# Identification of material property
# Hardness (50), Damping (Large)

**MSC.Marc**

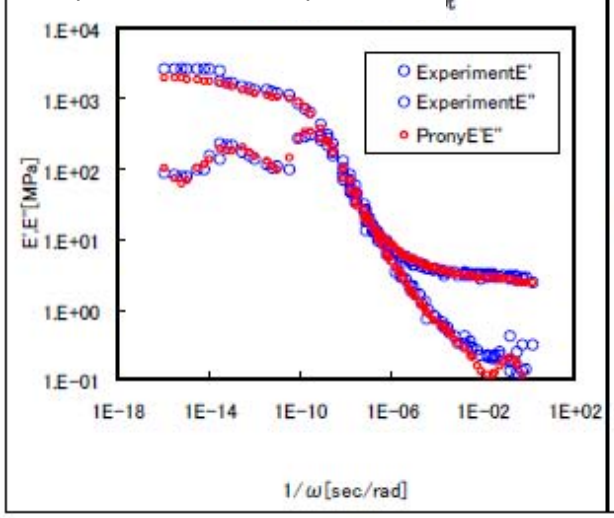
| Young's Modulus [N/mm²] | Poisson`s Ratio |
|---|---|
| 3.36101E+03 | 4.99000E-01 |

| $G_i$ [N/mm²] | $t_i$ [sec] |
|---|---|
| 5.66724E+01 | 1.06109E-12 |
| 1.32286E+02 | 1.59155E-11 |
| 2.07754E+02 | 1.59155E-10 |
| 3.47603E+02 | 1.59155E-09 |
| 2.54435E+02 | 1.59155E-08 |
| 7.48852E+01 | 1.59155E-07 |
| 2.91312E+01 | 1.59155E-06 |
| 8.20302E+00 | 1.59155E-05 |
| 3.28690E+00 | 1.59155E-04 |
| 1.56844E+00 | 1.59155E-03 |
| 1.02363E+00 | 1.59155E-02 |
| 8.28906E-01 | 1.59155E-01 |
| 6.49199E-01 | 1.59155E+00 |
| 5.10304E-01 | 1.59155E+01 |
| 3.89979E-01 | 1.59155E+02 |
| 4.72048E-01 | 1.59155E+03 |

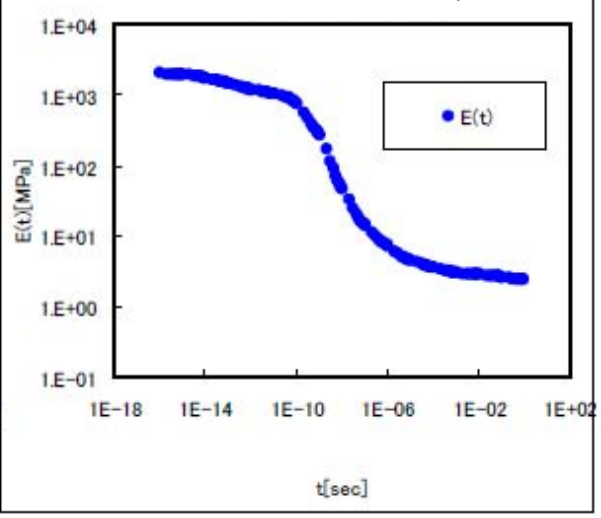
Prony series

$$G(t) = G^{\infty} + \sum_{n=1}^{N} G^{n} \exp\left(-\frac{t}{\lambda_d^n}\right)$$

Comparison between experimental data and fit




Stress-relaxation curve with identified parameters



# Stress-relaxation analysis (mat2_hs50_relax.marc.dat)
# Hardness (50), Damping (Large)

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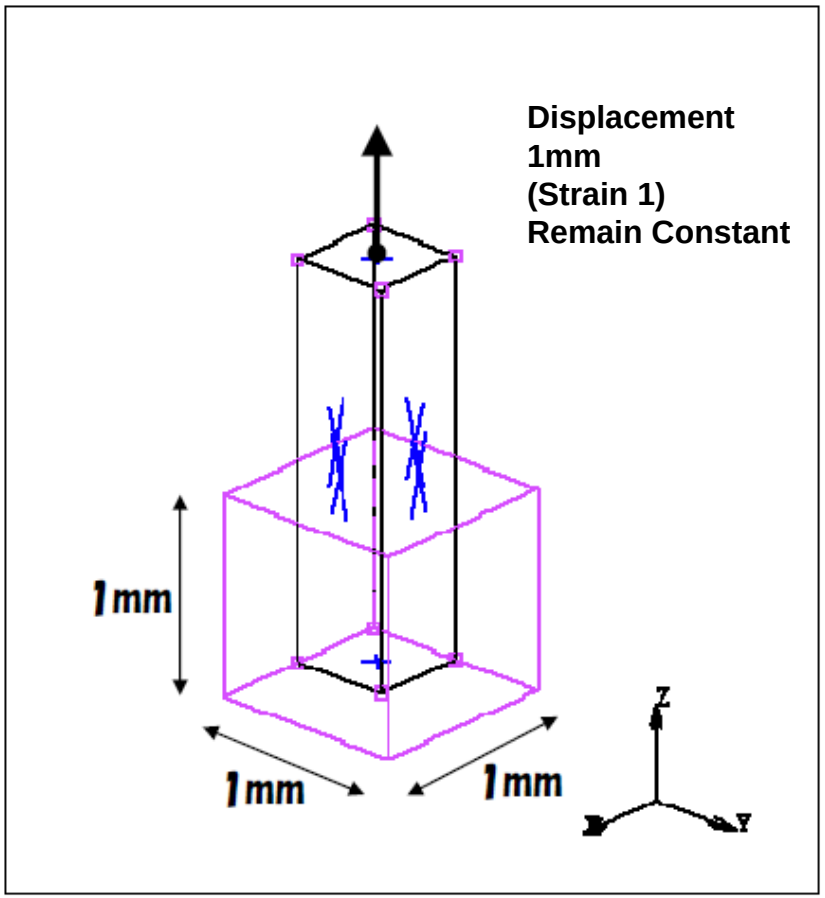
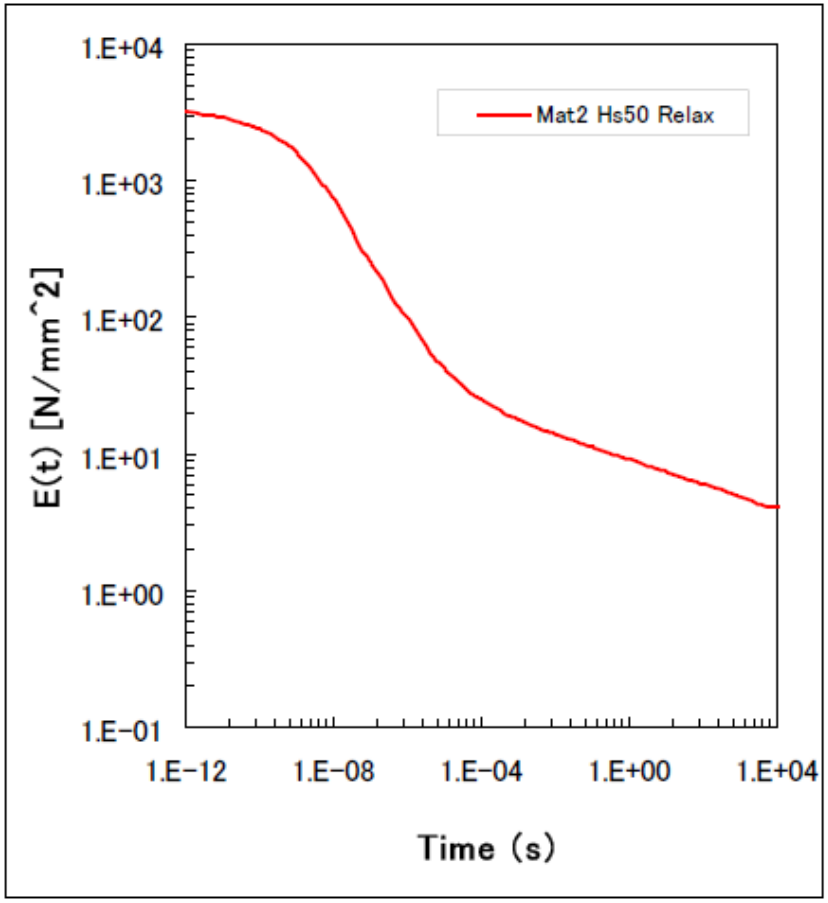



Analysis model




Stress-relaxation curve

# Harmonic Vibration Analysis (mat2_hs50_freq_marc.dat)
# Hardness (50), Damping (Large)

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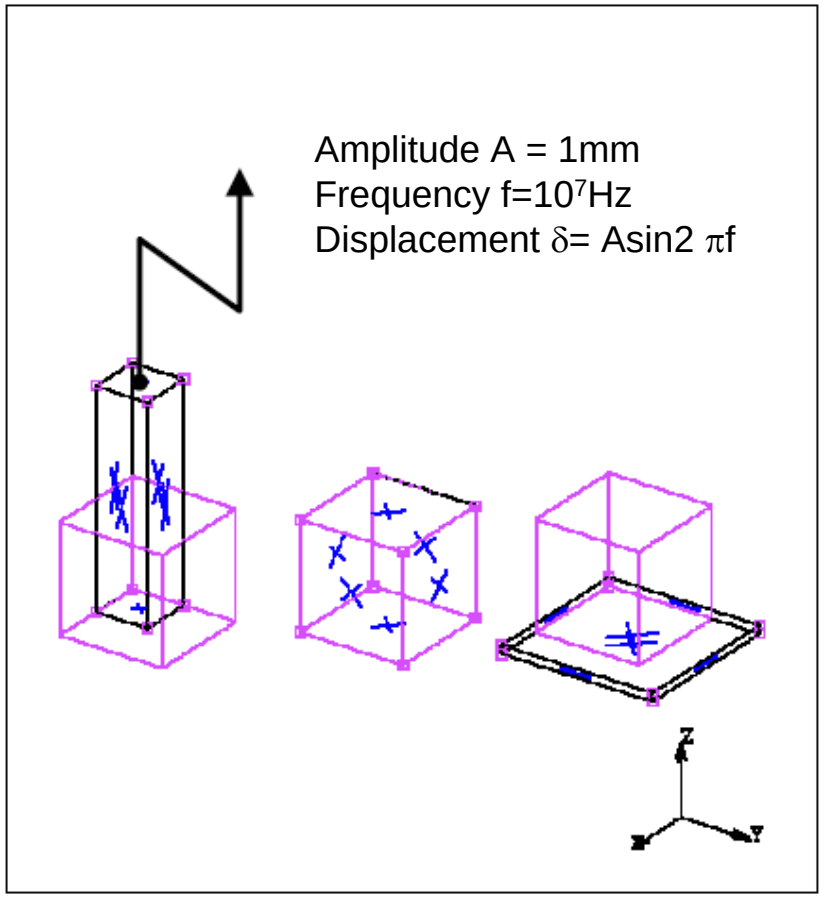
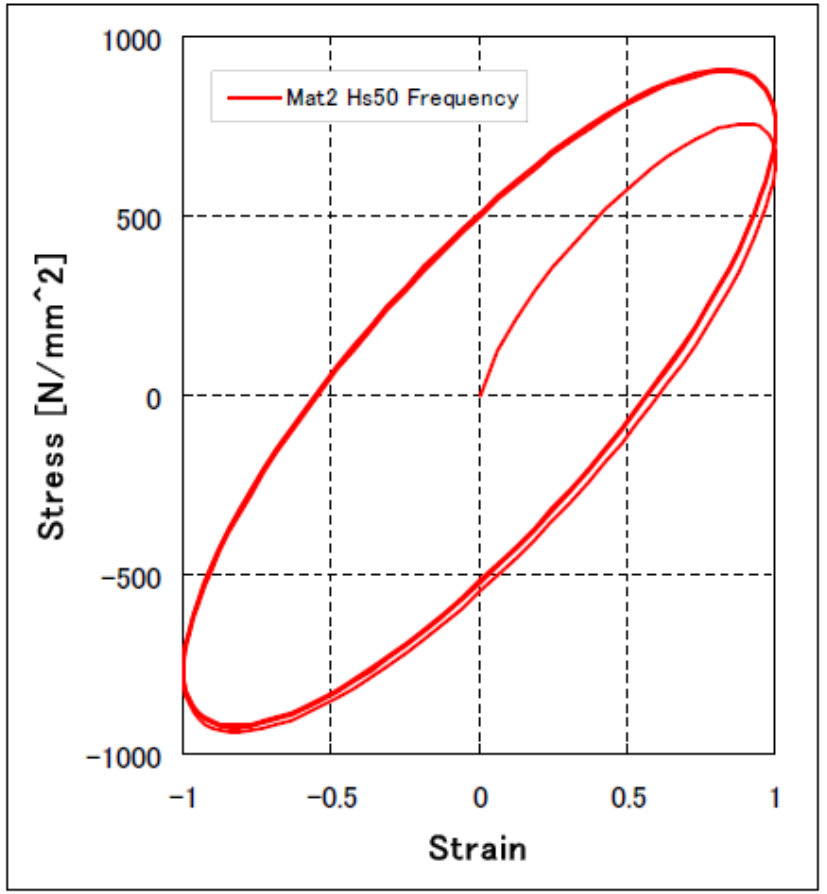



**Analysis model**




**1000Hz hysteresis curve**