Erratum and Nomenclature for:

Rheology of Particle Suspensions - Fresh Concrete, Mortar and Cement Paste with Various Types of Lignosulfonates

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Abstract

Like in most/all textbooks and other written documents, typesetting error are always present. The erratum written in this document applies for: Wallevik, J. E. (2003); Rheology of Particle Suspensions - Fresh Concrete, Mortar and Cement Paste with Various Types of Lignosulfonates (Ph.D.-thesis); Department of Structural Engineering, The Norwegian University of Science and Technology, ISBN 82-471-5566-4, ISSN 0809-103X.

1 Erratum

1. The name of the variable $\dot{\boldsymbol{\varepsilon}}$ is not **strain rate tensor**, but the **rate–of–deformation tensor**.
2. The term **coagulation state** U_3 should be written as **coagulated state**.
3. p.42: "$v = 3.5$ cm/s" $\Rightarrow$ "$v = 0.8$ cm/s".
4. p.109: $n - 1 \Rightarrow n - 2$; i.e. the correct equation is $\alpha_{\mathrm{H}} = H\sqrt{((1 - R^2)/R^2)(1/(n-2))}$.
5. p.153: "**6) HMW Ca**" $\Rightarrow$ "**6) LMW Ca**".
6. p.165: The two expressions $\partial v_\theta/\partial r = 0$ and $\partial v_\theta/\partial r \leq 0$ should be written as $\partial v_\theta/\partial z = 0$ and $\partial v_\theta/\partial z \leq 0$.

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7. p.388, footnote 14: The expression $(\nabla \cdot \boldsymbol{\sigma}) \cdot \mathbf{v} \approx -\mathbf{v} \cdot \nabla p = dp/dt$ is wrong (a minus sign is missing). It should be $(\nabla \cdot \boldsymbol{\sigma}) \cdot \mathbf{v} \approx -\mathbf{v} \cdot \nabla p = -dp/dt$.

2 Nomenclature

f	objective function [$\mathrm{N^3m^3}$]
$\mathbf{g}$	gravity [$\mathrm{m/s^2}$]
h	height of the inner cylinder = 116 mm
H_3	coagulation rate [$\mathrm{s^{-1}}$]
I_3	dispersion rate [$\mathrm{s^{-1}}$]
K	special function used in H_3 [$\mathrm{s^{-3}}$]
R_i	radius of the inner cylinder = 85 mm
R_o	radius of the outer cylinder = 101 mm
t	time ($t \in [0, 50\,\mathrm{s}]$)
t_m	time from water addition ($t_\mathrm{m} \in [0, 102\,\mathrm{min}]$)
T	measured torque [Nm]
T_c	computed torque [Nm]
$U_{3[0]}$	reversible coagulated state at $t = 0$ [−]
$\mathbf{v}$	velocity of the suspension [m/s]

Greek letters

$\dot{\gamma}$	shear rate [$\mathrm{s^{-1}}$]
$\dot{\boldsymbol{\varepsilon}}$	rate–of–deformation tensor [$\mathrm{s^{-1}}$]
η	shear viscosity (or equally, apparent viscosity) [$\mathrm{Pa \cdot s}$]
μ	plastic viscosity [$\mathrm{Pa \cdot s}$]
$\mu_{[\mathrm{t}]}$	total plastic viscosity [$\mathrm{Pa \cdot s}$]
ρ	density of the cement paste [$\mathrm{kg/m^3}$]
$\boldsymbol{\sigma}$	constitutive equation [Pa]
τ_0	yield value (or equally, yield stress; c.f. British Standard BS 5168:1975) [Pa]
$\tau_{0[\mathrm{t}]}$	total yield value [Pa]
Φ	phase volume of the cement paste [−]
ω_o	angular velocity of the outer cylinder (R_o) [rad/s]