

17.2 Ganguillet and Kutter (G & K) formula (River Mississippi)

Note: Kutter's C (for MKS units; for converting it into FPS multiply suitably; see Chow pp.98).

$$C = \frac{23 + \frac{0.00155}{S_o} + \frac{1}{n}}{1 + \frac{n}{\sqrt{R}} \left(23 + \frac{0.00155}{S_o} \right)}$$

Manning's n (Irish Engineer,1889)

$$V = \frac{1}{n} R^{2/3} S_o^{1/2}$$

Chezy's C (French Engineer,1768)

$$C = \frac{R^{1/6}}{n}$$

Type of channel boundary surface	Value of n
Very smooth surface such as glass, plastic or brass	0.010
Very smooth concrete and planned timber	0.011
Smooth concrete	0.012
Ordinary concrete lining	0.013
Glazed brick work	0.014
Vitrified clay	0.014
Brick surface lined with cement mortar	0.015
Cement concrete finish	0.015
Unfinished cement surface	0.017
Earth channel in best condition	0.017
Neatly excavation earth canals in good condition	0.017
Straight unlined earth canals in good condition	0.020
Rubble masonry	0.020
Corrugated metal surface	0.020
River and earth channels in fair condition	0.025
Earth channel with gravel bottom	0.025
Earth channel with dense weed	0.035
Mountain stream with rock beds and rivers with variables section & some vegetation along banks	0.045