0.1 title : KM-620 Equations

1 KM-620.1 and KM-620.2

$$\epsilon_{ts}\left(\sigma_t, E_y, \gamma_1, \gamma_2, \epsilon_p\right) = \begin{cases} \frac{\sigma_t}{E_y} & \text{if } \gamma_1 + \gamma_2 \le \epsilon_p \\ \frac{\sigma_t}{E_y} + \gamma_1 + \gamma_2 & \text{otherwise} \end{cases}$$

2 KM-620.3

$$\gamma_1\left(\epsilon_1, H\right) = \frac{\epsilon_1}{2} \cdot \left(1 - \tanh\left(H\right)\right)$$

3 KM-620.4

$$\gamma_2\left(\epsilon_2, H\right) = \frac{\epsilon_2}{2} \cdot \left(1 + \tanh\left(H\right)\right)$$

4 KM-620.5

$$\epsilon_1\left(\sigma_t, A_1, m_1\right) = \left(\frac{\sigma_t}{A_1}\right)^{\frac{1}{m_1}}$$

5 KM-620.6

$$A_1\left(\sigma_{ys}, \epsilon_{ys}, m_1\right) = \frac{\sigma_{ys} \cdot (1+\epsilon_{ys})}{(\log(1+\epsilon_{ys}))^{m_1}}$$

6 KM-620.7

$$m_1\left(R, \epsilon_p, \epsilon_{ys}\right) = \frac{\log(R) + \epsilon_p - \epsilon_{ys}}{\log\left(\frac{\log(1+\epsilon_p)}{\log(1+\epsilon_{ys})}\right)}$$

7 KM-620.8

$$\epsilon_2\left(\sigma_t, A_2, m_2\right) = \left(\frac{\sigma_t}{A_2}\right)^{\frac{1}{m_2}}$$

8 KM-620.9

$$A_2\left(\sigma_{uts}, m_2\right) = \frac{\sigma_{uts} \cdot e^{m_2}}{m_2^{m_2}}$$

9 KM-620.10

$H\left(\sigma_t, \sigma_{ys}, \sigma_{uts}, K\right) = \frac{2\cdot(\sigma_t-(\sigma_{ys}+K\cdot(\sigma_{uts}-\sigma_{ys})))}{K\cdot(\sigma_{uts}-\sigma_{ys})}$

10 KM-620.11

$R\left(\sigma_{ys}, \sigma_{uts}\right) = \frac{\sigma_{ys}}{\sigma_{uts}}$

11 KM-620.12

$\epsilon_{ys}() = 0.002$

12 KM-620.13

$K\left(R\right) = 1.5 \cdot R^{1.5} - 0.5 \cdot R^{2.5} - R^{3.5}$

13 KM-620.14

$\sigma_{utst}\left(\sigma_{uts}, m_2\right) = \sigma_{uts} \cdot e^{m_2}$

Note: *The above equations are confirmed identical to those of Division 2 Annex 3-D.3, so the resulting stress-strain curves may be used for either division.*