Vehicle Speed from Skid Marks

Initial speed of a vehicle from the length of its skid marks, drag factor, grade and braking efficiency, with an optional speed at the end of the skid.

Method: Skid-to-stop energy method

Input parameters

Unit system: SI

Parameter	Value	Unit
Skid length	30.000	m
Drag factor (road friction)	0.70000	
Grade (+ uphill)	0	%
Braking efficiency (share of wheels skidding)	100.00	%
Speed at the end of the skid (0 if it stopped)	0	km/h

Calculated results

Parameter	Value	Unit
Effective drag factor	0.70000	
Speed at the start of the skid	73.061	km/h
Skid duration	2.9564	s

Notes for this case

• $v_0 = \sqrt{(v_e^2 + 2gd(f \cdot n \cdot \cos\theta + \sin\theta))}$. Measure the drag factor with a test skid in the same car or a drag sled on the same surface; ABS cars leave faint or no marks.

Formula and method

$$v_0 = \sqrt{v_e^2 + 2gd(fn\cos\theta + \sin\theta)}$$

Variables

d	Skid length	m
f	Drag factor (road friction)	-
G	Grade (+ uphill)	-
n	Braking efficiency (share of wheels skidding)	-
v_e	Speed at the end of the skid (0 if it stopped)	m/s
f_e	Effective drag factor	-
v_0	Speed at the start of the skid	m/s
t	Skid duration	s

Method and standards

Skid energy.

Assumptions and limits

- Constant deceleration; straight skid.

References

Skid-to-stop energy method

Report details

Report reference	FCC-G2KD-9755 (the same inputs always give the same reference)
Generated	23 November 2026, 18:00 UTC
Calculator	Vehicle Speed from Skid Marks
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
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/vehicle-dynamics/speed-from-skid-marks

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.