



The Suicide Carabiner



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Summary

The name of this carabiner reflects an important message... Still, it's a great carabiner for securing of equipment!



N/A



2 pcs



0.24 mm
0.20 mm



0.60 mm
0.40 mm



PET



N/A



Creality
Ender 3 S1
Pro

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The name of this carabiner reflects the important message that **no one should trust their life with it!** That is to say, it is NOT FOR CLIMBING. With this disclaimer out of the way; my goal was to try and make that best climbing-inspired carabiner, designed specifically for manufacturing by 3D printing. No additional part or tools needed and no post-processing required.

Inspiration was taken from the D-shaped wire-gate metal carabiner that we climbers know and love. This consists of a forged aluminum alloy body

with a "straight" load bearing spine and a bent stainless steel wire providing tension for the self-closing gate. A subtle curvature of the spine and slack in the gate mechanism helps reduce the risk of failure by providing additional shock absorption.

Studying other makers of 3D printed components gave a good starting point for how to adapt these design elements for additive manufacturing, by utilizing the strengths of 3D polymers and avoiding their weaknesses. Each carabiner has a wide gate with positive interlocks on both sides and a unique sliding mechanism. This mechanism allows for a progressive tension and a complete opening of the gate, as well as a quick assembly process.

The main body comes in different variants; the standard climbing D-biner, the rotation stopper D-biner, the tactical strap D-biner, and the dual gated S-biner. All of these use the same gate and can be used to secure light and noncritical gear and equipment while climbing, or in everyday use.

Update 2025: Break testing the Suicide Carabiner printed with different materials after being aged for 6 months gave the following results:

PLA	PETG	Carbon Fiber (BASF PAHT-CF15)	Resin (Siraya Tech Blu & Simple)
162±2 kg	165±4 kg	350±5 kg	85±20 kg

Source files are given as .3dm (Rhino V6). Please post your remix and prints!

By request: There is now also a text free variant of each carabiner, called "...PC".

Manufacturing Advice

Material Selection

For the gate to function properly, a semi-flexible material is needed. I used the common PET-G filament and this was a good compromise between flexibility and strength. It is also tested to function with PLA, but this is not the recommended material.

Printing Settings

Size & scaling:

The carabiner can be scaled in the slicer program and printed in different sizes. I printed as large carabiner as would fit on my printer (X2.2), but

since the tolerances don't scale I included this "fun sized" carabiner among the files as well. For some printers, the gate might need to be lengthened (by ~2%) to close properly and this can easily be done with a 1D scale in the slicer program.

Temperature:

The temperature should be high enough for good layer adhesion, but not more, since higher temperatures tend to reduced the polymers elasticity and make the final part brittle. This is especially important for the bending section of the gate, allowing it to open fully without breaking of deforming.

Nozzle size:

To increase the strength of 3D prints it is usually recommended to use larger nozzles, here I used one with a diameter of 0.6mm.

Layer height:

From the nozzle size the best layer-height can be determined and for increased strength this is around half of the nozzle diameter, I used 0.3mm.

Perimeters and infill:

Under load, a stress is highest along the perimeter of the part and therefor it is important to have a high number of outer shells, I used 10 perimeters. The top and bottom can be of normal thickness and the infill at reasonable levels, I used 4 top/bottom layers and 50% infill.

Post-Printing

No post-processing is required unless (your printer leaves unwanted artifacts or) if you wish to fill in the letters, I did this manually under the nozzle (or you can use a 3D pen if you have one). The assembly procedure can be seen from the picture and to get a smoother operation, small amounts of suitable grease (silicone lubricant) can be added to the hinge parts.

Model files



Gate

1 file



sulclde_universal_gate.stl



Frame

4 files



sulclde_standard_frame.stl



sulclde_rotationstop_frame.stl



sulclde_tacticalstrap_frame.stl



sulclde_dualgate_frame.stl



Frame [No text]

4 files



sulclde_standard_frame_pc.stl



sulclde_rotationstop_frame_pc.stl



sulclde_tacticalstrap_frame_pc.stl



sulclde_dualgate_frame_pc.stl

Print files



sulclde-mixprint_06mm_pet-g_11h.gcode

🌀 PET 📏 0.60 mm 📏 0.24 mm ⌚ 11.00 hrs ⚖️ 168 g

🖨️ Printer: Creality Ender-3 S1 Pro

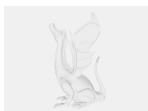


sulclde-mixprint_04mm_pet-g_19h.gcode

🌀 PET 📏 0.40 mm 📏 0.20 mm ⌚ 19.00 hrs ⚖️ 162 g

🖨️ Printer: Creality Ender-3 S1 Pro

Other files



suicidecarabiner_r6.zip

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