

DESCRIPTIVE MODEL OF SADO EPITHERMAL VEINS

By Dan L. Mosier, Bruce R. Berger, and Donald A. Singer

DESCRIPTION Gold, chalcopyrite, sulfosalts, and argentite in vuggy veins hosted by felsic to intermediate volcanic rocks that overlie older volcanic sequences or igneous intrusions (see fig. 106).

GENERAL REFERENCE Boyle (1979).

GEOLOGICAL ENVIRONMENT

Rock Types Host rocks are andesite, dacite, quartz latite, rhyodacite, rhyolite, and associated sedimentary rocks. Mineralization related to talc-alkaline or bimodal volcanism.

Textures Porphyritic.

Age Range Mainly Tertiary (most are 38-5 m.y.).

Depositional Environment Calc-alkaline and bimodal volcanism and associated intrusive activity over basement rocks composed of thick, older volcanic sequences or igneous intrusive (batholiths). Volcanic-related geothermal systems lack access to saline fluids from basement sources.

Tectonic Setting(s) Through-going fracture systems, major normal faults, fractures related to doming, ring fracture zones, joints.

Associated Deposit Types Placer gold and quartz-alunite Au.

DEPOSIT DESCRIPTION

Mineralogy Gold ± argentite + electrum + chalcopyrite. Sulfosalts and tellurides are moderate, galena and sphalerite are sparse. Gangue minerals are quartz ± pyrite ± adularia ± calcite. Chalcedony, adularia, kaolinite, rhodochrosite, chlorite, sericite, and barite are moderate to sparse.

Texture/Structure Banded veins, open space filling, lamellar quartz, stockwork, breccia pipes.

Alteration Silicification zoned by quartz + kaolinite + montmorillonite ± alunite; may have pervasive propylitic alteration of chlorite + calcite.

Ore Controls Through-going fracture systems; major normal faults, fractures related to doming, ring fractures, joints.

Weathering Bleached country rock, limonite, hematite, goethite, jarosite, alunite; argillization with kaolinite.

Geochemical Signature: Au + Ag; Au + Ag + Cu.

EXAMPLES

_____ Takeno, JPN

(Soeda and Watanabe, 1981)

GRADE AND TONNAGE MODEL OF SADO EPITHERMAL VEINS

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COMMENTS The two lowest gold grades were not plotted because it is suspected that their reported grades are in error. See figs. 117-119.

DEPOSITS

<u>Name</u>	<u>Country</u>	<u>Name</u>	<u>Country</u>
Bajo	JAPN	La Libertad	MXCO
Benten	JAPN	Mamuro	JAPN
Bruner	USNV	Mizobe	JAPN
Chitose	JAPN	Nagamatsu	JAPN
Guadalupe and Calvo	MXCO	Sado	JAPN
Hayden Hill	USCA	Sanei	JAPN
High Grade	USCA	Takahata	JAPN
Innai	JAPN	Takatama	JAPN
Kawasaki	JAPN	Takeno	JAPN
Koyama	JAPN	Winters	USCA

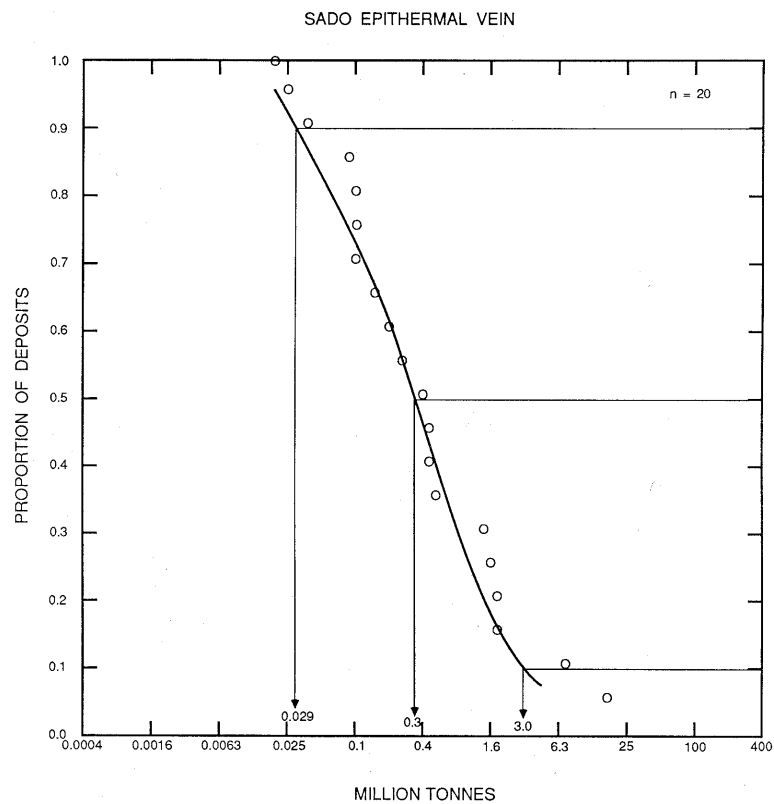


Figure 117. Tonnages of Sado epithermal vein deposits.

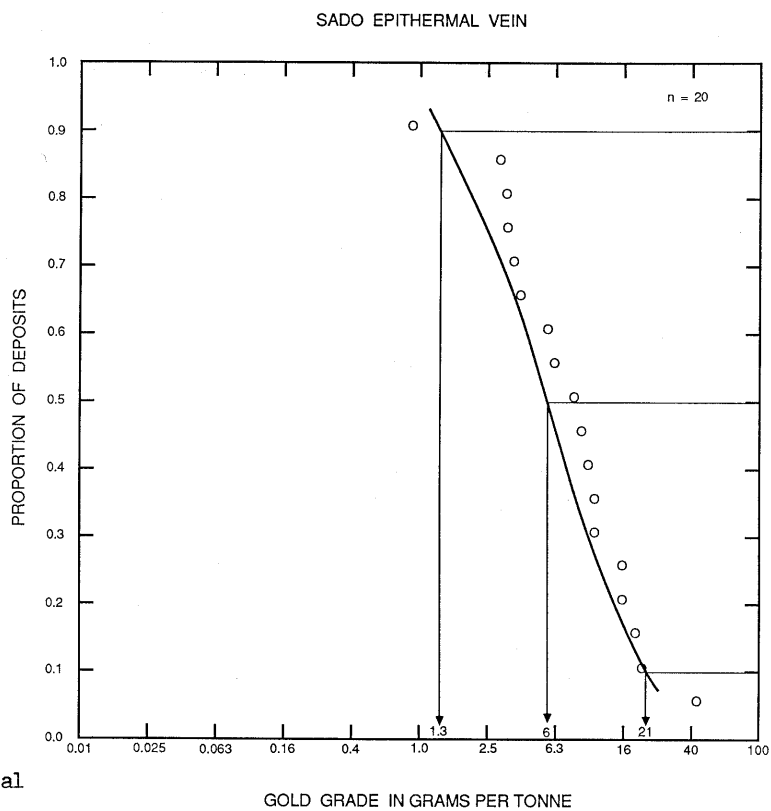


Figure 118. Gold grades of Sado epithermal vein deposits.

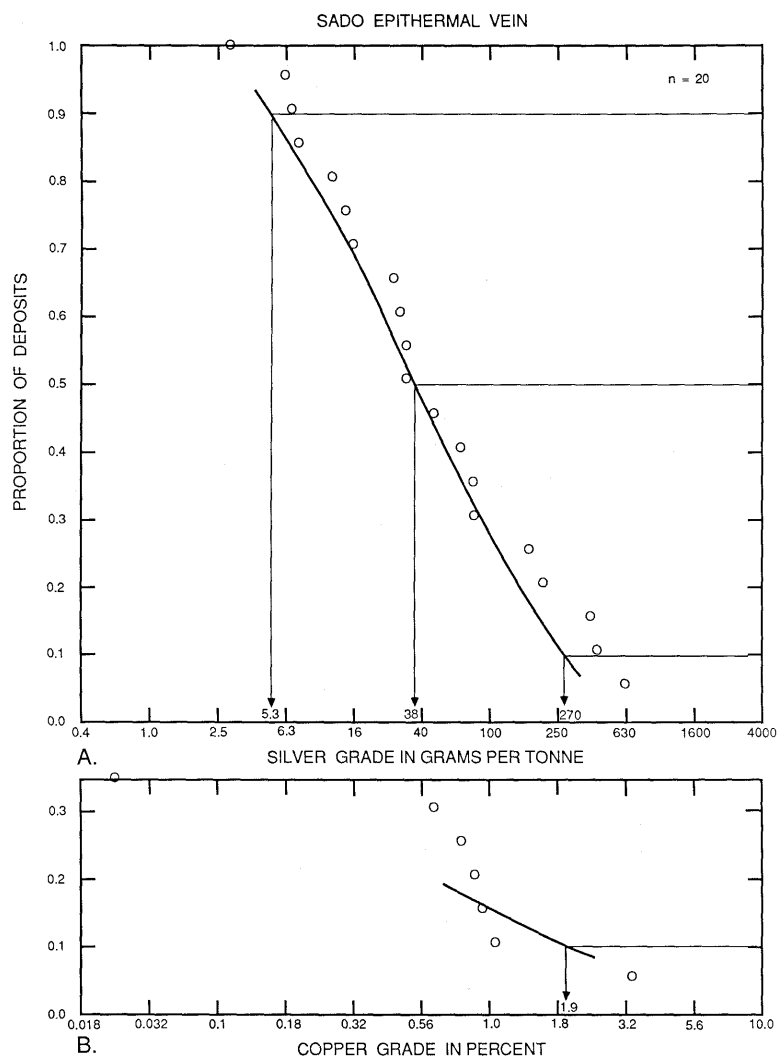


Figure 119. By-product grades of Sado epithermal vein deposits. A, Silver. B, Copper.