

Identification result of material property and analysis model: Hardness (65), Damping (Large)

LS-DYNA

Prony series

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

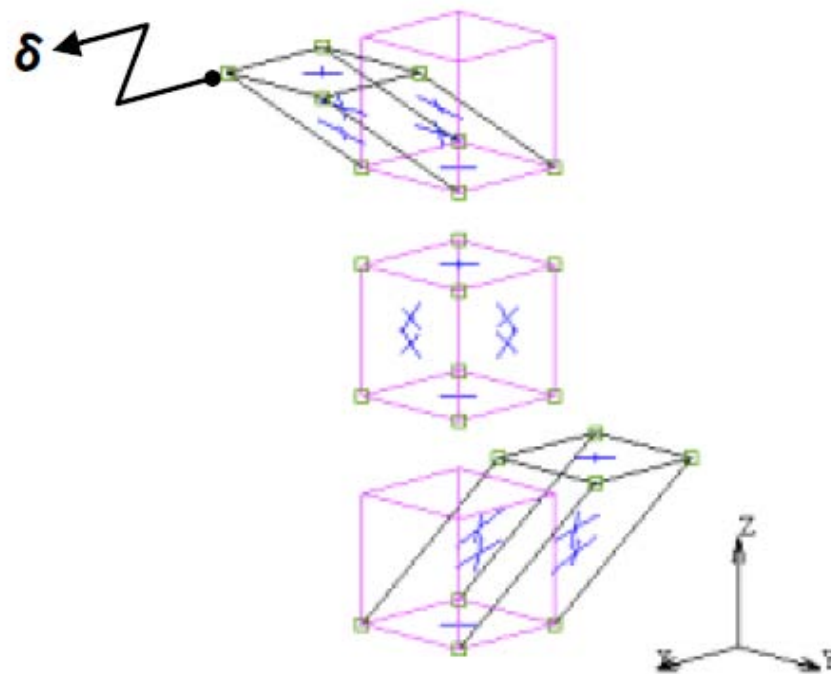
Parameter

G_n (MPa)		β_n	
G_1	4.8250e+00	β_1	1000.0
G_2	1.8317e-08	β_2	100.0
G_3	4.7917e-01	β_3	10.0
G_4	4.2211e-01	β_4	1.0

$\mu 1$	-209.7	$\alpha 1$	-0.36386
$\mu 2$	69.553	$\alpha 2$	-1.6138
$\mu 3$	-15.913	$\alpha 3$	-2.9527
$\mu 4$	2.2334	$\alpha 4$	-3.9273

Poisson's ratio ν	4.999
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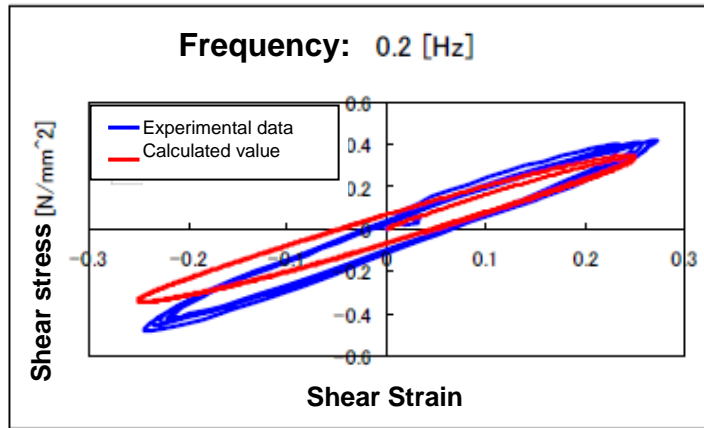
Amplitude: $A = 1 \text{ mm} (A^* = 0.25)$
 Frequency: $f = 0.2 \sim 15 \text{ Hz}$
 Displacement: $\delta = A^* \sin 2\pi f$



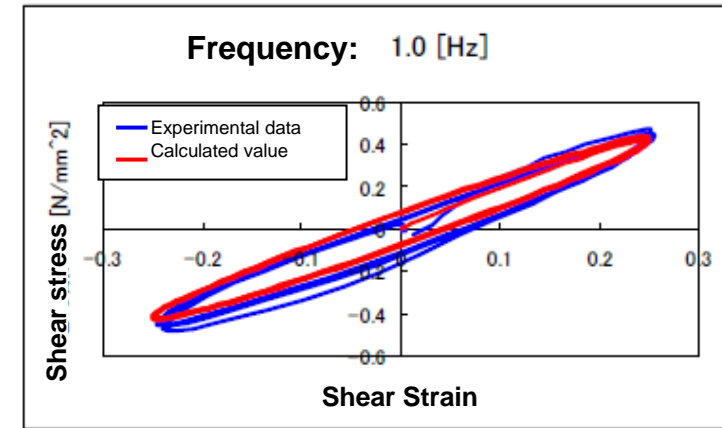
Analysis model

Analytical result of shear test (Constant amplitude): Hardness (65), Damping (Large)

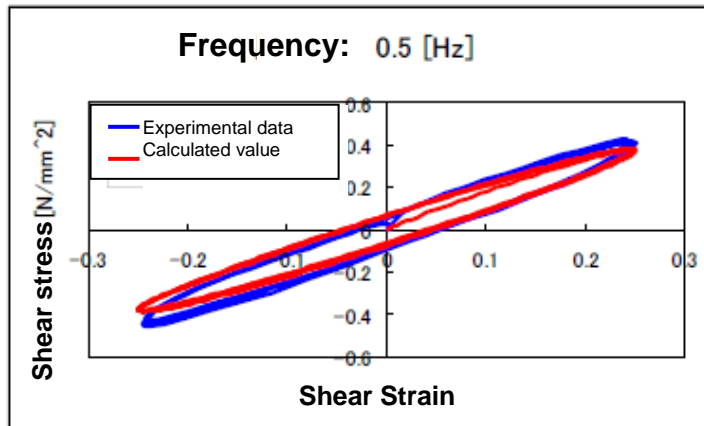
Software



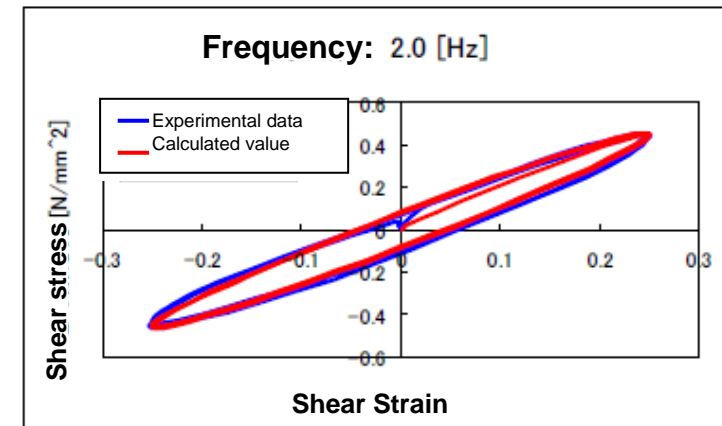
Input File: nll_t23_sin_a1_f0.2_DYNA.key



Input File: nll_t23_sin_a1_f1_DYNA.key



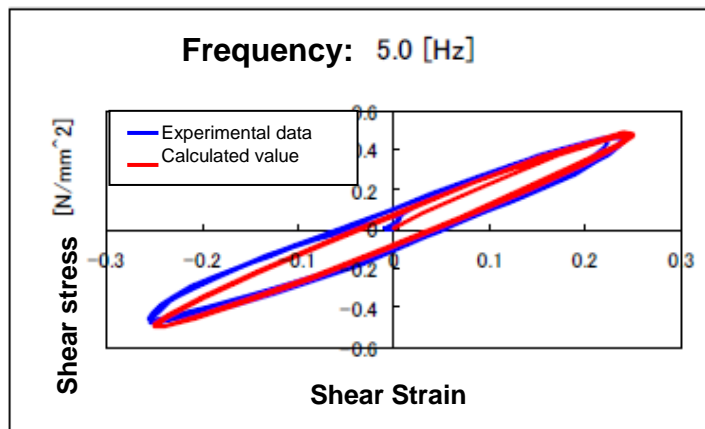
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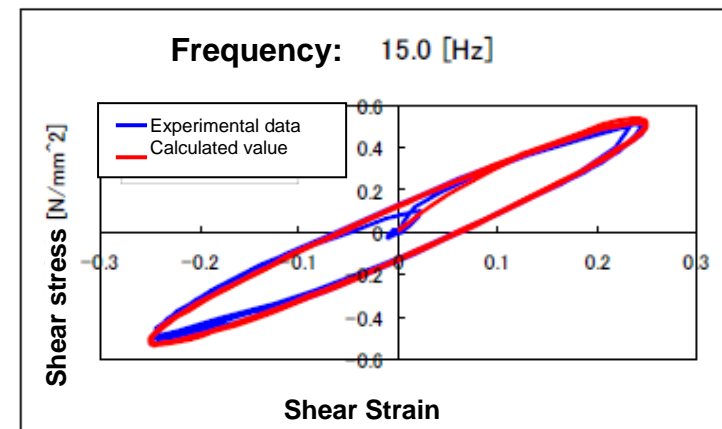
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Analytical result of shear test (Constant amplitude): Hardness (65), Damping (Large)

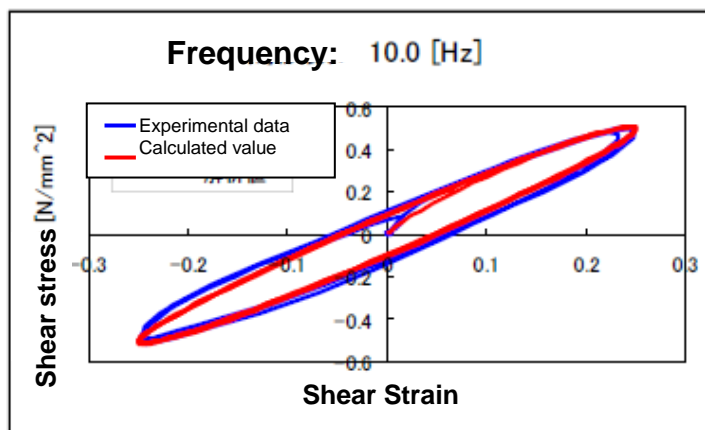
Software



Input File: nll_t23_sin_a1_f5_DYNA.key



Input File: nll_t23_sin_a1_f15_DYNA.key



Input File: nll_t23_sin_a1_f10_DYNA.key