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 \( \dot{\varepsilon} \) 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: “\( v = 3.5 \text{ cm/s} \) ⇒ “\( v = 0.8 \text{ cm/s} \)”.

4. p.109: \( n - 1 \Rightarrow n - 2 \); i.e. the correct equation is \( \alpha_H = H \sqrt{((1 - R^2)/R^2)(1/(n - 2))} \).

5. p.153: “6) HMW Ca” ⇒ “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 \( (\nabla \cdot \sigma) \cdot v \approx -v \cdot \nabla p = dp/dt \) is wrong (a minus sign is missing).

It should be \((\nabla \cdot \sigma) \cdot v \approx -v \cdot \nabla p = -dp/dt\).

2 Nomenclature

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

**Greek letters**

- \(\dot{\gamma}\): shear rate \([s^{-1}]\)
- \(\dot{\varepsilon}\): rate-of-deformation tensor \([s^{-1}]\)
- \(\eta\): shear viscosity (or equally, apparent viscosity) \([Pa \cdot s]\)
- \(\mu\): plastic viscosity \([Pa \cdot s]\)
- \(\mu_{[t]}\): total plastic viscosity \([Pa \cdot s]\)
- \(\rho\): density of the cement paste \([kg/m^3]\)
- \(\sigma\): constitutive equation \([Pa]\)
- \(\tau_0\): yield value (or equally, yield stress; c.f. British Standard BS 5168:1975) \([Pa]\)
- \(\tau_{0[\kappa]}\): total yield value \([Pa]\)
- \(\Phi\): phase volume of the cement paste \([-\]
- \(\omega_o\): angular velocity of the outer cylinder \((R_o)\) \([rad/s]\)