

modified Tait Model Parameter list

Parameter	Daplen BE 52	Nepol GB402HP	Unit
b_1L	1.19495	0.952517	cm ³ /g
b_2L	0.000871	0.000449984	cm ³ /(g*K)
b_3L	106	193	MPa
b_4L	0.0050591	0.004276	1/K
b_1S	1.137303	0.920217	cm ³ /g
b_2S	0.000625	0.000331195	cm ³ /(g*K)
b_3S	142	236	MPa
b_4S	0.006886	0.00889193	1/K
b_5	393.15	393.15	K
b_6	6.597E-09	4.095E-09	cm ² *K/dyne
b_7	0.047945315	0.0263443	cm ³ /g
b_8	0.1	0.1	1/K
b_9	7.01E-10	3.991E-10	cm ² /dyne

Modified Cross model

Parameter	Daplen BE 52	Nepol GB402HP	Unit
n	0.28175	0.38423	--
tau*	0.0453	0.01	MPa
E	9.42345	1.426	g/(cm*s)
T_b	5192.7	5227.25	K
D	0	0	cm ² /dyne

$$v(T, p) = v_0(T) \left[1 - 0.0894 \cdot \ln \left(1 + \frac{p}{B(T)} \right) \right] + v_t(T, p)$$

$$v_0(T) = \begin{cases} b_{1S} + b_{2S}T_i, & \text{if } T \leq T_t \\ b_{1L} + b_{2L}T_i, & \text{if } T > T_t \end{cases}$$

$$B(T) = \begin{cases} b_{3S} \cdot \exp(-b_{4S}T_i), & \text{if } T \leq T_t \\ b_{3L} \cdot \exp(-b_{4L}T_i), & \text{if } T > T_t \end{cases}$$

$$v_t(T, p) = \begin{cases} b_7 \cdot \exp(b_8T_i - b_9p), & \text{if } T \leq T_t \\ 0, & \text{if } T > T_t \end{cases}$$

$$T_t(p) = b_5 + b_6p$$

$$T_i = T - b_5$$

$$\eta = \frac{\eta_0}{1 + \left(\eta_0 \cdot \frac{\dot{\gamma}}{\tau^*} \right)^{1-n}}$$

$$\eta_0 = E \cdot \exp \left(\frac{T_b}{T} + Dp \right)$$