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TIA
TIRE INDUSTRY ASSOCIATION
www.TireIndustry.org

Tire Retread & Repair Information Bureau
1013 Birch Street
Falls Church, Virginia 22046
703-533-7677 Fax: 703-533-7678

Tire Industry Association
1532 Pointer Ridge Place, Suite G
Bowie, Maryland20716-1883
301.430.7280 Fax: 301.430.7283

Remanufactured Goods: An Overview of the U.S. and Global Industries, Markets and Trade

RETREAD TIRES – THE FIRST INDUSTRIAL RECYCLING PROGRAM

The United States retread industry is one of the most successful recycling programs in operation today. The savings generated in the transportation industry using retreaded tires benefits everyone with lower costs for nearly every consumable item used. The retreading of tires provides a savings not only on food, fuel and other goods, but the cost of our homes, roads and all infrastructures in this country.

Tire retreading began in 1904 with only limited enhancements until the 1940's. The shortage of tires during World War II and the development of synthetic rubber that was first used in 1937 was a major factor in the growth of retreading. Retreading of tires for the U.S. war effort was of strategic importance with the military operating its own retread plants in Europe, Japan, the continental United States and eventually in South Vietnam. In fact portable plants were created that were moved close to the front lines in WWII. The production and use of retreaded tires in the military continued through all conflicts including the most current ones.

One of the most successful retread usages today is in airline industry for both military and commercial aircraft. Today, commercial aviation relies heavily on the use of retreaded tires with 80% of all aircraft take-offs and landings taking place with retreaded tires.

The major shortages of new Off-The-Road (OTR) tires in the past ten years would have been disastrous for the mining and construction industry, except for the Off-The-Road

retread industry, which was able to gear-up and make tremendous increases in OTR retread production.

The same has been true of truck retreaders who produce nearly one-half of the replacement tires used in the trucking industry. Not only did their production capabilities help the industry through tire shortages, retreaded tires also reduced the operating costs across almost all categories of transportation. This past year has seen approximately a million unit increase in retread truck tires; driven not just by a lack of supply of new tires, but also cost. On average a retread tire costs less than two-thirds of a new tire.

School districts are able to deal with decreasing budgets by using retreaded tires and the U.S. Postal service uses retreaded tires on nearly all their small delivery vehicles, as well as, their largest transports.

Retreaded tires are sold in the same manner as new tires. Some retreaders sell their products through their own commercial truck tire centers, while others sell to any retail or wholesale dealers. Others sell direct to trucking fleets or small trucking companies and independent operators. Retreaded tires are serviced and warranted in essentially the same fashion as new tires. In some cases retread truck tires are priced by the mile while OTR tires may be priced by the hours of service. Aircraft retreads, may in some cases, be priced by the number of landings.

Another important part of tire retreading is repairing. Thirty-nine per cent of truck tires that come in for retreading require repairs. Many truck and OTR tires may require as many as five repairs during the life cycle of the original tread and future retreads. When a tire is no longer acceptable for retreading it can be recycled into a large number of reusable products. Some of those products will be used to produce new and retreaded tires.

In the late 1950's there were twelve thousand retread plants in the U.S. with the majority being passenger tire plants. While the number of plants has dropped drastically the amount of rubber used remains nearly the same.

Today, retread plants have become much larger with investments running into the millions of dollars. In 2011 the estimated number of retread plants in the United States stood at nearly 700 with 18 plants producing large OTR retreads; five producing aircraft retread tires and four producing passenger car retread tires. Six-hundred and eighty plants produce truck retreads and many plants produce several different types of retreads. A total of 15.5 million truck retreads were produced in 2011, with a market value of $3.1 billion, including casings. An estimated 1.5 million truck casings were imported into the U.S. for retreading in 2011.

There has been a continual downward trend in the use, both domestically and internationally, of passenger automobile retread tires. This is due to the confluence of several factors; first, the capital expense and technical challenges of passenger vehicle radial tire retreading for a retreading facility has not been viewed as providing a strong enough return-on-investment, second, the fact that tire manufacturers do not put an effort into designing passenger tires to be retreaded. Finally, the low cost of imported bias-ply and radial tires eroded much of the market for the domestic retread passenger tires.

In addition to the cost savings delivered by retreaded tires, there are massive environmental benefits provided by the tire retread industry. First, retreading conserves oil. The synthetic rubber components in a new medium truck tire contain approximately 22 gallons of oil, but it takes only seven gallons to retread the same tire. In 2011, the retreading industry in truck tires alone saved over 232 million gallons of oil. There are also significant savings in other raw materials that go into the production process, including steel, natural rubber and carbon black. Lastly, through retreading, millions of tires that would end up in tire piles or in landfills continue their useful lives for thousands of more miles.

In fact, several Presidential Executive Orders support the use of retreaded tires, including Executive Order 13149 (Greening the Government Through Federal Fleet and Transportation Efficiency) which states, in part: "agencies shall acquire and use United States EPA-designated Comprehensive Procurement Guideline items, including but not limited to retread tires, when such products are reasonably available and meet applicable performance standards."

It is also important to discuss one of the inaccurate myths surrounding the retread industry; being that the pieces of tire rubber you see on the side of the road comes from retreaded tires. In fact, there have been multiple state and federal studies that have examined this issue and determined that is not the case. Most recently, The National Highway Traffic Safety Administration published a study in 2008 (Commercial Medium Tire Debris Study - Report No: DOT HS 811 60) in which they collected almost 1,500 pieces of tire fragments from the roads. The study concluded that the fragments they found were from new and retreaded tires in equal proportion to their service on the roads and had almost nothing to do with the new tire manufacturing or retreading processes. The top two causes of damage identified from the debris studied were the result of hitting road hazards (39%) and excessive heat on the tire (30%), often caused by underinflation, overloading or some other type of abuse.

Even though retreaded tires are as safe, reliable and long-lasting as new tires, the retreading industry constantly strives to improve the quality of retreaded tires with advanced casing inspection technology, including the use of shearography and x-ray machines as well as constant refinement and testing of rubber compounds and tread designs to deliver superior tread-wear and fuel economy. The industry is also currently working with the EPA and their SmartWay program to define the process for SmartWay certifying retreaded tires.

Without the use of retreaded tires the cost of goods and services to businesses, consumers and government would be significantly higher; in addition to the negative environmental impact of the disposal of discarded tires.

RETREAD TIRES

THE FIRST INDUSTRIAL RECYCLING PROGRAM

History of the Retread Industry

- Retreading began in 1904
- Shortages during World War II major factor in retreading growth
- Retreaded tires utilized by military through all conflicts, including the most current ones

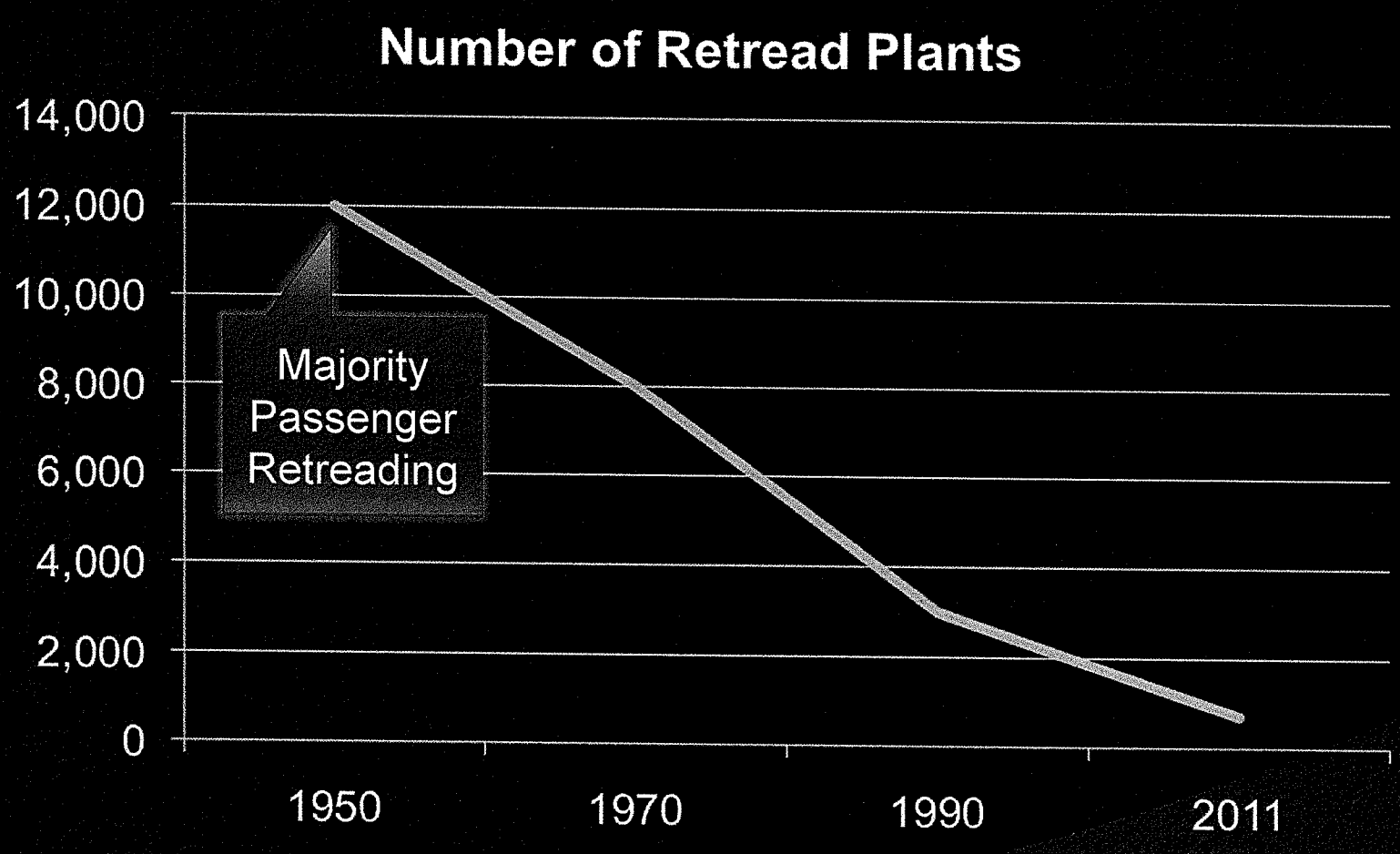
Usage of Retreaded Tires and Their Impact on Industries

- 80% of all aircraft take-offs and landings taking place with retreaded tires
- Shortage of new tires for mining and construction (OTR) would have been disastrous without retreads
- ½ of truck tires are retreads
- USPS uses retreads on nearly all small delivery vehicles and transports

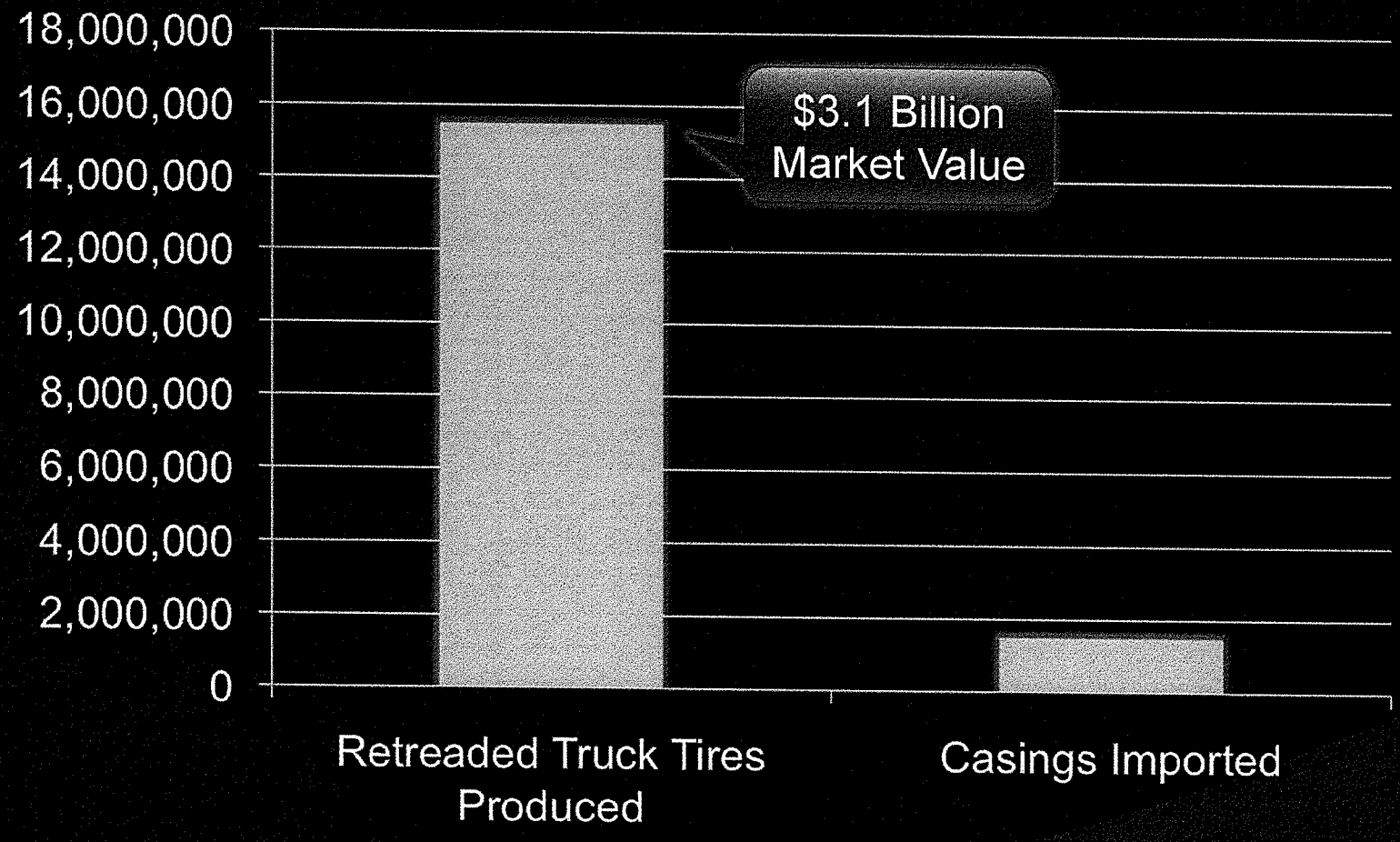
Sales Process and Channels for Retreaded Tires

- Retreaders may sell tires through their own commercial truck tire centers
- Others sell direct to trucking fleets
- Retread truck tires may be priced by the mile
- OTR tires may be priced by hours of service
- Aircraft retreads priced by number of landings

Evolution of Retreading in the US

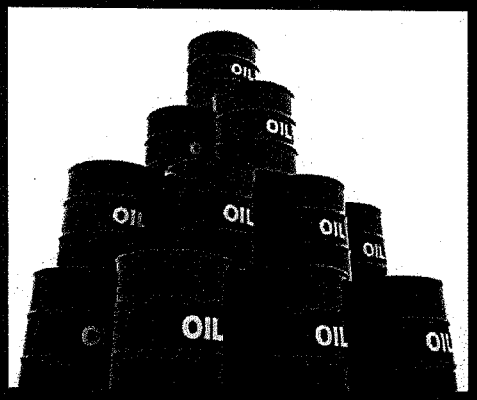


2011 US Snapshot

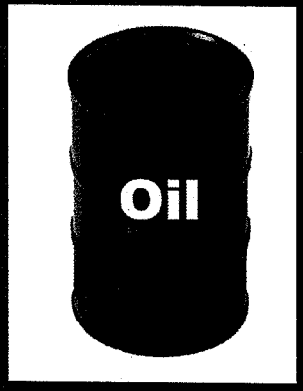


Environmental Benefits of Retreading

New Tire = 22 gallons



Retread Tire = 7 gallons



- 232 million gallons of oil saved annually by retreading
- Other savings in steel, natural rubber, and carbon black
- Millions of tires kept out of landfills
- EPA SmartWay Certification Underway
- Federal Executive Order 13149

Retread Myths

- Rubber on the Road – Don't Blame Retreads
  - Extensive studies by NHTSA, Virginia and Arizona
- Application of Treads - Vulcanization
- Inspection and Rejection – Modern Technology, including Shearography, X-ray and others.

Retreaded Tires

- Safe
- Reliable
- Cost Effective
- Environmental
- Critical

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