

ASL-CERACO CERAMIC COMPOSITE PIPES

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AIR SYSTEMS LIMITED

"ASL-CERACO" Ceramic Composite Pipes is a product, with excellent wear, heat, mechanical & Thermal shock resistance quality, which is very popular in developed Countries and are used by most of the Coal Fired Power Stations in their Ash Handling System. These Pipes have internal layer of special grade ceramic, which forms like an integral part of outer steel casing, when affixed by centrifugal force at more than 2000 degree C temp. Ceramics are among the hardest materials available to provide ultimate wear resistance in piping. In high wear applications, ceramic lined pipes have been demonstrated to be cost effective by increasing service life and reducing maintenance costs. ASL Equipment supply ceramic composite pipes as per custom dimensions.

EXTENDED SERVICE LIFE OF ASH CONVEYING PIPING & OPTIMAL SOLUTION TO PROTECT AGAINST WEAR

A wide range of piping materials with different characteristics are used by Power Sector to protect against wear. Pipe linings made of ceramic materials have proven to work well. In developed Countries, it has been experienced that the Composite Ceramic pipes and fittings are responsible in saving operational costs as "repair frequency" is greatly reduced and production time is increased. In some instances, a "single avoided repair" is found to be sufficient to cover the cost of replacement by these Composite pipes. The inner layer of ceramic composite pipes is high alumina ceramics (α -AL2O3) with hardness up to 9.0 on MOHs.

In Countries like Japan, China, Australia, Thailand, Malaysia, many thousands of meters of Composite Ceramic Pipes are used in wet & dry ash system in plants. This material has proven to be an excellent choice for this particular application as it combines the properties of high wear resistance and high corrosion resistance. The service lifetimes of these ash piping systems have been observed very good.

POWER PLANTS USING CERAMIC COMPOSITE PIPES:

Geuha Japan (2 x 500MW) power plant,
Huaneng Power Plant (4 x 300MW),
Shandong Power Plant (4 x 300MW + 2 x 600MW),
Zhejiang Jiaying Power Plant (2 x 300MW),
Yangzhou Power Plant (2 x 600MW),
Ningxia Dam Power Plant (4 x 300MW).

FEATURES:

- Quick, easy, cost-effective installation.
- Maximum working temperatures up to 1000°C.
- Available in sizes range from 100 to 350 mm.
- Maximum 10 bar pressure
- Absorbs vibration and thermal expansion.
- Highly wear resistant.

Materials : Mild steel pipe with alumina ceramics for lining

Designed pressure: > = 10bar

Normal operation velocity: 20-35m/s

Normal operation temperature: 50 to 800 c Max 1000°c

Running medium: Mixture of air and powder or Water and Ash

Size of the available pipes: The inner diameter is between 100 to 350mm or even larger

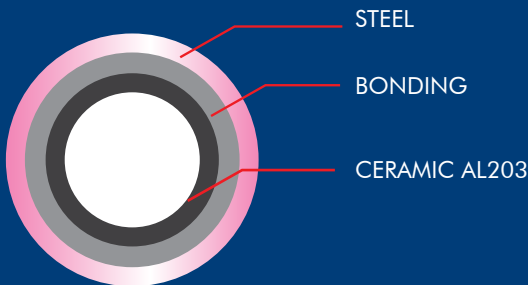


THE MANUFACTURING OF ASL-CERACO CERAMIC PIPE AND ELBOW

SHS (Self - propagating High - temperature Synthetic process) ceramic composite pipe and elbows are a new generation of abrasion and corrosion resistant pipeline. The composite ceramic pipe is composed of three layers: ceramic, intermediate, and steel layers. The ceramic layer is formed by molten alumina at a temperature above 2000 degree. The molten alumina produced from the reaction of $Fe_2O_3 + 2Al = 2Fe + Al_2O_3$ spreads on the inside wall of the steel pipe under the influence of a centrifugal force and then solidifies. So, the ceramic layer has high density with smooth surface and good bonding to the steel pipe.



Large quantities of bulk material are handled in conveying and storing in a coal fired power plants. Fly ash pipes are among the components that are particularly endangered by wear. Unless they are suitably protected, these systems will experience frequent failure requiring repair or replacement. "ASL - CERACO" offer the ideal solution for Ash Handling System and ensure optimal service lifetimes.



"ASL-CERACO" pipes are either joined by welding or by flanges. However, any type of coupling is feasible.

ASL REF NO	ID NB	T mm
CZ 100	100	8
CZ 150	150	10
CZ 200	200	12
CZ 250	250	12
CZ 300	300	16
CZ 350	350	16

ID : Inside diameter of ceramic lined pipe.

BC : Bolt circle of flange.

T : Thickness of ceramic in lined pipe.



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