

Scaffold Tube Properties

MODULUS	30GPa (longitudinal) 7GPa (transverse)
MOMENT OF INERTIA	198,000mm ⁴
SECTIONAL AREA	885mm ²
OUTSIDE RADIUS	48.5mm
INSIDE RADIUS	35mm
SECTION MODULUS	$Z = I/\gamma$ $\gamma = 48.5/2 = 24.25\text{mm} = 198000/(24.25) = 8165\text{mm}^3$
BENDING STRESS	measured tensile strength of a test plaque is 240MPa but maximum fibre stress is normally taken as 100MPa
BENDING MOMENT	$f*Z = 100*8165 = 816500\text{Nm}$
COMPRESSIVE STRENGTH	<p>From other sources the break between short column and long column for a tube of this size is approximately 600mm. So, for any effective vertical scaffold tube it has to design on the long column formula</p> <p>Ultimate compressive stress in long column $F_u = (1.3E)/k \ell/r)1.3$ $K = 1$ for pinned ends which is the conservative approach. So $F_u = (1.3*30000)/(1*\ell/14.95)^{1.3}$ If we take column height $\ell = 2000\text{mm}$ then $F_u = (39000)/(133.78)^{1.3} = 39000/581.17$</p> <p>$F_u = 67.1\text{N/mm}^2$ A suggested factor to the working design limit is 3 $F_u = 67.1/3 = 22.36$</p> <p>Section area is 885mm² so design compressive for is $885*22=19470\text{N}$</p>

NON-CONDUCTIVE SCAFFOLD TUBE PROPERTIES

www.mills-scaffold.com

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