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Data Article

Viscoplastic properties of laponite-CMC mixes



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ABSTRACT

In this dataset, 15 samples of laponite-CMC mixes were realized and their viscoplastic properties are determined. Rheological parameters are then expressed as a function of age and components concentrations.

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Specifications Table

Subject area	Physics
More specific subject area	Viscoplastic properties
Type of data	Table, graph
How data was acquired	Rheometer (Gemini, Malvern)
Data format	Raw, analyzed
Experimental factors	15 samples of laponite-CMC were made with different concentrations of components (synthetic clay and polymer) and analyzed with a rheometer
Experimental features	Rheometrical tests are carried out and viscoplastic properties are linked to the concentration of components
Data source location	n/a
Data accessibility	Data is available in this paper

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Value of the data

- The data can be compared to other recipes to obtain transparent viscoplastic mixes for optical measurements such as PIV.
- The data can be used directly to make transparent viscoplastic model fluids with rheological controlled properties for civil engineering, agroalimentary, sediment transport, cosmetic field,...
- The data show effects of clay and polymer concentrations on viscoplastic parameters to reach the desired rheological properties.

1. Data

Rheological properties on 15 samples of laponite-CMC mixes are determined varying mass concentration of the components (laponite and carboxymethylcellulose) [1,2]. Rheograms are established and a viscoplastic model (Herschel–Bulkley) is fitted. Model parameters are expressed as a function of time or components concentration.

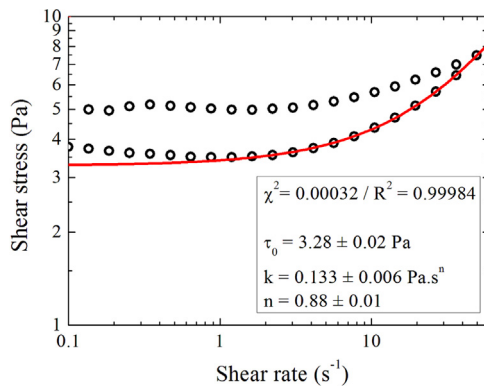


Fig. 1. Fitted curve with Herschel–Bulkley model on sample 0.5% CMC+0.5% laponite for D+1.

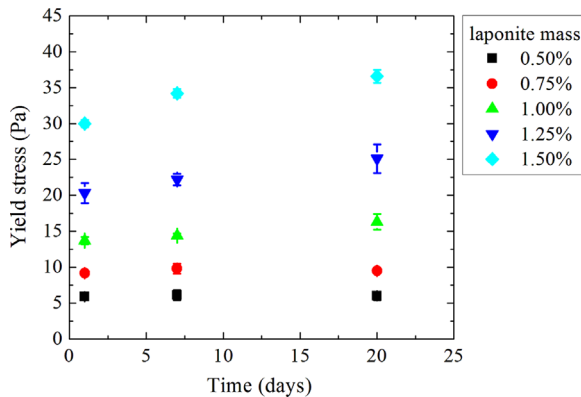


Fig. 2. Yield stresses as a function of time for a CMC mass concentration of 0.75%.

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