SNS COLLEGE OF TECHNOLOGY

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COIMBATORE-35.

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DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUB202 – AUTOMOTIVE SYSTEMS

II YEAR / III SEMESTER

Unit 5 – Braking System

Topic : Types of Tyres

TYRES

- A tyre is a crucial component of a vehicle, providing the necessary interface between the vehicle and the road.
- It is designed to support the vehicle's weight, provide traction, and absorb shocks from the road surface.
- Tires are typically constructed with layers of fabric and steel cords embedded in rubber, forming a flexible and durable structure.
- The internal construction includes components like belts and plies that reinforce the tire's strength and shape.

SPEED RATING AND LOAD RATING

- The tyre load index or load rating identifies the maximum load capacity of a tyre, i.e. the absolute carrying capacity.
- A tire speed rating is a code on the sidewall of a tire that indicates the maximum speed capability of the tire under optimal conditions.

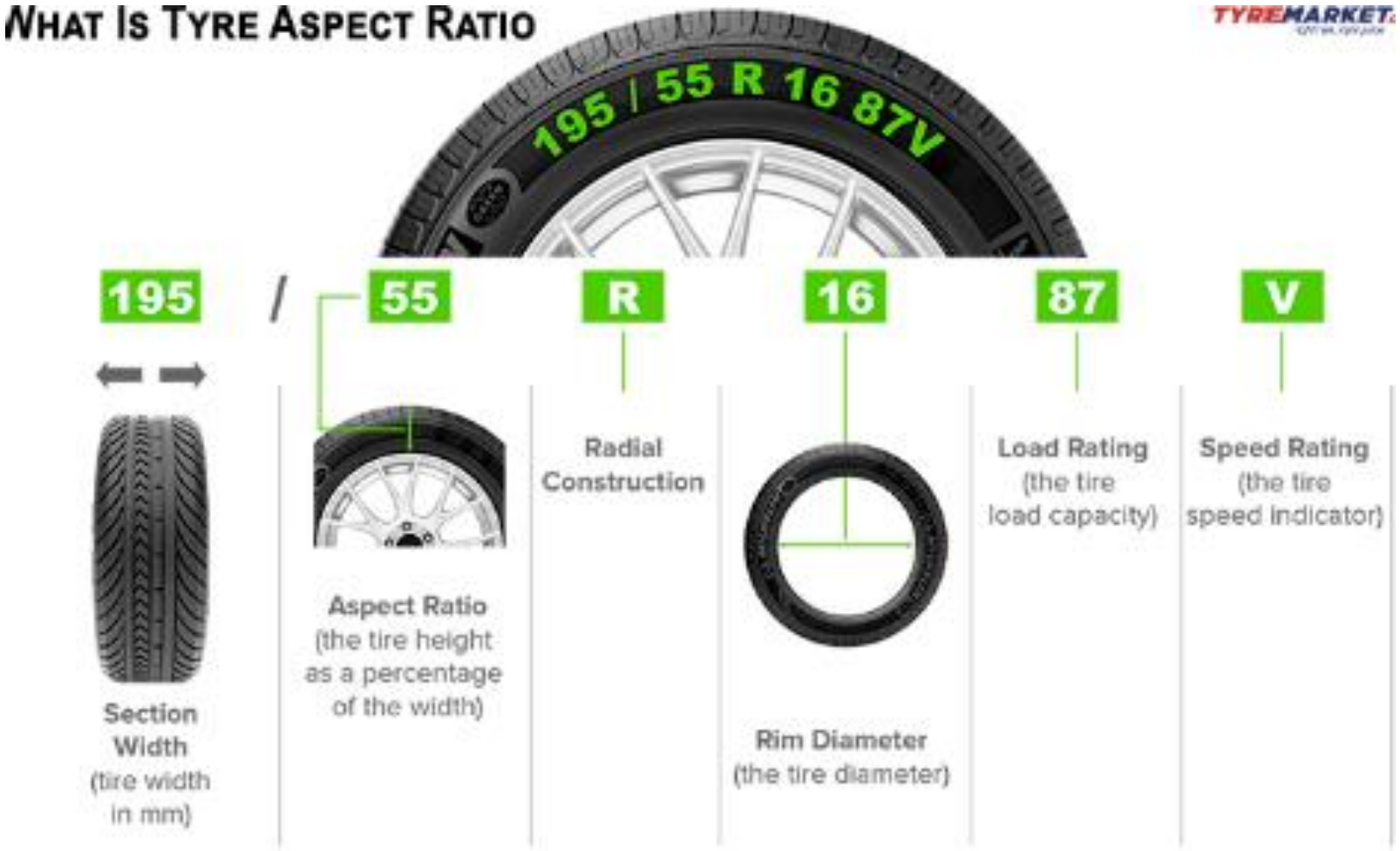
Speed symbol	Miles/ Hour	Kilo/Hour
N	87	140
P	93	150
Q	99	160
R	106	170
S	112	180
T	118	190
U	124	200
H	130	210
V	149	240
Z	150+	240+
W	168	270
Y	186	300

Load index	Load in Kg per tyre	Load index	Load in Kg per tyre	Load index	Load in Kg per tyre	Load index	Load in Kg per tyre	Load index	Load in Kg per tyre
62	265	75	387	88	560	101	825	114	1180
63	272	76	400	89	580	102	850	115	1215
64	280	77	412	90	600	103	875	116	1250
65	290	78	425	91	615	104	900	117	1285
66	300	79	437	92	630	105	925	118	1320
67	307	80	450	93	650	106	950	119	1360
68	315	81	462	94	670	107	975	120	1400
69	325	82	475	95	690	108	1000	121	1450
70	335	83	487	96	710	109	1030	122	1500
71	345	84	500	97	730	110	1060	123	1550
72	355	85	515	98	750	111	1090	124	1600
73	365	86	530	99	775	112	1120	125	1650
74	375	87	545	100	800	113	1150	126	1700

ASPECT RATIO

- Aspect ratio is simply identified as a percentage of the section height divided by the section width.
- Types of Tire Construction
  - Radial Tyre
  - Cross Ply tyre
  - Bias Tyre

TYRE CODE


WHAT IS TYRE ASPECT RATIO
TYREMARKET
195 / 55 R 16 87V
195
55
R
16
87
V
Section Width (tire width in mm)
Aspect Ratio (the tire height as a percentage of the width)
Radial Construction
Rim Diameter (the tire diameter)
Load Rating (the tire load capacity)
Speed Rating (the tire speed indicator)

TYPES OF TYRES

- Solid Tyres
- Pneumatic Tires
  - Tube Tyre
  - Tubeless Tyre
- Bullet Proof Tyre
- Liquid Filled Tyre

SOLID TYRES

- Solid tires are a type of tire that is made entirely of solid rubber or other materials, and they do not contain any air or inner tubes.
- Unlike traditional pneumatic (air-filled) tires, solid tires provide several advantages in certain applications
- Solid tyres is used in Fork lift trucks, some agricultural vehicles, Skid steer loader

TUBE TYRES

- Tube-type tires, also known as inner tube tires, are a type of tire design that requires an inner tube to hold air.
- These tires have a separate inner tube, typically made of rubber or other flexible materials, which contains the air and is placed inside the tire casing.
- The outer part of the tire, known as the casing or carcass, protects the inner tube and provides traction with the road.
- Tube-type tires require a separate inner tube to hold air.
- During installation, the inner tube is placed inside the tire, and the entire assembly is mounted on the wheel rim. The tube is then inflated to the recommended pressure.

ADVANTAGES AND DISADVANTAGES

❖ **Advantages:**

- Tube-type tires are repairable, and punctures in the tread area can often be patched or plugged.
- Generally less expensive than tubeless tires.

❖ **Disadvantages:**

- Tube-type tires are more susceptible to punctures in the sidewall, and a sudden loss of air can occur if the inner tube is damaged.
- The presence of the inner tube adds weight to the tire assembly.

TUBELESS TYRES

- Tubeless tires are a type of tire design that does not require an inner tube to hold the air.
- Instead, the tire itself forms an airtight seal with the wheel rim, and the air is held directly within the tire casing.
- The inner liner of a tubeless tire is designed to provide an airtight seal against the rim. It prevents air from escaping through the tire structure.
- The beads of a tubeless tire are designed to create an airtight seal with the rim, preventing air from escaping.

ADVANTAGES AND DISADVANTAGES

Advantages:

1. Reduced Puncture Risks
2. Less Weight
3. Sealant Compatibility

Disadvantages:

1. Initial Complexity
2. Potential for Rim Damage

Tube tyre	Tubeless tyre
Beads are reinforced with steel wires at the inner edges of the tyre to increase its strength	Beads are not required this case
Weight of the tyre is high	It is lighter in weight
Losses will occur during puncture	There is no loss when the nail penetrates to the tyre
Leakage of air is high	It is low in this case
Complicated assembly	Simpler assembly
Tread life will be more	Tread life is less
Bttter contact of tyre while cornering	Poor contract of the tyre while cornering

THANK YOU !!!