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# Plant Enhancements

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## Solid ceramic outlasts all previously installed valves

Dino L. Tsapatsaris

**A**lumina Partners of Jamaica, a subsidiary of Kaiser Aluminum & Chemical Corporation could not get more than four to six weeks' service out of their hydrate slurry valves. This was a major concern for the maintenance crew who would have to routinely remove the worn valve from the process and install a brand new valve every month. Shutting down the process to perform this task was costing ALPART a lot of unnecessary labor time - but most importantly lost production.

The liquor stream is predominantly bauxite with a very high pH caustic sodium hydroxide as the carrier fluid. Typical pressure in the 8" line is approximately 150 psig, and temperatures range between 180° and 200° F. The particle

solids present in the media are 325 mesh, and up to 45% concentration. Downstream of the valve the media is finally emptied into large tanks for the precipitation process to take place.

A down-sized Fujikin 6" solid 99.5% alumina *Cosmix* ceramic ball valve with a zirconia ball was installed in the process for a trial period of three months. The majority of the ceramics in the valve installed were actually made of the same material the process was precipitating! However, once ceramic components are sintered during manufacturing, the components become only second to diamond in hardness, and are extremely chemically resistant to the service.

The photographs above show the "like-new" condition of the valve after the

three month trial period. There were no visible signs of ball, body, or seat wear from the highly abrasive media, and the ceramic components show absolutely no corrosive degradation.

**The Result:** The valve during this three month trial period more than paid for itself 1½ times. As of December 1996, ALPART has replaced all slurry hydrate valves with Fujikin *Cosmix* solid ceramic ball valves. The original 6" *Cosmix* valve is still in service and shows no visible signs of wear.

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**Fujikin of America, Inc.**

4 AlsanWay

Little Ferry, NJ 07643

Tel: (201) 641-1119 Fax: -1137

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