



IIT ROORKEE



NPTEL ONLINE
CERTIFICATION COURSE

RISER DESIGN

Risering methods-II

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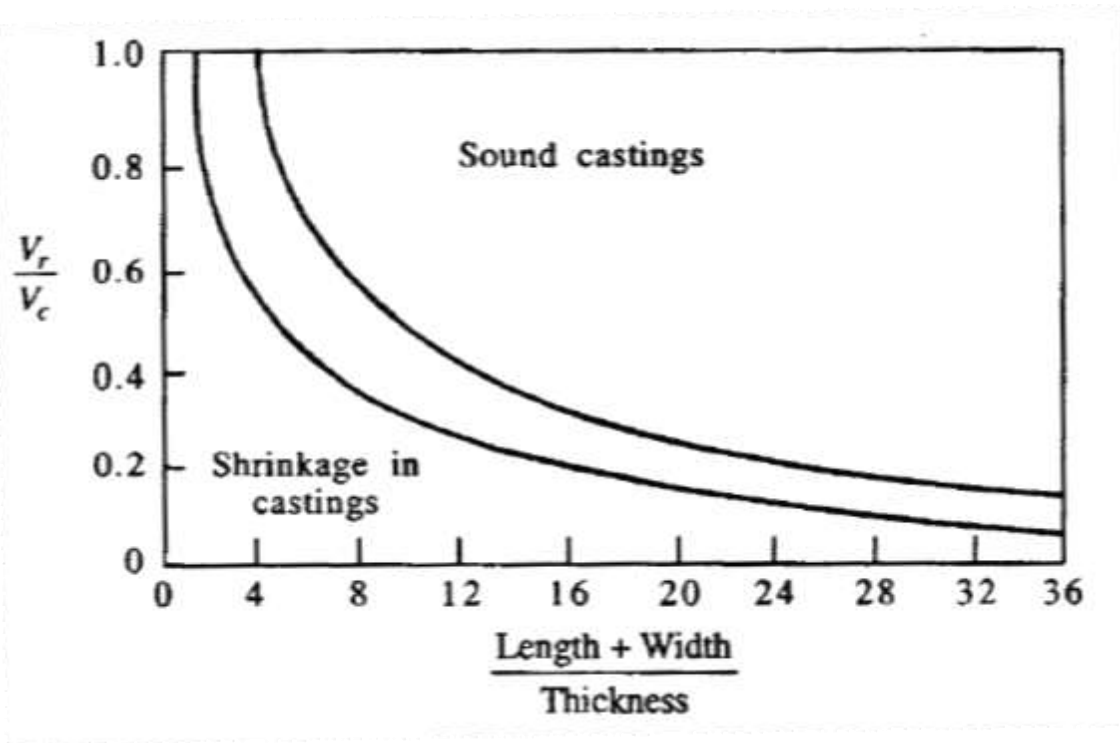


NRL Method or Shape Factor Method

- Freezing ratio term (used in Caine's method) is replaced by term shape factor.
- Shape factor is defined as ratio $(L+W)/T$ where L, W and T are calculated based on maximum dimension of parent section of casting.
- If casting has appendages, they are also considering towards calculating total riser volume required to feed parent as well as appendage volumes.

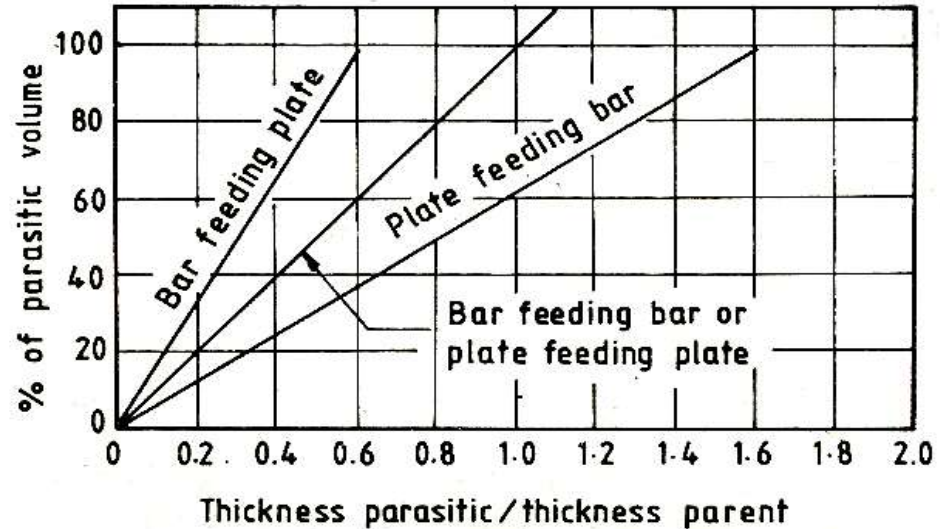


SHAPE FACTOR METHOD



Riser volume calculation for appendage volumes

- Appendages may be classified as plates or bars.
- A bar experiences larger cooling rate than a plate of similar thickness.



Q. Projection of c/s area 1 inch^2 and 4" long is added to a plate of 5" X 10" X 2". Find riser volume necessary to feed the casting.

- For hollow cylindrical shapes, because of presence of core in the central portion, cooling rate is lowered with respect to plate of similar cross section.
- In such cases, a correction factor is incorporated for finding the effective plate thickness by multiplying the true wall thickness with the correction factor.

Core diameter	$T/2$	T	$2T$	$4T$
Correction factor (K)	1.17	1.14	1.02	1.0

Q. Find riser volume necessary to feed a bushing with outer dia 12", inner dia 4" and height 12".

THANKS

