

Association of Metallurgical Engineers of Serbia
Faculty of Technology and Metallurgy, University of Belgrade
Institute for Technology of Nuclear and Other Mineral Raw Materials
Institute of Chemistry, Technology and Metallurgy
Vinca Institute of Nuclear Sciences
Serbian Foundrymen's Society

MME SEE

2019

Metallurgical & Materials
Engineering Congress
of South-East Europe

BOOK OF ABSTRACTS

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Dragomir Glišić
Branislav Marković
Vaso Manojlović

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PREFACE

The Fourth Metallurgical & Materials Engineering Congress of South-East Europe (MME SEE 2019) is a biannual meeting of scientists, professionals, and specialists working in the fields of metallurgical and materials engineering. The aim of the Congress is to present current research results related to processing/structure/property relationships, advances in processing, characterization, and applications of modern materials.

Congress encompasses a wide range of related topics and presents the current views from both academia and industry: Future of metals/materials industry in South-East European countries; Raw materials; New industrial achievements, developments and trends in metals/materials; Ferrous and nonferrous metals production; Metal forming, casting, refractories and powder metallurgy; New and advanced ceramics, polymers and composites; Characterization and structure of materials; Recycling and waste minimization; Corrosion, coating, and protection of materials; Process control and modeling; Nanotechnology; Sustainable development; Welding; Environmental protection; Education; Accreditation & certification.

The Editors hope that Congress will stimulate new ideas and improve the knowledge in the field of metallurgical and materials engineering.

The Congress is organized jointly by the Association of Metallurgical Engineers of Serbia, Faculty of Technology and Metallurgy, University of Belgrade, Institute for Technology of Nuclear and Other Mineral Raw Materials, Institute of Chemistry, Technology and Metallurgy, Vinca Institute of Nuclear Sciences and Serbian Foundrymen's Society.

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QUARTZ SAND PROCESSING METHODS FOR THE APPLICATION IN WATER GLASS PRODUCTION⁷

Slavica Mihajlović, Živko Sekulić, Marina Blagojev, Vladan Kašić

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To use quartz sand for water glass production, processing of raw quartz sand is necessary. The objectives of processing are: achieving the required granulometric composition, increasing the content of SiO₂ and reducing the content of impurities that lower its quality. The most frequently used method is the attrition cleaning in combination with gravity and magnetic concentration. In order to eliminate quartz sand impurities to a greater extent, it is approached to different methods of preparing mineral raw materials, which depends of the content and type of impurities as well as on the way they appear (as individual grains, surface coatings on quartz grains or as a form of intergrowth with quartz). The size reduction processes are used when it comes to sandstone or large-grained sand, whereby the size decreases up to 0.6 mm. Besides that, washing, attrition scrubbing, grading and also gravity, flotation, and magnetic concentration are used. Desliming, washing, and grading procedures are used almost always because there is clay present in the quartz raw material as impurities. The scrubbing procedure in attrition machines is used when the quartz surface is kaolinized and limonitised. The flotation concentration is used when in raw material beside the quartz, there is mica and feldspar, with preceding washing and grading procedures to eliminate the clay component. That is so-called „reverse“ flotation consisting of flotating mica and feldspar is applied, and the pure quartz remains in the pulp. The magnetic separation process is used when in quartz raw material are also magnetic impurities type Fe₂O₃ as carriers of total iron. Efficacy of the removal of iron is expressed as a rate of reduction of Fe₂O₃. In the company „Kesogradnja d.o.o.“ at Kozluk, near Zvornik (Republic of Srpska) from quartz sand deposit „Bijela Stijena Skočić“, quartz sand for the production of water glass was obtained by the procedures of washing, grinding, sizing and magnetic separation.

Keywords: quartz sand; separation; magnetic separation; water glass.

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