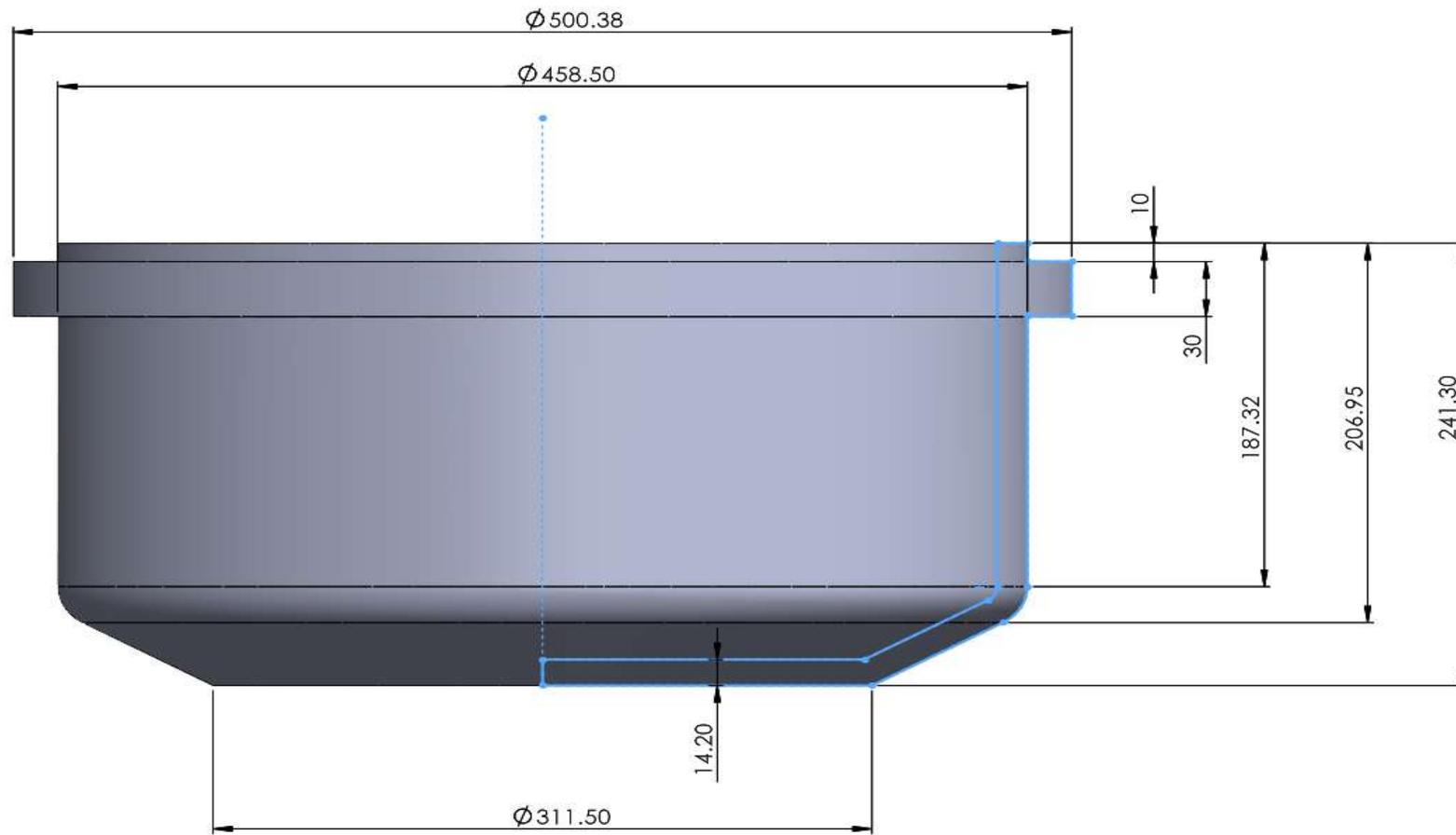
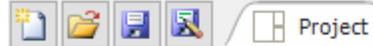


BRAKE DRUM



Dimensions of brake drum



- Toolbox
- Analysis Systems
 - Component Systems
 - Custom Systems
 - Design Exploration
 - ACT

Project Schematic

A	
1	Static Structural
2	Engineering Data ✓
3	Geometry ✓
4	Model ✓
5	Setup ✓
6	Solution ✓
7	Results ✓

STRUCTURAL STEEL

B	
1	Static Structural
2	Engineering Data ✓
3	Geometry ✓
4	Model ✓
5	Setup ✓
6	Solution ✓
7	Results ✓

GRAY CAST IRON

C	
1	Static Structural
2	Engineering Data ✓
3	Geometry ✓
4	Model ✓
5	Setup ✓
6	Solution ✓
7	Results ✓

CAST IRON EN GJL 100

D	
1	Static Structural
2	Engineering Data ✓
3	Geometry ✓
4	Model ✓
5	Setup ✓
6	Solution ✓
7	Results ✓

CARBON STEEL 1020 ANNEALED

E	
1	Static Structural
2	Engineering Data ✓
3	Geometry ✓
4	Model ✓
5	Setup ✓
6	Solution ✓
7	Results ✓

INCONEL 718

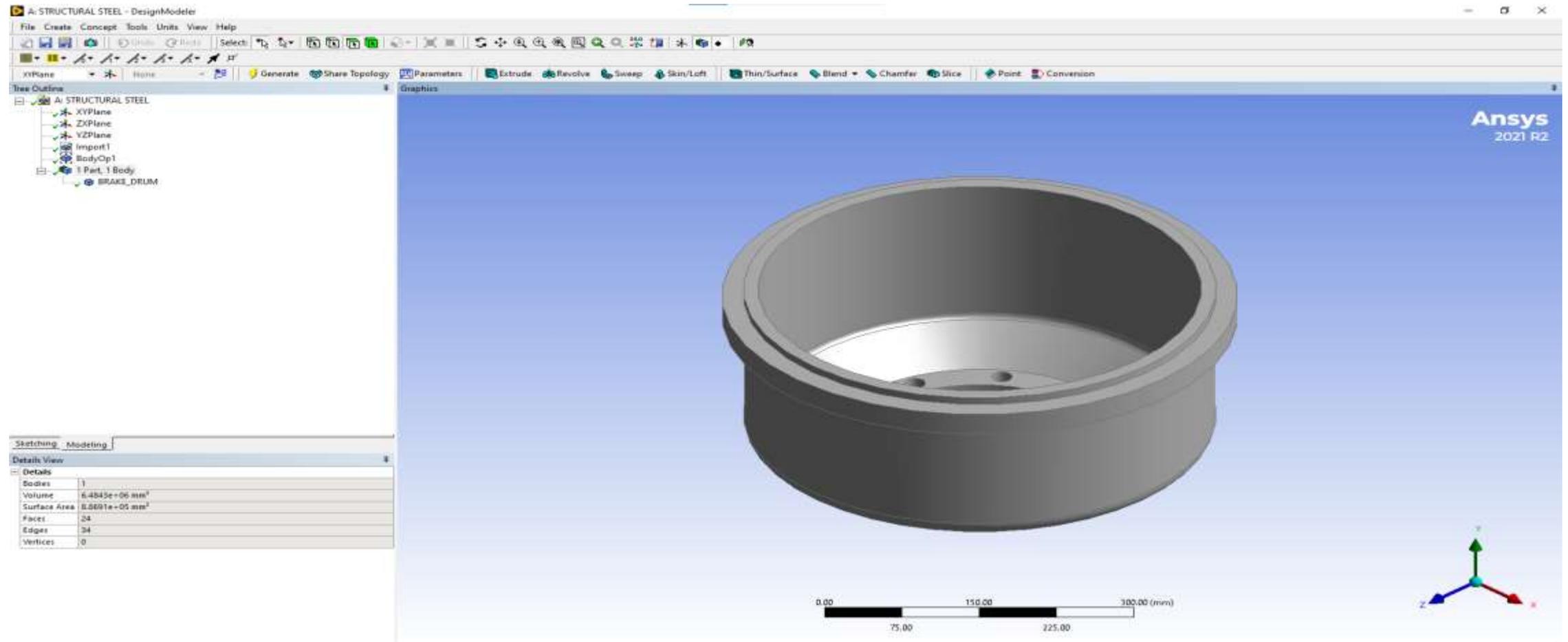
F	
1	Static Structural
2	Engineering Data ✓
3	Geometry ✓
4	Model ✓
5	Setup ✓
6	Solution ✓
7	Results ✓

SS 316 ANNEALED

	A	B	C	D	E
1	Contents of Engineering Data			Source	Description
2	Material				
3	Carbon steel, 1020, annealed		<input type="checkbox"/>	G	Carbon steel, AISI 1020, annealed Data compiled by the Granta Design team at ANSYS, incorporating various sources including JAHM and MagWeb. ANSYS Inc. provides no warranty for this data.
4	Cast iron, EN GJL 100		<input type="checkbox"/>	G	Cast iron, gray, flake graphite, EN GJL 100, BS EN 1561:1997 (record based on BS 1542:1990 BS grade 100) Data compiled by the Granta Design team at ANSYS, incorporating various sources including JAHM and MagWeb. ANSYS Inc. provides no warranty for this data.
5	Gray Cast Iron		<input type="checkbox"/>	G	
6	Inconel 625		<input type="checkbox"/>	A	Sample data representative of Inconel 625
7	Inconel 718		<input type="checkbox"/>	A	Sample data representative of Inconel 718
8	Stainless steel, 316, annealed		<input type="checkbox"/>	G	Stainless steel, austenitic, AISI 316, annealed, wrought Data compiled by the Granta Design team at ANSYS, incorporating various sources including JAHM and MagWeb. ANSYS Inc. provides no warranty for this data.
9	Structural Steel		<input type="checkbox"/>	G	Fatigue Data at zero mean stress comes from 1998 ASME BPV Code, Section 8, Div 2, Table 5-110.1
*	Click here to add a new material				

Importing model into ANSYS

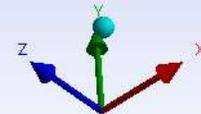
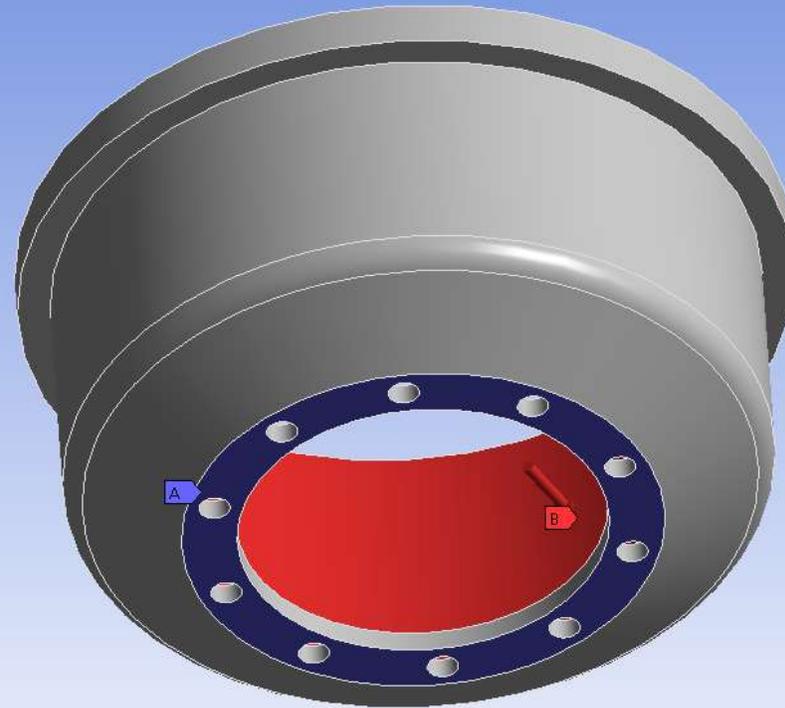
Ansys design modeler accepts the Solid Works file and it is made easy for importing the CAD model into the ANSYS system. The following image shows the imported model in ANSYS.



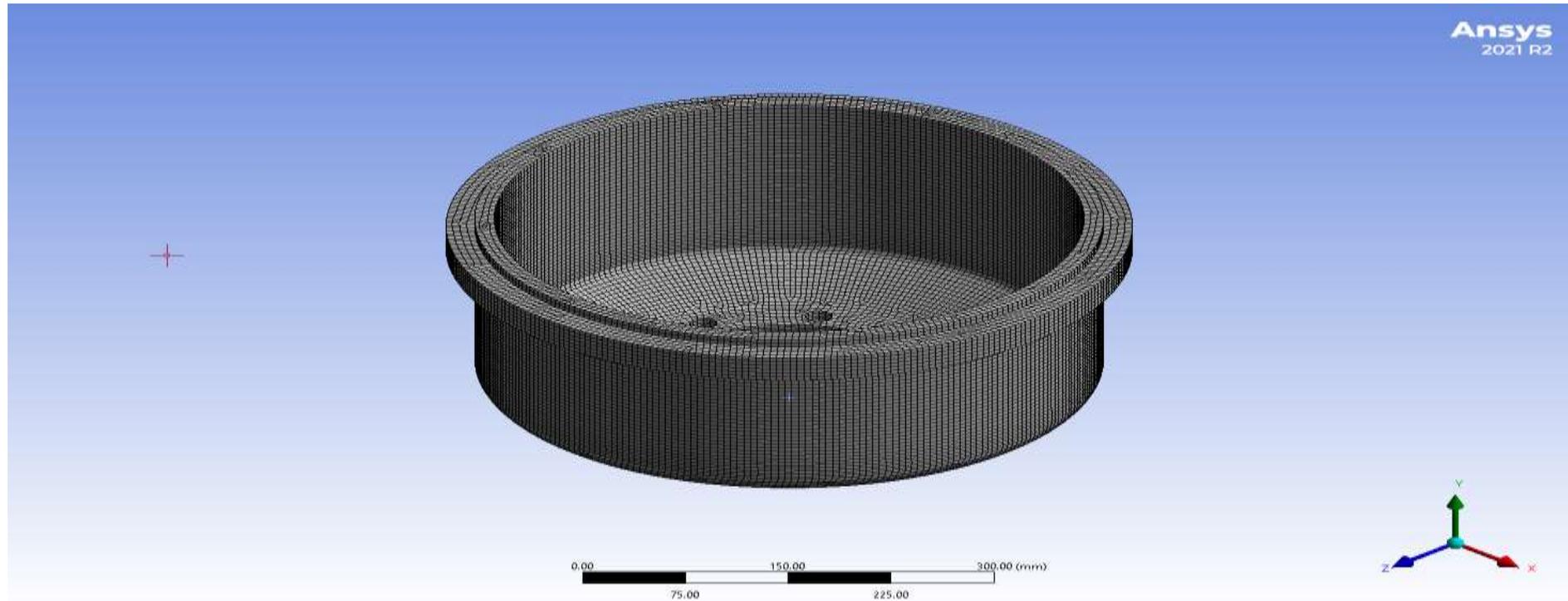
F: SS 316 ANNEALED
Static Structural
Time: 1. s
02-11-2022 10:13 AM

Ansys
2021 R2

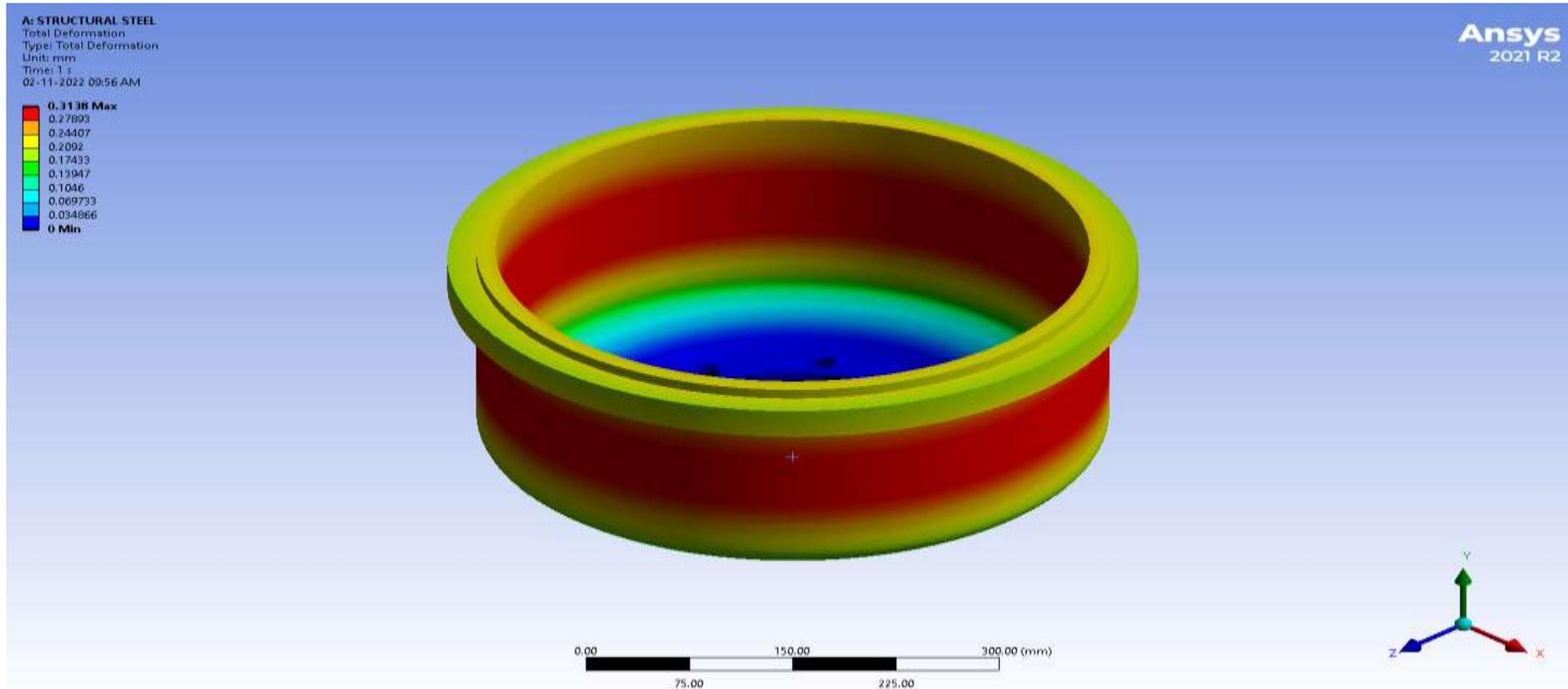
- A Fixed Support
- B Pressure: 1.5 MPa



Meshing – meshing is the process of dividing / splitting the model into number of divisions to obtain the result in desired location in the model. If the mesh size is less, more elements will be created, which results in accurate results. The following image is an example of meshed model.

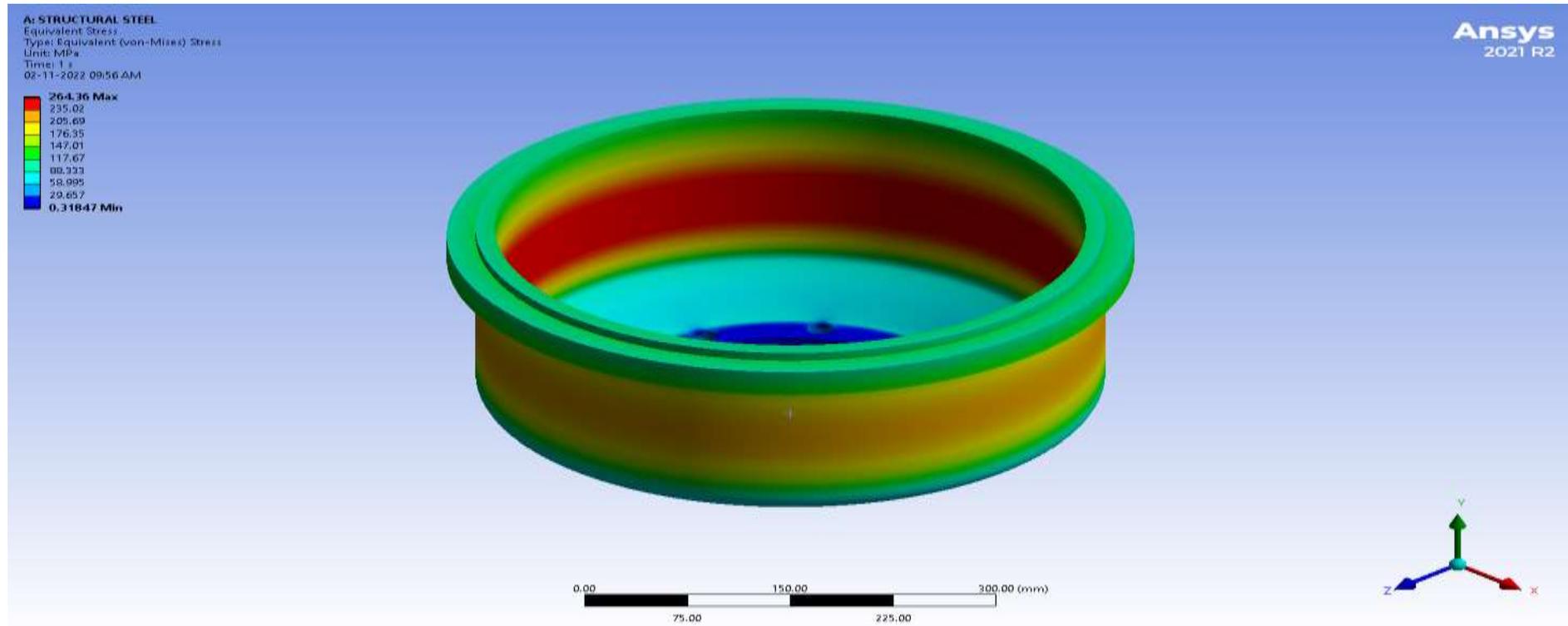


DEFORMATION - STRUCTURAL STEEL



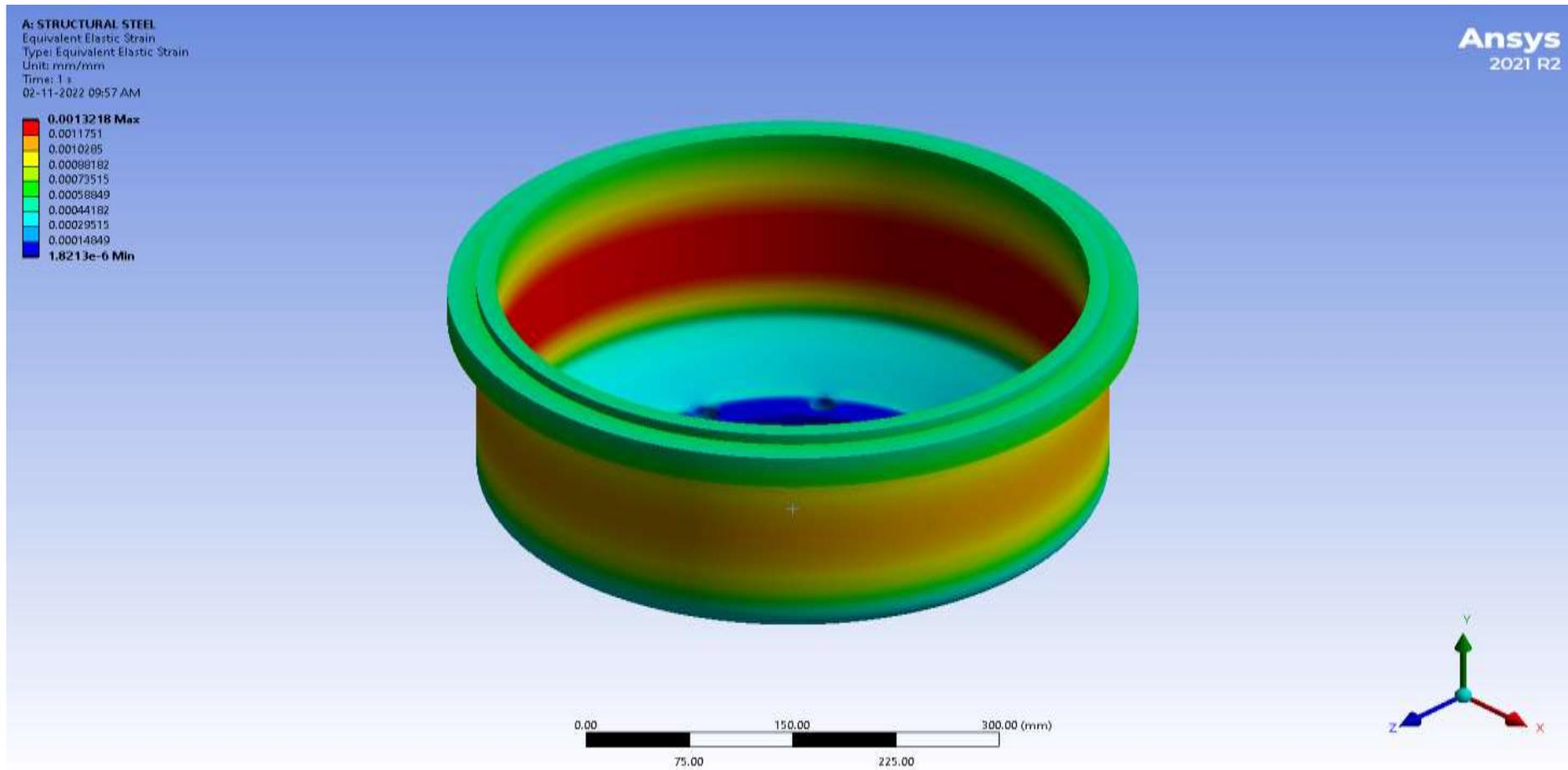
Total deformation is done for cross-sectional of work piece brake drum. Total Deformation of Structural Steel is calculated drum which is minimum of about 0 mm and maximum of 0.3138 mm around the circumference of the drum.

STRESS - STRUCTURAL STEEL



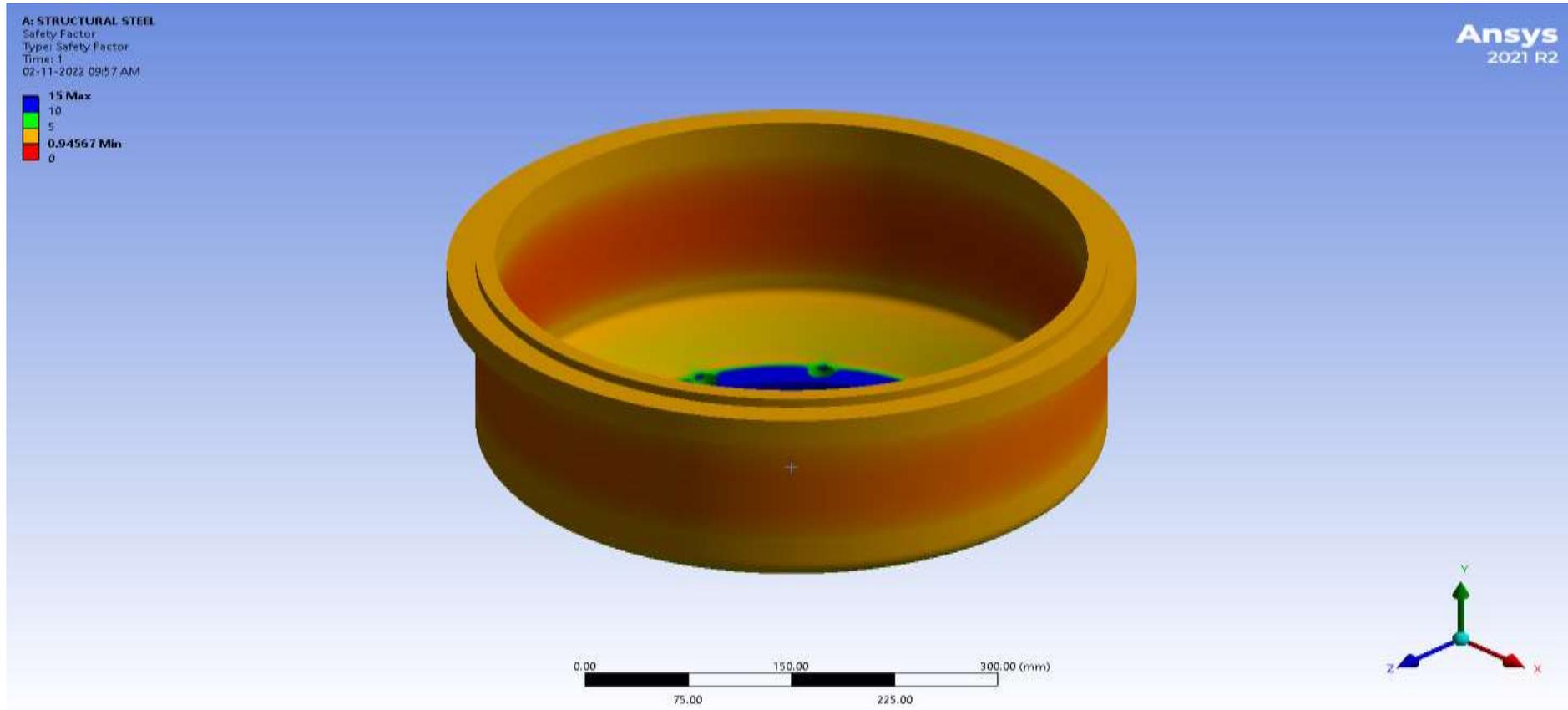
Equivalent stress is done for cross-sectional of work piece brake drum. Equivalent stress of Structural Steel is calculated drum which is minimum of about 0.31847 Mpa and maximum of 264.36 Mpa around the circumference of the drum.

STRAIN - STRUCTURAL STEEL



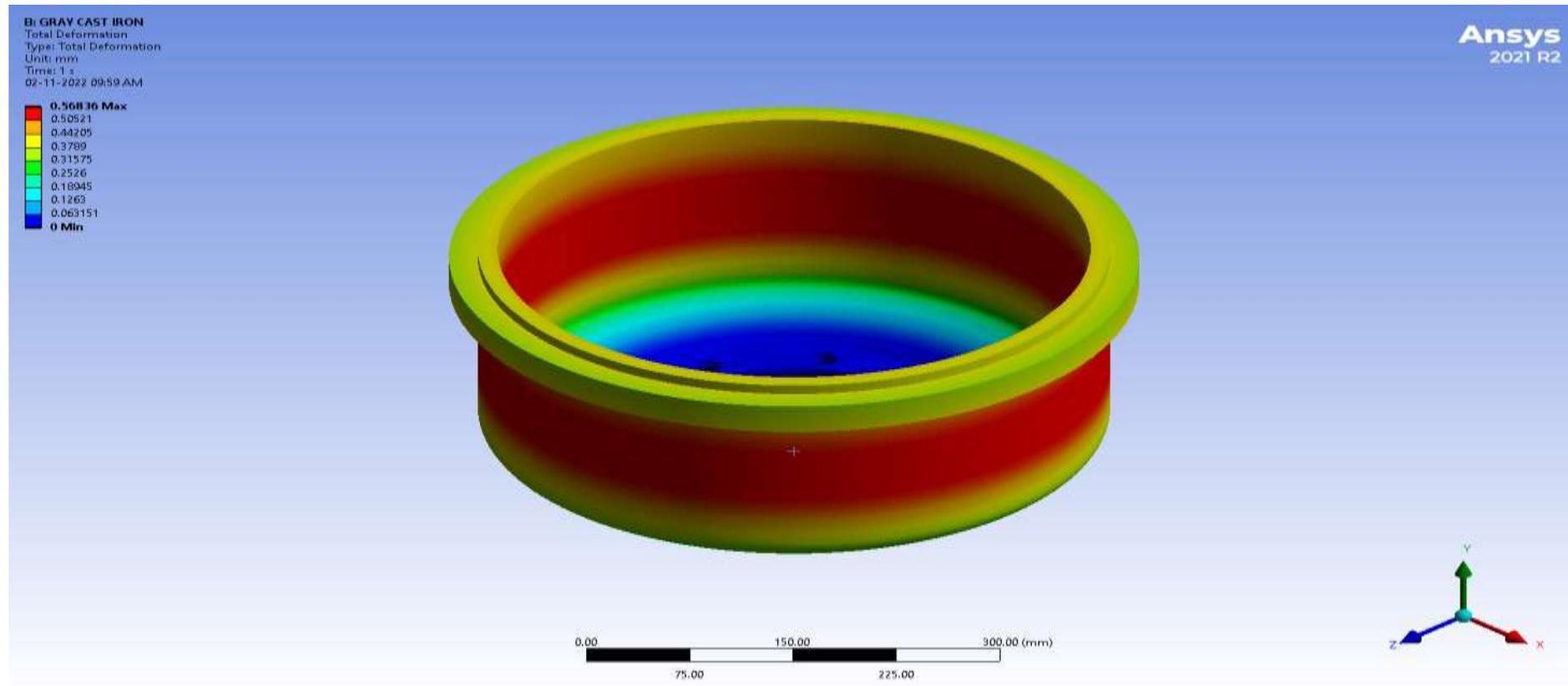
Equivalent strain is done for cross-sectional of work piece brake drum. Equivalent strain of Structural Steel is calculated drum which is minimum of about 1.8213×10^{-6} Mpa and maximum of 0.0013 Mpa around the circumference of the drum.

FOS - STRUCTURAL STEEL



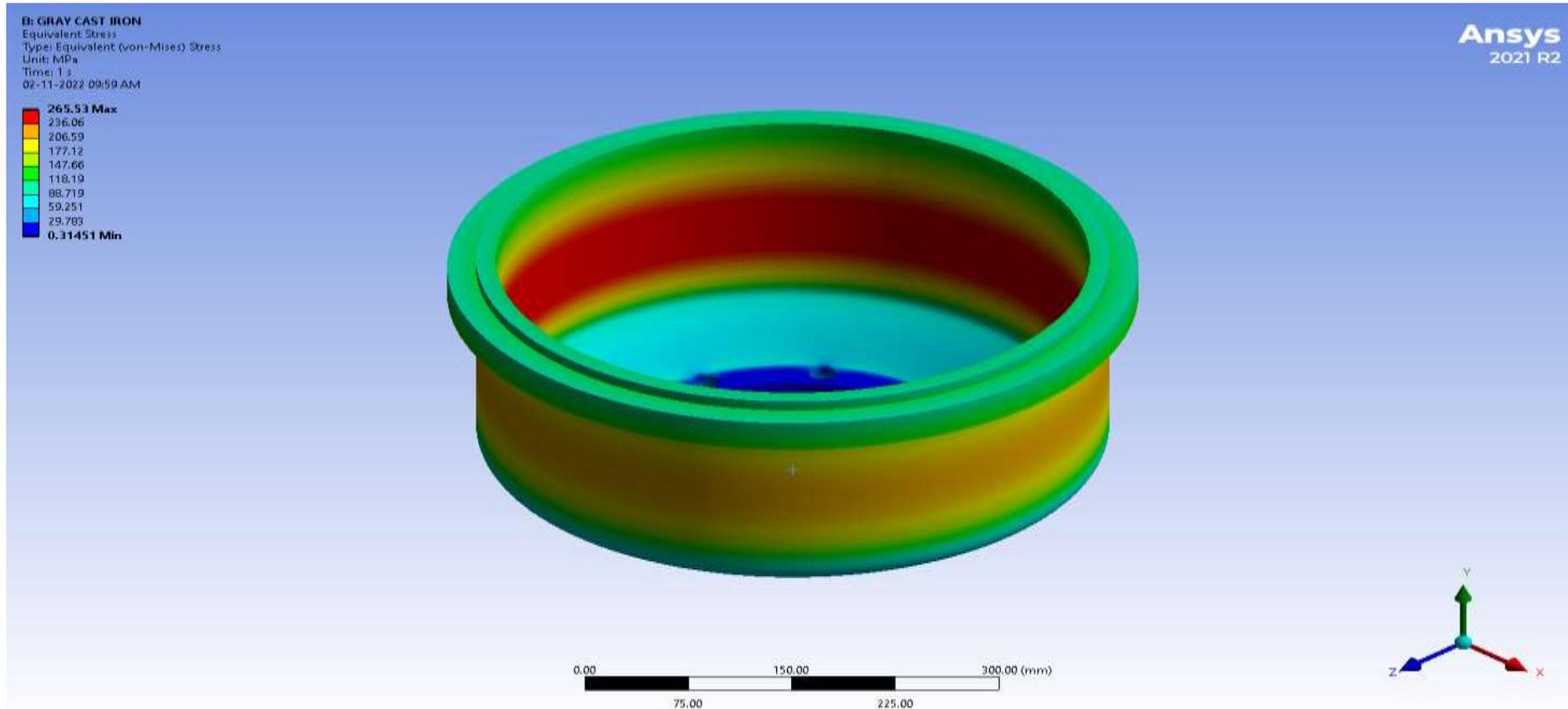
Safety factor is done for cross-sectional of work piece brake drum. safety factor of Structural Steel is calculated drum which is minimum of about 0 and maximum of 15 around the circumference of the drum.

DEFORMATION - GRAY CAST IRON



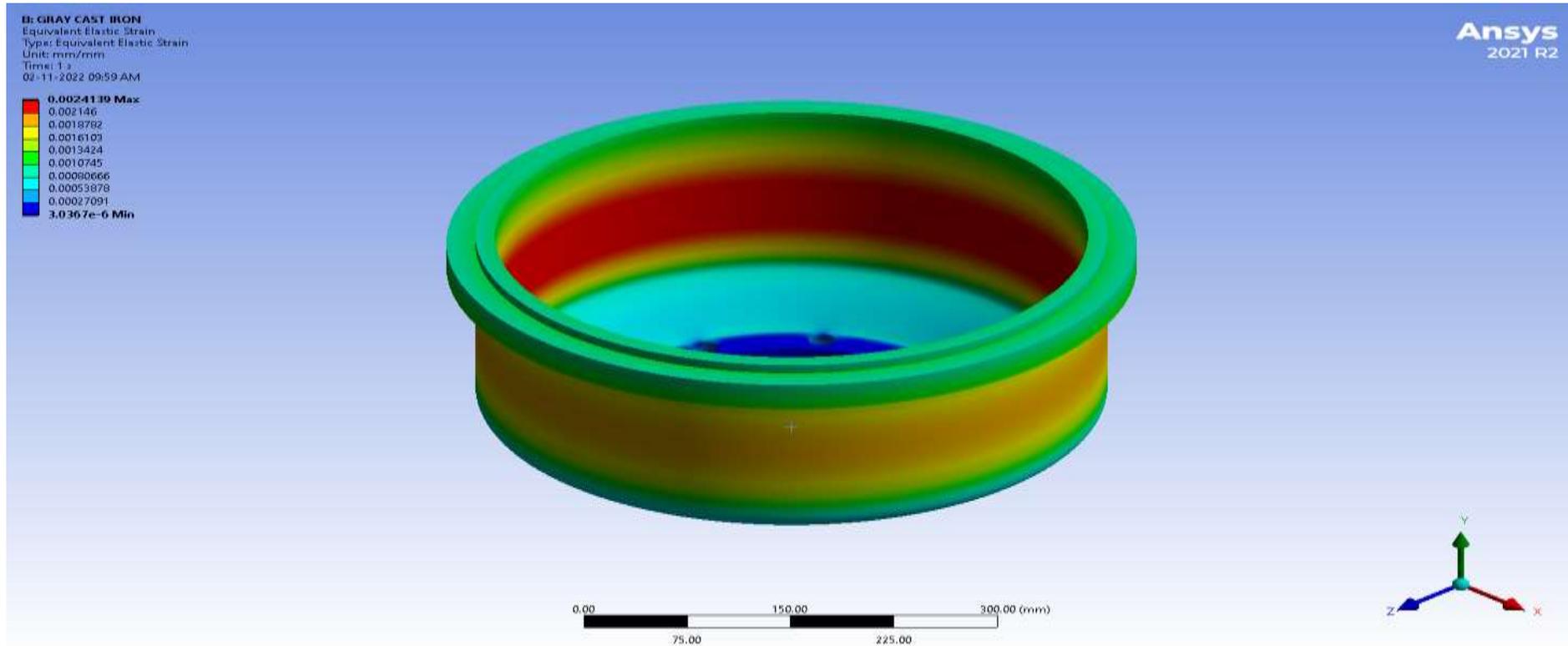
Total deformation is done for cross-sectional of work piece brake drum. Total Deformation of Gary Cast Iron is calculated drum which is minimum of about 0 mm and maximum of 0.56836 mm around the circumference of the drum.

STRESS - GRAY CAST IRON



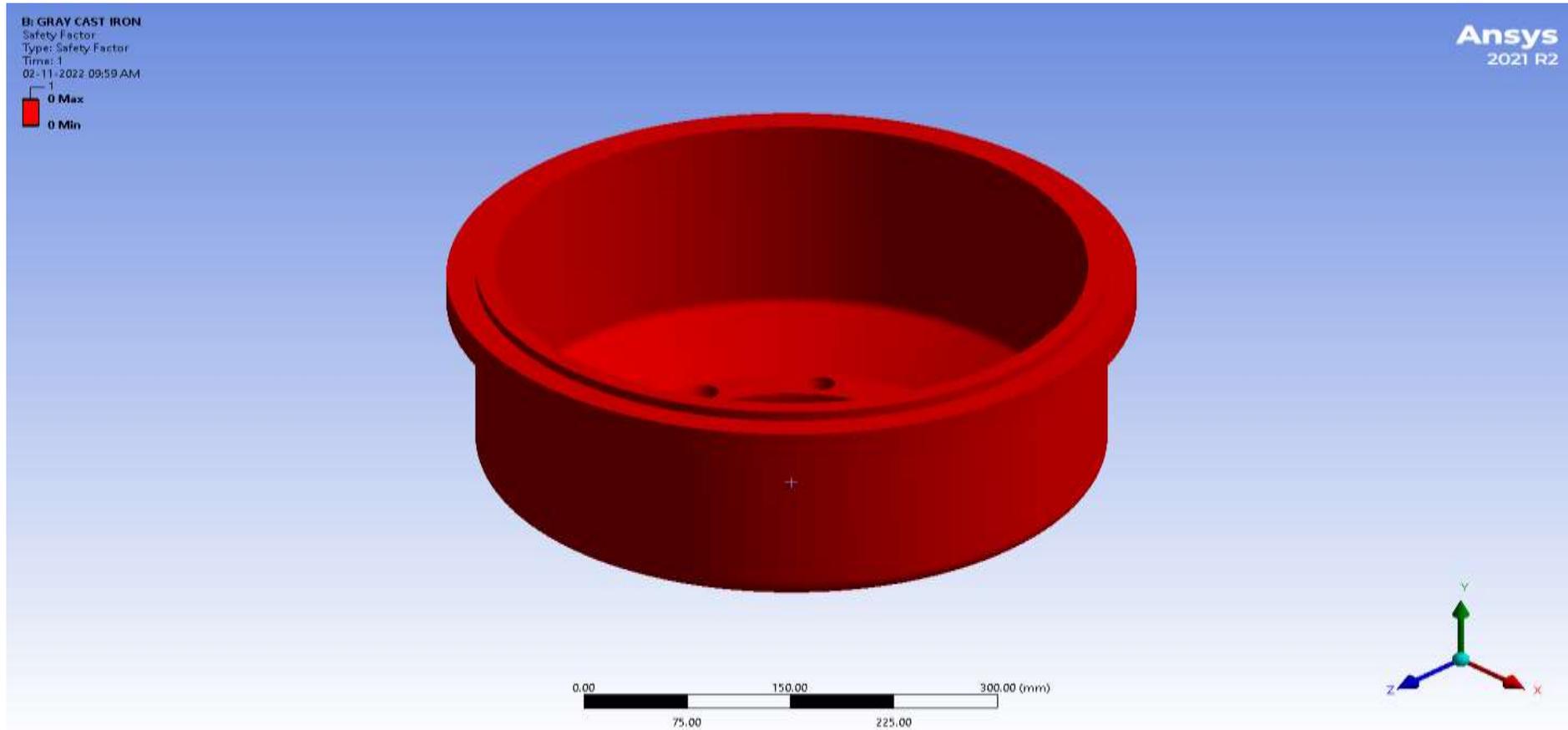
Equivalent stress is done for cross-sectional of work piece brake drum. Equivalent stress of Gary Cast Iron is calculated drum which is minimum of about 0.31451 Mpa and maximum of 265.53 Mpa around the circumference of the drum.

STRAIN - GRAY CAST IRON



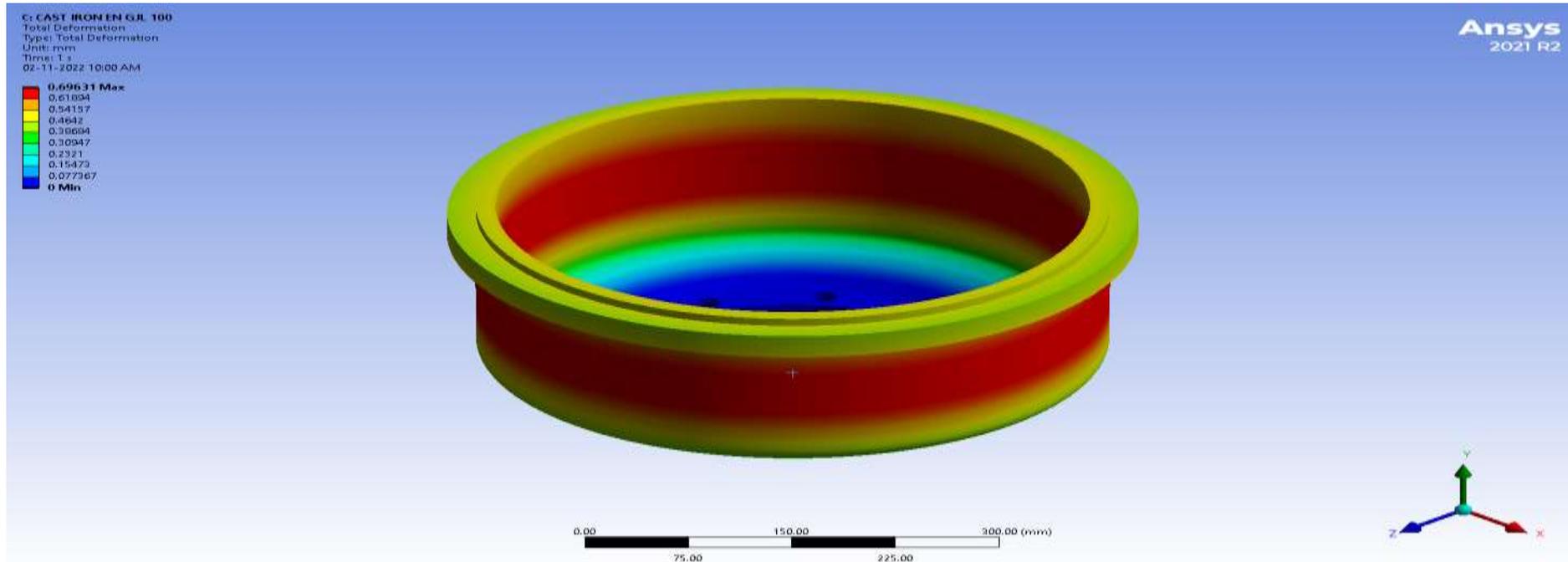
Equivalent strain is done for cross-sectional of work piece brake drum. Equivalent strain of Gary Cast Iron is calculated drum which is minimum of about 3.0×10^{-6} Mpa and maximum of 0.00241 Mpa around the circumference of the drum.

FOS - GRAY CAST IRON



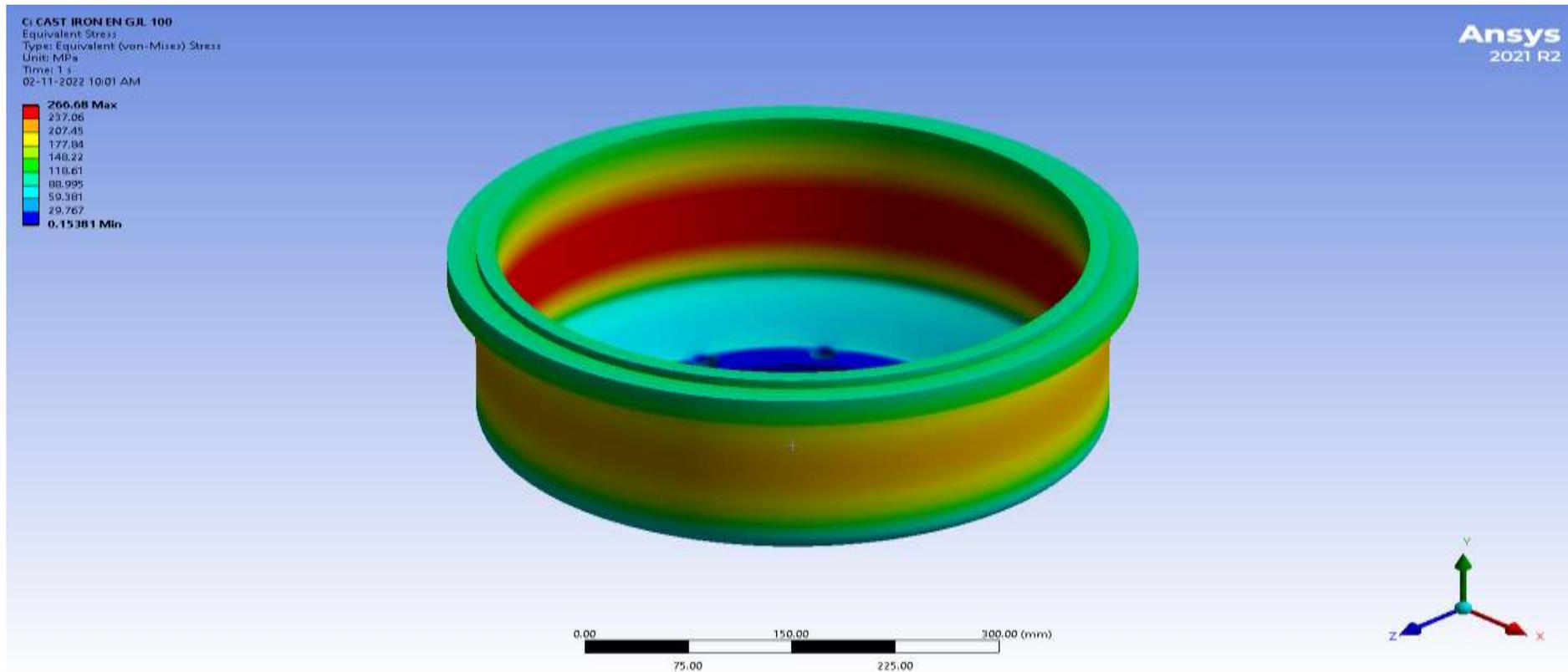
Safety factor is done for cross-sectional of work piece brake drum. safety factor of Gary Cast Iron is calculated drum which is minimum of about 0 and maximum of 0 around the circumference of the drum.

DEFORMATION - CAST IRON EN GJL 100



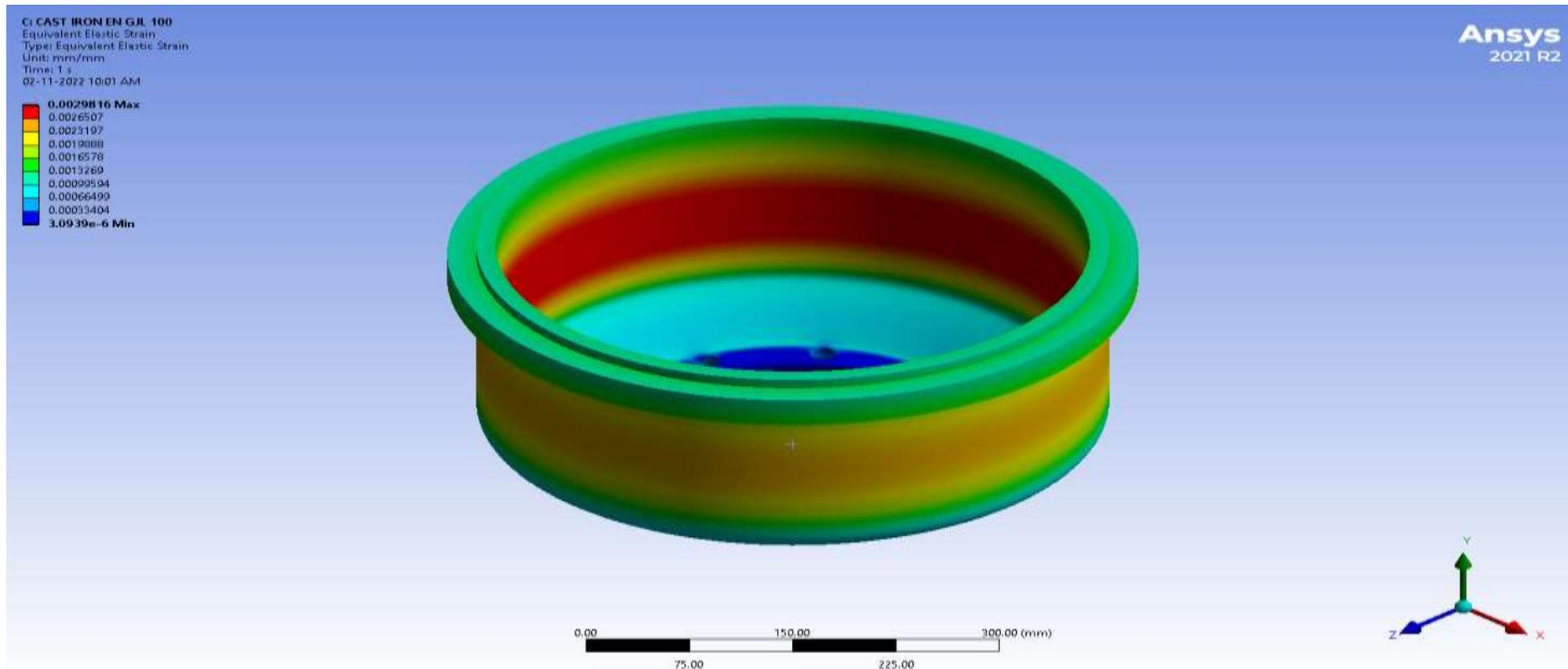
Total deformation is done for cross-sectional of work piece brake drum. Total Deformation of CAST IRON EN GJL 100 is calculated drum which is minimum of about 0 mm and maximum of 0.69631 mm around the circumference of the drum.

STRESS - CAST IRON EN GJL 100



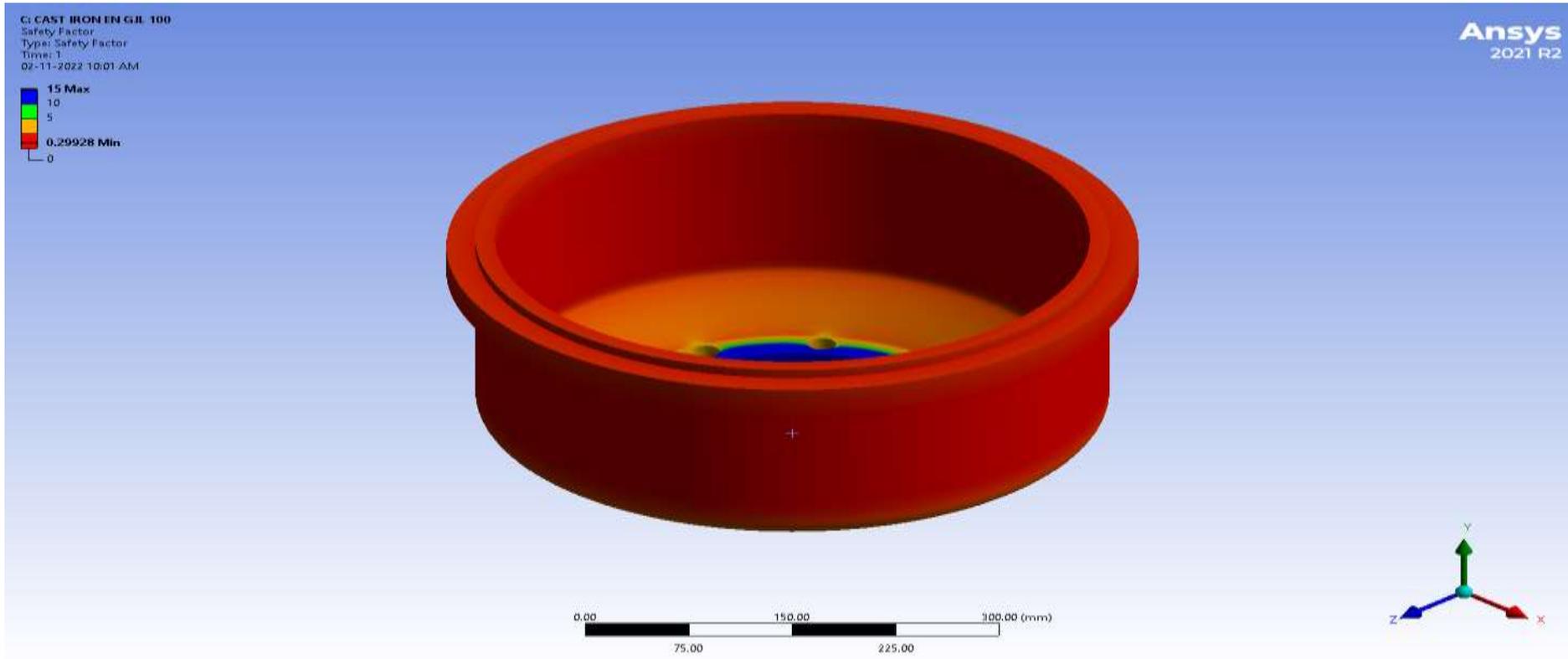
Equivalent stress is done for cross-sectional of work piece brake drum. Equivalent stress of CAST IRON EN GJL 100 is calculated drum which is minimum of about 0.15381 Mpa and maximum of 266.68 Mpa around the circumference of the drum.

STRAIN - CAST IRON EN GJL 100



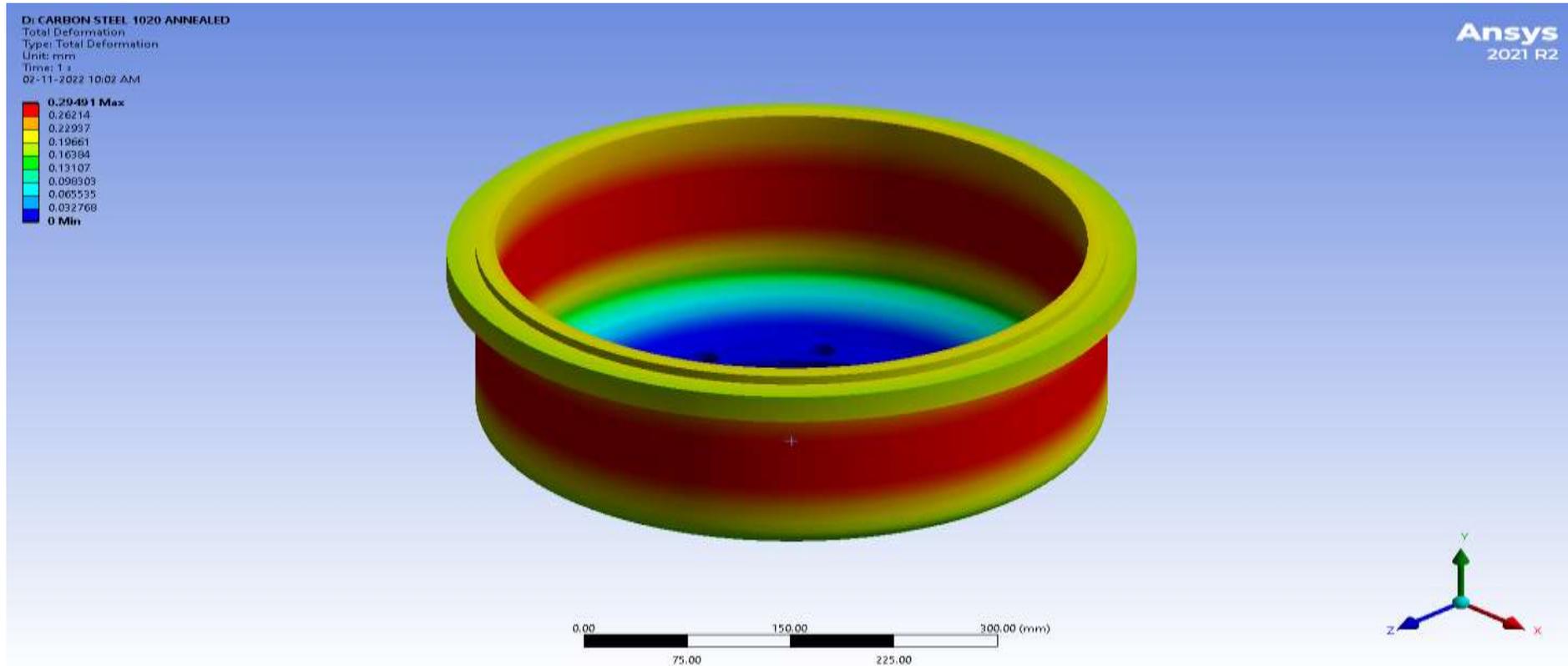
Equivalent strain is done for cross-sectional of work piece brake drum. Equivalent strain of CAST IRON EN GJL 100 l is calculated drum which is minimum of about 3.0939×10^{-6} Mpa and maximum of 0.00298 Mpa around the circumference of the drum.

FOS - CAST IRON EN GJL 100



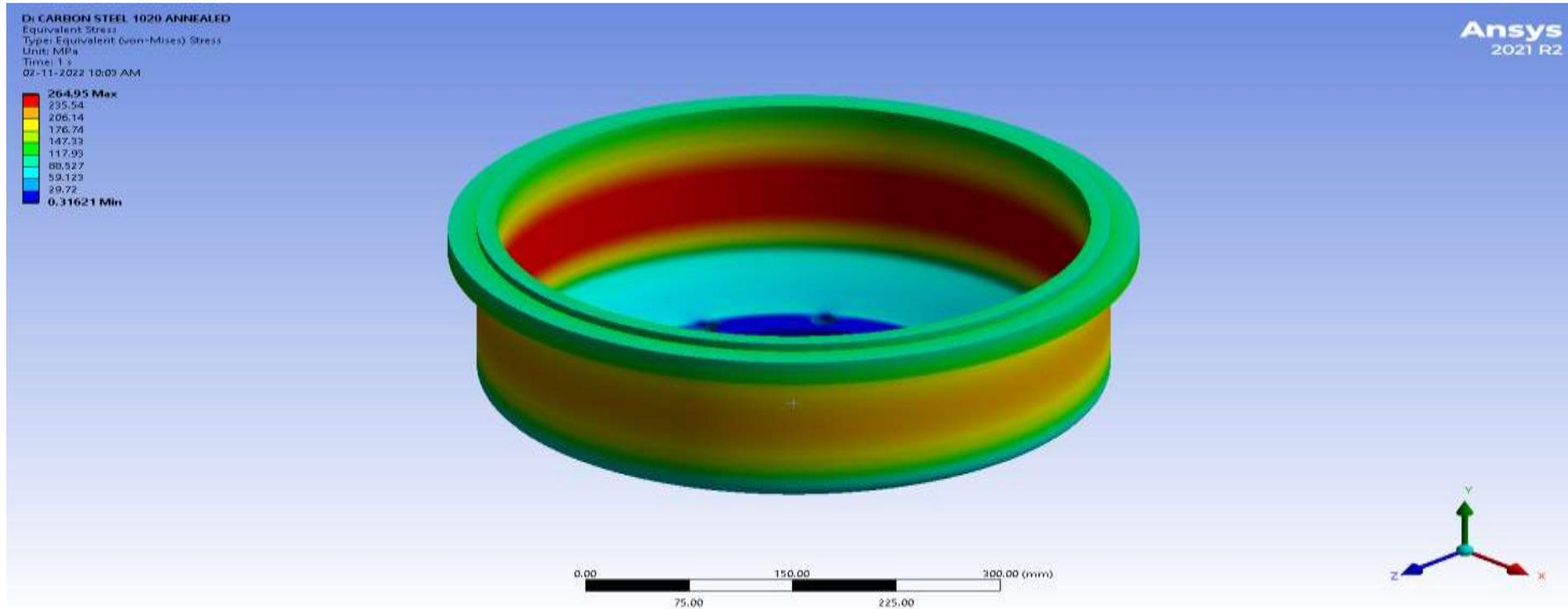
Safety factor is done for cross-sectional of work piece brake drum. safety factor of CAST IRON EN GJL 100 is calculated drum which is minimum of about 0 and maximum of 0.29 around the circumference of the drum.

DEFORMATION - CARBON STEEL 1020 ANNEALED



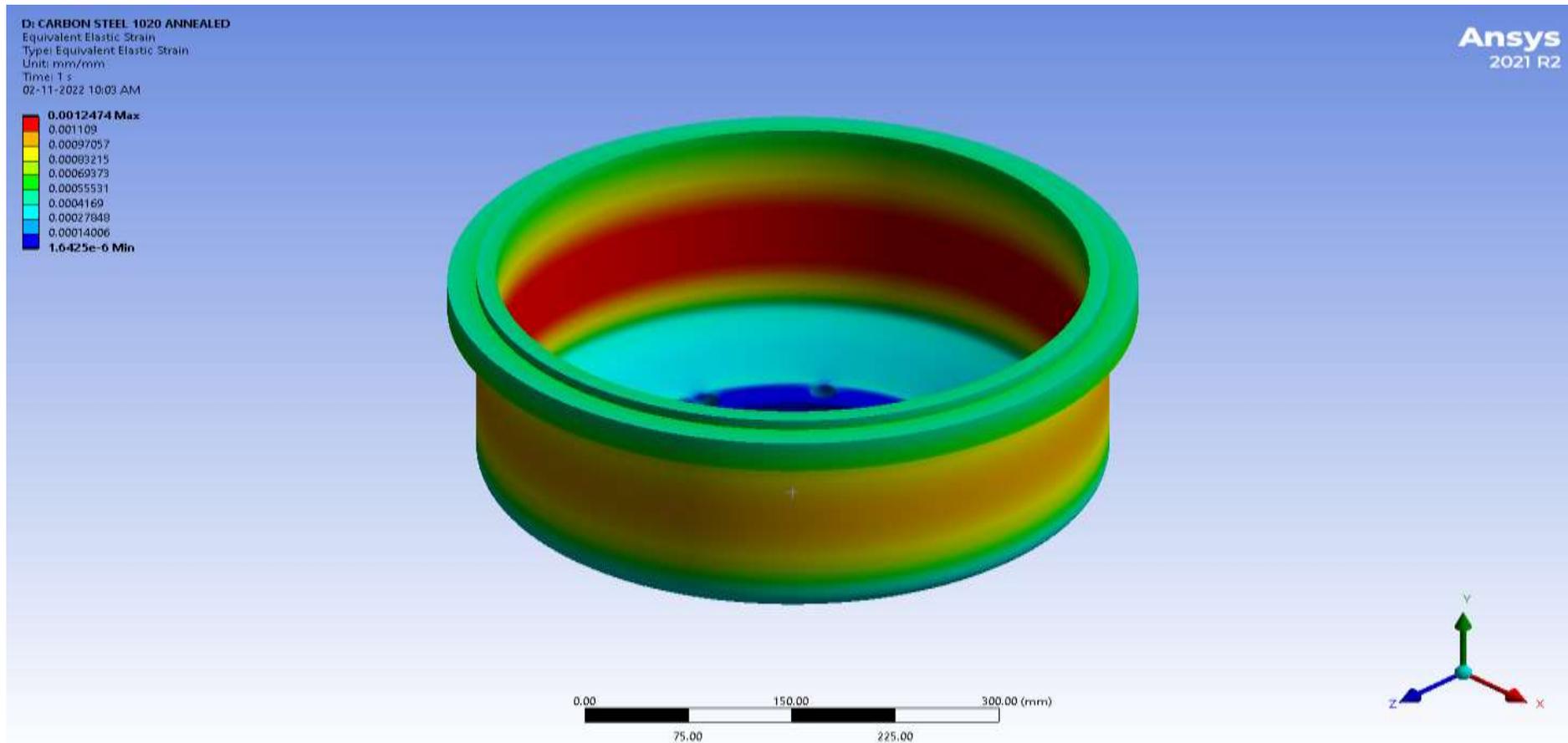
Total deformation is done for cross-sectional of work piece brake drum. Total Deformation of CARBON STEEL 1020 ANNEALED is calculated drum which is minimum of about 0 mm and maximum of 0.2949 mm around the circumference of the drum.

STRESS - CARBON STEEL 1020 ANNEALED



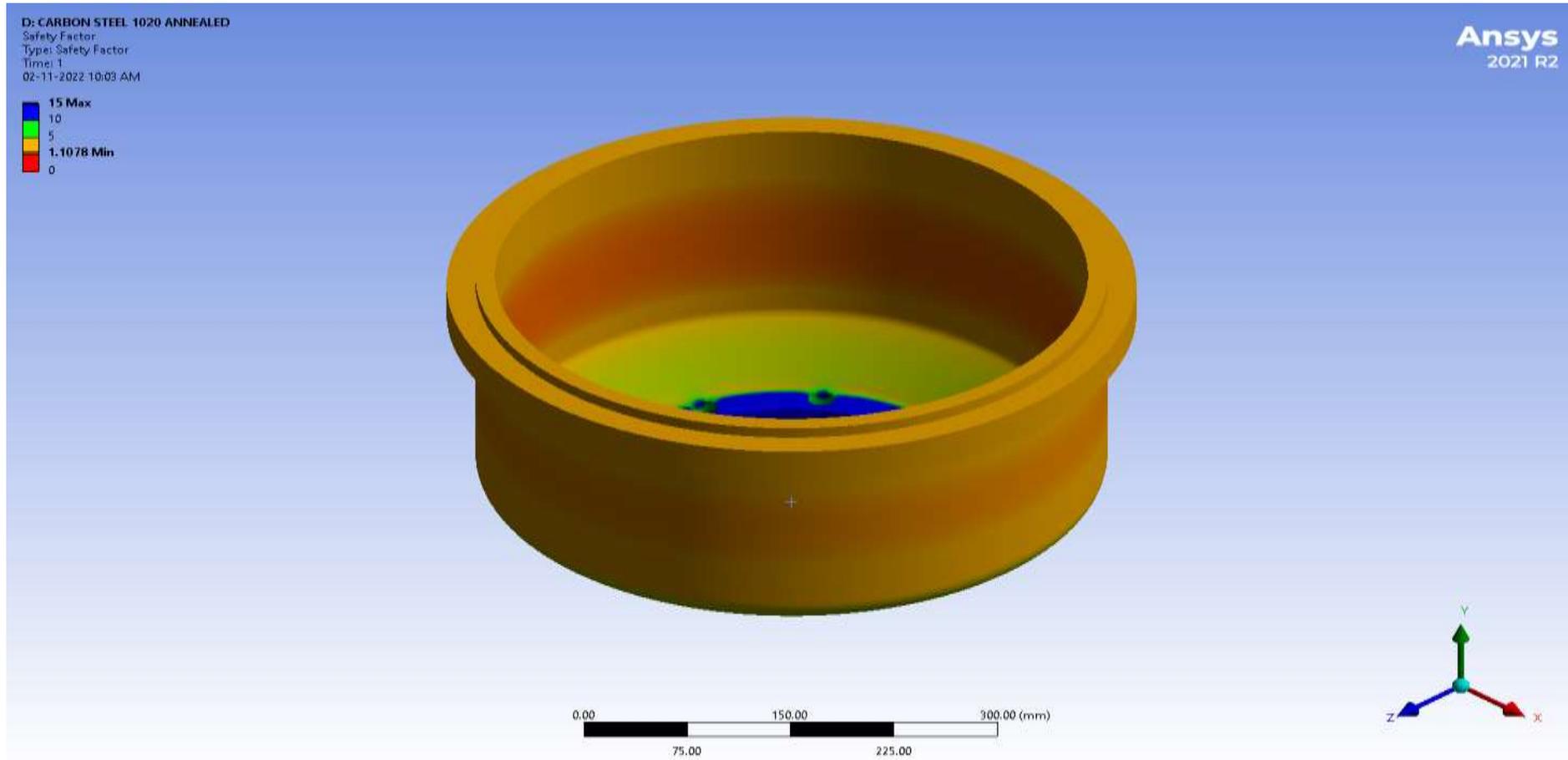
Equivalent stress is done for cross-sectional of work piece brake drum. Equivalent stress of CARBON STEEL 1020 ANNEALED is calculated drum which is minimum of about 0.3162 Mpa and maximum of 264.95 Mpa around the circumference of the drum.

STRAIN - CARBON STEEL 1020 ANNEALED



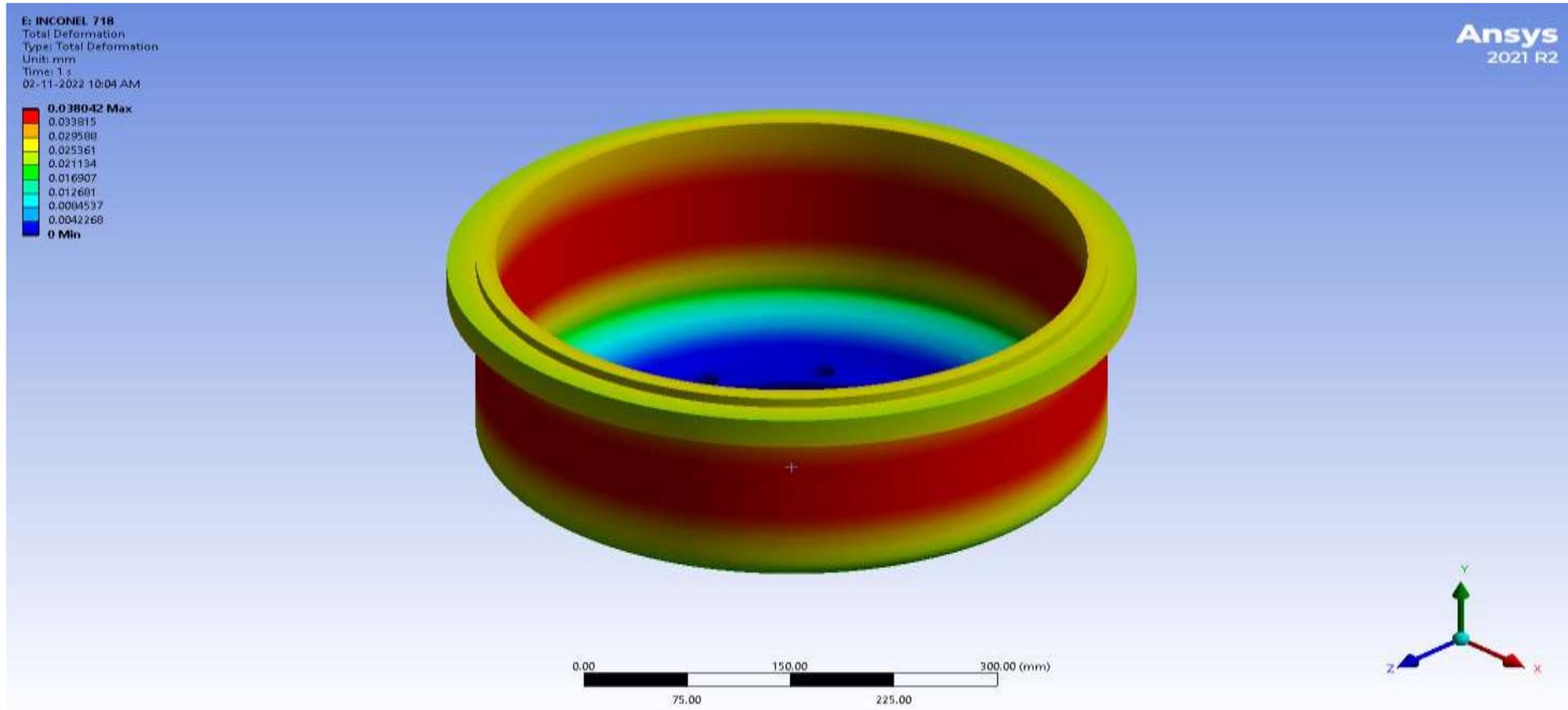
Equivalent strain is done for cross-sectional of work piece brake drum. Equivalent strain of CARBON STEEL 1020 ANNEALED is calculated drum which is minimum of about 1.6425×10^{-6} Mpa and maximum of 0.001247 Mpa around the circumference of the drum.

FOS - CARBON STEEL 1020 ANNEALED



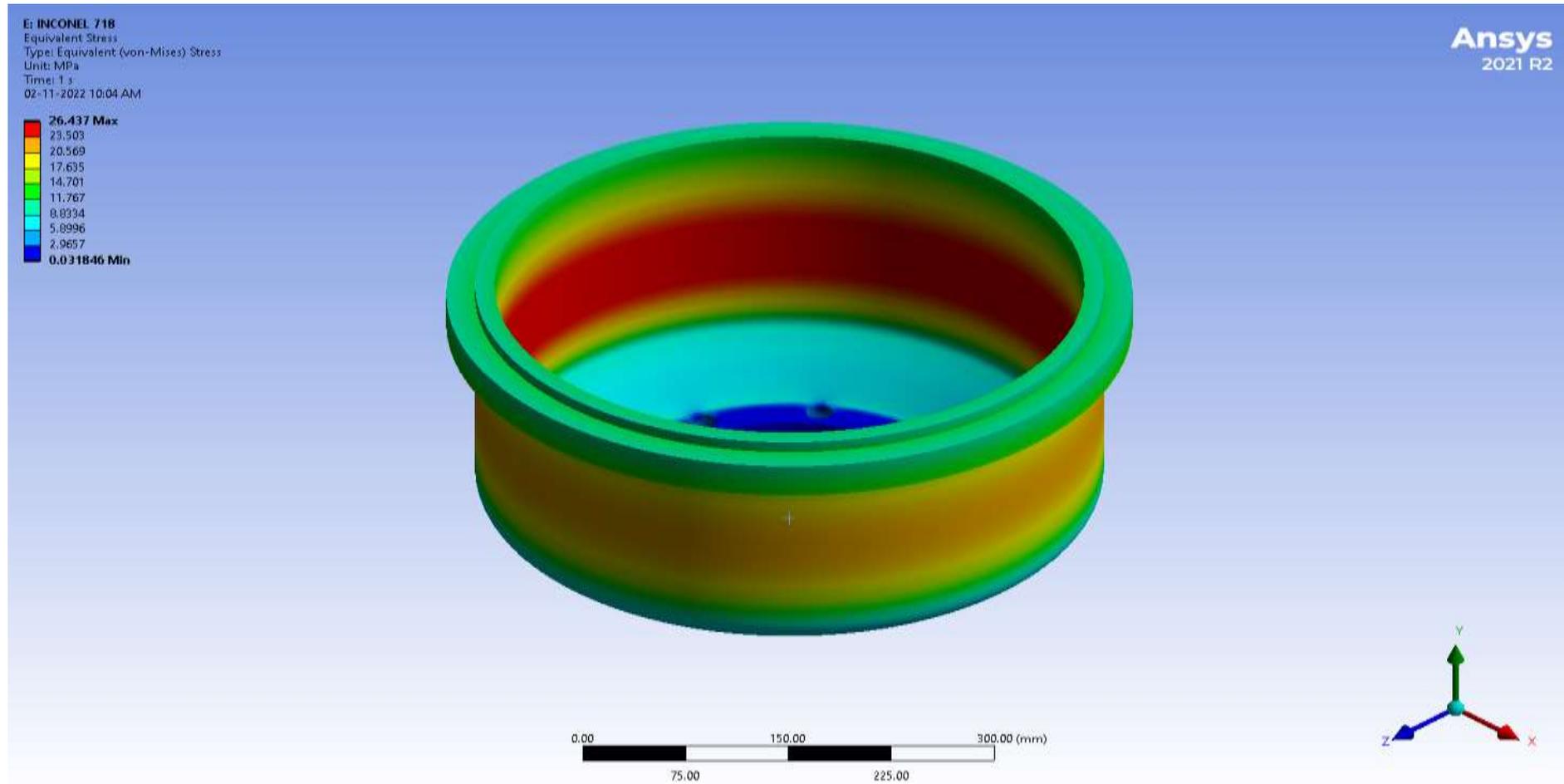
Safety factor is done for cross-sectional of work piece brake drum. safety factor of CARBON STEEL 1020 ANNEALED is calculated drum which is minimum of about 0 and maximum of 1.11 around the circumference of the drum.

DEFORMATION - INCONEL 718



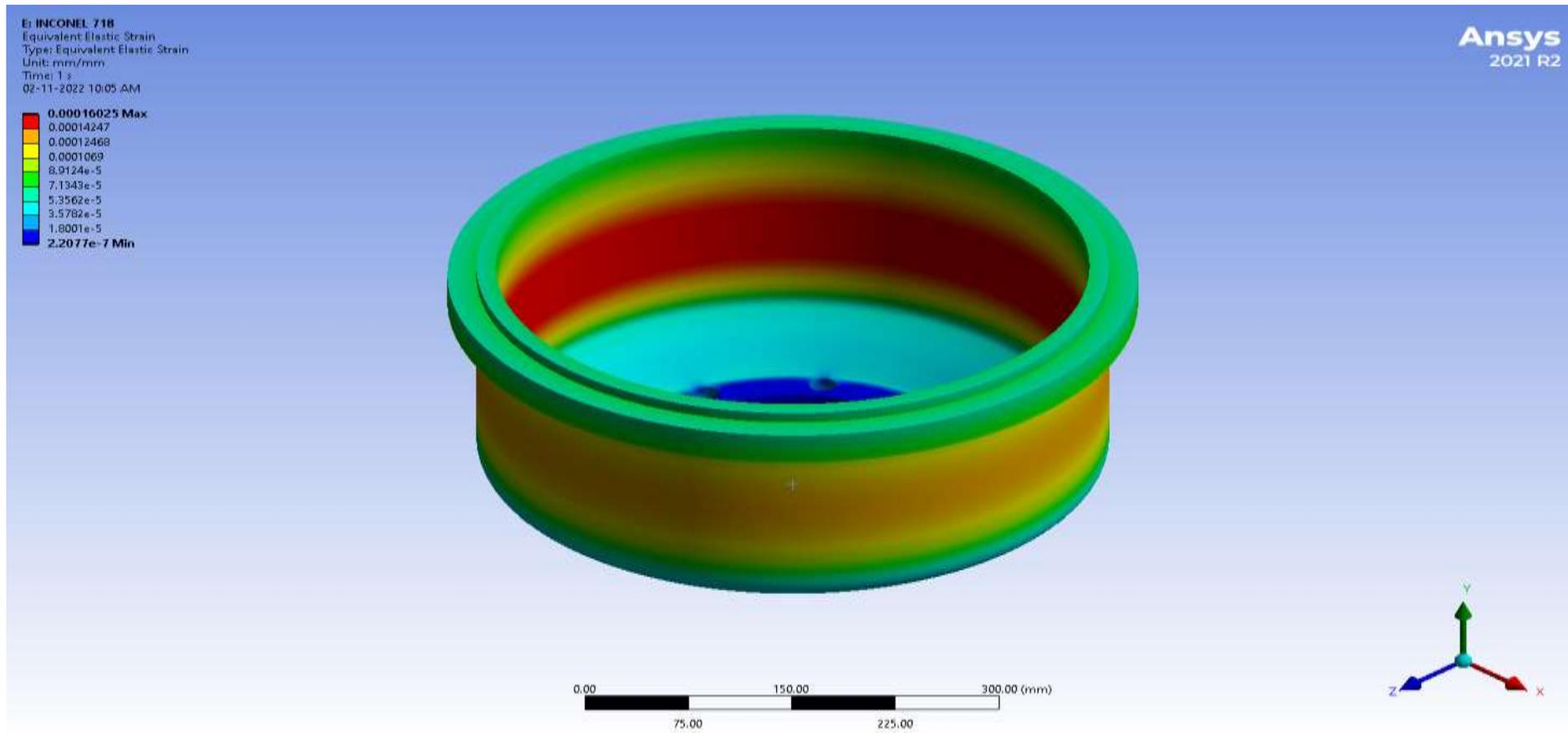
Total deformation is done for cross-sectional of work piece brake drum. Total Deformation of INCONEL 718 is calculated drum which is minimum of about 0 mm and maximum of 0.038 mm around the circumference of the drum.

STRESS - INCONEL 718



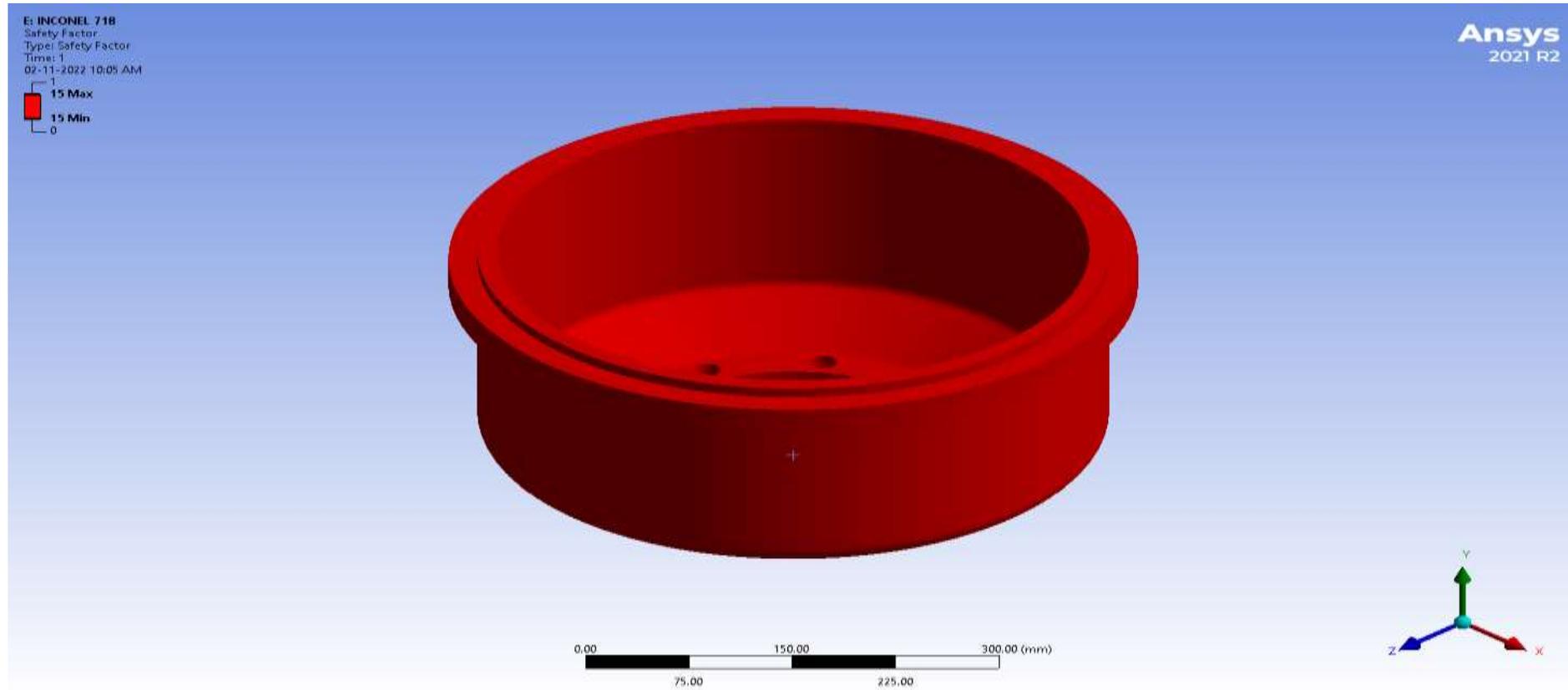
Equivalent stress is done for cross-sectional of work piece brake drum. Equivalent stress of INCONEL 718 is calculated drum which is minimum of about 0.3184 Mpa and maximum of 26.44 Mpa around the circumference of the drum.

STRAIN - INCONEL 718



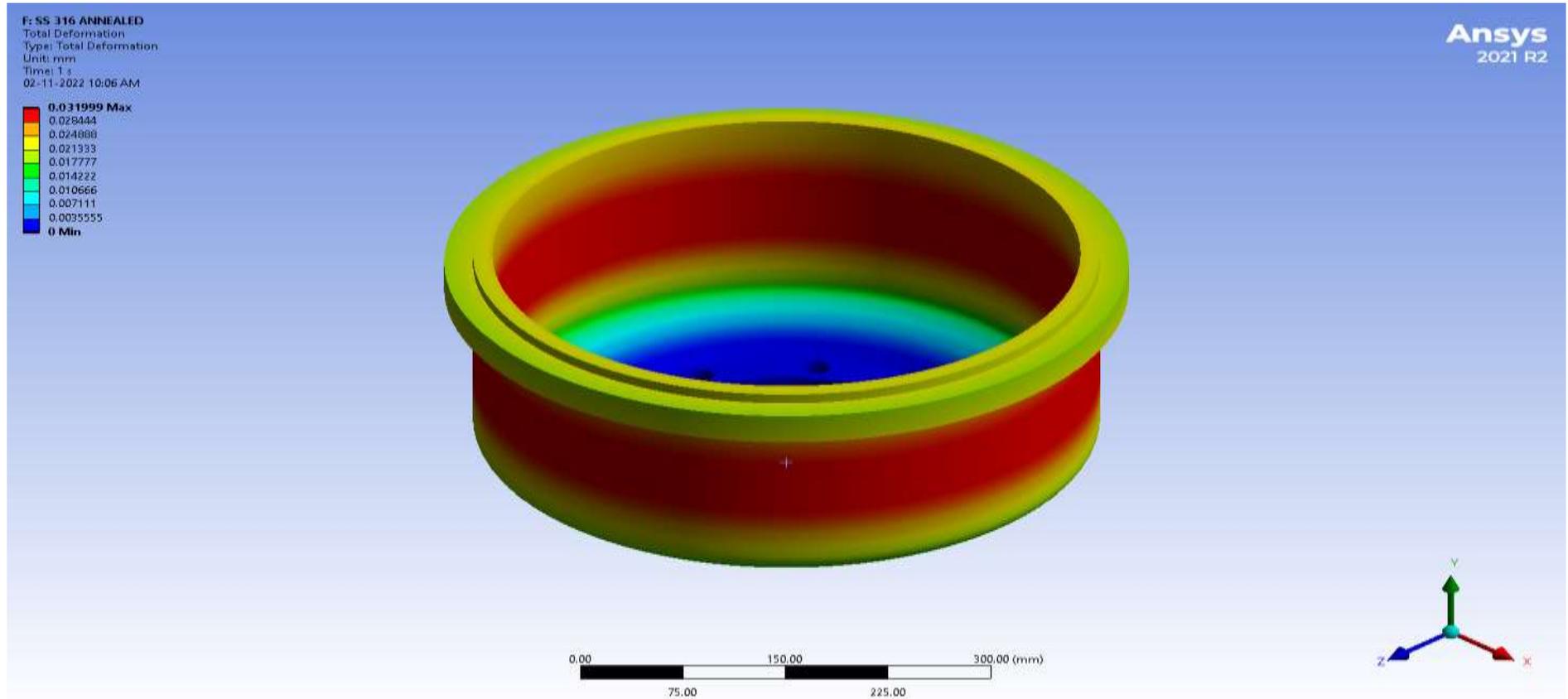
Equivalent strain is done for cross-sectional of work piece brake drum. Equivalent strain of INCONEL 718 is calculated drum which is minimum of about 2.2077×10^{-7} Mpa and maximum of 0.00016 Mpa around the circumference of the drum.

FOS - INCONEL 718



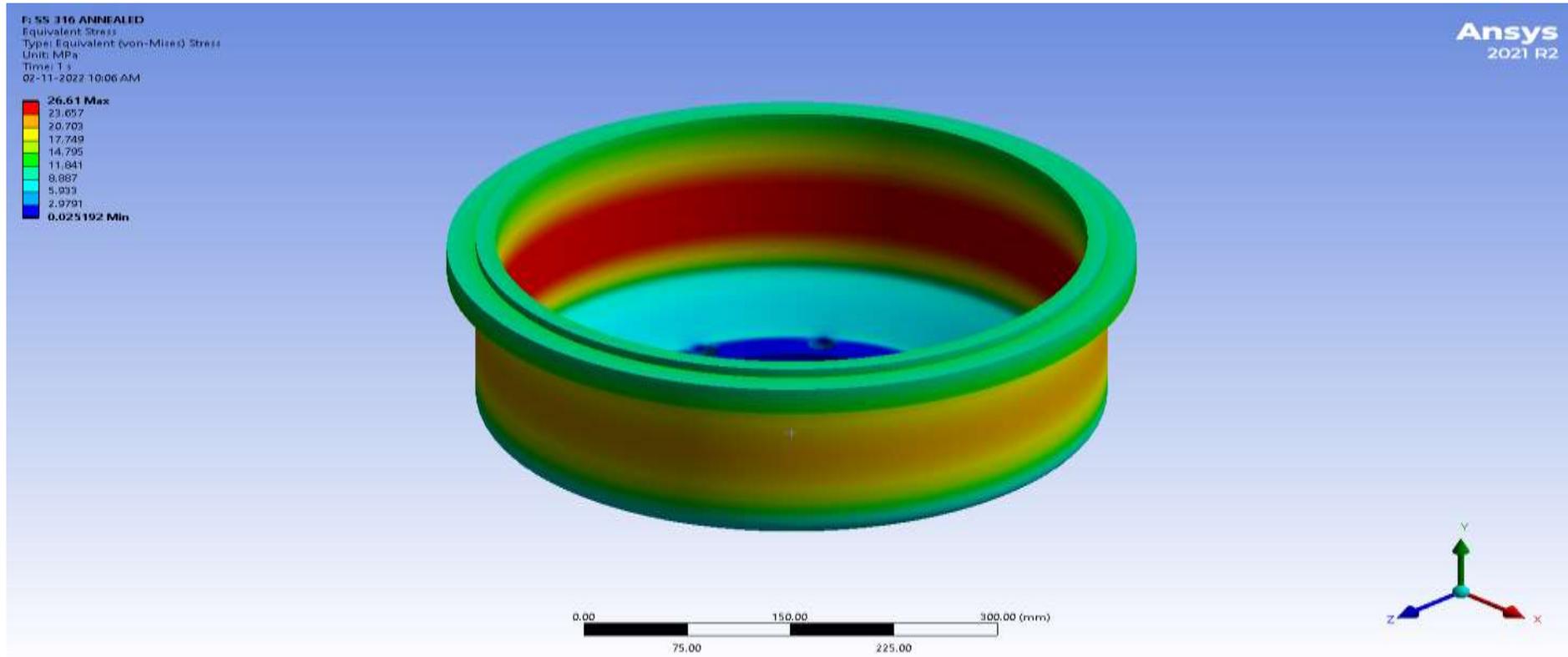
Safety factor is done for cross-sectional of work piece brake drum. safety factor of INCONEL 718 is calculated drum which is minimum of about 0 and maximum of 15 around the circumference of the drum.

DEFORMATION - SS 316 ANNEALED



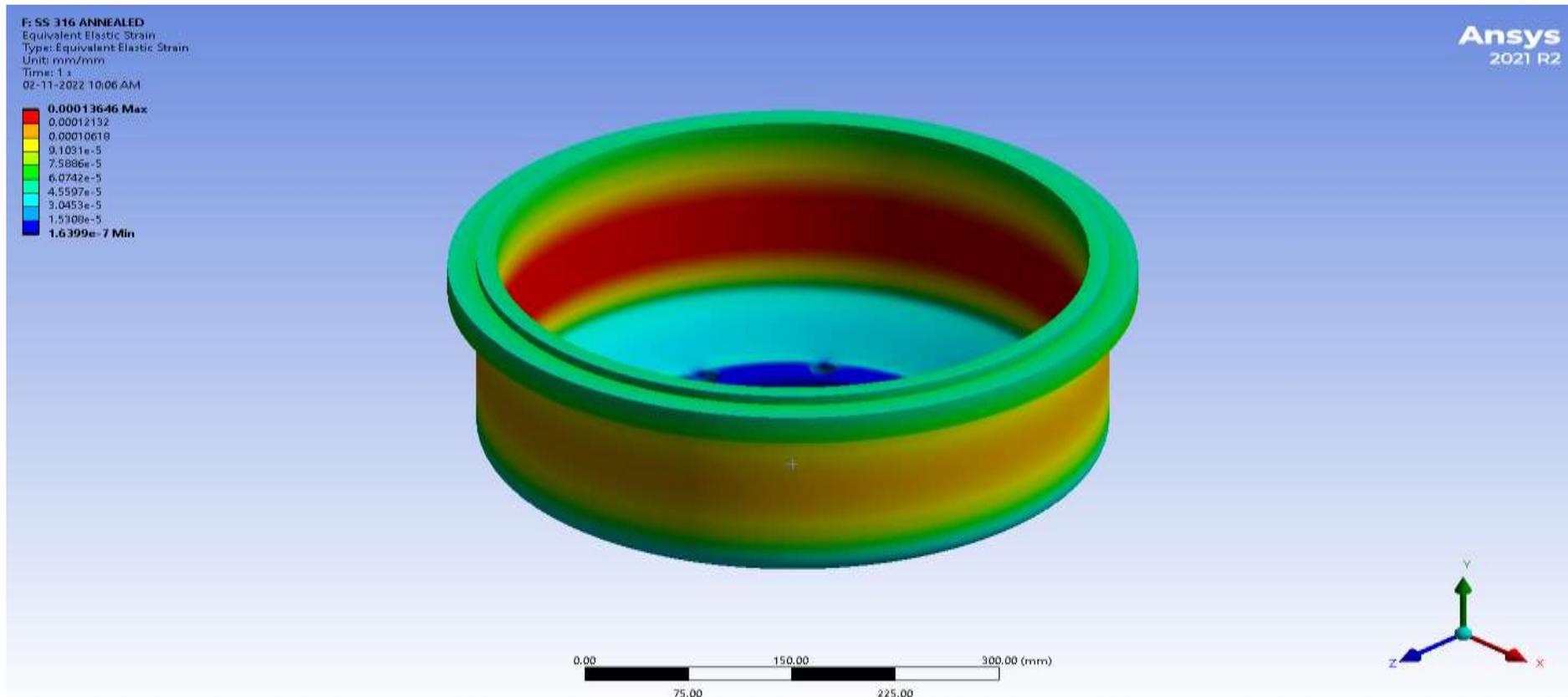
Total deformation is done for cross-sectional of work piece brake drum. Total Deformation of SS 316 ANNEALED is calculated drum which is minimum of about 0 mm and maximum of 0.032 mm around the circumference of the drum.

STRESS - SS 316 ANNEALED



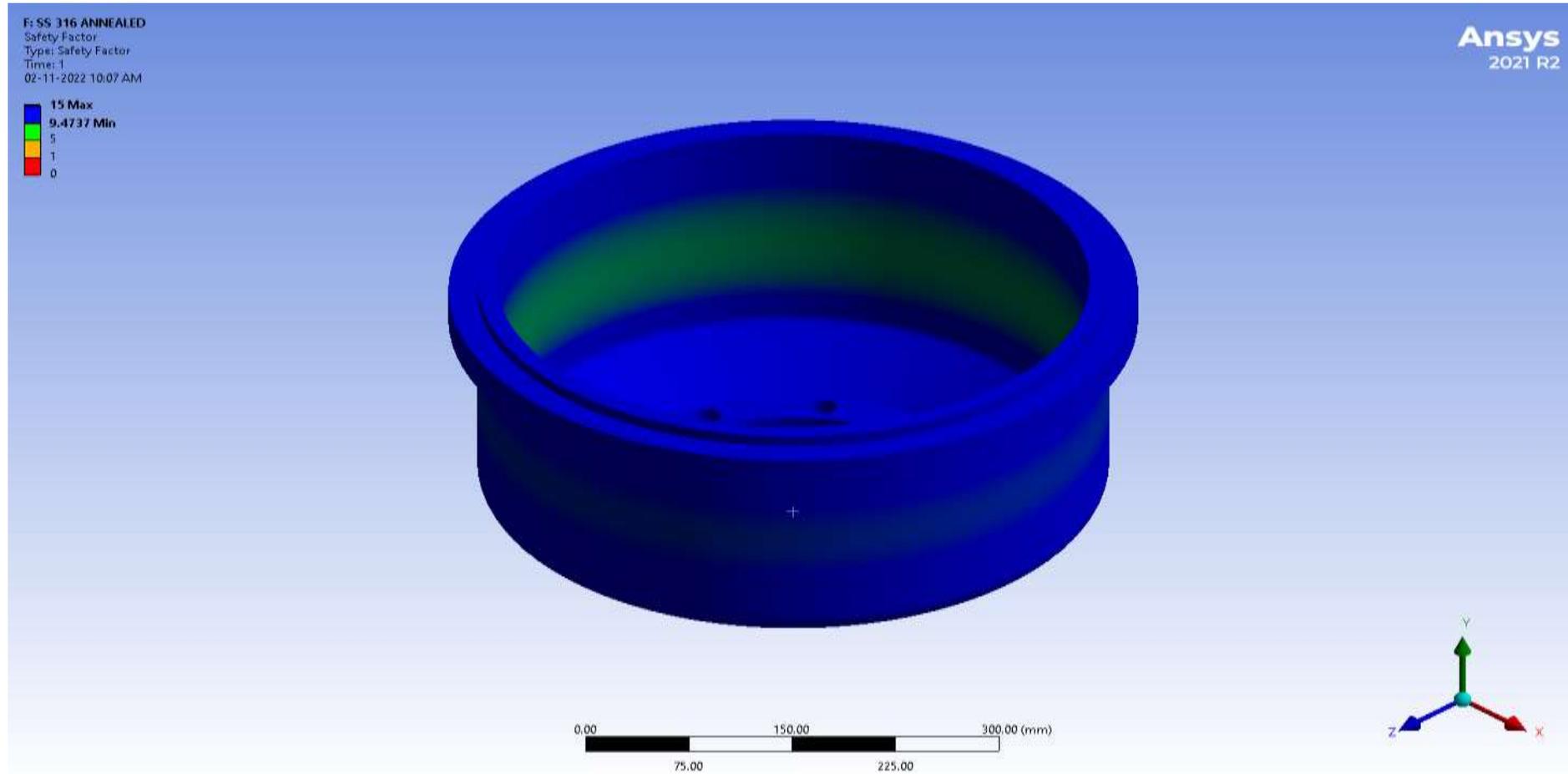
Equivalent stress is done for cross-sectional of work piece brake drum. Equivalent stress of SS 316 ANNEALED is calculated drum which is minimum of about 0.0352 Mpa and maximum of 26.61 Mpa around the circumference of the drum.

STRAIN - SS 316 ANNEALED



Equivalent strain is done for cross-sectional of work piece brake drum. Equivalent strain of SS 316 ANNEALED is calculated drum which is minimum of about 1.6399×10^{-7} Mpa and maximum of 0.000137 Mpa around the circumference of the drum.

FOS - SS 316 ANNEALED



Safety factor is done for cross-sectional of work piece brake drum. safety factor of SS 316 ANNEALED is calculated drum which is minimum of about 0 and maximum of 9.48 around the circumference of the drum.

BRAKE DRUM				
MATERIAL	TOTAL DEFORMATION (mm)	STRESS (Mpa)	STRAIN	FOS
STRUCTURAL STEEL	0.3138	264.36	0.0013	0.95
GRAY CAST IRON	0.568	265.53	0.0024	0
CAST IRON EN GJL 100	0.696	266.68	0.0029	0.29
CARBON STEEL 1020 ANNEALED	0.295	264.95	0.0012	1.11
INCONEL 718	0.038	26.437	0.0001	15
SS 316 ANNEALED	0.032	26.61	0.0002	9.48