



## Preliminary Datas of Carbonate-rock hosted barite Mineralization in Dadağlı (Kahramanmaraş) area, Turkey

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### Keywords

Amanos  
Barite  
Paragenesis  
Vein Type  
Dadağlı

### Abstract

There are units existing to the Amanos Group in the vicinity of Dadağlı (Kahramanmaraş). Paleozoic aged rocks and Mesozoic aged carbonates are observed on them. There is vein type barite mineralization in the fracture lines of the Upper Triassic-Lower Jurassic Küreci dolomitic limestones in the north of Dadağlı. Paragenesis consists of galena, sphalerite, pyrite, smitsonite, calcite and quartz, individually. The mineralization is roughly 1 m thick and 200 meters long. The BaO value amounts to a peak of 65.07% in the specimens gathered from the ore zone. Although the ore zone is poor in SrO, it is rather rich in SiO<sub>2</sub>. It is concluded that the mineralization, which is particularly close to the left-lateral strike-slip East Anatolian Fault (EAF), forms in fractures and cracks set up as a result of deformations.

### Introduction

Barite (BaSO<sub>4</sub>) is an essential industrial raw material because it is an intense mineral. Barite, which generally observed in marine environments [1-2], is still involved in the paragenesis of Pb, Zn, Cu and Au deposits in low, medium and high sulfidation classes [3-4].

Turkey's important barite deposits were formed as a result of the Alpine and Hercynian Orogeny [5]. For this reason, barite mineralization is located in major tectonic belts. Among these deposits, the Isparta barite deposits, which have the largest distribution, are observed in Paleozoic aged carbonate and pelitic rocks in the Western Taurus [6-11]. Cansu and Öztürk [12] explained the formation and origin of barite deposits associated with Paleozoic sediments located in both the Tauride-Anatolide belt (Şarkikaraağaç, Hüyük and Tordere deposits) and the Arabian platform (Şekeroba and Önsen deposits, Kahramanmaraş). The barite mineralization observed in the Dadağlı region is very close to this district. In this paper, we present preliminary geochemical data obtained from Dadağlı barite mineralization using X-ray fluorescence (XRF) methods.

### Material and Method

In terms of its geological structure, Kahramanmaraş is a complex region where various tectonic units are observed simultaneously. Many thrust and fault zones identified with the closure of the southern branch of the Neotethys Ocean are observed in this region [13]. Suture belts were formed by both the closure of the ocean and the convergence of the Tauride and Arabian plates [14]. With the depletion of the ocean floor, allochthonous units were thrust onto the Arabian platform in the south and suture belt and suture belts were formed between these two continents [15]. Rigo De Righi and Cortesini [16] and Gül [17] divided the tectonostratigraphic units in the Southeastern Anatolia Region into orogenic belts.

The Dadağlı barite mineralization is situated in the margin fold belt of the Arabian Platform in the south of the Taurus Orogenic Belt (Figure 1). In this region, Upper Triassic-Lower Jurassic Küreci limestones overlie the

Paleozoic basement with angular unconformity. Vein type barite mineralizations are observed in the limestones in the north of Dadadağlı (Figure 2a, b). In the mineralization with epigenetic formation, quartz, calcite and smithsonite are still observed along with galena, sphalerite and pyrite, respectively.

In this region, 8 samples were taken and geochemical analyzes were made. Major oxide and trace element analyzes were carried out in ITU-JAL. Analysis results are given in Table 1.

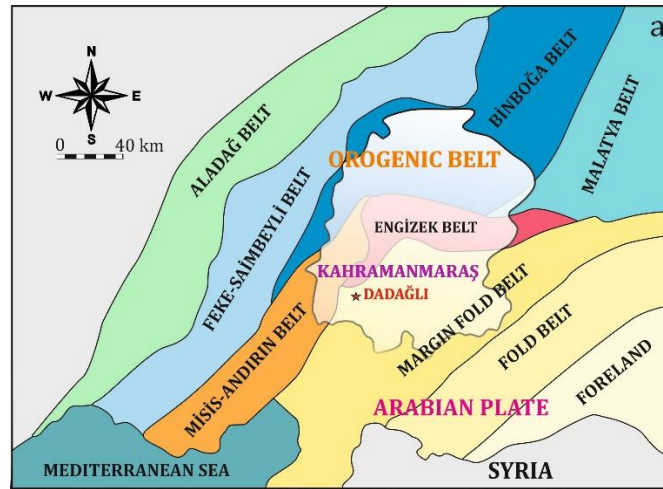


Figure 1. Tectonic location of the study area (Modified from Gül [17]).



Figure 2. General view of barite mineralization.

### Geochemistry

As showed in Table 1, BaO is between 0.49-65.07% (average 29.52%) and SrO is between 0.06-1.78% (average 0.64%) in the ore zone. Some of the compiled samples are rather rich in SiO<sub>2</sub>. CaO is between 0.26-12.77% (average 2.88%) and Fe<sub>2</sub>O<sub>3</sub> is between 0.12-15.97% (average 4.15%).

Table 1. Major oxide analysis of barite mineralization.

Formula	K1	K2	K3	K4	K5	K6	K7	K8
Na <sub>2</sub> O	0,13	0,89	0,48	0,48	0,05	0,33	0,00	0,38
MgO	3,95	0,82	0,20	0,05	0,42	0,13	0,61	0,12
Al <sub>2</sub> O <sub>3</sub>	1,80	22,70	1,27	0,25	1,28	0,45	1,72	0,65
SiO <sub>2</sub>	38,79	42,44	6,62	2,32	87,74	32,18	86,78	9,28
P <sub>2</sub> O <sub>5</sub>	0,27	0,66	0,03	0,00	0,02	0,04	0,03	0,03
K <sub>2</sub> O	0,47	5,51	0,10	0,00	0,24	0,10	0,28	0,10
CaO	12,77	0,26	1,13	0,61	1,46	2,23	2,32	2,31
TiO <sub>2</sub>	0,13	3,97	0,12	0,01	0,06	0,16	0,06	0,10
MnO	0,20	0,03	0,02	0,00	0,81	0,00	1,84	0,07
Fe <sub>2</sub> O <sub>3</sub>	2,41	15,97	0,30	0,12	0,86	11,38	1,63	0,53
SO <sub>3</sub>	8,56	0,13	26,77	28,44	1,47	17,43	0,31	25,58
BaO	16,71	0,49	60,97	65,07	2,51	31,07	0,96	58,41
Cr <sub>2</sub> O <sub>3</sub>	0,00	0,01	0,00	0,00	0,00	0,00	0,00	0,00
SrO	0,57	0,06	1,12	1,78	0,06	0,57	0,02	0,94
LOI	13,22	5,86	0,83	0,81	2,96	3,89	3,38	1,47
<b>TOTAL</b>	<b>99,99</b>	<b>99,80</b>	<b>99,96</b>	<b>99,94</b>	<b>99,94</b>	<b>99,97</b>	<b>99,93</b>	<b>99,97</b>

## Conclusion

The Dadagli region is located within the margin fold belt of the Arabian plate. There are vein type epigenetic barite mineralizations in the Mesozoic aged carbonates from the Amanos Group units here. The mineralization observed in the fractures and cracks of the carbonates in this region is 200 meters long, with an average thickness of 1 meter. Corresponding to the preliminary data, lead-zinc minerals and their carbonated forms are observed in the ore paragenesis. Major oxide results indicate a mineralization that is poor in Sr but rich in silica. Rich Al<sub>2</sub>O<sub>3</sub> values in specimens with poor BaO content may be associated with argillization in fault zones. The positive correlation between SO<sub>3</sub> and BaO in the analysis results is remarkably strong to be ignored.

Since this region is extremely close to EAF, it is considered that EAF may have an effect on barite formation in fractures and cracks.

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