

Rules Of Thumb

If your airplane's performance documentation includes consideration for conditions like a tailwind, a sloped runway and/or grass, use that information to plan your takeoff. If, as is likely, one or more existing conditions aren't covered by the available performance charts and tables—or the documentation provides no way of combining, say, a soft field and a short one at the same time, you're on your own.

In such an instance, which isn't all that uncommon once one gets off clean, dry, level pavement, you'll need to run the numbers for the worst-case conditions, then apply some rules of thumb. The table below may be of use.

SURFACE	POTENTIAL EFFECT ON TAKEOFF DISTANCE
Firm Turf	+ 5–10 percent
Rough, Rocky or Short Grass	+ 10–20 percent
Firm Sand	+ 15 percent
Long Grass	+ 20–100 percent *
Soft Sand	+ 20–100 percent *
Mud	+ 20–100 percent *
Soft-Field Conditions	+ 25–100 percent *
Half-Inch of Standing Water, Wet Snow, Slush	+ 25–100 percent *

Other rules of thumb can include adding some distance for your relatively poor technique, underinflated tires, tired engine and worn prop. Put all those factors together and it might be time to offload some weight.

* Impossible surface conditions may create more resistance than available horsepower can overcome, resulting in running out of runway, altitude and/or ideas before reaching takeoff speed.