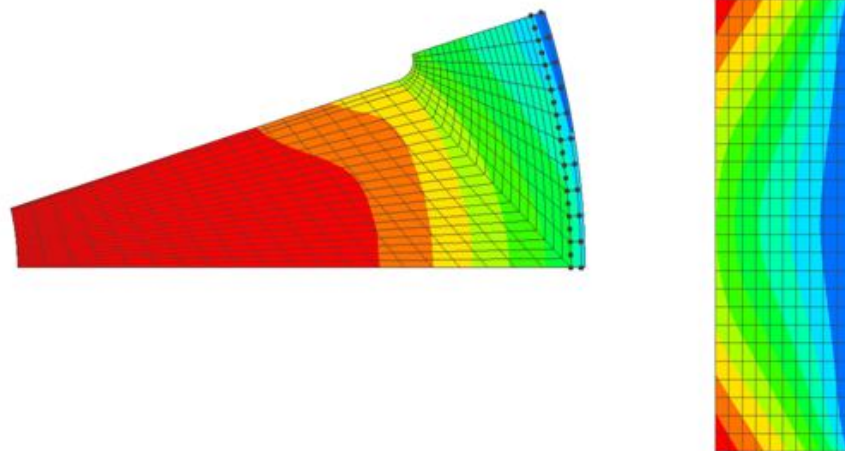


## Viscoelastic analysis of solid propellant grain



	Material	Property	Units	Value
<b>Material property :</b>	Insulation	Initial modulus	ksc	100
		Coefficient of thermal expansion	$^{\circ}\text{C}$	0.0002
		Poisson's ratio		0.5
		Specific gravity		1.2
	Casing	Initial modulus	ksc	1900000
		Coefficient of thermal expansion	$^{\circ}\text{C}$	0.00001
		Poisson's ratio		0.3
		Specific gravity		7.8
<b>Element types :</b>	Quadrilateral shell			
<b>Finite element statistics :</b>	Number of elements	Number of nodes	Degrees of freedom	
	300	975	1944	

Grain	Thermal load		Pressure load	
	FEAST <sup>SMT</sup>	MARC <sup>®</sup>	FEAST <sup>SMT</sup>	MARC <sup>®</sup>
Star Port Grain				
Max. Radial Displacement at the inner port, mm	8.99	8.93	1.22	1.22
Max.Hoop strain at the inner port, %	2.70	2.71	3.50	3.90
Cylindrical Port Grain				
Max. Radial Displacement at the inner port, mm			1.89	1.89
Max.Hoop strain at the inner port, %			3.74	3.44