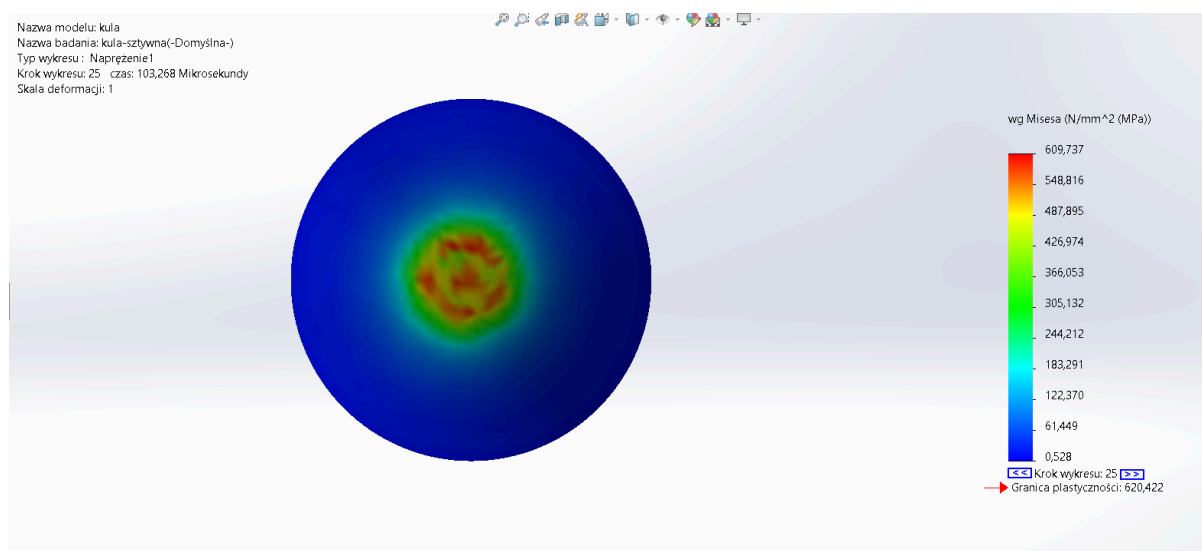


# Drop Test

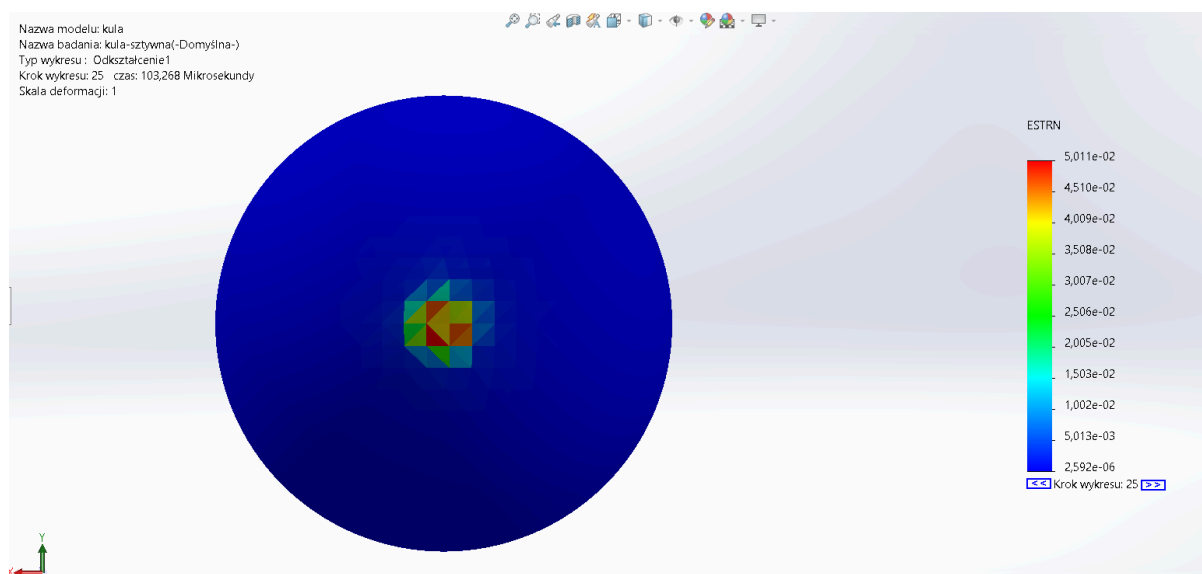
## Obtained results:

### RIGID sphere:

#### distribution of stress according to Mises:

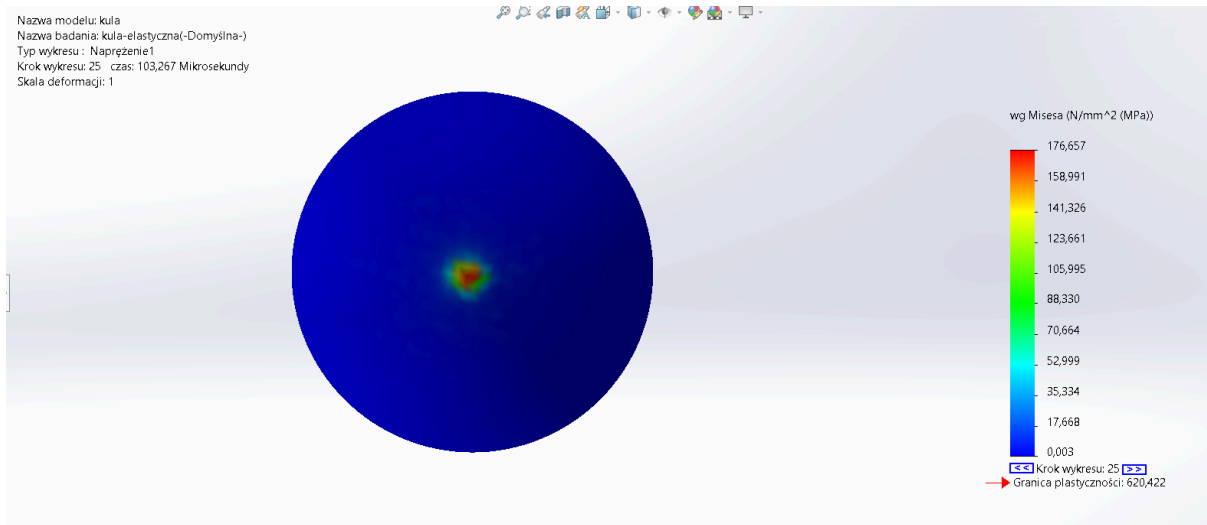


#### distribution of deformation (ESTRN):

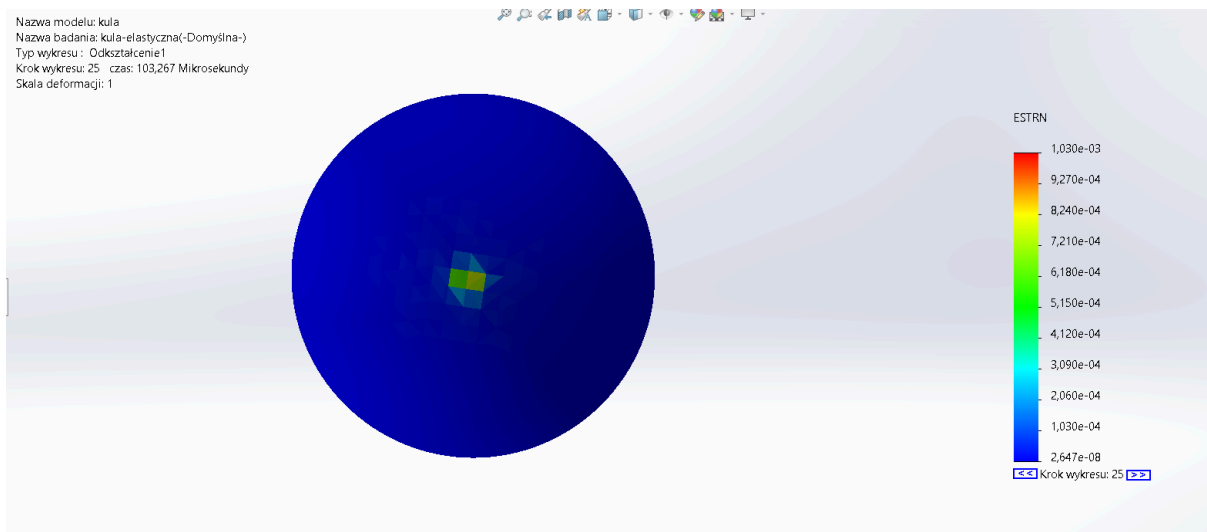


## ELASTIC sphere:

### distribution of stress according to Mises:



### distribution of deformation (ESTRN):



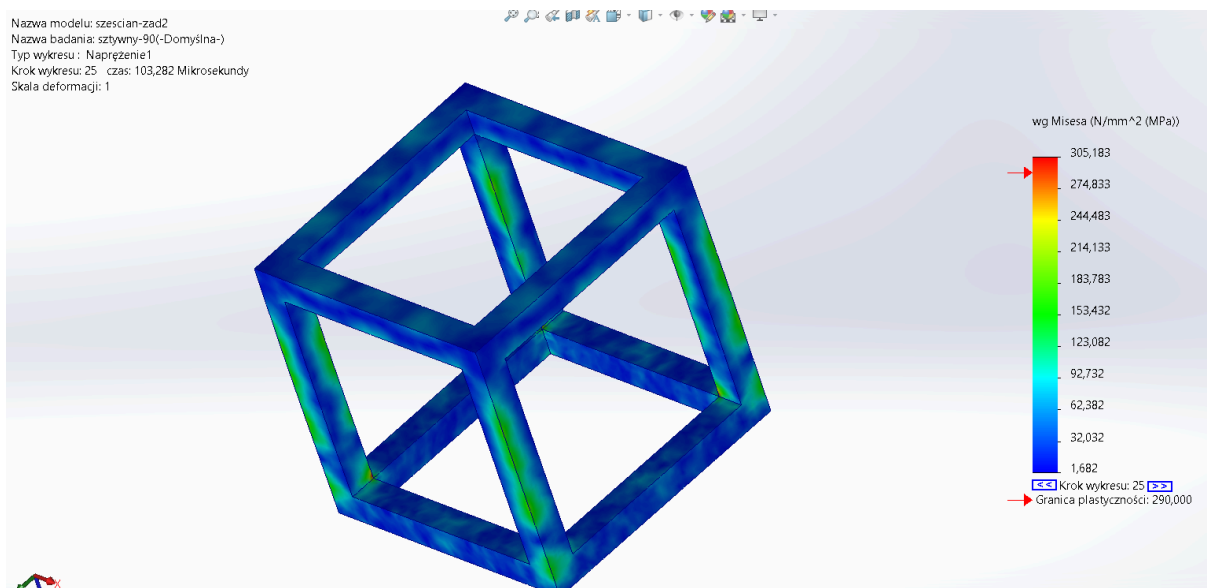
# Drop Test

## Obtained results:

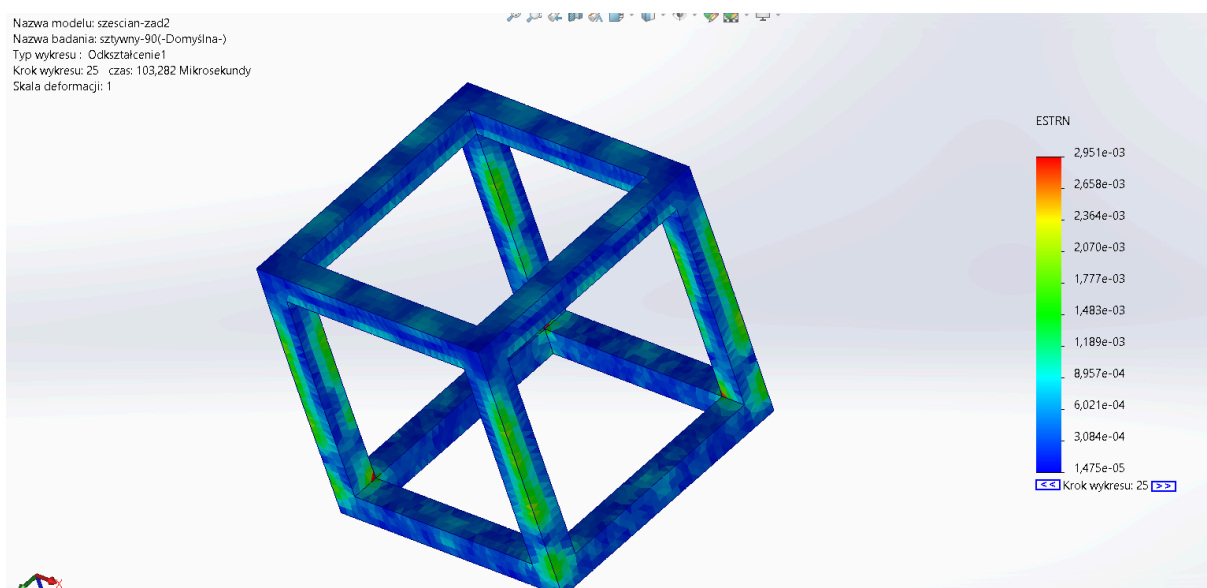
### RIGID cube

#### 1. 90 DEGREES

#### distribution of stress according to Mises:

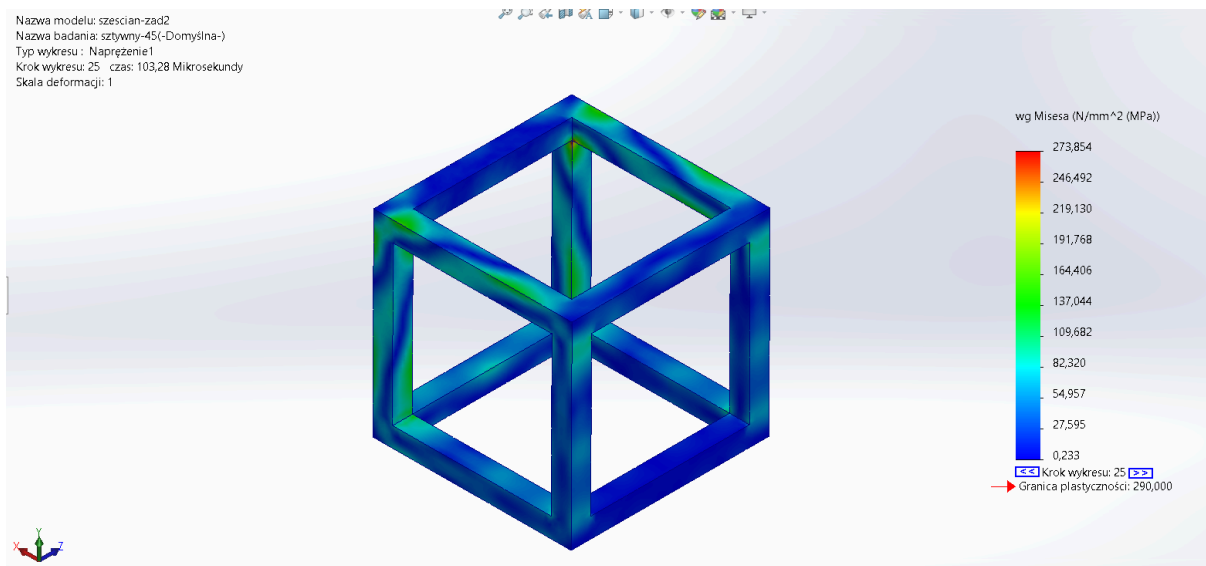


#### distribution of deformation (ESTRN):

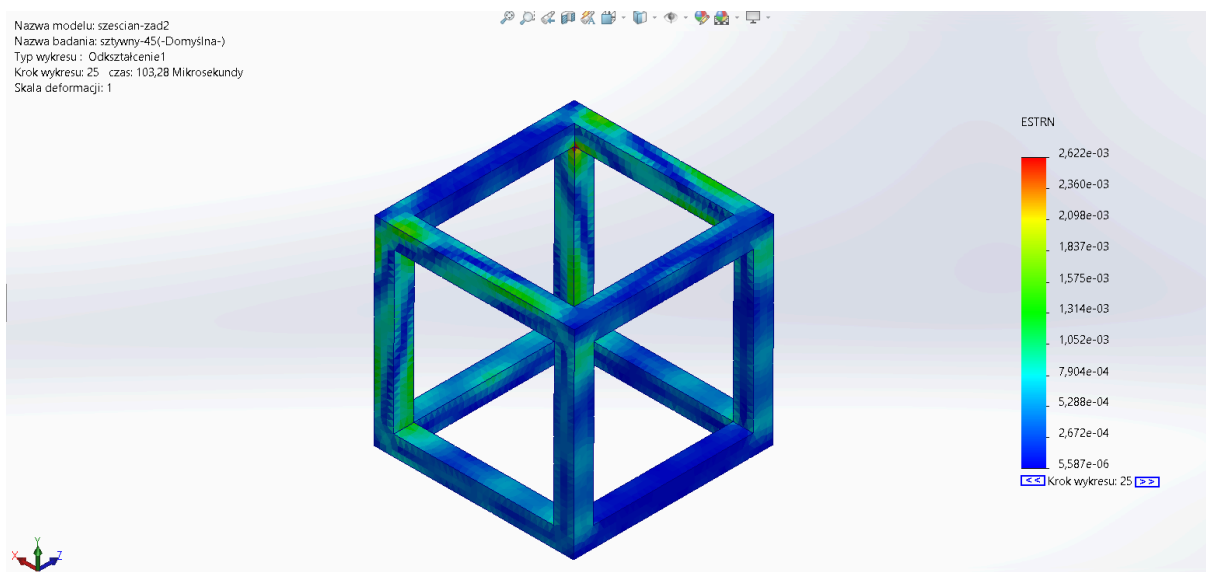


## 2. 45 DEGREES

### distribution of stress according to Mises:

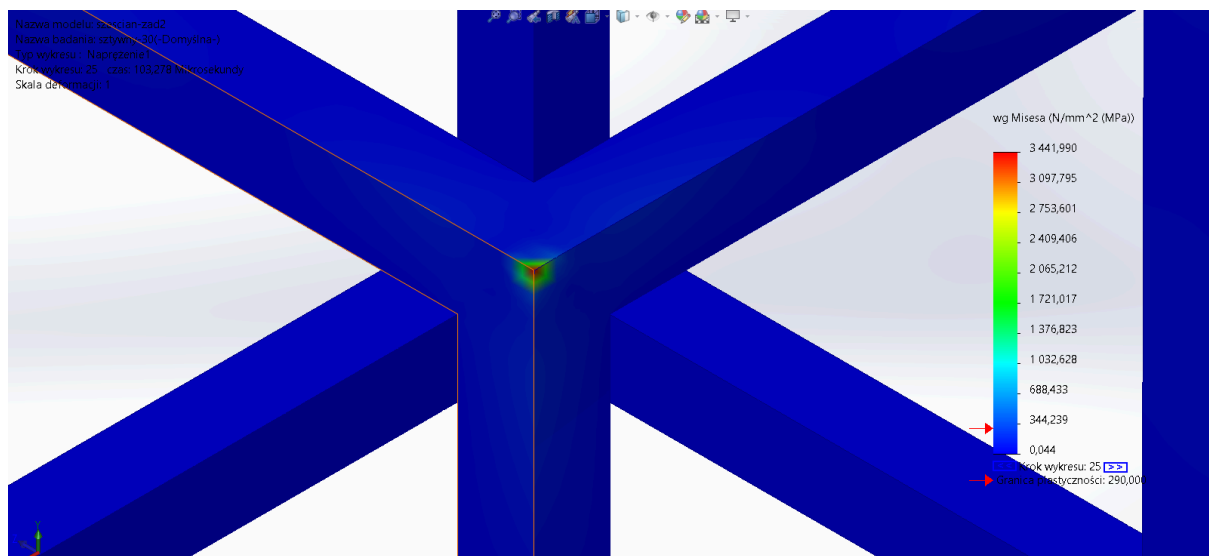
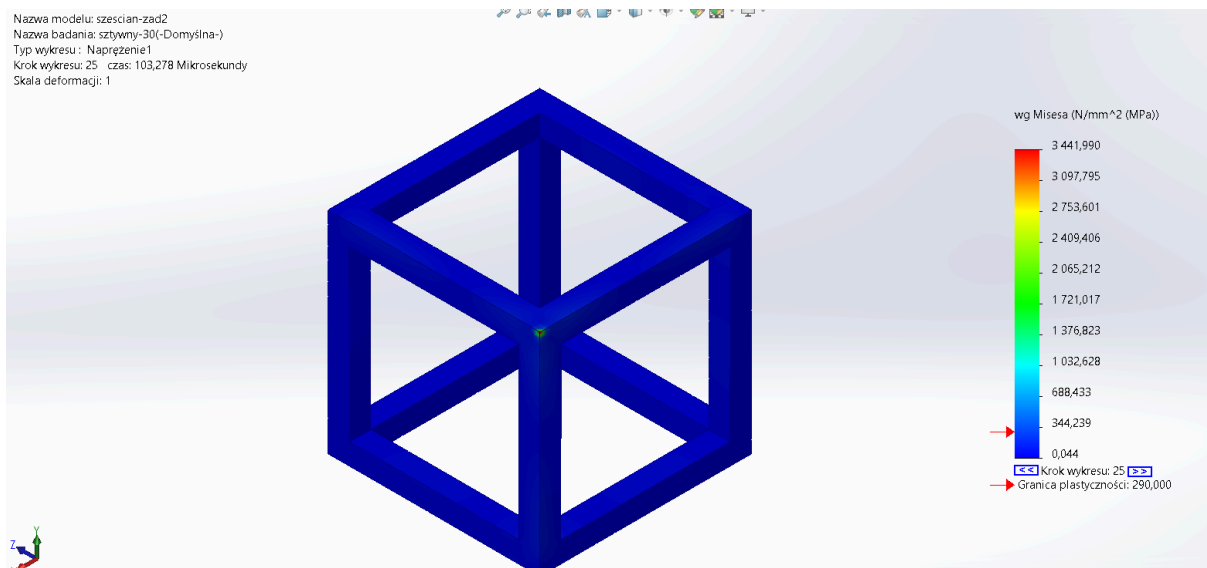


### distribution of deformation (ESTRN):

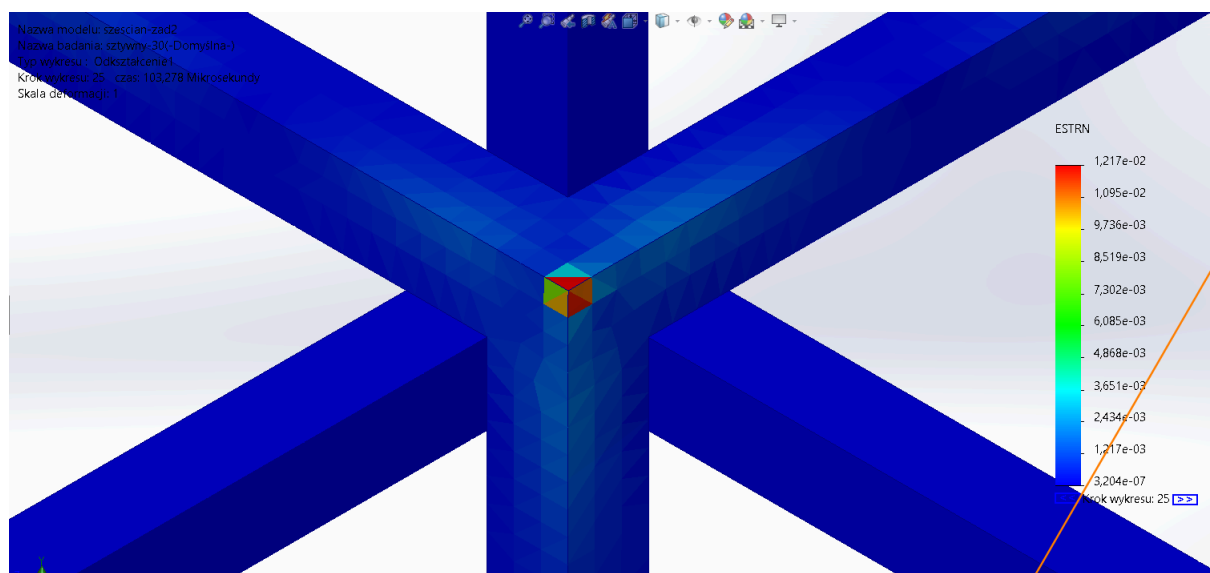
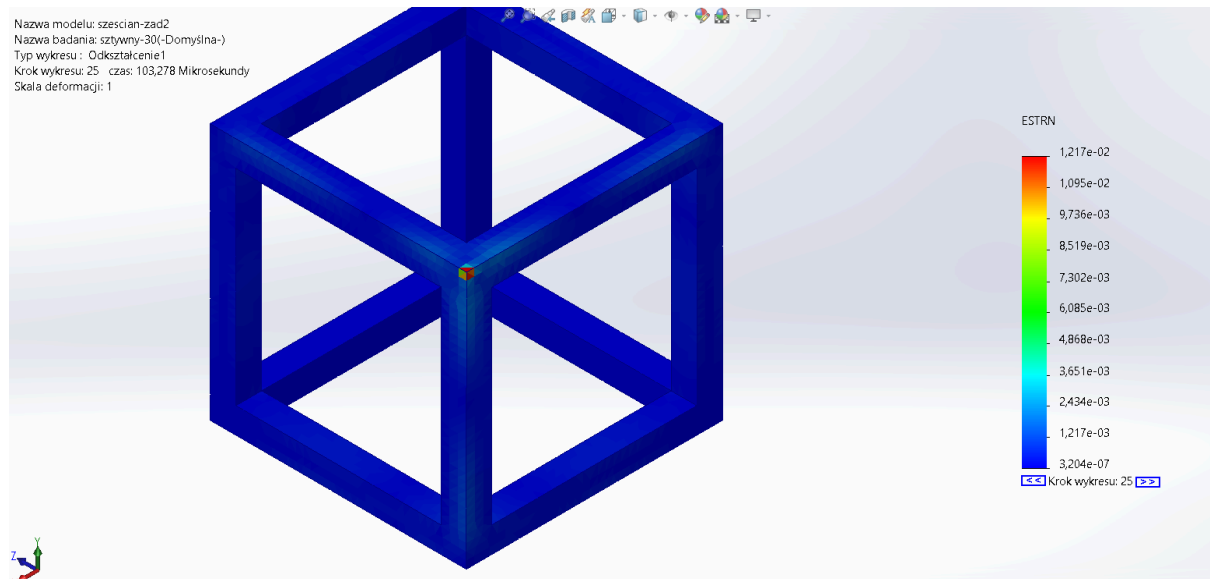


### 3. 30 DEGREES

#### distribution of stress according to Mises:



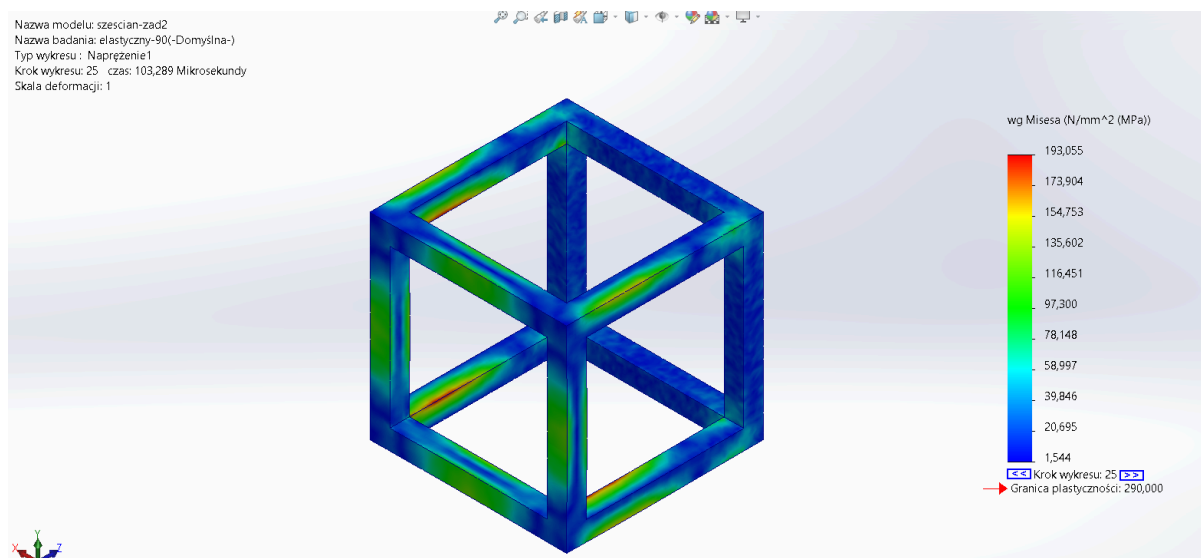
## distribution of deformation (ESTRN):



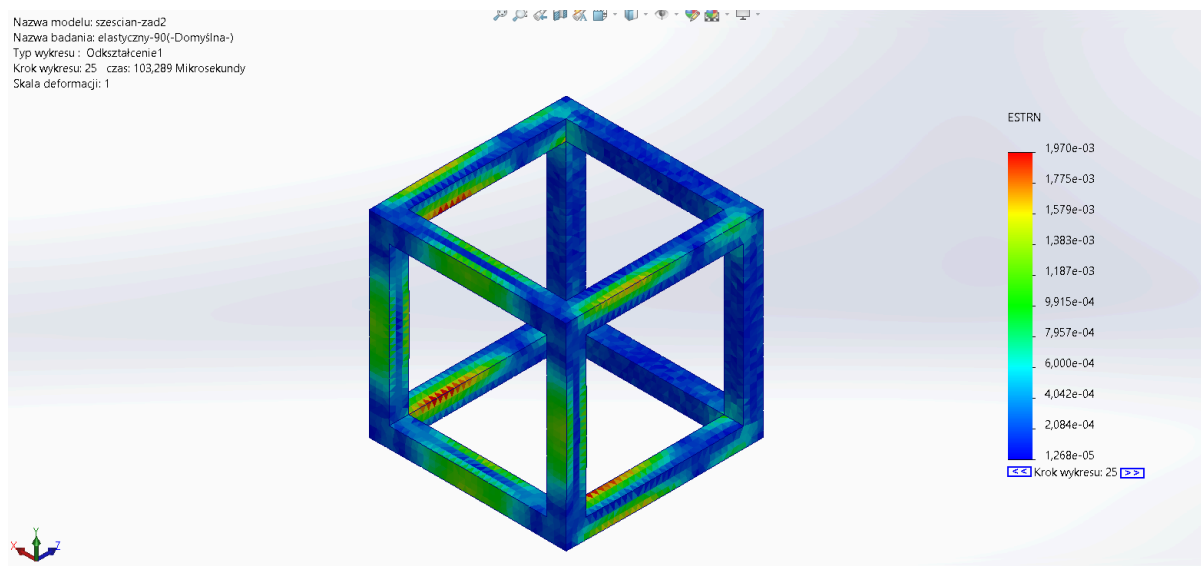
## ELASTIC cube:

### 1. 90 DEGREES

#### distribution of stress according to Mises:

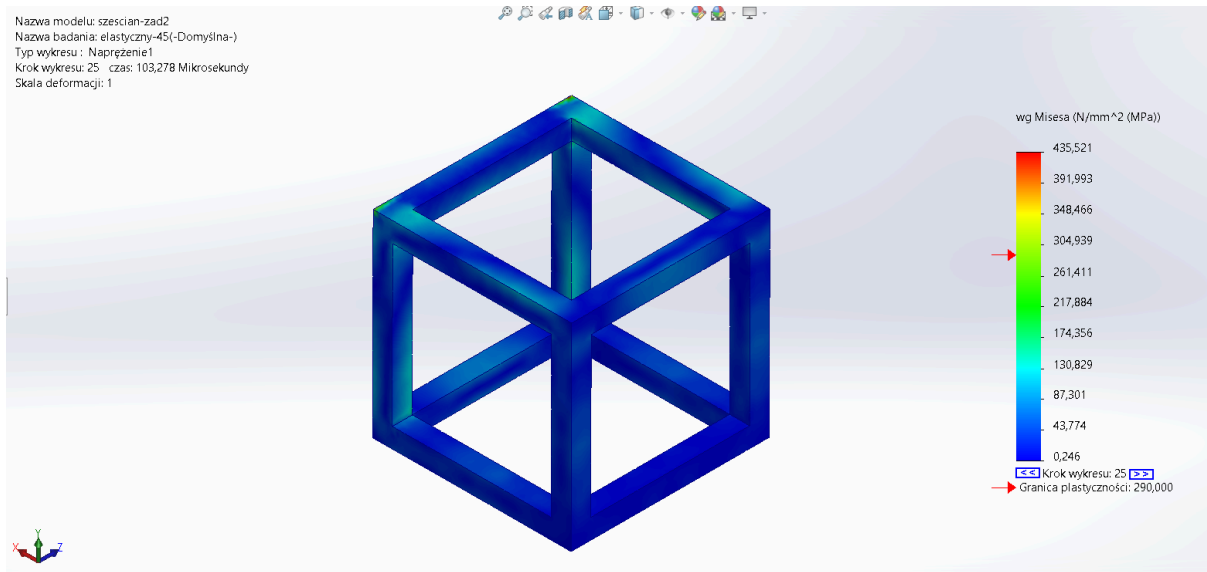


#### distribution of deformation (ESTRN):

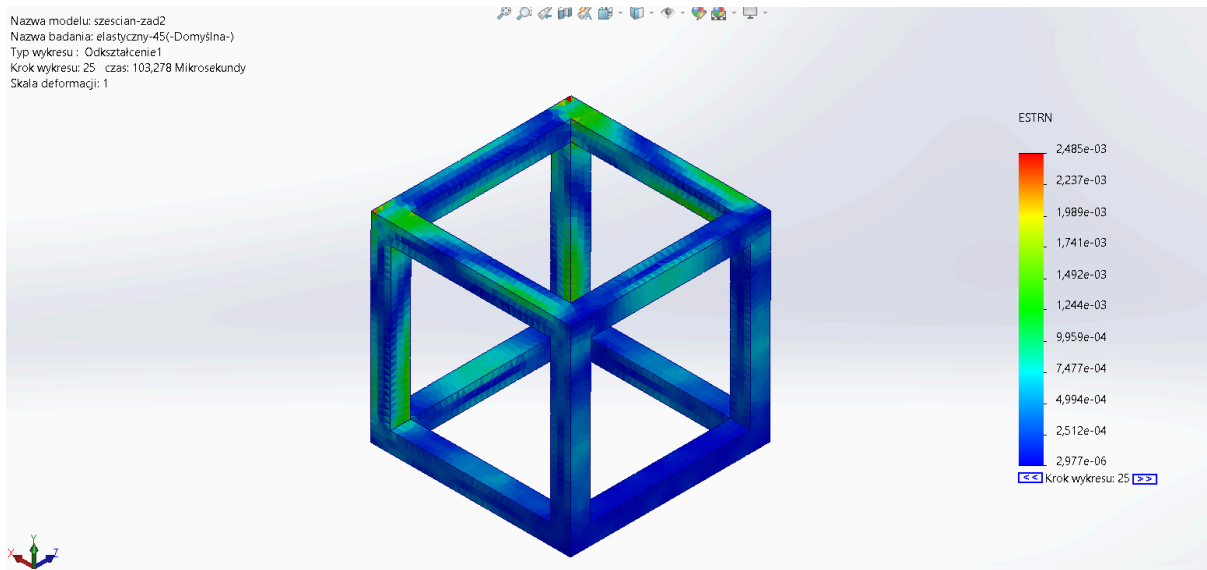


## 2. 45 DEGREES

### distribution of stress according to Mises:



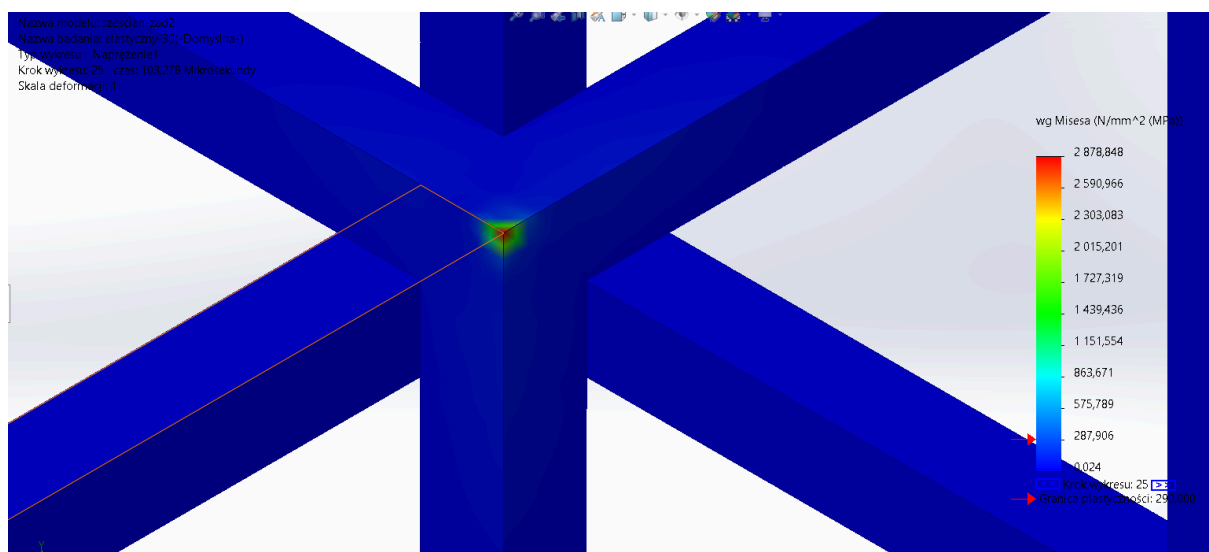
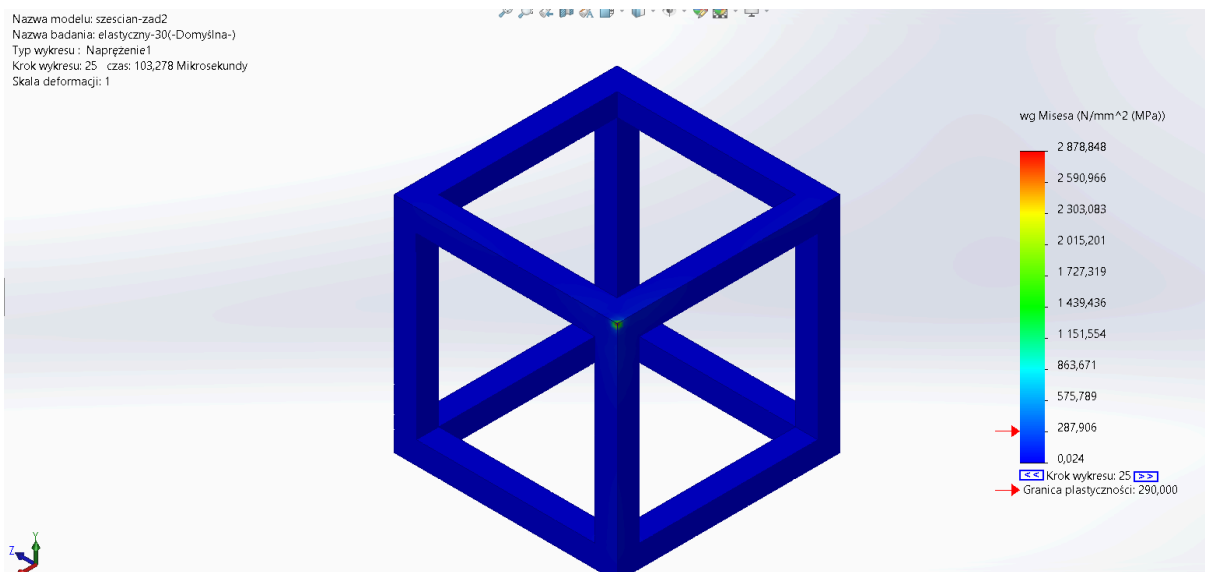
### distribution of deformation (ESTRN):





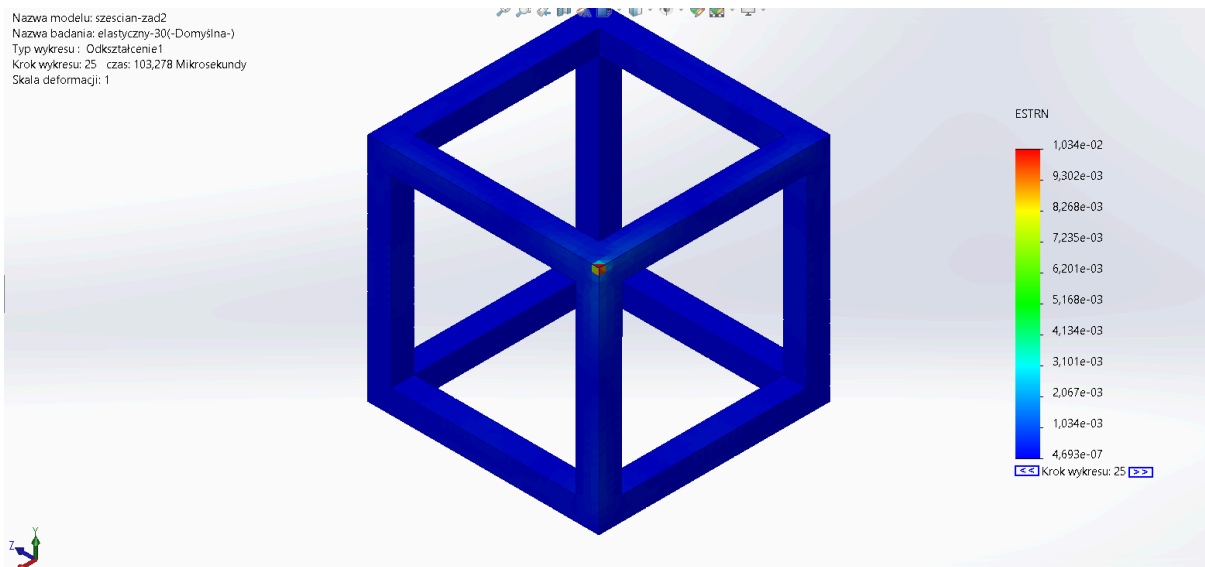
### 3. 30 DEGREES

#### distribution of stress according to Mises:

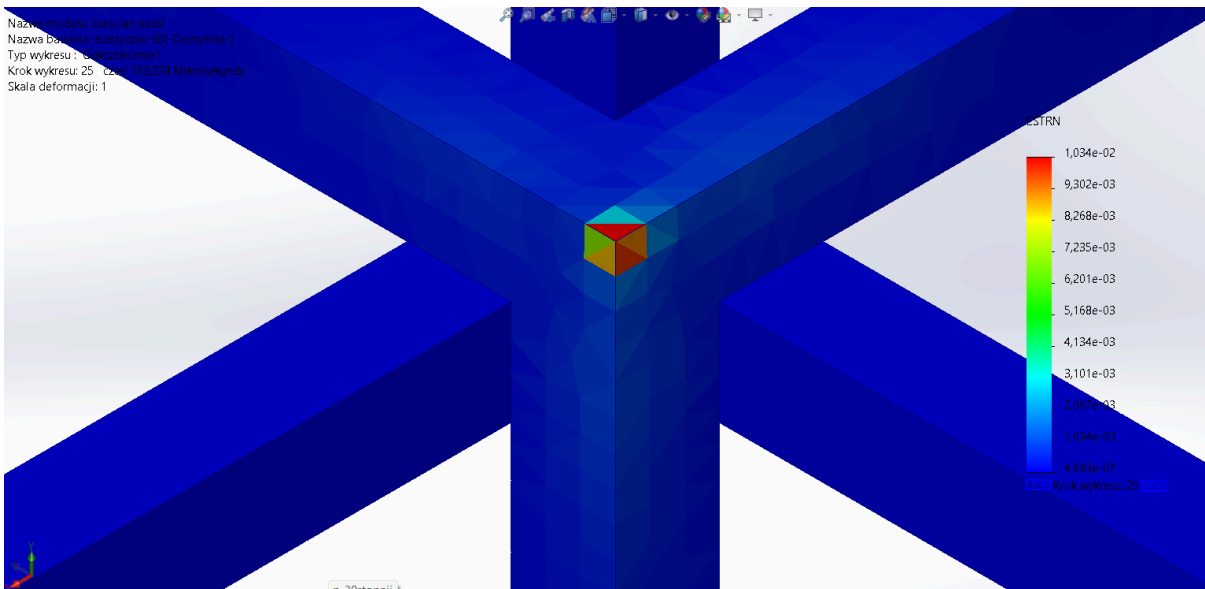


## distribution of deformation (ESTRN):

Nazwa modelu: szescian-zad2  
Nazwa badania: elastyczny-30(-Domyślne-)  
Typ wykresu: Odkształcenie1  
Krok wykresu: 25    czas: 103,278 Mikrosekundy  
Skala deformacji: 1



Nazwa modelu: szescian-zad2  
Nazwa badania: elastyczny-30(-Domyślne-)  
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Krok wykresu: 25    czas: 103,278 Mikrosekundy  
Skala deformacji: 1



## **RESULTS**

### **Task 1:**

<b>KULA</b>	<b>Maksymalne odkształcenia (ESTRN)</b>	<b>Maxkysmalne naprężenia wg Misesa</b>
<b>SZTYWNA</b>	5.011e-02	609.737 MPa
<b>ELASTYCZNA</b>	1.030e-03	176.657 MPa

## **CONCLUSIONS**

After conducting the drop test for the rigid sphere, we observe a high value of maximum deformation (ESTRN) and maximum stress according to Mises. This indicates large deformations of the object and significant material strain at the moment of contact with the surface. For the elastic sphere, both the maximum deformation and the Mises stress are significantly lower, suggesting that the surface absorbs part of the impact energy, reducing the deformations of the sphere.

Thus, we can conclude that an elastic surface effectively reduces the likelihood of damage to the object during a fall.

## Task 2:

	90 stopnii		45 stopnii		30 stopnii	
SZEŚCIAN	SZTYWNY	ELASTYCZNY	SZTYWNY	ELASTYCZNY	SZTYWNY	ELASTYCZNY
Maksymalne odkształcenia (ESTRN)	2.951e-03	1.970e-03	2.622e-03	2.485e-03	1.271e-02	1.034e-02
Maxkysmalne naprężenia wg Misesa	305.183 MPa	193.055 MPa	273.854 MPa	435.521 MPa	3441.990 Mpa	2878.848 Mpa

## CONCLUSIONS

For each elastic cube, we observe a reduction in the value of maximum deformation (ESTRN) and Mises stress compared to the rigid counterpart.

The angle of orientation also affects the parameters we are studying. A decrease in the angle of orientation significantly increases the analyzed quantities, suggesting a greater risk of cube damage.

The most unfavorable variant of the drop test, in terms of the deformation of the tested cube, is at an orientation angle of 30 degrees on a rigid surface. In this case, the deformations are the greatest, indicating the highest risk of damage to the object.