



Supplementary Materials

# The elastic share of inelastic stress-strain paths of woven fabrics

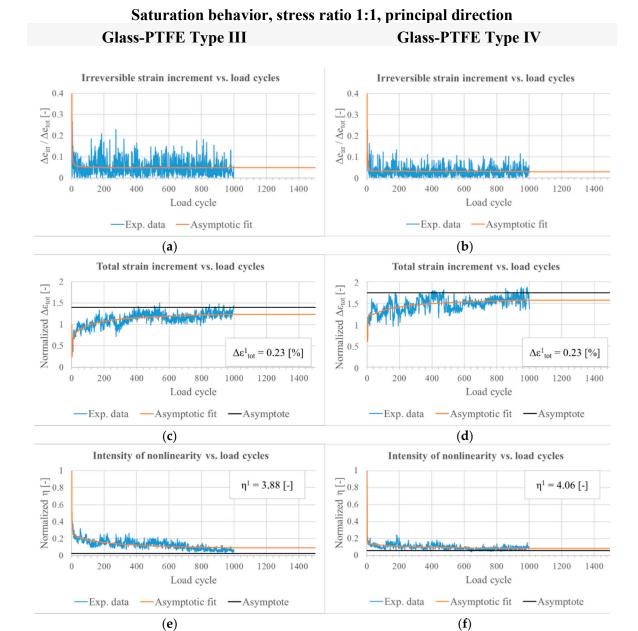
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In addition of section 3 of the paper, this document provides all curve progressions of all three saturation inspection characteristics for both investigated glass-PTFE fabrics type III and IV, see Figures S1 to S10. Each Figure summarizes the diagrams in principal or transverse direction, respectively, for one of the five tested stress ratios. Note that principal direction is always the direction which is subjected to the major stress of a stress ratio. For stress ratio 1:1, principal direction equals warp direction per definition.

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**Figure S1.** Curves of the saturation inspection characteristics for stress ratio 1:1, principal direction. (a) Irreversible strain increment vs. load cycles; (b) irreversible strain increment vs. load cycles; (c) total strain vs. load cycles; (d) total strain vs. load cycles; (e) intensity of nonlinearity vs. load cycles and (f) intensity of nonlinearity vs. load cycles.

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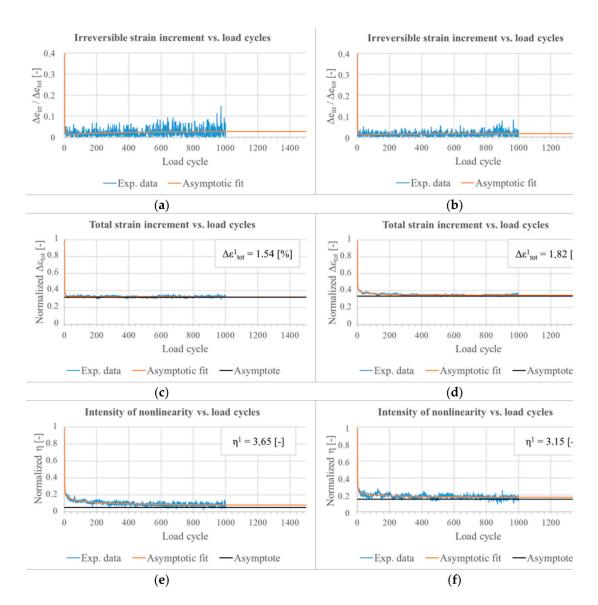
#### Saturation behavior, stress ratio 1:1, transverse direction

#### **Glass-PTFE Type III Glass-PTFE Type IV** Irreversible strain increment vs. load cycles Irreversible strain increment vs. load cycles 0.4 0.4 $\Delta e_{iir} / \Delta e_{tot} \begin{bmatrix} -1 \\ 0.3 \end{bmatrix}$ □0.3 $\Delta e_{irr} / \Delta e_{tot}$ [ 0.3 400 800 1000 1200 1400 200 600 800 1000 1200 1400 200 600 400 Load cycle Load cycle -Exp. data Asymptotic fit -Exp. data -Asymptotic fit (a) (b) Total strain increment vs. load cycles Total strain increment vs. load cycles Normalized $\Delta \epsilon_{tot}$ [-] 0.6 8.0 0.4 0.2 0 Normalized $\Delta \epsilon_{tot}$ [-] $\Delta \varepsilon_{\text{tot}}^1 = 8.48 \, [\%]$ $\Delta \varepsilon^{1}_{tot} = 6.39 \ [\%]$ 0 0 400 600 800 1000 1200 1400 200 400 600 800 1000 1200 1400 200 Load cycle Load cycle Asymptotic fit Asymptotic fit —Asymptote (d) (c) Intensity of nonlinearity vs. load cycles Intensity of nonlinearity vs. load cycles Normalized n [-] 0.8 0.6 0.4 0.2 Normalized η [-] 0.8 0.6 0.4 0.2 $\eta^1 = 5.95$ [-] $\eta^1 = 7.46$ [-] 0 0 0 200 400 600 800 1000 1200 1400 200 600 800 1000 1200 1400 400 Load cycle Load cycle Asymptotic fit Exp. data —Asymptote Exp. data Asymptotic fit (**f**) (e)

**Figure S2.** Curves of the saturation inspection characteristics for stress ratio 1:1, transverse direction. (a) Irreversible strain increment vs. load cycles; (b) irreversible strain increment vs. load cycles; (c) total strain vs. load cycles; (d) total strain vs. load cycles; (e) intensity of nonlinearity vs. load cycles and (f) intensity of nonlinearity vs. load cycles.

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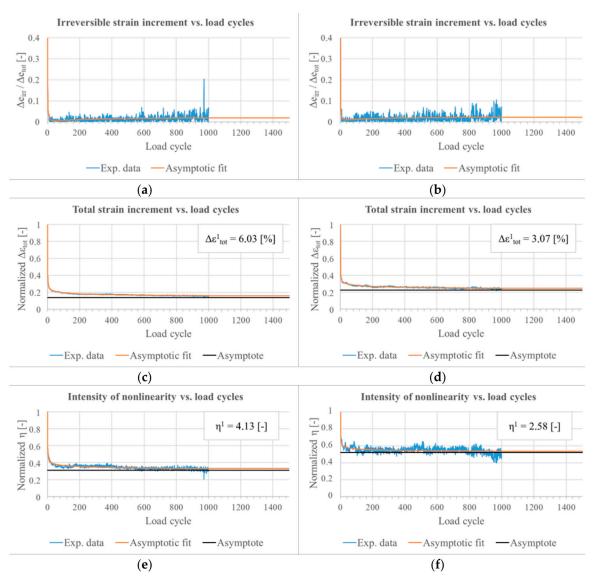
## Saturation behavior, stress ratio 2:1, principal direction Glass-PTFE Type III Glass-PTFE Type IV



**Figure S3.** Curves of the saturation inspection characteristics for stress ratio 2:1, principal direction. (a) Irreversible strain increment vs. load cycles; (b) irreversible strain increment vs. load cycles; (c) total strain vs. load cycles; (d) total strain vs. load cycles; (e) intensity of nonlinearity vs. load cycles and (f) intensity of nonlinearity vs. load cycles.

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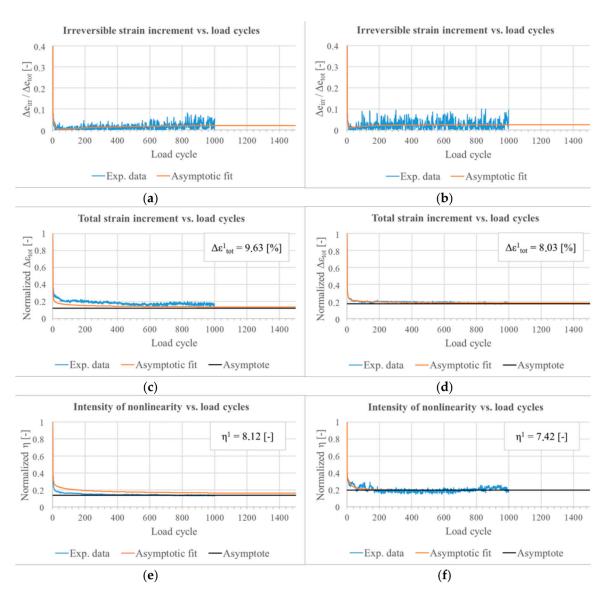
# Saturation behavior, stress ratio 2:1, transverse direction Glass-PTFE Type III Glass-PTFE Type IV



**Figure S4.** Curves of the saturation inspection characteristics for stress ratio 2:1, transverse direction. (a) Irreversible strain increment vs. load cycles; (b) irreversible strain increment vs. load cycles; (c) total strain vs. load cycles; (d) total strain vs. load cycles; (e) intensity of nonlinearity vs. load cycles and (f) intensity of nonlinearity vs. load cycles.

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## Saturation behavior, stress ratio 1:2, principal direction Glass-PTFE Type III Glass-PTFE Type IV



**Figure S5.** Curves of the saturation inspection characteristics for stress ratio 1:2, principal direction. (a) Irreversible strain increment vs. load cycles; (b) irreversible strain increment vs. load cycles; (c) total strain vs. load cycles; (d) total strain vs. load cycles; (e) intensity of nonlinearity vs. load cycles and (f) intensity of nonlinearity vs. load cycles.

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### Saturation behavior, stress ratio 1:2, transverse direction **Glass-PTFE Type III Glass-PTFE Type IV** Irreversible strain increment vs. load cycles 0.4 0.4

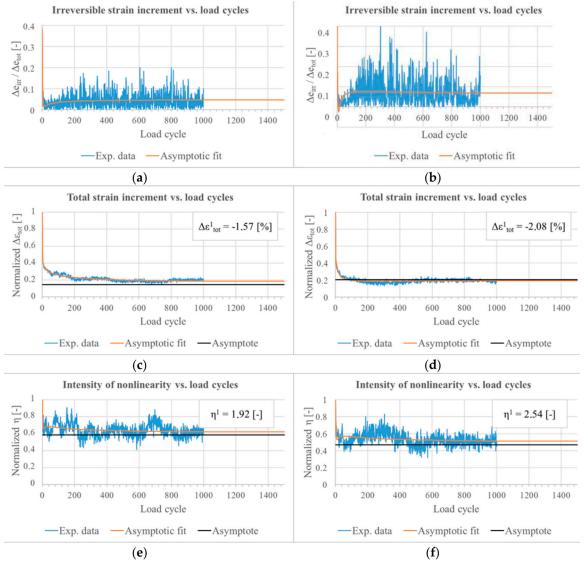
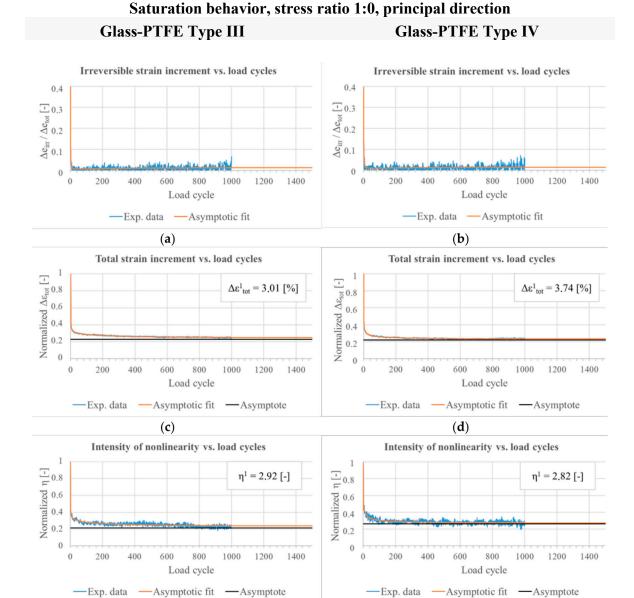


Figure S6. Curves of the saturation inspection characteristics for stress ratio 1:2, transverse direction. (a) Irreversible strain increment vs. load cycles; (b) irreversible strain increment vs. load cycles; (c) total strain vs. load cycles; (d) total strain vs. load cycles; (e) intensity of nonlinearity vs. load cycles and (f) intensity of nonlinearity vs. load cycles.

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**Figure S7.** Curves of the saturation inspection characteristics for stress ratio 1:0, principal direction. (a) Irreversible strain increment vs. load cycles; (b) irreversible strain increment vs. load cycles; (c) total strain vs. load cycles; (d) total strain vs. load cycles; (e) intensity of nonlinearity vs. load cycles and (f) intensity of nonlinearity vs. load cycles.

(e)

(**f**)

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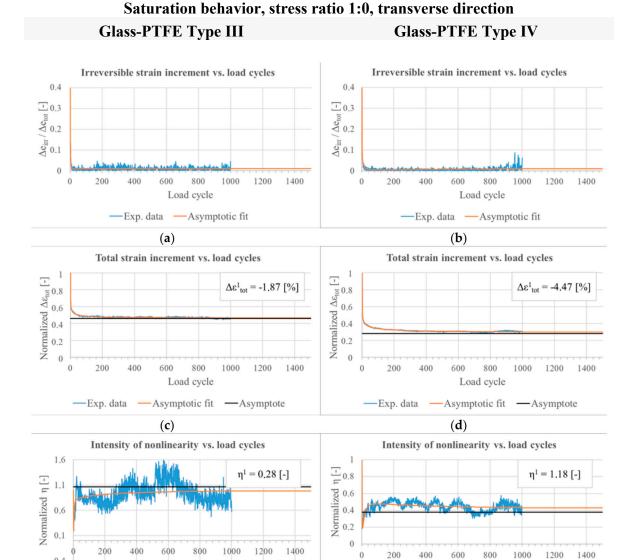


Figure S8. Curves of the saturation inspection characteristics for stress ratio 1:0, transverse direction. (a) Irreversible strain increment vs. load cycles; (b) irreversible strain increment vs. load cycles; (c) total strain vs. load cycles; (d) total strain vs. load cycles; (e) intensity of nonlinearity vs. load cycles and (f) intensity of nonlinearity vs. load cycles.

Load cycle -Asymptotic fit

(e)

—Asymptote

Load cycle

—Asymptote

Asymptotic fit

(**f**)

Exp. data

-0.4

Exp. data

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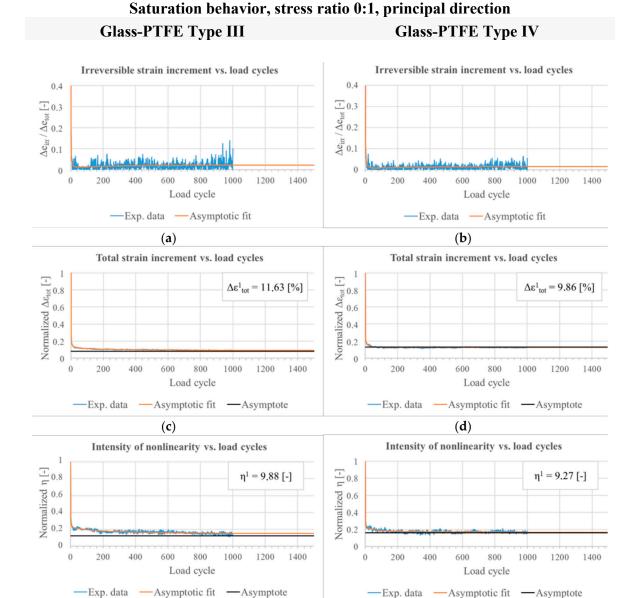
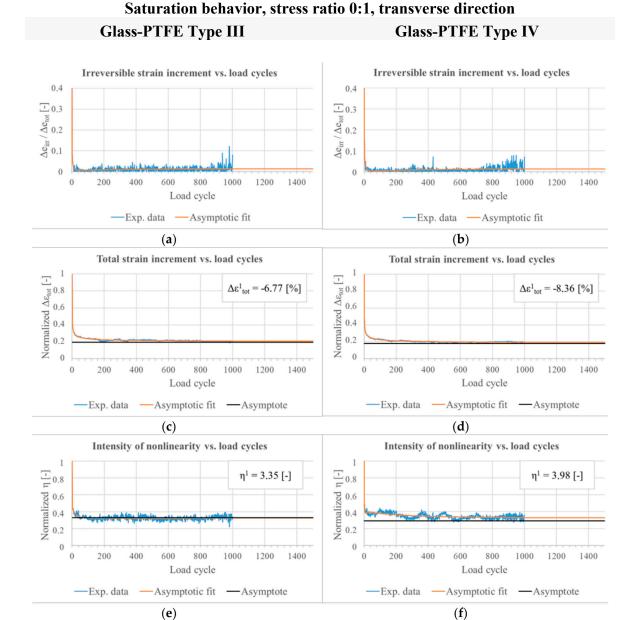


Figure S9. Curves of the saturation inspection characteristics for stress ratio 0:1, principal direction. (a) Irreversible strain increment vs. load cycles; (b) irreversible strain increment vs. load cycles; (c) total strain vs. load cycles; (d) total strain vs. load cycles; (e) intensity of nonlinearity vs. load cycles and (f) intensity of nonlinearity vs. load cycles.

(e)

(**f**)

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**Figure S10.** Curves of the saturation inspection characteristics for stress ratio 0:1, transverse direction. (a) Irreversible strain increment vs. load cycles; (b) irreversible strain increment vs. load cycles; (c) total strain vs. load cycles; (d) total strain vs. load cycles; (e) intensity of nonlinearity vs. load cycles and (f) intensity of nonlinearity vs. load cycles.