

# Accepted Manuscript

Characteristics of particle breakage of sand in triaxial shear

Fangwei Yu

PII: S0032-5910(17)30645-9  
DOI: doi:[10.1016/j.powtec.2017.08.001](https://doi.org/10.1016/j.powtec.2017.08.001)  
Reference: PTEC 12740

To appear in: *Powder Technology*

Received date: 21 November 2016  
Revised date: 23 July 2017  
Accepted date: 2 August 2017



Please cite this article as: Fangwei Yu, Characteristics of particle breakage of sand in triaxial shear, *Powder Technology* (2017), doi:[10.1016/j.powtec.2017.08.001](https://doi.org/10.1016/j.powtec.2017.08.001)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**Characteristics of particle breakage of sand in triaxial shear**

Fangwei Yu<sup>i, ii</sup>, Ph.D.

<sup>i</sup> Assistant Professor, Institute of Mountain Hazards and Environment, Chinese Academy of Sciences, Chengdu 610041, China. <sup>ii</sup> Formerly, Ph.D. Candidate, Department of Civil Engineering, The University of Tokyo, Tokyo 113-8656, Japan. E-mail: fwyuui@gmail.com

**Abstract:** A great deal of triaxial tests were conducted under various influence factors on the Silica sand No.5 with the purpose of investigating the characteristics of particle breakage. Particle breakage was measured by sieve analysis conducted at the different axial strain level after the tests to obtain relevant grain size distribution curves which were quantified by relative breakage. It was found that the particle breakage in relative breakage increases with increasing axial strain and confining pressure. Particle breakage was also caused during consolidation. Denser sample was revealed to cause more particle breakage. Initial stress anisotropy was found to result in more particle breakage during anisotropic consolidation than that during isotropic consolidation but during shearing the higher confining pressure resulted in more particle breakage than the initial stress anisotropy with a relatively lower confining pressure. Particle breakage was found to increase in up convexity with increasing cycle number of cyclic loading but in up concavity with increasing additional axial strain. A hyperbolic model was proposed to correlate the particle breakage in relative breakage with the plastic work per unit volume for the monotonic and cyclic triaxial tests.

**Keywords:** Grain size distribution; Particle breakage; Plastic work; Sand; Triaxial tests

Download English Version:

<https://daneshyari.com/en/article/4910437>

Download Persian Version:

<https://daneshyari.com/article/4910437>

[Daneshyari.com](https://daneshyari.com)