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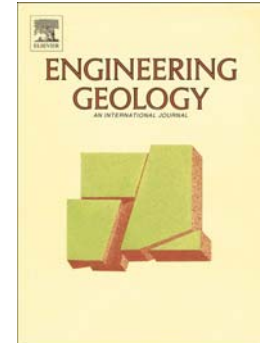
Rock fabric heterogeneity and its influence on the petrophysical properties of a building limestone: Lede stone (Belgium) as an example

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## **Rock fabric heterogeneity and its influence on the petrophysical properties of a building limestone: Lede stone (Belgium) as an example**

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### **Abstract**

Lede stone is an important historical stone in Belgium, with many ceased and disappeared historical quarries. Owing to its geological nature, this stone exhibits considerable variation in petrophysical properties. Three macroscopical different facies from the solely remaining quarry area in Balegem (Belgium) were profoundly characterized for their pore network properties and petrophysical properties. The pore network was exhaustively studied combining water imbibition under vacuum, mercury intrusion porosimetry and X-ray computed microtomography. The three facies not only have a strong difference in total porosity, but also differ in terms of pore connectivity and pore size distribution, linked to the variability in microfacies. This has profound implications on the water transfer properties such as atmospheric water absorption, capillary water absorption, omnidirectional drying and water vapor resistance. The petrophysical behavior is illustrated with a salt ageing test. The results can be used for restoration and conservation of Lede stone in the built cultural heritage.

### **Keywords**

Lede stone, pore network characterization, petrophysical properties, cultural heritage

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