

K-Ar Dates on Permian potash minerals from southeastern New Mexico

Shell

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Isochron/West was published at irregular intervals from 1971 to 1996. The journal was patterned after the journal *Radiocarbon* and covered isotopic age-dating (except carbon-14) on rocks and minerals from the Western Hemisphere. Initially, the geographic scope of papers was restricted to the western half of the United States, but was later expanded. The journal was sponsored and staffed by the New Mexico Bureau of Mines (now *Geology*) & Mineral Resources and the Nevada Bureau of Mines & Geology.



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The 5 age dates reported here were run at the Exploration and Production Research Center of the Shell Development Co. Analytical methods, and constants used in age calculations, were given in Isochron/West, no. 3 (Jan. 1972), p. 1. The locations of the core holes from which the samples were taken are not available; the data are thus mainly useful in indicating which potash minerals give meaningful K-Ar ages.

Only langbeinite gave a K-Ar age consistent with the known Permian age of the potash beds. Sylvite gave much younger ages; langbeinite-sylvite mixtures gave intermediate ages.

1. S-EPR2132A K-Ar (langbeinite) 245±10 m.y.

Permian evaporite (Core Hole No. 2, 1663 ft.; Eddy Co., NM) consisting of langbeinite and halite with a small amount of sylvite. Analytical data: K = 17.99%; $\text{Ar}^{40} = 1.81 \times 10^{-4}$ ml/g; $\text{Ar}^{40}/\Sigma\text{Ar}^{40} = 96.9\%$; analyzed separate contained minor halite.
2. S-EPR2132B K-Ar (sylvite) 74±8 m.y.

Permian evaporite (Core Hole No. 4, 1584 ft.; Eddy Co., NM) consisting of coarse-grained sylvite (70%), halite, and polyhalite. Analytical data: K = 18.73%; $\text{Ar}^{40} = 5.41 \times 10^{-5}$ ml/g; $\text{Ar}^{40}/\Sigma\text{Ar}^{40} = 85\%$; analyzed separate contained some halite and a trace of polyhalite.
3. S-EPR2132C K-Ar (langbeinite & sylvite) 137±8 m.y.

Permian evaporite (Core Hole No. 5, 1536 ft.; Eddy Co., NM) consisting of langbeinite with 5% interstitial sylvite. Analytical data: K = 27.52%; $\text{Ar}^{40} = 1.52 \times 10^{-4}$ ml/g; $\text{Ar}^{40}/\Sigma\text{Ar}^{40} = 94.8\%$. Comment: Compare with S-EPR2132D (below) which is from same core hole.
4. S-EPR2132D K-Ar (langbeinite & sylvite) 147±10 m.y.

Permian evaporite (Core Hole No. 5, 1541 ft.; Eddy Co., NM) consisting of halite, sylvite, and langbeinite. Analytical data: K = 10.58%; $\text{Ar}^{40} = 6.25 \times 10^{-5}$ ml/g; $\text{Ar}^{40}/\Sigma\text{Ar}^{40} = 51\%$; analyzed separate contained considerable halite.
5. S-EPR2132E K-Ar (sylvite) 18±8 m.y.

Permian evaporite (from First Ore Zone, Potash Company of America Mine, Eddy Co., NM) consisting of halite, sylvite, and light blue mineral which was not identified. Analytical data: K = 49.84%; $\text{Ar}^{40} = 3.68 \times 10^{-5}$ ml/g; $\text{Ar}^{40}/\Sigma\text{Ar}^{40} = 15\%$; analyzed separate contained some halite.

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