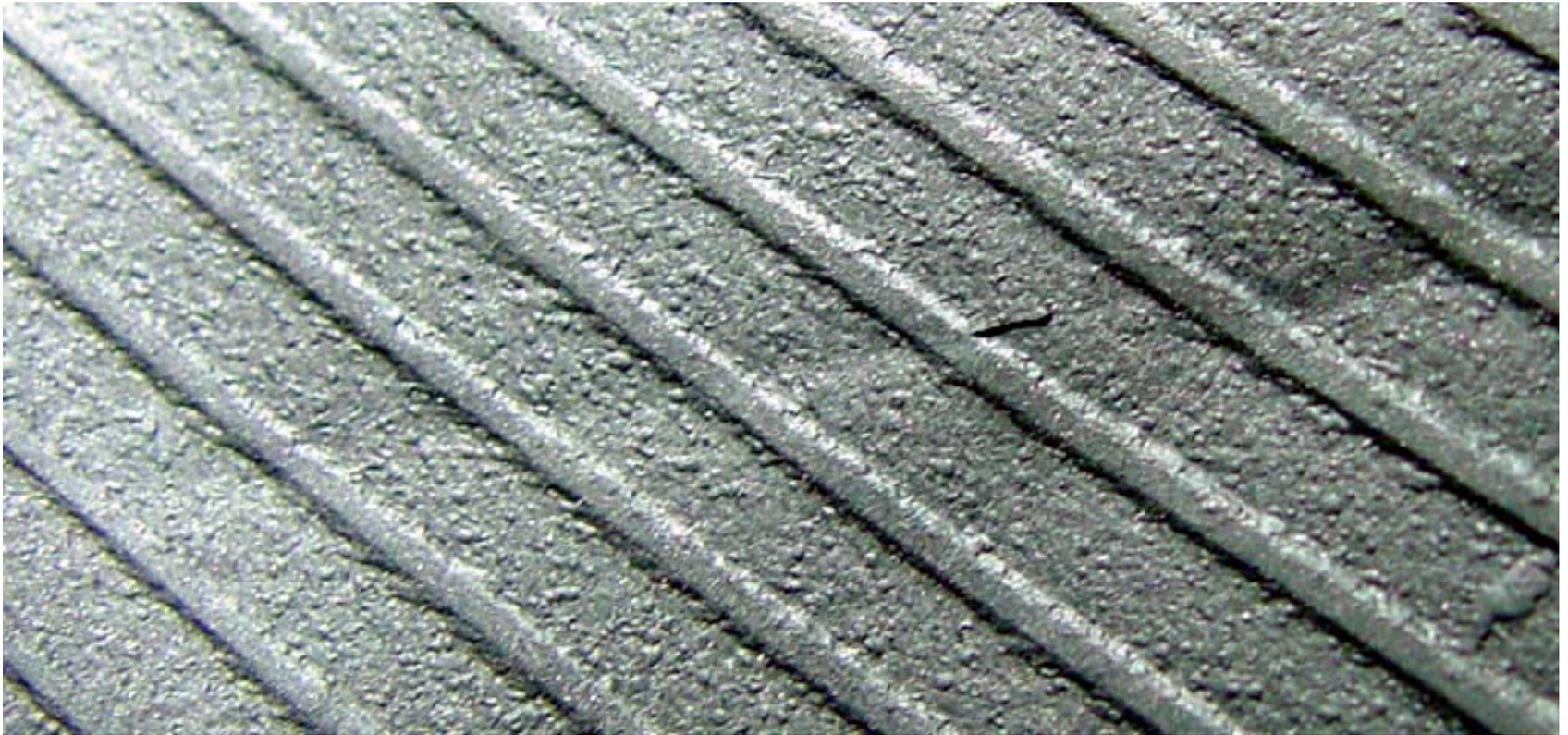
Severe case of Overdeflection – Run Flat













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What can vehicle owners do?

Keep Air in the Tire – **Keep Air in the Tire** – Keep Air in
the Tire – **Keep Air in the Tire** – **Keep Air in the Tire**

What can vehicle owners do?

Vehicle Placard – Owner's Manual - **NOT THE SIDEWALL**

What can vehicle owners do?

Walk around the vehicle when you fill up with gas

.....AND LOOK AT THE TIRES!

What can vehicle owners do?

Whenever you approach your vehicle

..... **LOOK AT THE DRIVER'S SIDE TIRES!**

What can vehicle owners do?

Listen and feel what the vehicle is telling you

Take the car to a professional tire shop when you see something that doesn't appear right

Follow general good maintenance practices (inflation/rotation/alignments)

What can vehicle owners do?

Replace the tires at 4/32"

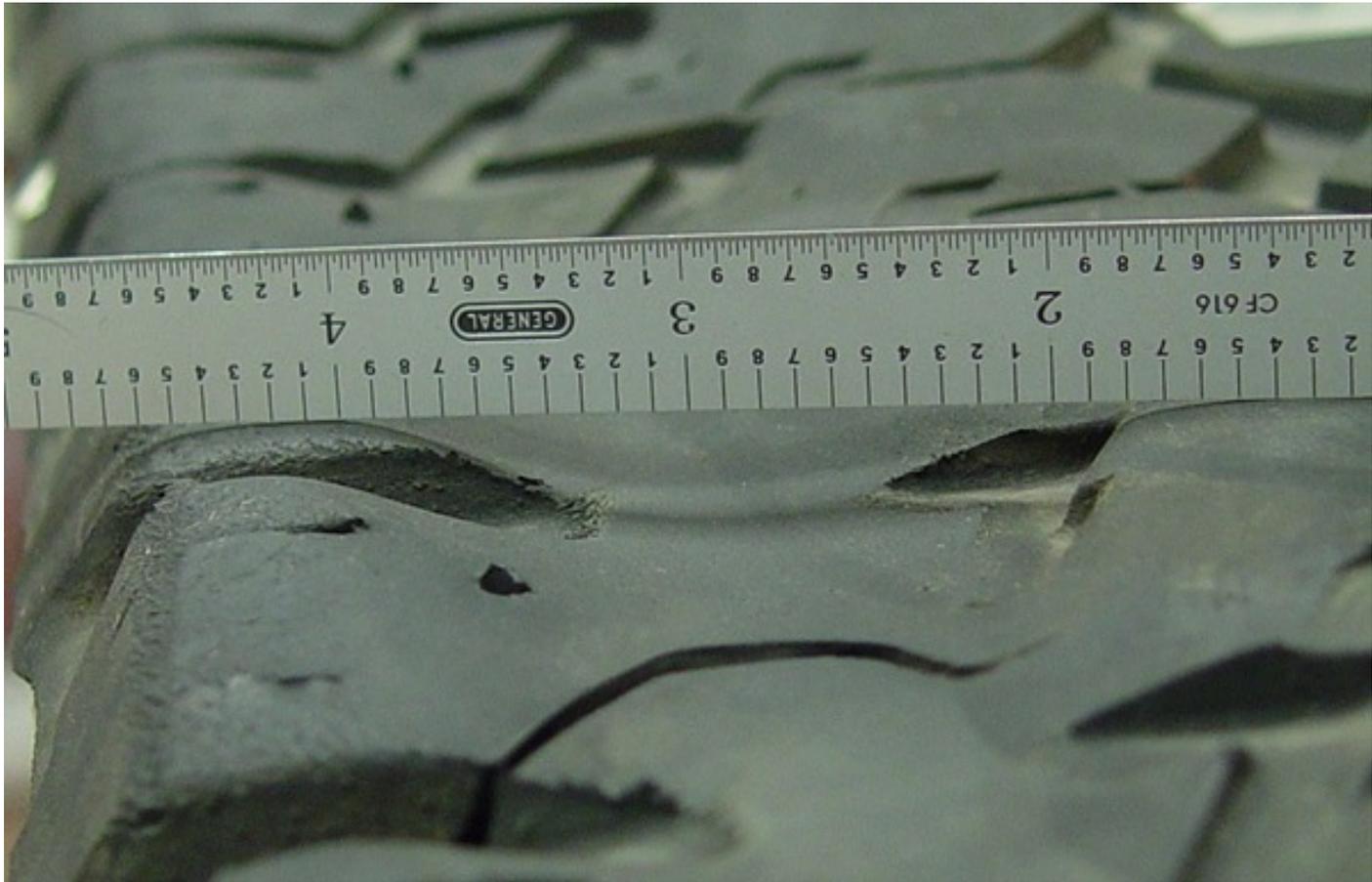
What can Vehicle Owners Look for?

- Uneven, treadwear inboard (side facing the axle) & outboard (side facing you)
- Uneven treadwear within the tread
- Fast shoulder wear
- Localized fast wear
- Bulges or bumps

Localized Fast Wear



Localized Fast Wear



One shoulder
does not appear
like the other



Camber



One shoulder worn
much more than
the other



Cuts, Snags, Gouges – Physical Damage



Ozone Deterioration (Weather Checking)



Tread Cracking, Tearing, Cutting / Chipping



Bulges



In Summary

- There is a lot that the tire owner can do to maintain their tires and reduce the risk of tire failure
- Maintenance requires some vigilance on the owner's part – The tire is the only part of the car/truck in contact with the earth
- The tire is a highly engineered laminate structure
- **Keep Air in the Tire – Keep Air in the Tire**

**Thank you NTSB for the invitation
and
privilege to present today**

