

Tyre Air Pressure Variants

Comparison for condition of tire inflation



| | Under - inflation | Proper - inflation | Over - inflation |
|--------------------|-------------------|--------------------|------------------|
| Wear condition | | — | |
| Deflection | ↑ | — | ↓ |
| Contact area | ↓ | — | ↓ |
| Passenger comfort | ↑ | — | ↓ |
| Rolling resistance | ↑ | — | ↓ |
| Heat generation | ↑ | — | ↓ |
| Spring rate | ↓ | — | ↑ |
| Cornering | ↓ | — | ↓ |
| Fuel waste | ↑ | — | ↓ |

- ① On condition of over-inflation, due to the large spring-rate and excessive tension of cord, ride comfort will be worse and textile cords could get hurt easily.
- ② On condition of under-inflation, where will be an increase in sidewall deflection, then generate heat and fatigue so that it could result in breakdown of body-casing
- ③ Proper-inflation is the best condition but, under-inflation tire is much more dangerous than over-inflation and also have a bad influence in fuel efficiency.
- ④ Right side picture illustrates the relation between cord fatigue and heat generation while driving on low-pressure condition. as the tread and bead part is fixed on ground and rim, also sidewall is on free-movement condition, the linkage parts (between fixed and movement part) and steel belt layers (by shear stress) will get fatigue and heat generation so that it could lead to separation due to the adhesion loss

