NOMENCLATURE

D_{out}, D_{in}	outer and inner diameters of tubular specimens
D_ε, D_σ	strain and stress deviators, respectively
E	Young's modulus
F_o, F, F_c	original, current, and limiting (in the neck) cross-sectional areas of a specimen
G	shear modulus
h	thickness of a flat specimen or of the wall of a tubular specimen
I_1, I_2, I_3	the first, second, and third invariants of the stress tensor
I_1', I_2', I_3'	the first, second, and third invariants of the stress deviator
I, k_σ	parameters of the stress state rigidity: $I = 3k_\sigma$, $k_\sigma = \dfrac{\sigma_o}{\sigma_i}$
K_o	bulk modulus
M_T, M_b	twisting and bending moments
N	axial load
p	pressure of the working medium (gas or liquid)
S_{1c}, S_{2c}, S_{3c}	ultimate principal normal stresses calculated from real dimensions of a specimen at the instant of fracture
s, s_c	current and ultimate reduction of the specimen cross-sectional area, $s = \ln F_o/F$; $s_c = \ln F_o/F_c$
T_ε, T_σ	strain tensor and stress tensor
T_ε^o, T_σ^o	spherical strain tensor and spherical stress tensor
γ_{12}, γ_{23}, γ_{31}	principal shear strains
γ_{xy}, γ_{yz}, γ_{zx}	shear strains in the planes xy, yz, and zx
$\gamma_{z\theta}$, $\gamma_{\theta r}$, γ_{rz}	shear strains in tubular specimens in the planes $z\theta$, θr, and rz
γ_{max}	maximal shear strain
γ_{oct}	octahedral shear strain
γ_i	shear strain intensity
$\dot{\gamma}_i$	shear strain rate intensity
γ_u	uniform limiting shear strain in pure torsion
$\gamma_{z\theta u}$, $\gamma_{\theta ru}$, γ_{rzu}	limiting shear strains in tubular specimens under multicomponent loading
γ_{umax}, γ_{uoct}	ultimate values of maximal strains and octahedral strains
γ_{iu}	ultimate value of the shear strain intensity
γ_{cmax}	maximal ultimate shear strain in the site of fracture
γ_a	amplitude value of the shear strain
δ	relative elongation after fracture in uniaxial tension
ε_1, ε_2, ε_3	principal linear strains
ε_x, ε_y, ε_z	strains in the x, y, and z directions
ε_z, ε_θ, ε_r	axial, circumferential, and radial strains in tubular specimens
ε_o	mean strain
$\dot{\varepsilon}_1$, $\dot{\varepsilon}_2$, $\dot{\varepsilon}_3$	strain rates

ε_i	strain intensity
$\dot{\varepsilon}_i$	strain rate intensity
ε_a	amplitude strain value under cyclic loading
ε_{ia}	amplitude strain intensity value under cyclic loading
ε_u	uniform limiting strain in uniaxial tension
$\varepsilon_{1u}, \varepsilon_{2u}, \varepsilon_{3u}$	uniform limiting principal plastic strains at a complex stress state
$\varepsilon_{zu}, \varepsilon_{\theta u}, \varepsilon_{ru}$	uniform limiting plastic strains in tubular specimens
$\varepsilon_{1c}, \varepsilon_{2c}, \varepsilon_{3c}$	ultimate plastic strains in the site of fracture
$\varepsilon_{u\max}, \varepsilon_{c\max}$	maximal uniform and ultimate strains, respectively
$\varepsilon_{iu}, \varepsilon_{ic}$	limiting value of uniform strain intensity and ultimate plastic strain intensity, respectively
ε_{oct}	octahedral normal strain
$\varepsilon_{1t}, \varepsilon_{2t}, \varepsilon_{3t}$	limiting principal strains in creep
$\theta_1, \theta_2, \theta_3$	the first, second, and third invariants of the strain tensor
θ_o	relative volume change
μ	Poisson's ratio
$\mu_\sigma, \mu_\varepsilon$	parameters of the stress and strain deviator types (Lode's parameters)
ν	coefficient of transverse strain in the elastoplastic range
$\sigma_1, \sigma_2, \sigma_3$	principal normal stresses
$\sigma_x, \sigma_y, \sigma_z$	normal stresses on the planes perpendicular to the axes $x, y,$ and z
$\sigma_z, \sigma_\theta, \sigma_r$	axial, circumferential, and radial normal stresses in a tubular specimen
σ_o	mean normal stress
σ_i	stress intensity
σ_{oct}	normal octahedral stress
σ_p	proportional limit in uniaxial tension
$\sigma_{02}^+, \sigma_{02}^-$	yield strengths in tension and compression determined by an offset residual strain of 0.2 %
σ_u^+, σ_u^-	ultimate strength in uniaxial tension and compression, respectively
$\bar{\sigma}_u^+, \bar{\sigma}_u^-$	true ultimate strength in uniaxial tension and compression calculated by the maximal load considering real dimensions of a specimen
$\sigma_{1p}, \sigma_{2p}, \sigma_{3p}$	stresses corresponding to a proportional limit under a complex stress state
$\sigma_{1y}, \sigma_{2y}, \sigma_{3y}$	stresses corresponding to the yield strength under a complex stress state
σ_{iy}	yield strength determined from the generalized curve $\sigma_i = \sigma_i(\varepsilon_i)$ by an offset residual strain of 0.2 %
$\bar{\sigma}_{1u}, \bar{\sigma}_{2u}, \bar{\sigma}_{3u}$	true stresses corresponding to the maximal load under a complex stress state
$\sigma_{1u}, \sigma_{2u}, \sigma_{3u}$	conventional stresses corresponding to the maximal load under a complex stress state
$\bar{\sigma}_{iu}$	true value of the stress intensity corresponding to the maximal load
σ_t^+, σ_t^-	long-term strength in tension and compression
$\sigma_{1t}, \sigma_{2t}, \sigma_{3t}$	stresses corresponding to the long-term strength under a complex stress state

σ_a, σ_m	stress amplitude and mean stress under cyclic uniaxial loading, respectively
σ_{ia}, σ_{im}	stress amplitude intensity and mean stress intensity under cyclic loading
σ_{-1b}	fatigue limit under fully reversed loading in bending
τ_{12}, τ_{23}, τ_{31}	principal shear stresses
τ_{xy}, τ_{yz}, τ_{zx}	shear stresses on planes perpendicular to the y, z, and x axes and parallel to the x, y, and z axes, respectively
τ_u	ultimate strength in torsion
τ_y	yield strength in torsion
$\tau_{z\theta}$	shear stress in a tubular specimen
τ_p	proportional limit in torsion
τ_{oct}	octahedral shear stress
$\tau_{\text{oct}m}$	mean value of shear octahedral stress under cyclic loading
$\tau_{\max}$	maximal shear stress
$\tau_{u\max}$, $\tau_{u\text{oct}}$	limiting values of the maximal and shear octahedral stresses
τ_{-1}	fatigue limit in torsion
τ_o	fatigue limit in pulsating torsion
ψ, ψ_u	local (in the neck) and uniform reduction of the cross-sectional area after fracture in uniaxial tension