Identification for Mooney model: α gel, θ-8, V=1.25

Japan Association for Nonlinear CAE

ABAQUS

Mooney model

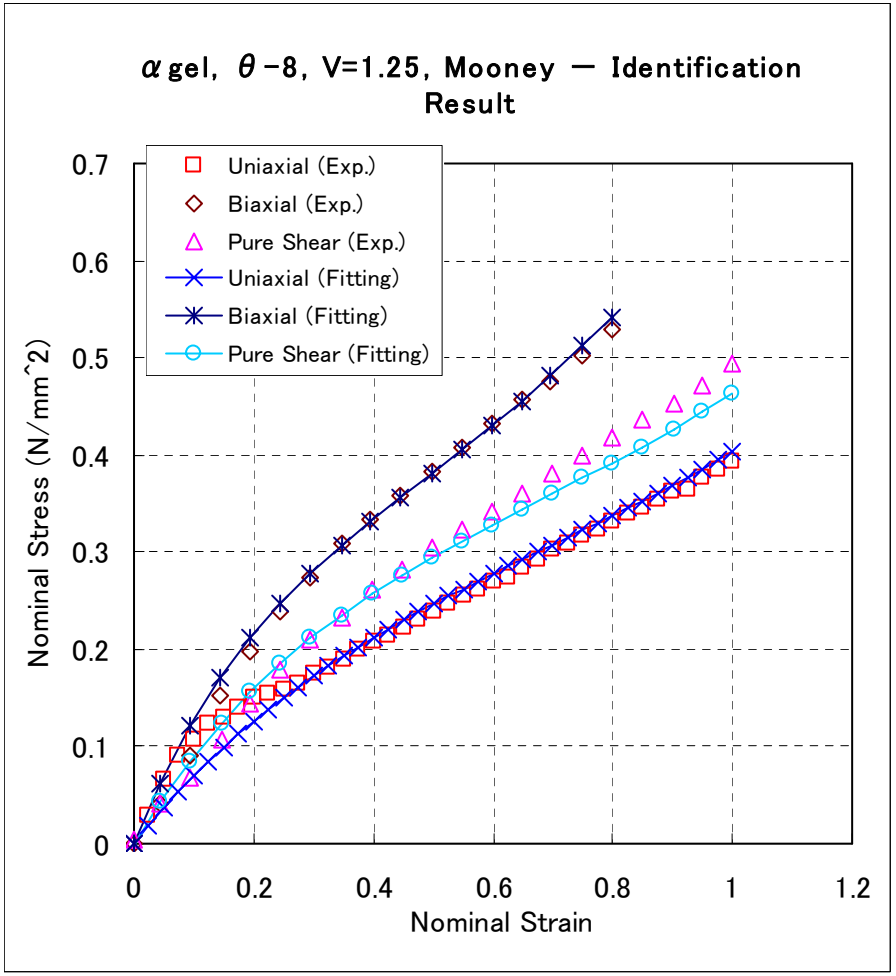
$$W = \sum_{m=1}^{N} \sum_{n=1}^{N} C_{mn} (I_1 - 3)^m (I_2 - 3)^n$$

Rate of Loading in Tension Test(s)

1.25 mm/s

Coefficient

Coefficient	
C10 (C1)	0.105933
C01 (C2)	0.0236160
C20 (C3)	−0.00339578
C11 (C4)	−0.00310392
C02 (C5)	
C30 (C6)	0.00152368
C21 (C7)	
C12 (C8)	
C03 (C9)	
C40 (C10)	



Identification result:
Stress-strain relationship

Analysis with Mooney model: α gel, θ-8, V=1.25

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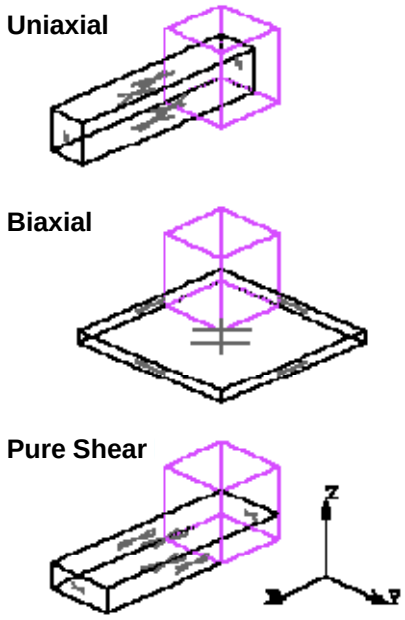
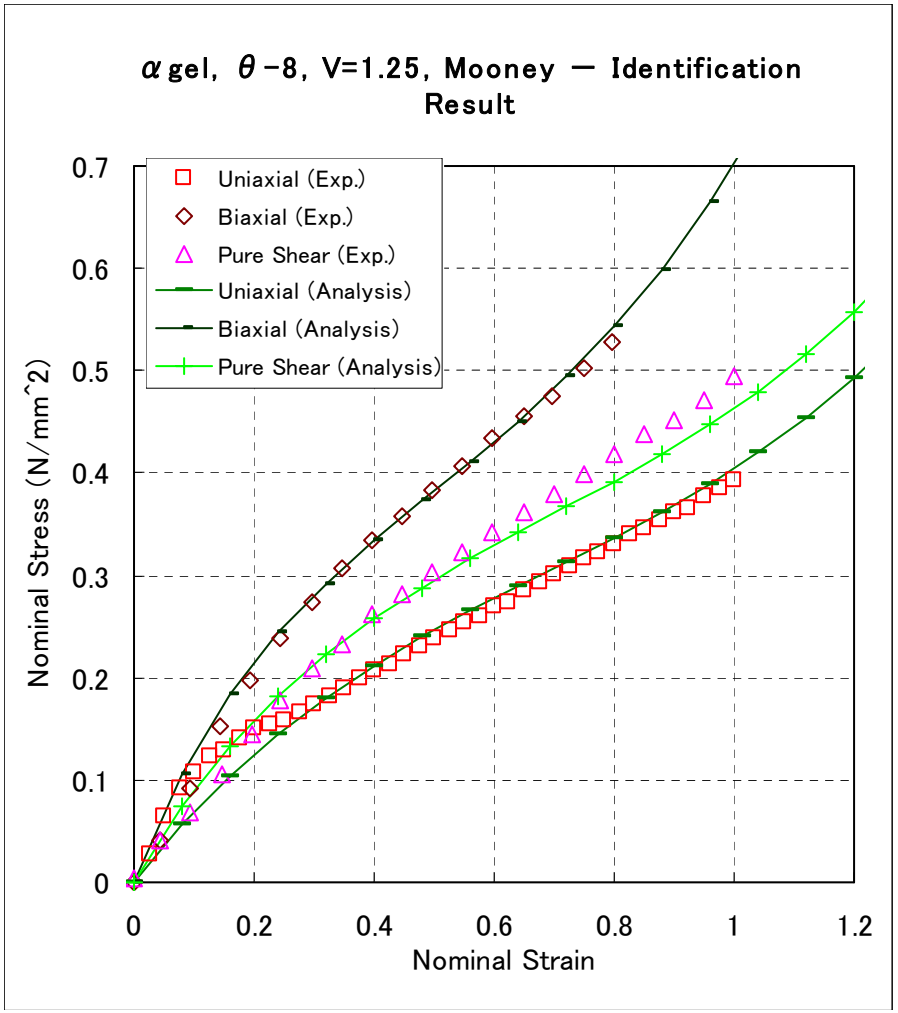
Input File: gel8_v1.25_abaqus_m.inp



Analysis model



Analysis result:
Stress-strain relationship

Identification for Odgen model: α gel, θ-8, V=1.25

ABAQUS

Ogden model

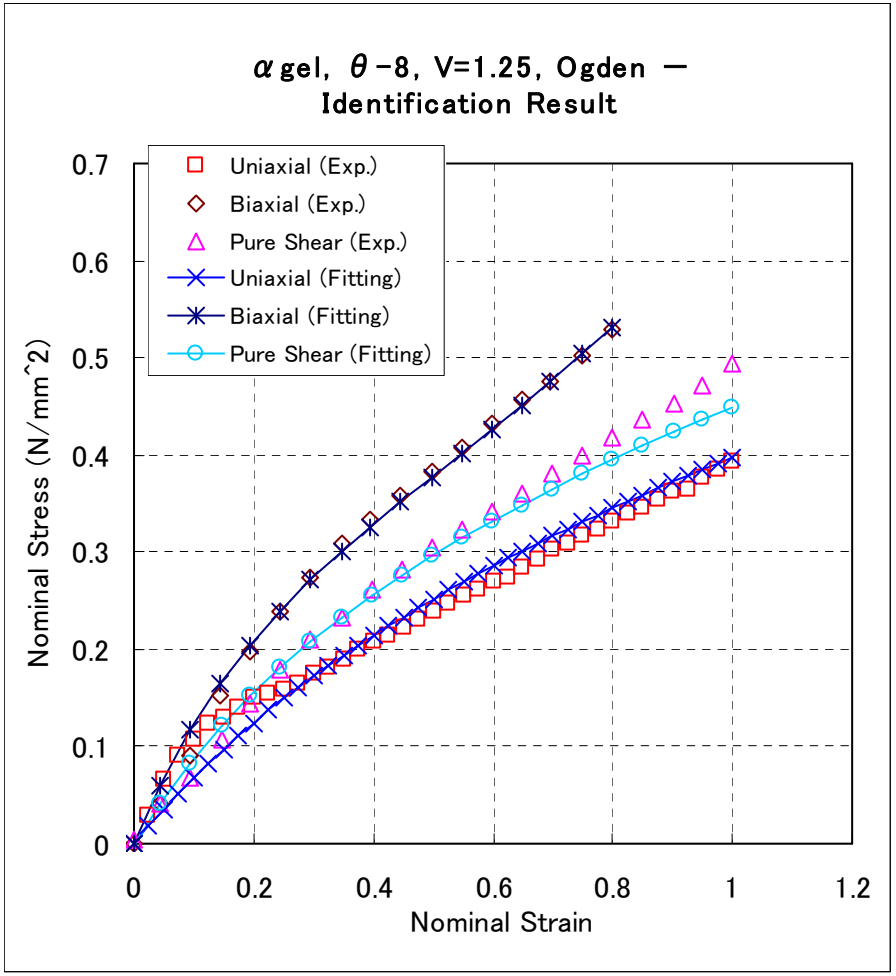
$$W = \sum_{n=1}^{N} \frac{2\mu_n}{\alpha^2_n}\left[\left(\lambda_1^{\alpha_n} + \lambda_2^{\alpha_n} + \lambda_3^{\alpha_n}\right) - 3\right]$$

Rate of Loading in Tension Test(s)

1.25 mm/s

Coefficient

Coefficient		
Order	μ	α
1	0.220794	1.79262
2	0.00426875	2.84583
3	0.00678476	−3.30902
4	0.0198042	0.170000



Identification result:
Stress-strain relationship

Analysis with Odgen model: α gel, θ-8, V=1.25

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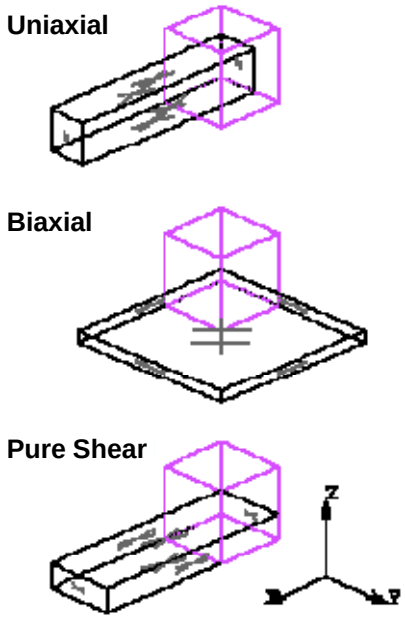
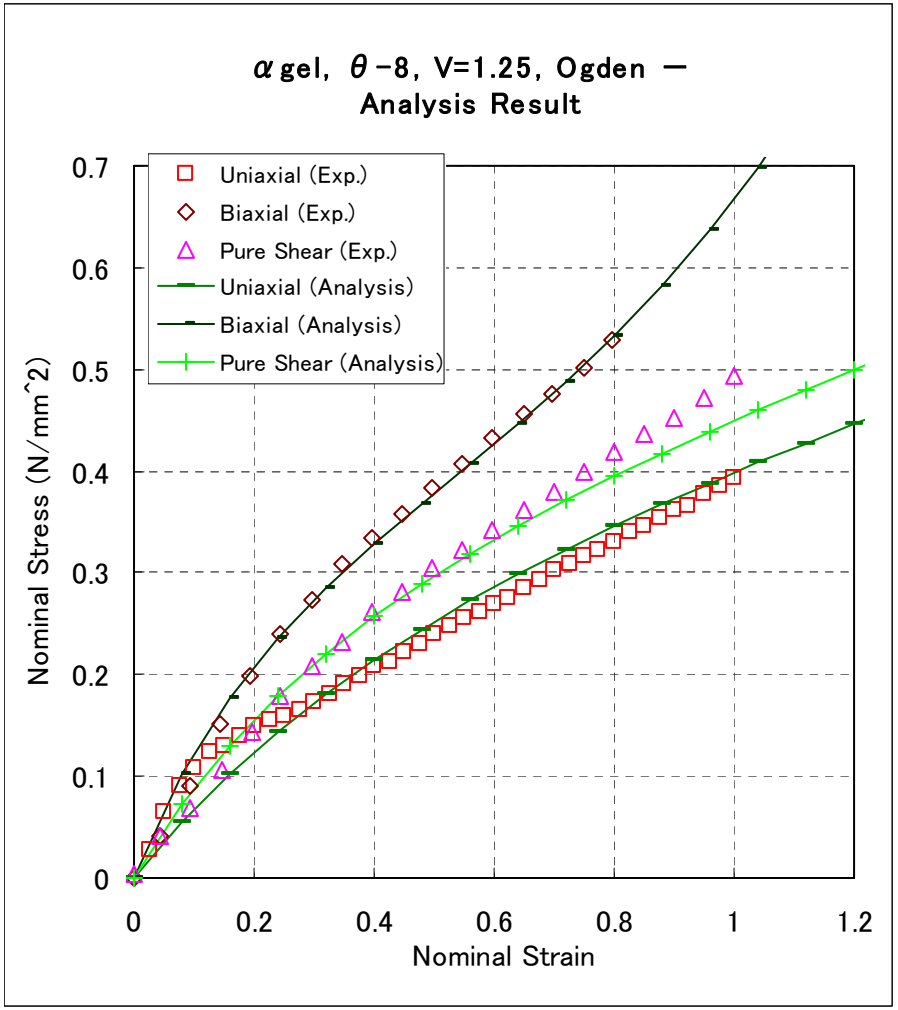
Input File: gel8_v1.25_abaqus_o.inp



Analysis model



Analysis result:
Stress-strain relationship