

# The Greenbank Group UK

Enhancing the performance of our customers plant and equipment



## Greenbank Terotech - Abrasion Resistant Lining Systems

### Basalt, Zalcon & Alumina Lined Pipework

For abrasion, corrosion and low friction resistant applications

Greenbank offers a comprehensive range of lining materials designed to combat erosion and have more than 50 years of expertise on their applications.

Basalt, Zalcon and Alumina are the three most well know lining materials. Other linings include Zalcon, Nickel and Chrome alloys, Silicon Nitride Bonded Silicon Carbide, Epoxy Coating and a range of Performance Steels.

#### Cast Basalt

Cast Basalt is a material formed from Basaltic Rock/Slag combined with crystallising agents. When cast it has two exceptional qualities. Firstly the abrasive resistance, which is a most important factor, becoming several times higher than that of iron or steel. Secondly, it has a high degree of chemical resistance.



For lining of pipework, chutes, bunkers, cyclones and hoppers. Cast Basalt has become the world standard for ash slurry pipework at fossil fuel power stations. An all round cost effective and adaptable lining material that extends the life of equipment where affected by erosion.

#### Zalcon

Zalcon is an advanced fusion cast ceramic, developed specifically to resist impact and sliding abrasion in extreme and arduous conditions. Zalcon is cast at approximately 1800°C into virtually any required lining shape, eliminating many joints which cause premature failure in other ceramic linings.

Zalcon's resistance to impact and thermal shock makes it the perfect liner in areas where aggressive materials are handled adjacent to heat sources. The interlocking crystalline structure of Zalcon gives the material superior physical characteristics. Its coefficient of friction improves with wear and improves the flow of the material being handled.

#### Alumina Ceramic

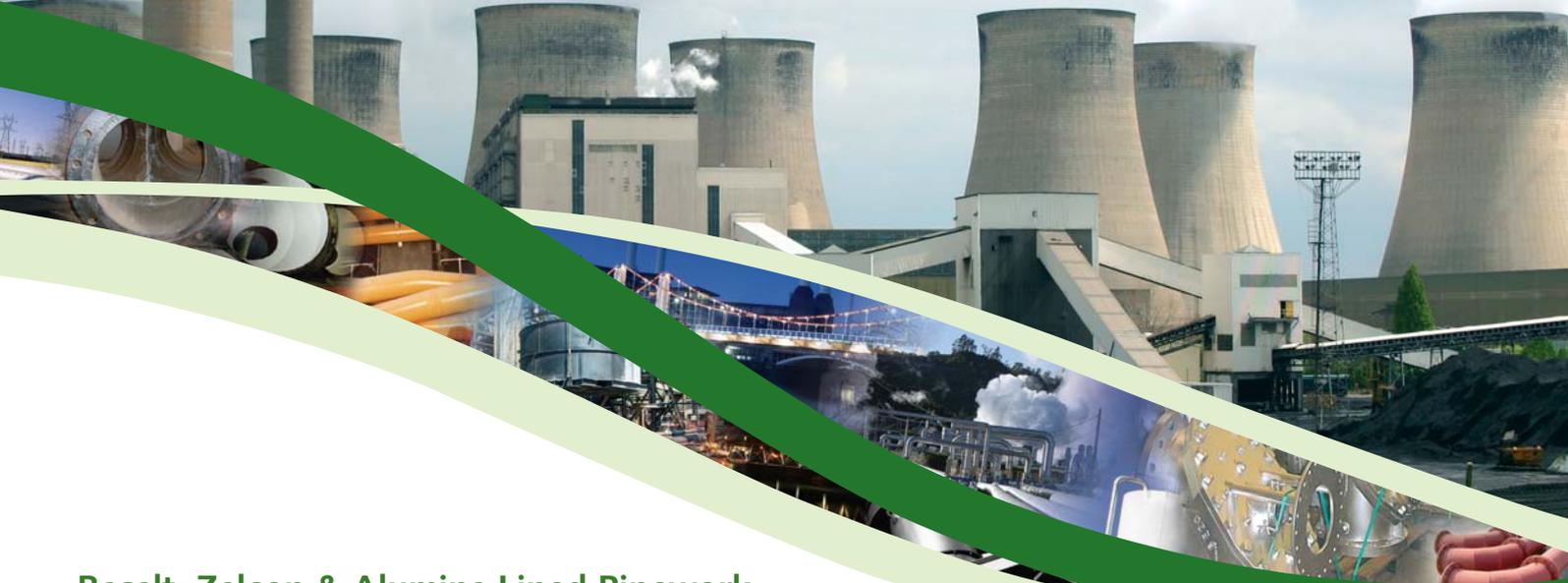
Alumina is the most cost effective and widely used material in the family of engineering ceramics. Alumina ceramics has been developed and optimised for maximum wear resistance and corrosion resistance. A high density, diamond like hardness, fine grain structure and superior mechanical strength are the unique properties that make it the material of choice for a wide range of demanding applications.

For uses similar to Cast Basalt but has greater resistance to wear especially in high velocity lean and dense phase systems.



INVESTOR IN PEOPLE





## Basalt, Zalcon & Alumina Lined Pipework

For abrasion, corrosion and low friction resistant applications

### Industries Served:

- Coal Fired Power Stations
- Coal Mines
- Cement Works
- Paper & Pulp Mills
- Glass Industries
- Sand and Gravel Mines
- Steel Manufacture
- Biomass Handling Plants

Greenbank provide our customers with the full range of Pipeworks include Straight Pipes, Bends, Elbows, Tees, Y-pieces and Laterals. (See models on the right).

### Casings

Design pressure: 10 bar (150psi) at 100°C  
Material: mild steel to BS EN10025/S275 (or equivalent)  
Standard Casing thickness: 3 - 6 mm (Other thickness of casings available to suit design Parameters)

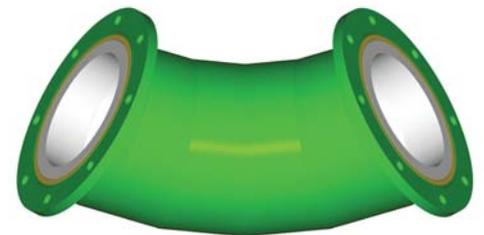
### Linings

Up to 500 N.B. 20-25 nominal thk, Basalt or Alumina segments, jointed with CBP No.1 resin bonded cement, grouted with Portland Cement/Sand mixture.

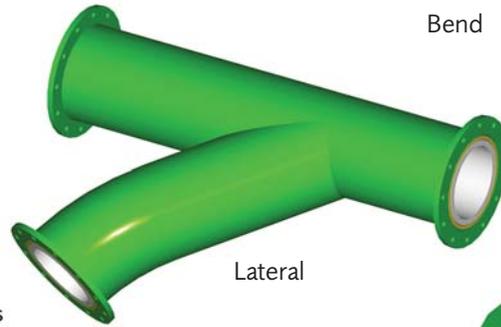
Over 500 N.B. 30mm nominal thk, Basalt or Alumina tiles, bedded and jointed with CBP No.1 resin bonded cement.

### Flanges

As well as our standard Fixed and Rotating Flanges Greenbank also supplies Adaptor Flanges, Viking Johnson Coupling and Victaulic Joints to suit our customers' applications and requirements.



Bend



Lateral



Y-piece splitter



Tees



Enhancing Performance

"It is our vision to excel and lead the world in our area of expertise."

## Basalt, Zalcon & Alumina Lined Pipework

For abrasion, corrosion and low friction resistant applications

### Standard Flanges & Other Joints

PIPE			STANDARD FLANGE DETAILS						
N.B. Bore	Actual (mm)	Casing O/D	O/D FF	O/D RF	THK	No. Holes	Hole Dia	PCD	Collar THK
3"	75	168*	255	262	20	8	18	210	20
4"	100	194*	282	289	20	8	18	235	20
5"	125	205*	301	308	20	8	18	260	16
6"	150	232*	330	337	20	8	18	292	16
7"	175	259*	383	390	20	8	18	324	16
8"	204	286*	403	410	20	8	22	356	20
9"	225	305*	403	410	20	8	22	356	20
10"	254	334*	456	463	20	12	22	406	20
11"	280	356*	456	463	20	12	22	406	12
12"	303	387*	489	489	20	12	22	438	20
14"	356	432*	552	552	20	12	24	495	16
15"	380	463*	583	591	20	12	24	521	16
16"	400	480*	610	610	20	12	24	552.5	20
18"	456	532*	641	641	20	12	24	584	20
20"	500	587*	705	705	20	16	24	641	20



### Adaptor Flange

Used to connect Basalt lined pipework to unlined mild steel pipework, valves, tanks, hoppers, etc.

### Standard Flanges

Fixed flange holes off centres unless otherwise specified. Other flange drillings available include BS4504, ANSI, etc

### Gaskets

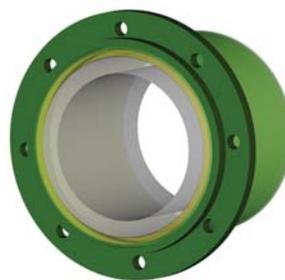
All types incorporated to suit various applications.

### Finish

Standard protection Red Oxide Primer, Other finishes available to suit specific requirements.

### Victaulic Joint

We also offer victaulic joints as an alternative to flanges, they are quicker to release and allow some degree of angular movement.

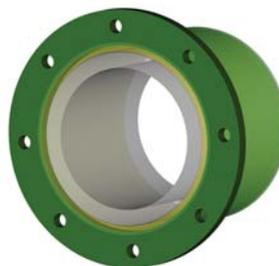


Rotating Flange (RF)



### Viking Johnson Coupling

Used to 'take up' pipework expansion, gives six degrees of angular movement each side of centre line if used in pairs. Ideal for accommodating boiler drops in power stations.

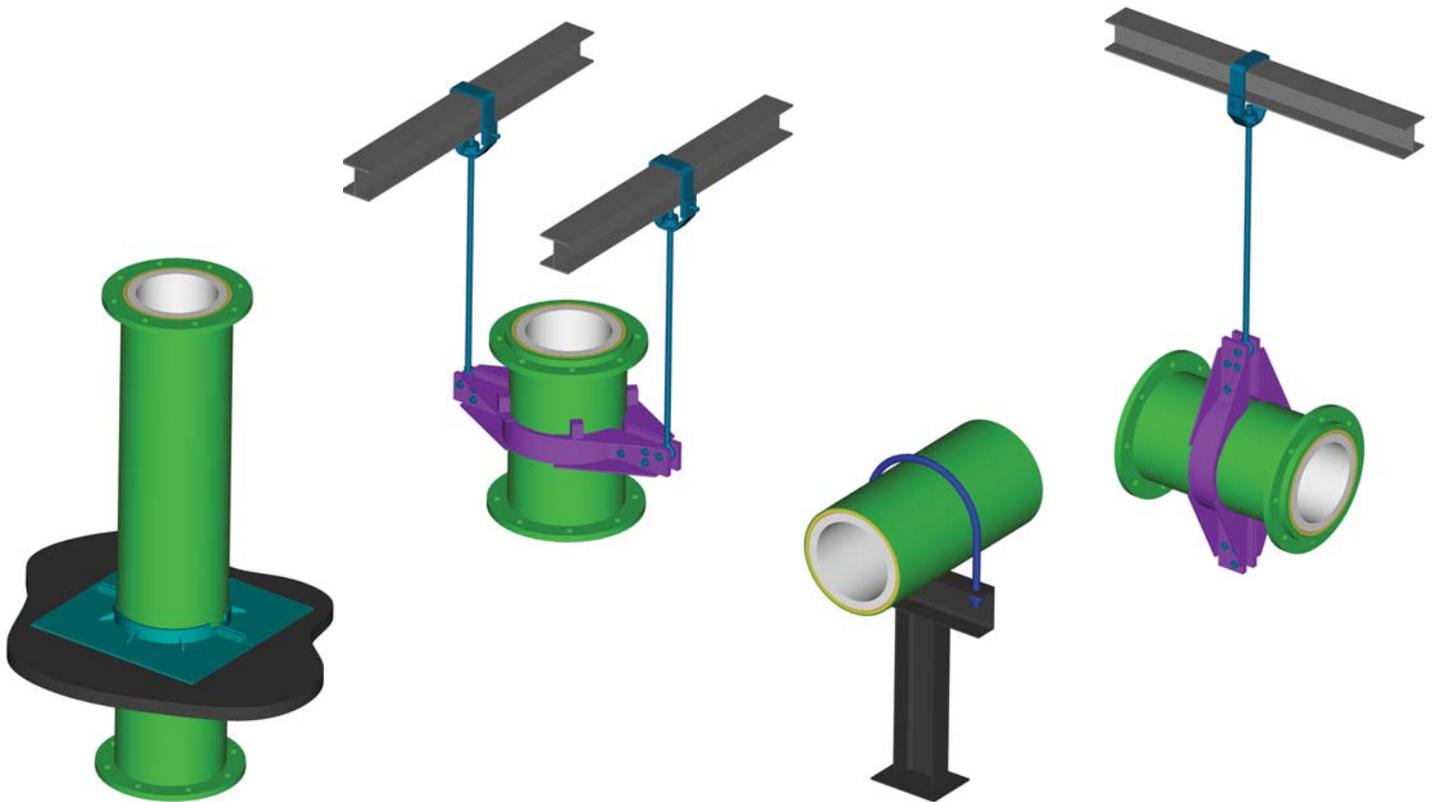


Fixed Flange (FF)



## Basalt, Zalcon & Alumina Lined Pipework

Supporting systems design & supplied to suit your needs



### The Greenbank Group UK

Incorporating:

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**Greenbank Materials Handling**

**GAIM**

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