Yarn diameter and Count

Relationship between yarn count and diameter is dependent upon specific volume of yarn. Specific volume, v, is the ratio of the volume of yarn to that of the same weight of water. Specific volume of yarn depends upon the raw material, type of spinning system, twist factor and spinning parameters. Ring spun yarns have a lower specific volume than rotor spun yarns. Acrylic and wool yarns have a higher specific volume than cotton yarns. Specific volume reduces with increase in twist factor. If "d" is diameter in inches of yarn of count "Nec"

Then,

• $v = 858 N_c.d2$ (1/d) = 29.3 $\sqrt{(N_{ec}/v)}$. Specific volume of yarn is usually 1.1 to 1.2. If specific volume is assumed as 1.1 • (1/d) = $\sqrt{N_{ec}}$. If "d1" is diameter in *cm* and "N_{tex}" is the count in Tex units then d1= $\sqrt{N_{tex}}/267.3$