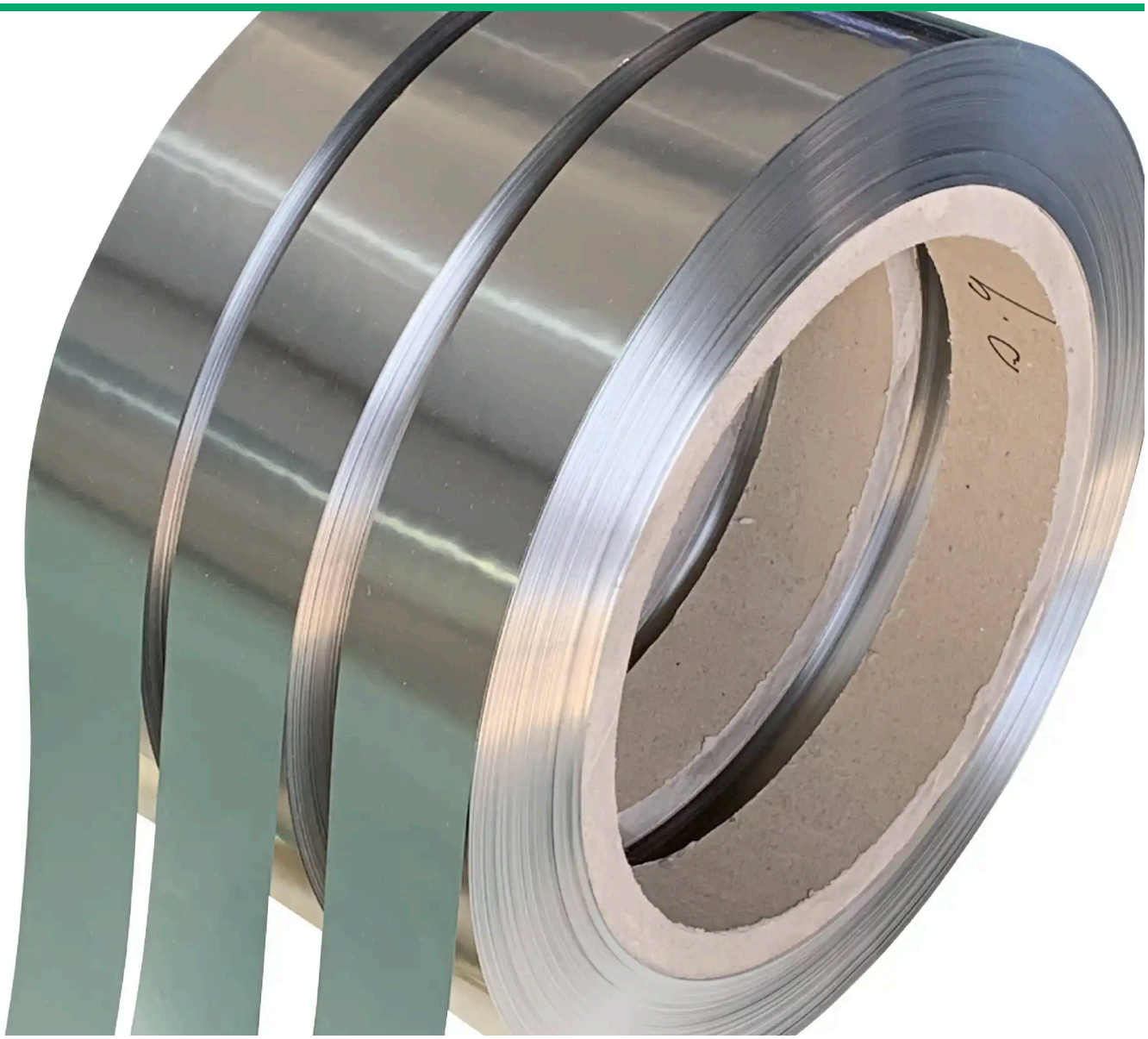
Why The Same Drawing Costs More In Stainless Steel Than In Aluminium

Aluminium draws with lower forces but galls and marks; stainless work-hardens with every stage. What that changes about tooling, stage count, lubrication and the price of the same part.



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If two suppliers quote you the same number of draw stages for a part in aluminium and the same part in stainless, one of those quotes is not real.

Both materials are deep drawn for a living at our plant in Zhejiang, and they behave differently enough that the tool changes before the first part exists.

Aluminium is easier to form and easier to ruin. It draws with lower forces, so it needs less press tonnage and often fewer stages for the same depth. The problem is the surface: aluminium galls and marks against the die, so die finish, lubrication and how the parts are handled matter more than they do in steel. Springback also moves with alloy and temper - 5052, 6061 and soft tempers of the same alloy are three different conversations.

Stainless steel work-hardens while you draw it. Austenitic grades like 304 and 316L get harder with every stage, so the force needed for the next stage climbs and the tear risk moves to the punch radius. Deep parts usually need more stages, and often an intermediate anneal. Stainless also wants to stick to tool steel, so die material, coating and lubricant are chosen to prevent adhesion first and reduce friction second.

What that means for the tooling decision:

1. **Stage count is set by the material, not by the drawing.** Aluminium and stainless rarely share a

stage count for the same part.

1. **Annealing is a process decision.** If it is not allowed, the stage count goes up; if it is

allowed, the lead time does.

1. **Lubrication is tooling, not consumable.** On aluminium it is the difference between a clean part

and a scored one; on stainless it is the difference between a die that runs and a die that picks up.

1. **Surface finish has to be classified.** Cosmetic or functional changes the die finish, the

handling and the price.

If you want the longer version - the four numbers that decide the stage count, and what to put on the drawing so a quote means something - it is here: https://balford.net/deep-drawing-aluminium-vs-stainless-steel/

I am the founder of Balford, a deep drawing and metal stamping manufacturer in Zhuji, China. We deep draw and stamp housings, caps, sleeves and bushings for OEM programmes, on presses from 25 t to 350 t with a maximum draw diameter of Ø250 mm. If you send a drawing, the first thing we do is tell you which of these two conversations you are actually having.

SEND A DRAWING, GET A REAL ANSWER

Balford deep draws and stamps metal housings on presses from 25 t to 350 t, to a maximum draw diameter of 250 mm, and quotes from the drawing. **balford.net** · **rfq.balford.net** · shawn@balford.net