ASHIS SRIVASTAVA

NIT-DURGAPUR

ANALYSIS OF 6:1 GEAR REDUCTION IN ANSYS

After Analysis we Calculated :

I.Contact Stresss(MPa)

ii.Maximum Deformation(mm)

iii.Factor of Safety

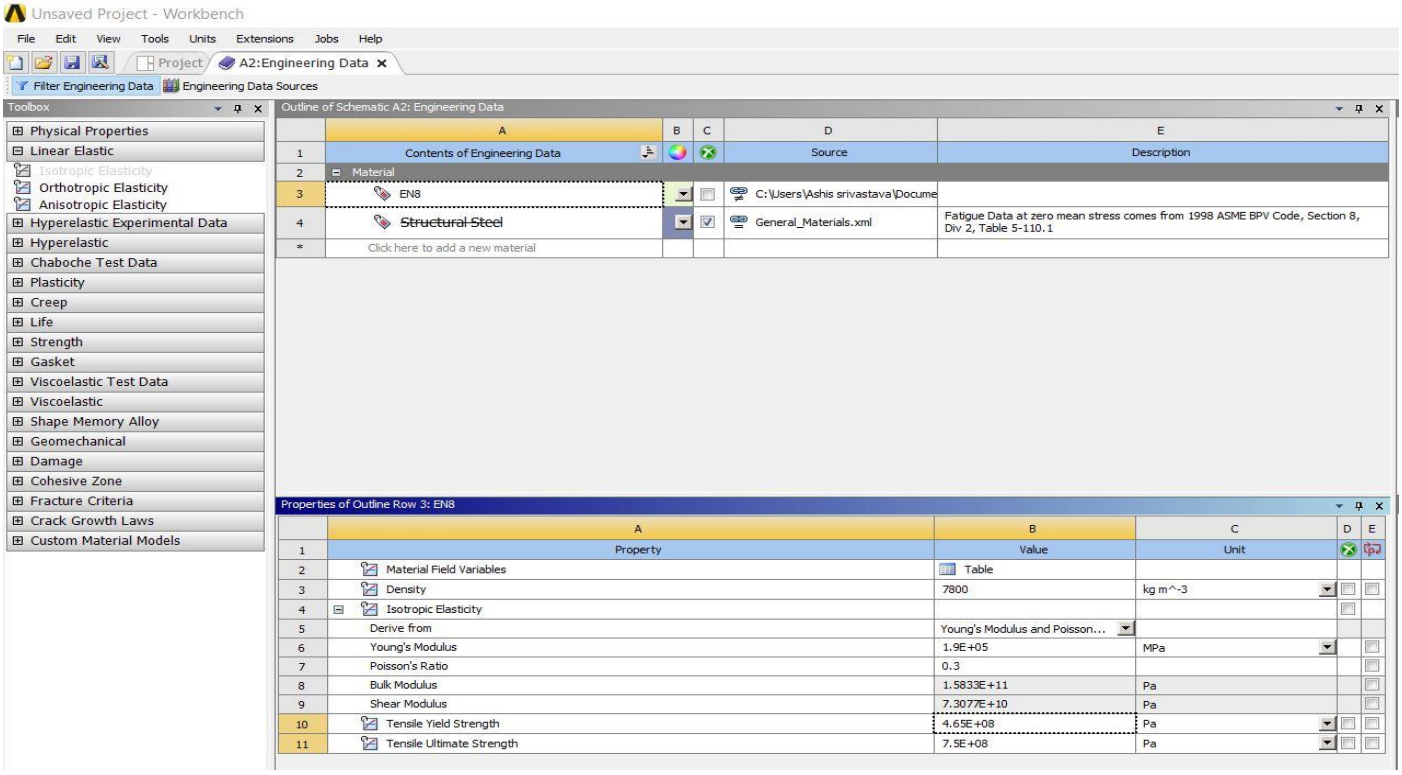
ASSUMPTIONS:

Power Transmitted by driver=40KW
Speed of driver=3600 RPM

LOAD

For Meshing gear 1 and gear 2 we have,
Input load= Moment on Gear 1 ,i.e **106.10 N-m AntiClockwise**
For Meshing gear 3 and gear 4 we have,
Input load= Moment on Gear 3 ,i.e **212.20 N-m Clockwise**

Material-EN8 **(Based on data collected from google)**



Analysis for Gear 1 and Gear 2

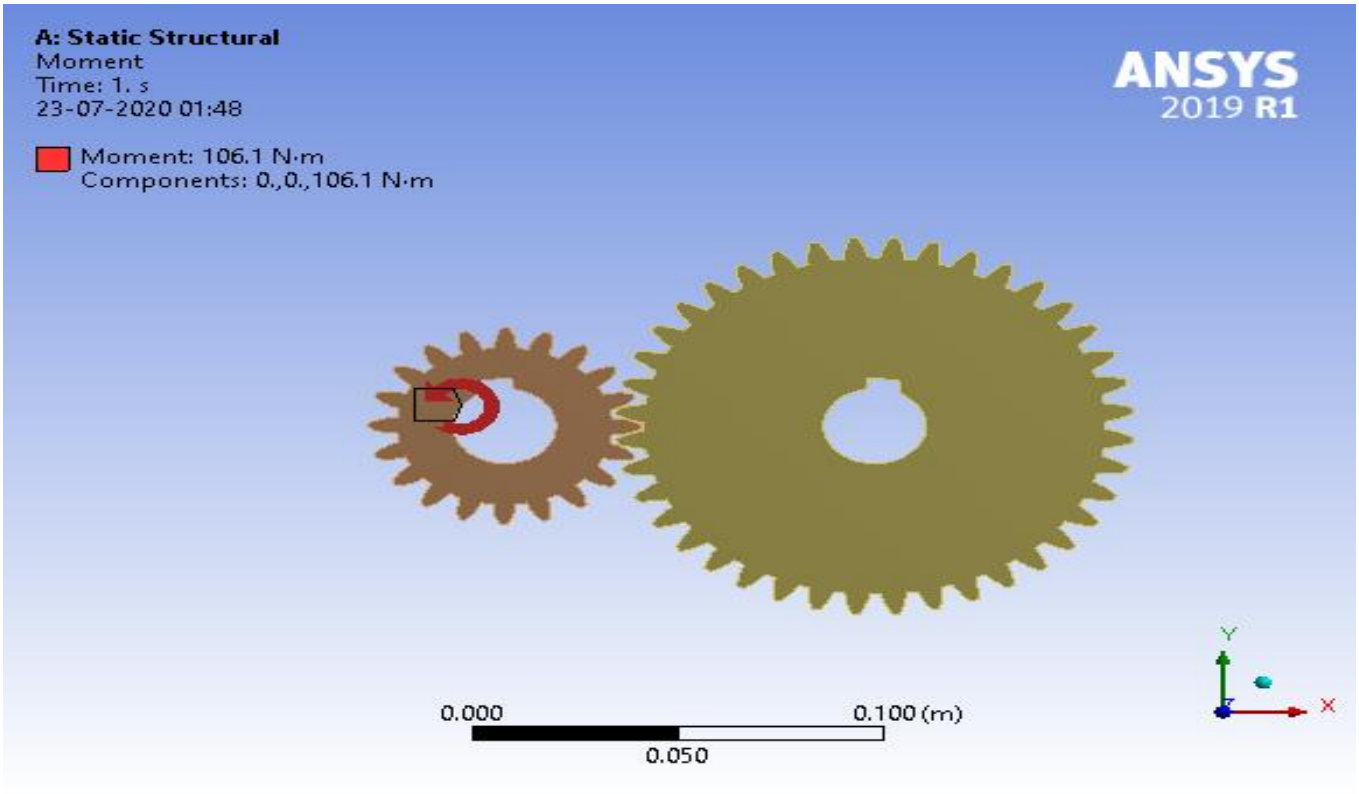


Fig:Moment on Gear 1 (106.10N-m-AntiClockwise)

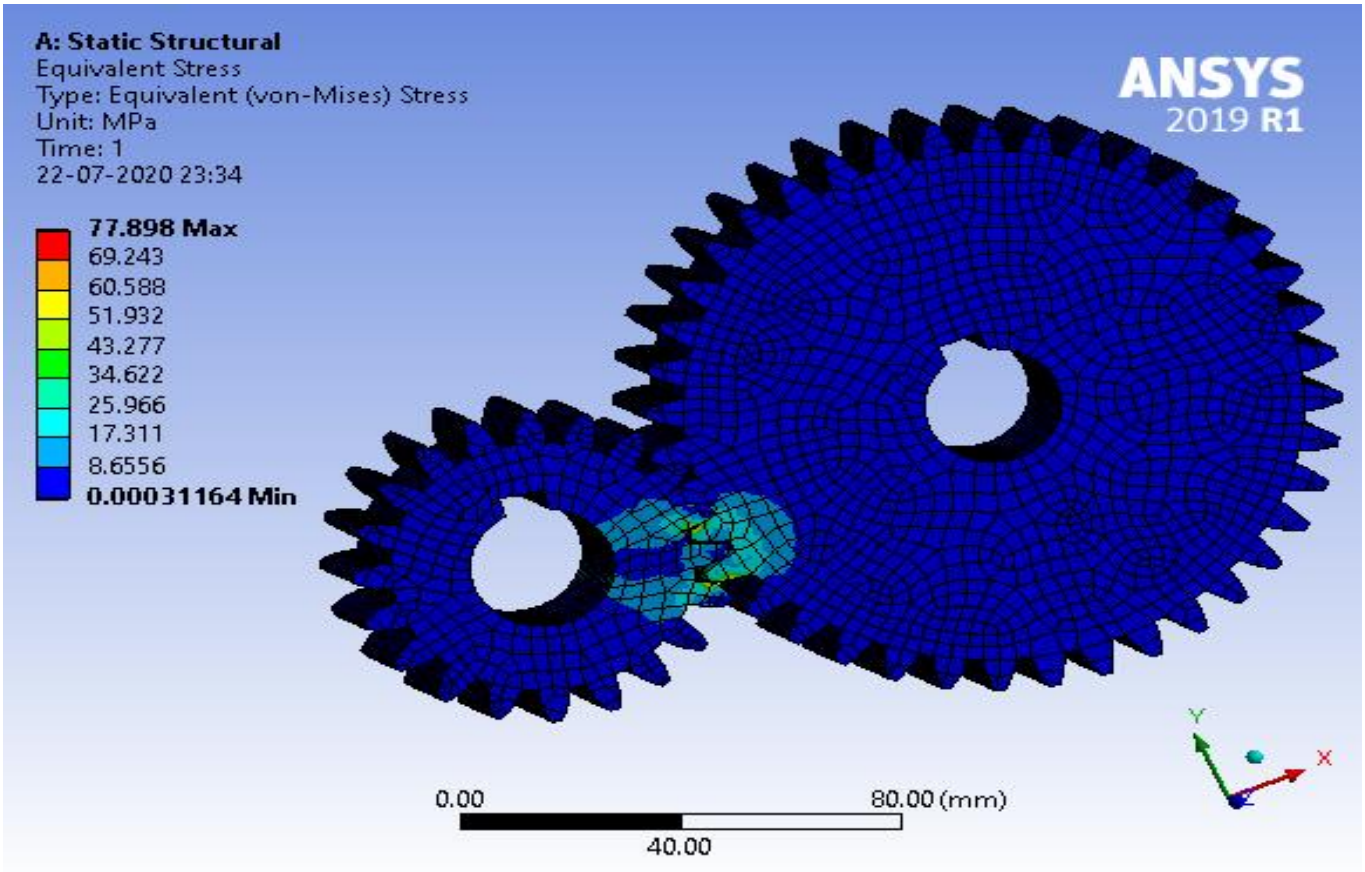


FIG: Contact Stresses

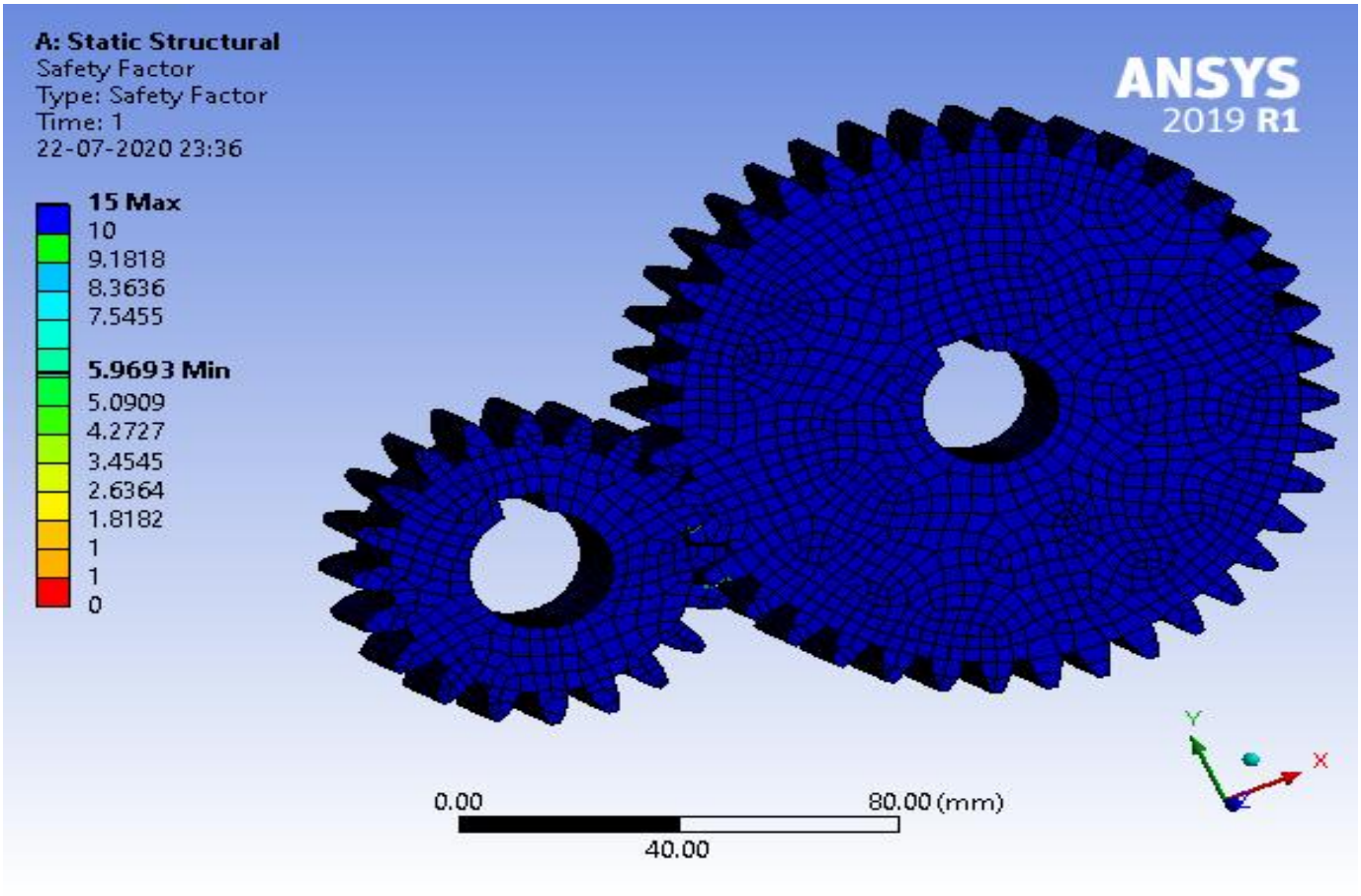


FIG: Factor of Safety

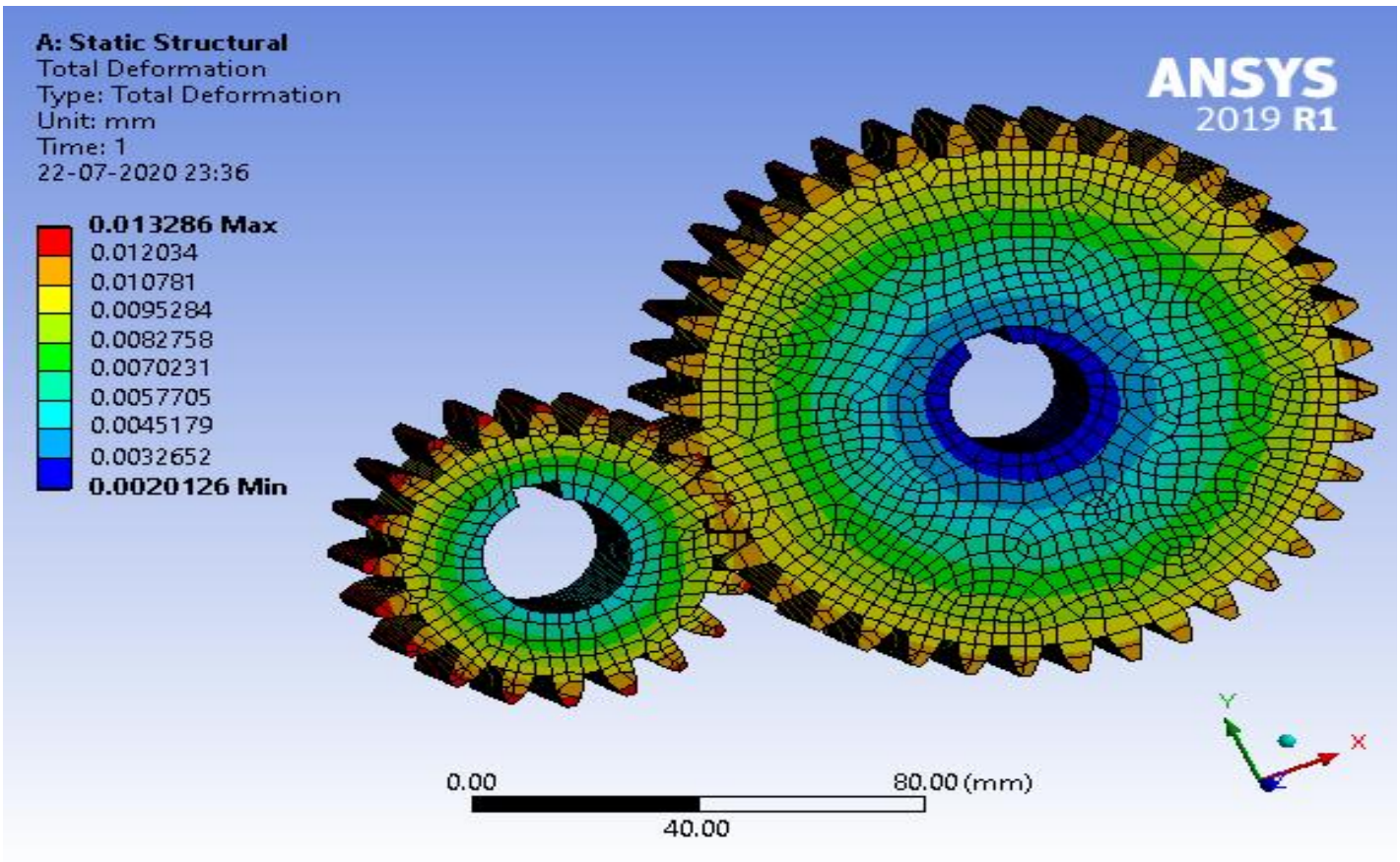


FIG: Deformation

Analysis for Gear 3 and Gear 4

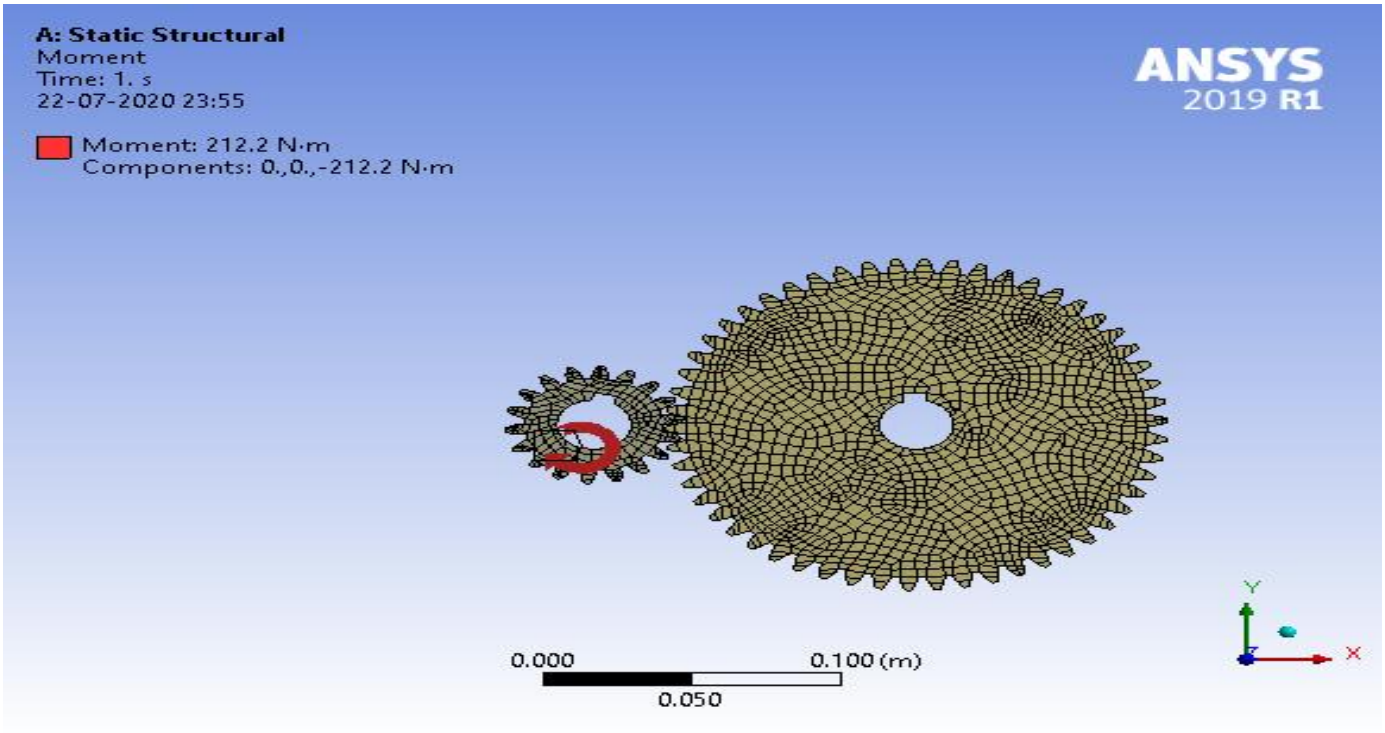


Fig:Moment on Gear 3 (212.2N-m-Clockwise)

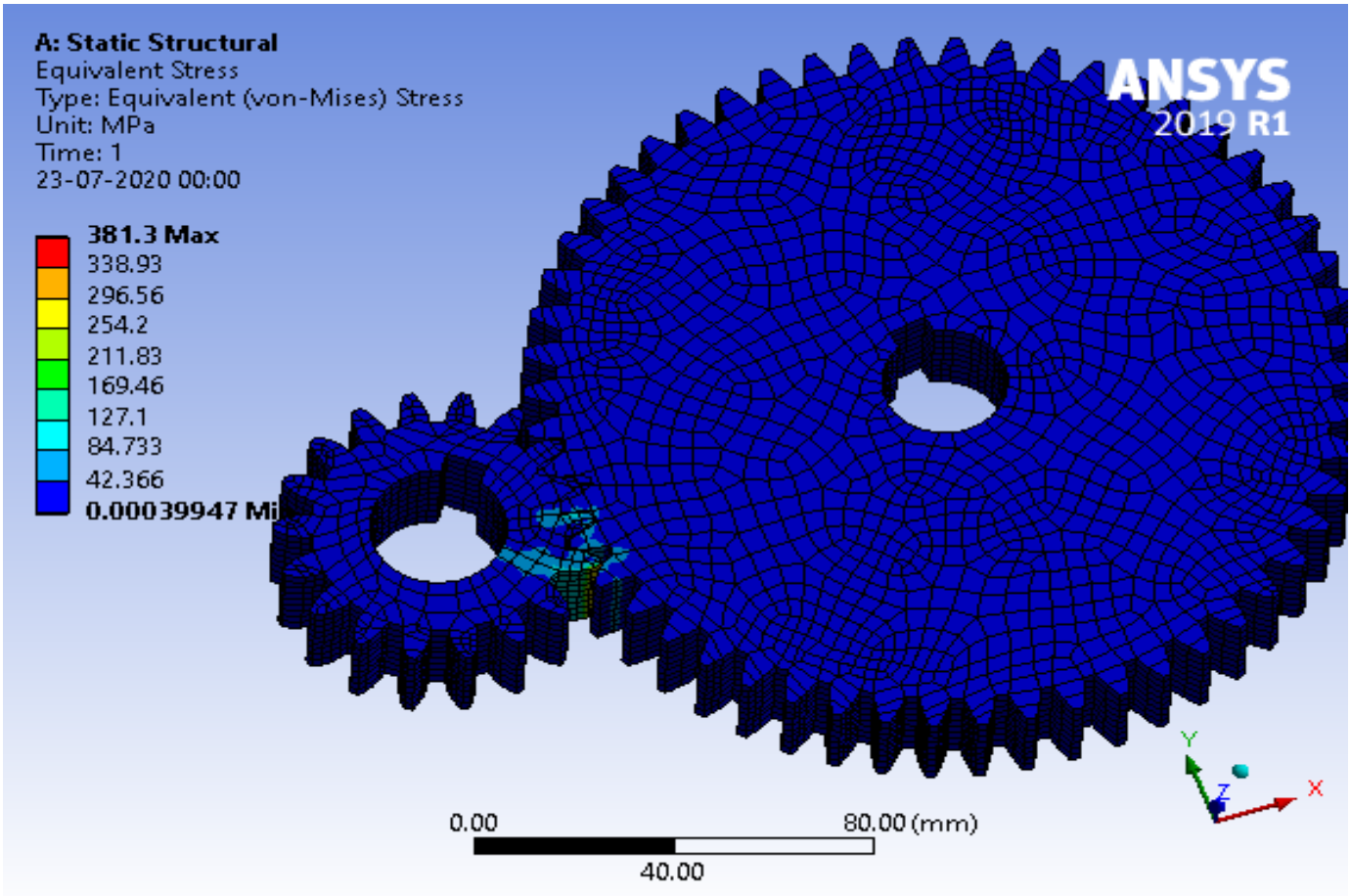


FIG: Contact Stresses

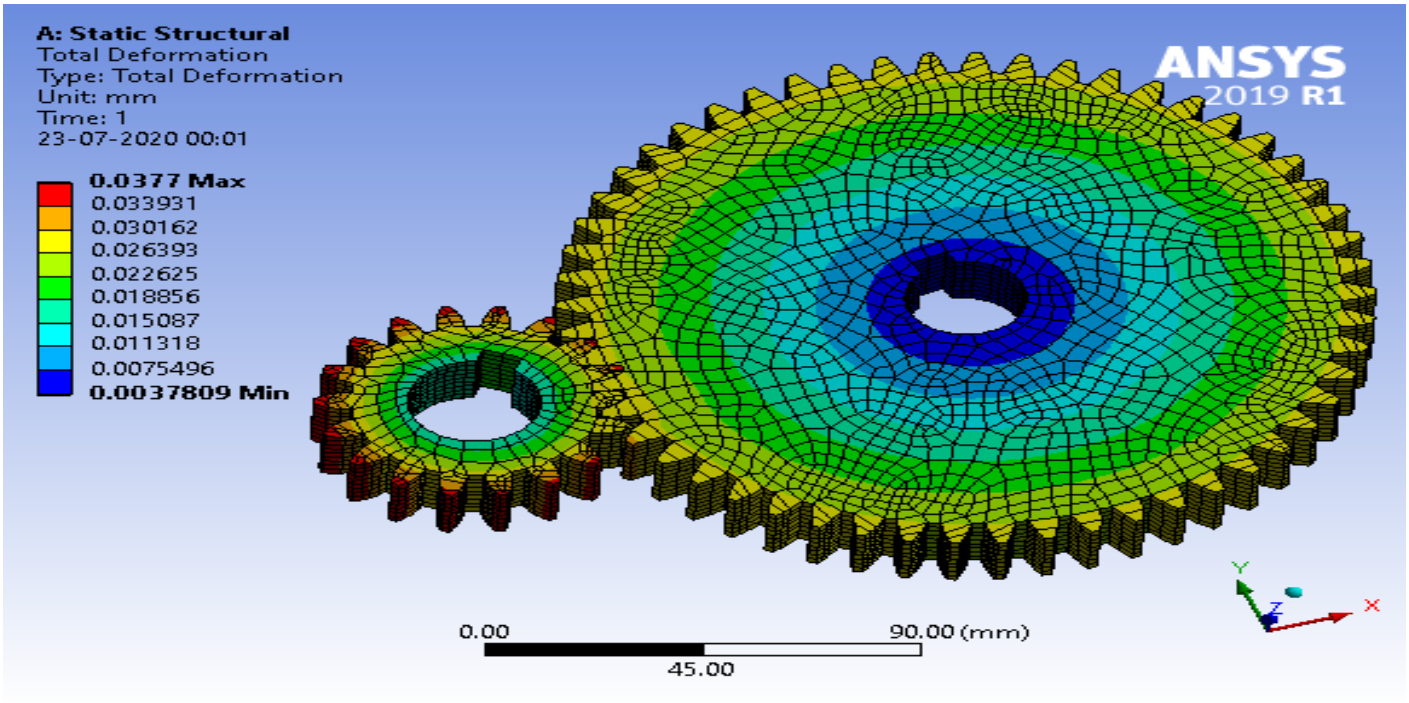


FIG: Deformation

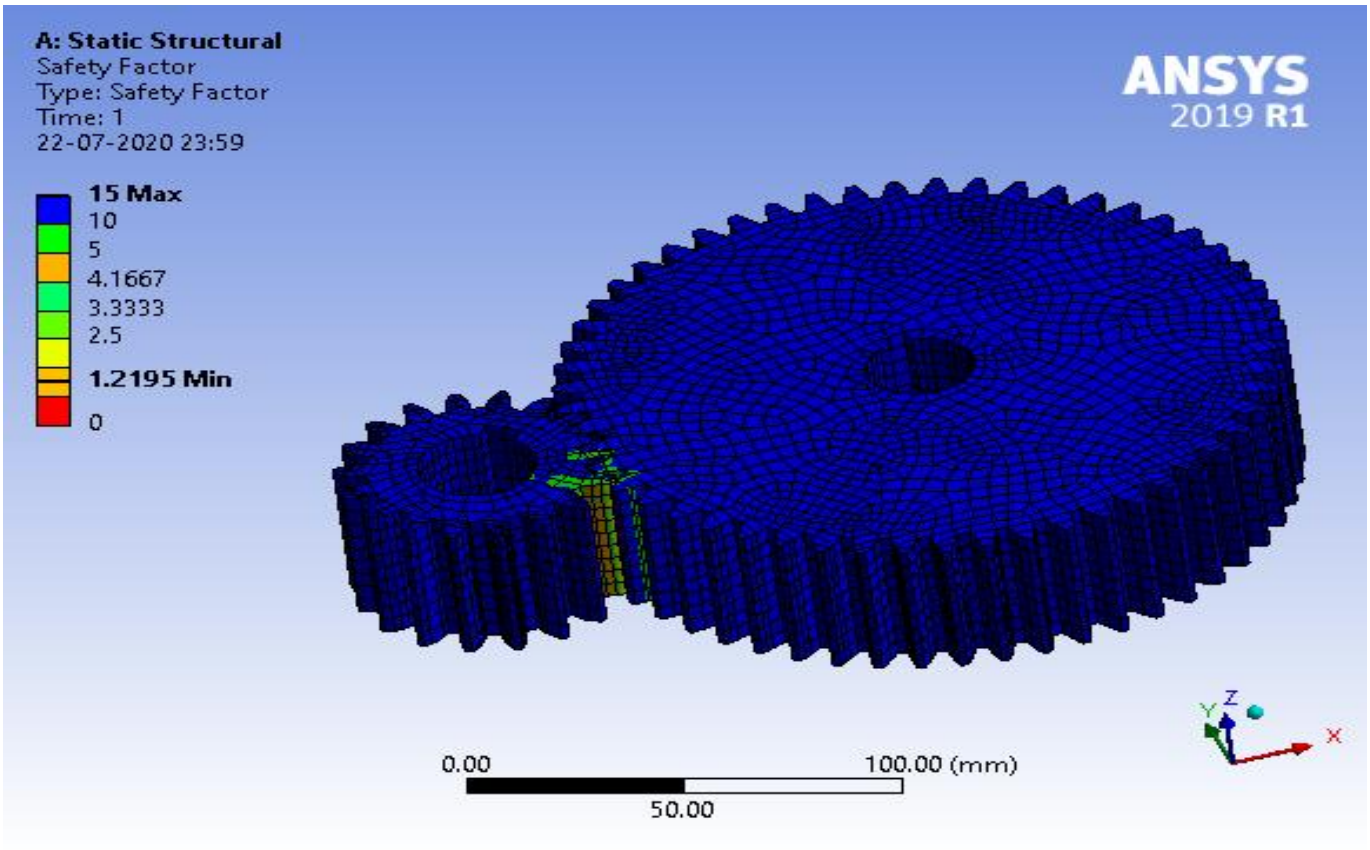


FIG: Factor of Safety

CONCLUSION:

The Design is well under the permissible limits and will not fail when working on this assumed data.So This is the required 6:1 Compound Gear Train.