

### Chart 5: Specific modulus, $E/\rho$ , against specific strength, $\sigma_f/\rho$

The chart for specific stiffness and strength. The contours show the yield strain,  $\sigma_f/E$ . The qualifications on strength given for Charts 2 and 4 apply here also. The chart finds application in minimum weight design of ties and springs, and in the design of rotating components to maximize rotational speed or energy storage, etc. The guide lines show the loci of points for which

- (a)  $\sigma_f^2/E\rho = C$  (ties, springs of minimum weight; maximum rotational velocity of discs)
- (b)  $\sigma_f^{3/2}/E\rho^{1/2} = C$
- (c)  $\sigma_f/E = C$  (elastic hinge design)

The value of the constant  $C$  increases as the lines are displaced downwards and to the right.

