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Mechanical Behavior materials HW5

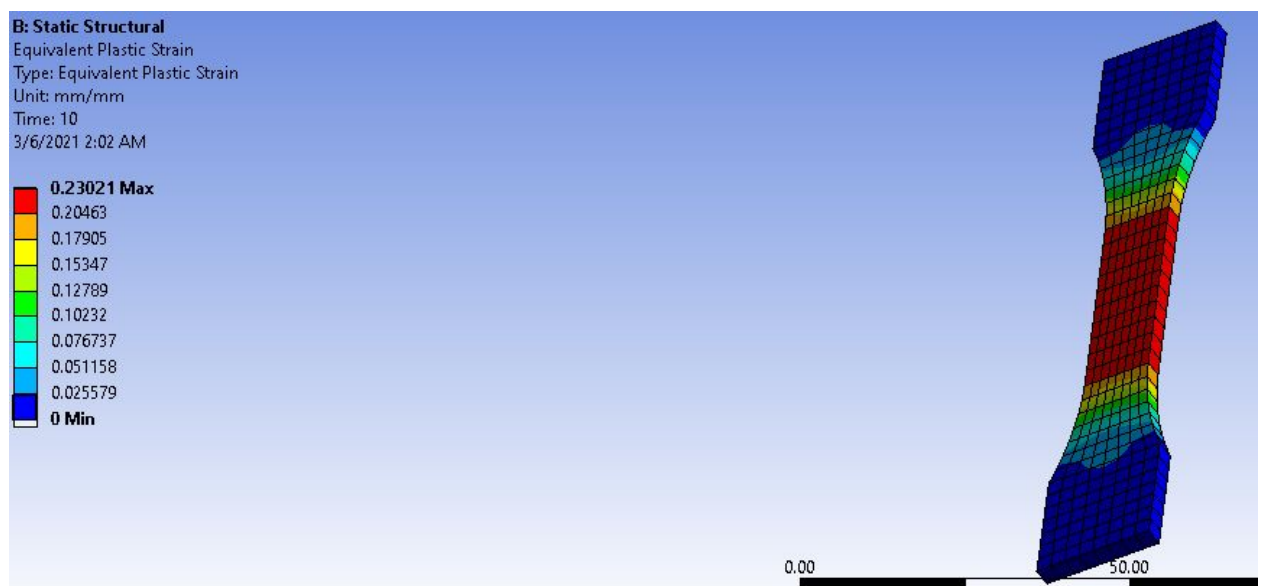
a. $E = 43750 \text{ MPa}$

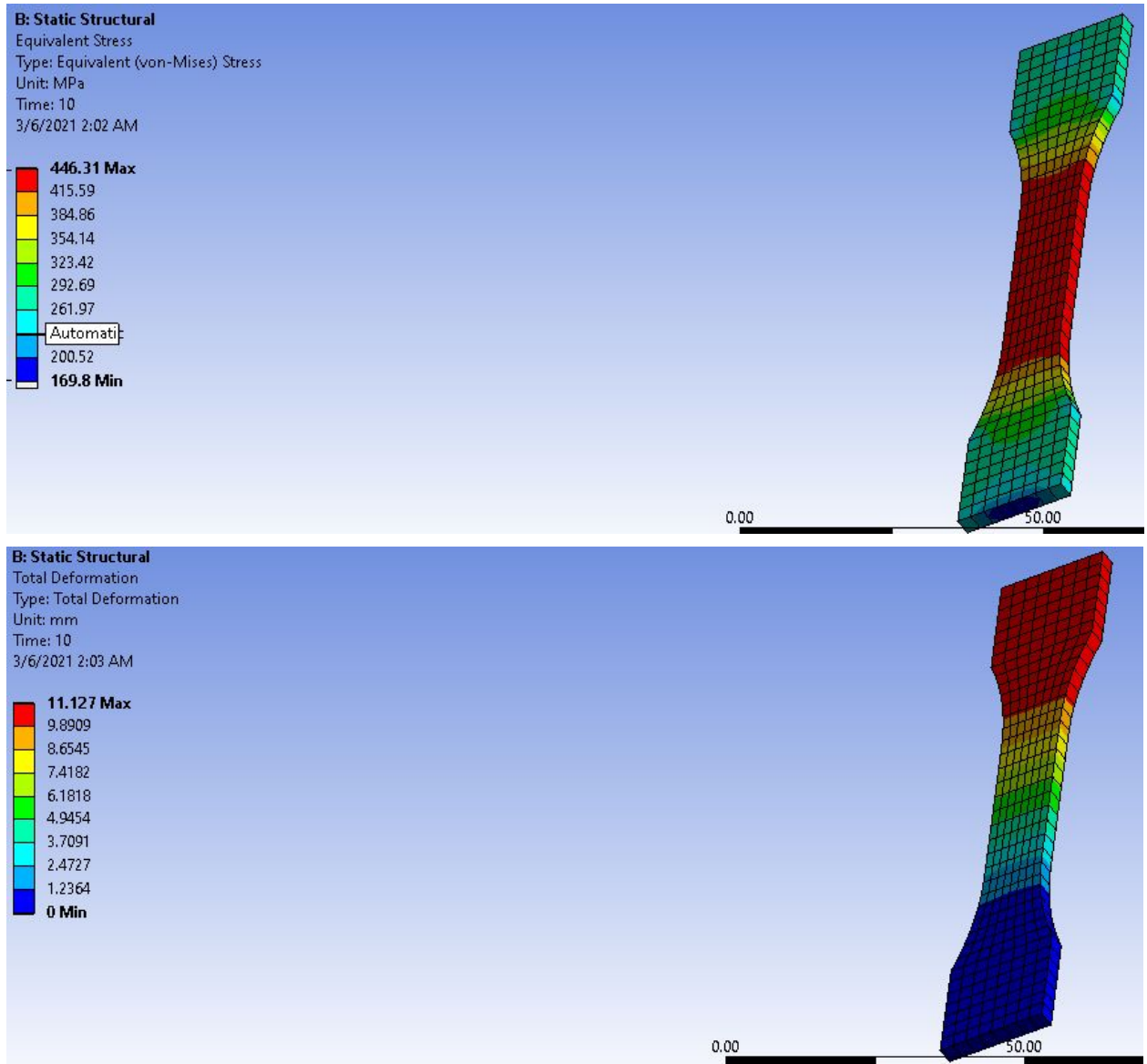
b.

| Strain (Total) | Stress (Mpa) | Plastic strain (mm) |
|----------------|--------------|---------------------|
| 0 | 0 | 0 |
| 0.001 | 75 | 0 |
| 0.002 | 150 | 0 |
| 0.003 | 225 | 0 |
| 0.004 | 240 | 0 |
| 0.005 | 250 | 0 |
| 0.025 | 300 | 0.018142857 |
| 0.06 | 355 | 0.051885714 |
| 0.1 | 390 | 0.091085714 |
| 0.15 | 420 | 0.1404 |
| 0.2 | 435 | 0.190057143 |
| 0.25 | 449 | 0.239737143 |
| 0.275 | 450 | 0.264714286 |

c. 250Mpa

d. Equivalent Plastic strain/ Von-misses stress and Total deformation contour in that order:





- e. The maximum equivalent plastic strain obtained in Ansys is 0.23021 MPa, whereas the one calculated in Excel is 0.26471 MPa. This difference does not seem significant but it is nevertheless a difference of approximately 15%.