Mechanical Behavior of Materials, 4/e Instructor's Solution Manual

Norman Dowling, Virginia Tech

© 2013 Pearson Education, Inc., Upper Saddle River, NJ. All rights reserved. This publication is protected by Copyright and written permission should be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or likewise. For information regarding permission(s), write to: Rights and Permissions Department, Pearson Education, Inc., Upper Saddle River, NJ 07458.

1.7 Plate with width change, Fig. A. 11(c). P = 3600 N, $w_2 = 24$, $w_1 = 16$, t = 5 mmPolycarbonate, $\sigma_0 = 62 MPa$, $\varepsilon_f = 110$ to 150% $X_1 = ?$ adequate?

$$S = \frac{P}{W_1 t} = \frac{3600 \text{ N}}{16(5) \text{ mm}^2} = 45 \text{ MPa}$$

$$X_1 = \frac{\sigma_0}{5} = \frac{62 MRa}{45 MPa} = 1.38$$

The value is a bit low but may be suitable under ideal circumstances. Note that the material is quite ductile.

© 2013 Pearson Education, Inc., Upper Saddle River, NJ. All rights reserved. This publication is protected by Copyright and written permission should be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or likewise. For information regarding permission(s), write to: Rights and Permissions Department, Pearson Education, Inc., Upper Saddle River, NJ 07456.