A study on the technological properties of Velibey quartz sandstone field (Kumtarla Village-Zonguldak) at the cliffs of Visean Yılanlı Formation on Cretaceous sea beach in south of Holocene Sea

Okan PULAT[1], Meftun PEHLEVAN[1], İbrahim BUZKAN[2], Haşini AĞRILI[3] and Murat ÇİÇEK[3]

'MTA Batı Karadeniz Bölge Müdürlüğü, Zonguldak, pulat_95@hotmail.com

Zonguldak Karaelmas Üniversitesi Jeoloji Mühendisliği Bölümü, Zonguldak

MTA Genel Müdürlüğü Maden Etüd Ve Arama Dairesi, Ankara

Considering the geological history of Turkey, there are many quartz sandstone occurrences derived from various types of rocks in different time intervals. These rocks are generally formed due to transportation of quartz grains, separated from magmatic or metamorphic rocks by means of disintegration, by river flow to sea and accumulation on coastal environments. The collected quartz grains in different size become enriched by washing in a turbulent coastal environment. Finally, they are cemented with fine grained material in this environment. Quartz sandstone can also be deposited in periods due to the tidal environment effect. Recently, quartz sand depositions can take place as a result of corrosion of quartz enriched rocks on the coast by sea water and deposition of the material in current coastal areas.

There are poorly cemented quartz sandstones on Paleozoic Continental margin in Western Black Sea region, well enriched by washing in the turbulent environment conditions of Cretaceous sea. According to stratigraphic nomenclature, this unit is known as "Velibey Formation". Its outcrop begins from Armutçuk (Ereğli), lies in to E-NE direction by surrounding Zonguldak Paleozoic window and fmishes in east of Kilimli, on Black Sea coast. it is in Albian-Aptian and was deposited in an environment between shallow marine and beach (Yergök et al., 1987). Although there are many ideas about the origin of quartz components in sandstones of Velibey Formation, any concrete data related to origin of bedrock has not been found, so far.

in this study it is aimed to determine the distribution of quartz sandstone, the boundary relations with Paleozoic limestone, located at the basement with a disconformity and the origin of quartz grains, in a recently found quartz sand field in Velibey Formation, situated in Kumtarla site, near to Zonguldak. The thickness, distribution and quality reserve correlation of sandstones containing quartz sands suitable for industrial utilization were introduced. Detailed map of mineral geology of the study area was prepared in order to define the upper and lower boundary relations and distributions of the units. Quartz sandstones give outcrops in shape of a window throughout the field. in this context, trenchs were opened on the suitable outcrops and samples were collected from their fresh surfaces for technological analyses. To identify visible thickness of quartz sandstones, to validate their thickness and distribution in lateral direction and to examine their quality properties (SiO_2%), drilling studies were implemented in 4 locations. Samples were collected for 1 meter intervals during the drilling, carried out on the anticlinal axis limbs of Velibey Formation, by reverse circulation method. Quartz sandstones of Velibey have properties of clastic sedimentary rock and their SiO_2 rate is between 90% and 96% according to raw samples. Technological analyses (Sieving, Scrubbing, Magnetic Seperation) were carried out on samples collected from the study area (Doğan, 2009). Besides, in order to examine the grain composition origin and to find out percent distribution of the unit composed of quartz sandstone and quartz arenite, mineral liberation (Modal mineralogical analyses) and petrographical description were completed.

According to the results of technological analyses of raw samples collected from Zonguldak-Kumtarla field, it is identified that SiO_2 content of quartz sandstones (90-96%) is increased to 98-99% with a yield of 80% as a mean value. The existence of Velibey formation on the margin of Paleozoic carbonates from the beginning of coast, its enclosing of Paleozoic window near to Zonguldak, its non-existence in south of basin and the data obtained from modal mineralogical analyses, suggest that the quartz components forming sandstones would come from a magmatic bedrock in the North, which has a granitic-granodioritic origin. *Keywords : Quartz sand, beach, Velibey, Kumtarla*

Yergök, A.F. et al., (1987);" Batı Karadeniz Bölgesinin Jeolojisi I", MTA Genel Müdürlüğü, Jeoloji Etüdleri Dairesi, Ankara. Doğan, C. and Öztoprak, M. (2009); "Karadeniz Endüstriyel Hammadde Aramaları Zonguldak İli Merkez Kumtarla Köyü Kuvars

Kumu Cevherinin Teknolojik Etüdü", MTA Genel Müdürlüğü, Maden Analizleri Ve Teknoloji Dairesi, Ankara.
Kretase denizinin plajında, Vizeen Yaşlı Yılanlı Formasyonun falezlerinde, Holosen Denizinin güneyinde oluşan Zonguldak Merkez Kumtarla köyü Velibey kuvarslı kumtaşı sahasının teknolojik özellikleri
üzerine bir çalışma
Türkiye'nin jeolojik tarihçesinde, farklı zaman aralıklarında değişik türdeki kayaçlardan türeyen pek çok kuvars kumtaşı oluşumu bulunmuştur. Bu tür oluşumlar, genellikle mağmatik, sedimanter ve metamorfik kayaçlardan ayrışarak kopan ve serbestleşen kuvars tanelerinin akarsular ile denizlere taşınarak kıyı ortamlarında birikmesi ile