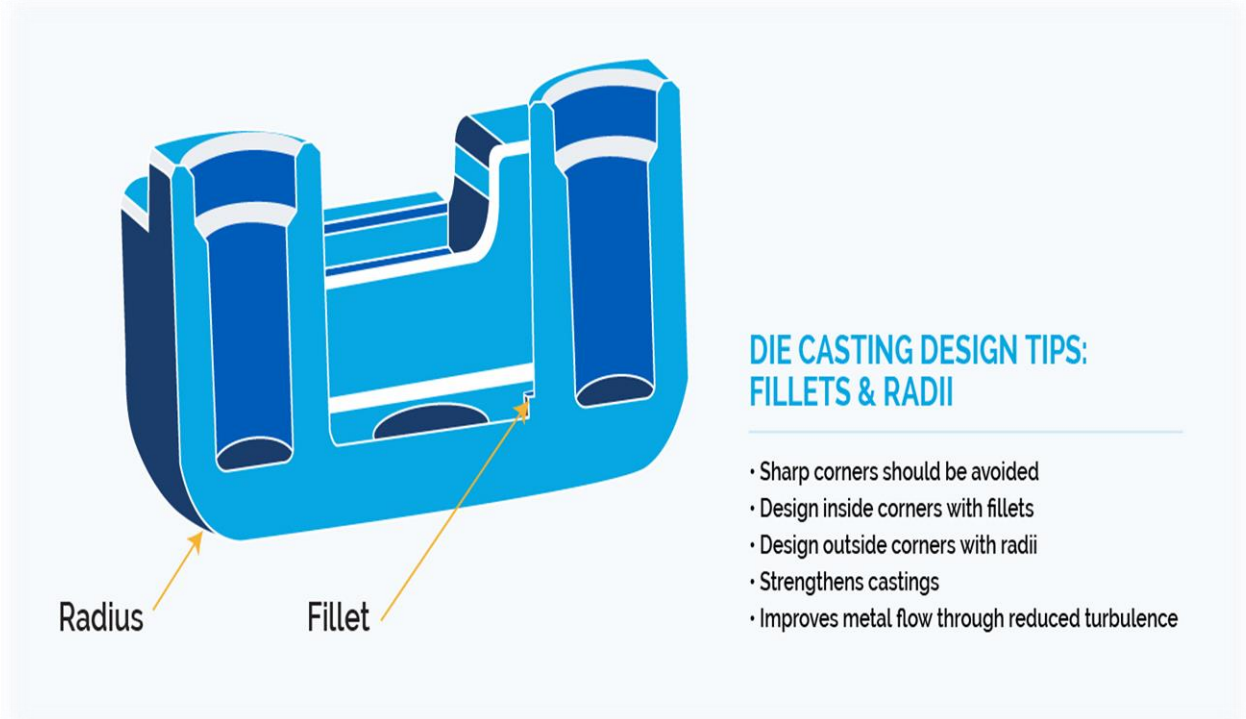


FILLET RADII

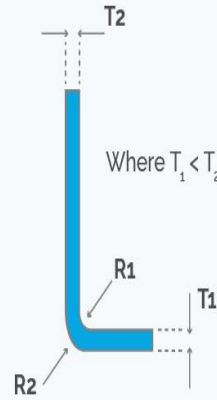
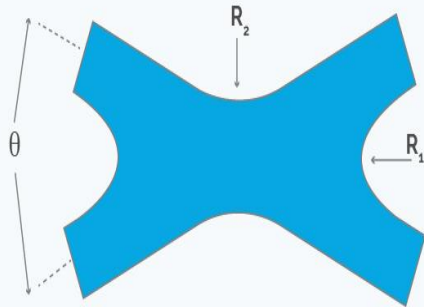
Fillet radii are extremely important but are often overlooked by component designers.



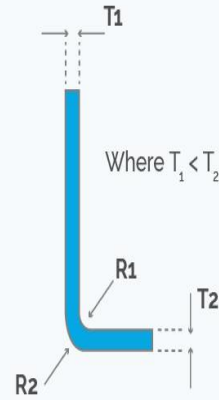
Die Casting Design Tips for Fillet & Radii

- To avoid high stress concentrations in the component and the die, fillet radii of the appropriate size must be used in all internal and external component edges
- The exception to this rule is where the feature lands on the parting line of the tool
- An important aspect of fillet radii is that it assists in filling the part die
- There is an optimum size of fillet where structural parts are concerned
- Although increasing the fillet radii size will generally decrease the stress concentration at the bottom of a rib, eventually the mass of material added by the fillet will induce shrinkage porosity in that area
- Designers should also note that fillets applied perpendicular to the parting line of the tool require draft

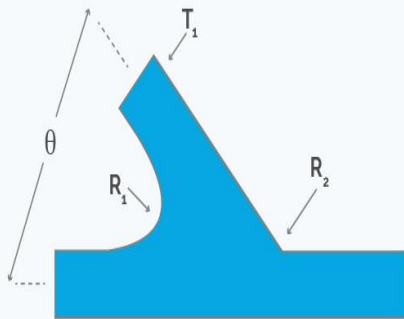
Recommended fillet radii designs



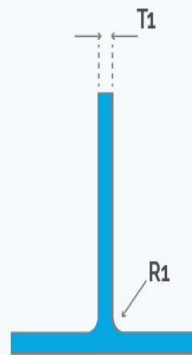
If $R_2 = R_1 + T_1$, $R_1 = T_1$
 If $R_2 = 0$ then $T_1 \leq R_1 \leq 1.25T_1$



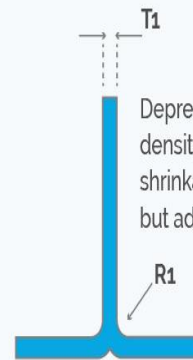
$R_1 = 2/3(T_1 + T_2)$
 $R_2 = 0$ to $R_1 + T_2$



$\theta = 90^\circ$ All Radii = T_1
 $\theta = 45^\circ$ $R_1 = 0.7T_1$; $R_2 = 1.5T_1$
 $\theta = 30^\circ$ $R_1 = 0.5T_1$; $R_2 = 2.5T_1$



Tee Junction
 $R_1 = T_1$ to $1.25T_1$



Tee Junction
 $R_1 = T_1$ to $1.25T_1$

Depression promotes density (reduces shrinkage porosity but adds to die cost)

$\theta = 30^\circ, R_1 = 0.5T_1; R_2 = 2.5T_1$
 $\theta = 45^\circ, R_1 = 0.7T_1; R_2 = 1.5T_1$
 $\theta = 90^\circ, R_1 = R_2 = T_1$

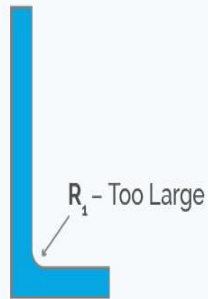
$R_1 = T_1$ to $1.25T_1$

$R_1 = T_1$ to $1.25T_1$

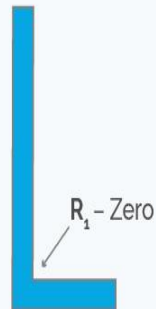


Depression promotes density (reduces shrinkage porosity but adds to die cost)

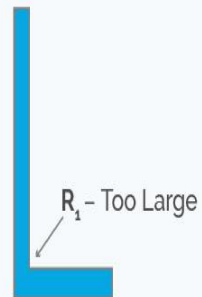
Designs that are less desirable and should be avoided



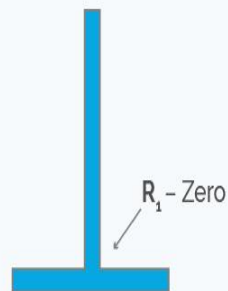
Heavy Mass
Risk of shrinkage porosity.



Weak Casting
Poor die condition



R_1 Approaching Zero
Poor die condition cracking in part.



Weak Casting
Poor die condition



Sharp Edge
Difficult to trim