

Committee Report: JCI-TC193A

Technical Committee on Advanced Utilization of Volcanic Sediments as Mineral Admixture for Concrete

委員会報告：JCI-TC193A

火山性堆積物のコンクリート用混和材としての高度利用に関する研究委員会

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Keywords: Volcanic sediments, mineral admixture, aggregates, pozzolan, effective utilization

Abstract

Japan has several volcanoes, and therefore, an abundant reserve of volcanic sediments with pozzolanic reactivity. In this committee, we focused on various volcanic sediments that can be utilized as mineral admixture for concrete. We conducted surveys on volcanic sediment distribution and reserves in Japan and overseas as well as their physical and chemical composition characteristics. In addition, we conducted surveys on the actual usage and characteristics of the concrete that utilizes these materials and test methods for using volcanic sediments as mineral admixture for concrete using a simple manufacturing method. We proposed an optimal manufacturing and usage method.

1. Introduction

Japan has many volcanoes, and therefore, it has abundant reserves of volcanic sediments with pozzolanic reactivity. The advanced utilization of such volcanic sediments as mineral admixture for concrete can help improve concrete durability and carbon reduction. The effective utilization of volcanic sediments in Japan has been conducted since the Meiji era, and thus far, many examples of utilization have accumulated throughout history regardless of the fields of civil engineering and architecture. Various research institutions have started reconsidering its effective utilization owing to the enactment of the JIS A 6209 “Volcanic glass powder for use in concrete” in March 2020.

In this committee, we focused on various volcanic

sediments that can be used as mineral admixture for concrete. We conducted surveys on information such as volcanic sediment distribution and reserves in Japan and overseas and their physical and chemical composition characteristics. In addition, we conducted surveys on the actual usage and characteristics of the concrete that utilizes those materials (from the aspects of fluidity, strength development, durability, etc.) and the test methods required for using volcanic sediments as concrete materials with a simple manufacturing method. We proposed an optimal manufacturing method and usage method.

The committee members are listed in Table 1. In the Raw Materials WG (WG1: Hiroshi Jinnai, Chief), we survey information such as volcanic sediment distribution and reserves in Japan.....