Formulario

Propiededades mecanicas	Dislocaciones y endurecimiento
$\sigma = rac{F_t}{A_0} \ \Box \ au = rac{F_s}{A_o} \ \Box \ \sigma_R = rac{F}{A_i}$	Fuerza de traccion: $F_n = F\cos(arphi)$
$arepsilon = rac{\Delta L}{L_0} = rac{L - L_0}{L_0}$	Fuerza cizalladura: $F_c = \cos(\lambda)$
$arepsilon_L = rac{\Deltaarnothing}{arnothing_0} = rac{arnothing - arnothing_0}{arnothing_0}$	$A_arphi = rac{A}{\cos(arphi)}$
$\gamma = an(heta) \ \Box \ au = G \gamma$	$\sigma_n = \sigma \cos(arphi)^2$
$v = -rac{arepsilon_L}{arepsilon} \; \epsilon \; [-1, 0.5]$	$ au_r = \sigma \cos(arphi) \cos(\lambda)$
$P=-Krac{\Delta V}{V_0}$	$\sigma_y = rac{ au_{CRSS}}{(\cos(arphi)\cos(\lambda))_{MAX}}$
$U_R = \int_0^{arepsilon_y} \sigma darepsilon = 0.5 arepsilon_y \sigma_y =$	mejor caso:
$=rac{\sigma_y^2}{2E}=0.5Earepsilon_y^2$	$arphi = \lambda = 45^{ m o} \Rightarrow \sigma_y = 2 au_{CRSS}$
$\%EL=rac{L_f-L_0}{L_0} imes 100$	$\sigma_y = \sigma_0 + k_y d^{-1/2}$
$\%AR=rac{A_0-A_f}{A_0} imes 100$	$\%CW = rac{A_o - A_d}{A_o} imes 100$
$U_t = \int_0^{arepsilon_f} \sigma darepsilon = U_r + \int_{arepsilon_y}^{arepsilon_f} \sigma darepsilon$	$d^n - d_0^n = Kt$

- σο límite elástico del material en estado monocristalino (cte)
- ky parámetro de ajuste (cte)
- d diámetro medio de los granos (variable)

Fracture	Fatigue	Diffusion	Creep
$K_c = Y \sigma_c \sqrt{\pi a}$	$\sigma_m = rac{\sigma_{max} + \sigma_{min}}{2}$	$N_{v} = \ N_{0} \exp(-rac{Q}{kT})$	$\dot{arepsilon}_s = K_1 \sigma^n$
$K_{Ic} = Y \sigma \sqrt{\pi a}$	$\sigma_r = \sigma_{max} - \sigma_{min}$	$J=rac{1}{A}rac{dM}{dt}$	$\dot{arepsilon}_s = \ K_2 \sigma^n \exp(-rac{Q_c}{RT})$
A3	$\sigma_a=rac{\sigma_{max}-\sigma_{min}}{2}=rac{\sigma_r}{2}$	$J=-Drac{dC}{dx}$	
A3	$R=rac{\sigma_{min}}{\sigma_{max}}$	$rac{\delta C}{\delta t} = D rac{\delta^2 C}{\delta x^2}$	

Fracture	Fatigue	Diffusion	Creep
A3	$\Delta\sigma\cdot N_f^a=C_1$	$rac{C_x-C_0}{C_s-C_0}=1-erf(rac{x}{2\sqrt{D}})$	$\overline{\overline{t}}$)
A3	$\sum rac{n_i}{NN_i} = 1$	$rac{C_x-C_0}{C_s-C_0}=1-erf(z)$	

Failure	Temperature T	Load/Stress σ
Fracture	Low	static
Fatige	Low	cyclic time-dependent
Creep	$High(T>0.4T_m)$	static