Tyre Tread Wear Rate and Remaining Life

Tread wear rate from new and current tread depth over the distance driven, and the remaining and total distance to the legal or chosen minimum depth.

Method: Linear tread wear projection

Input parameters

Unit system: SI

Parameter	Value	Unit
New tread depth	8.0000	mm
Current tread depth	5.6000	mm
Minimum (replacement) depth	1.6000	mm
Distance driven since new	22,000	km

Calculated results

Parameter	Value	Unit
Wear per 10,000 km	1.0909	mm
Remaining distance	36,667	km
Total expected life	58,667	km
Share of usable tread worn	37.500	%

Notes for this case

• Assuming the same wear rate continues, life is the usable tread (new depth less the minimum) divided by the depth worn per kilometre. Wear is rarely linear: new tyres wear faster at first while the tread blocks are tall and flexible, and driving style, alignment, pressure and road surface change the rate a lot. The legal minimum is 1.6 mm in the EU and India, but wet grip falls sharply below about 3 mm.

Formula and method

$$w = \frac{d_0 - d}{s}, \quad s_{rem} = \frac{d - d_{min}}{w}, \quad s_{tot} = \frac{d_0 - d_{min}}{w}$$

Variables

d_0	New tread depth	m
d	Current tread depth	m
d_{min}	Minimum (replacement) depth	m
s	Distance driven since new	m
w	Wear per 10,000 km	m
s_{rem}	Remaining distance	m
s_{tot}	Total expected life	m
u	Share of usable tread worn	-

Method and standards

Tread life.

Assumptions and limits

- Constant wear rate; uniform wear across the tread.

References

Linear tread wear projection

Report details

Report reference	FCC-WZTK-YVRZ (the same inputs always give the same reference)
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Calculator	Tyre Tread Wear Rate and Remaining Life
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Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/automotive/tyres-wheels/tyre-tread-wear-life

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.