

7.D4 This problem asks us to determine which of copper, brass, and a 1040 steel may be cold-worked so as to achieve a minimum yield strength of 310 MPa (45,000 psi) while maintaining a minimum ductility of 27%EL. For each of these alloys, the minimum cold work necessary to achieve the yield strength may be determined from Figure 7.19(a), while the maximum possible cold work for the ductility is found in Figure 7.19(c). These data are tabulated below.

	Yield Strength (<u>> 310 MPa</u>)	Ductility (<u>> 27%EL</u>)
Steel	Any %CW	Not possible
Brass	> 15%CW	< 18%CW
Copper	> 38%CW	< 10%CW

Thus, only brass is a possible candidate since for this alloy only there is an overlap of %CW's to give the required minimum yield strength and ductility values.