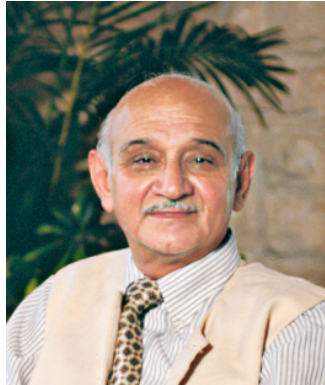




## Jyoti Ceramic Industries – from the MD’s Desk



Jyoti Ceramic Industries Pvt Ltd was established in 1970, in the industrial city Nashik located approximately 180 Kms from Mumbai. It is a global front runner in manufacturing of Advanced Industrial and Bio-Ceramic products.

In these 5 decades, Jyoti Ceramic Industries has garnered, rich manufacturing experience, great expertise and skill in the highly specialized field of Industrial & Bio Ceramics.

Our expertise in ceramics is not an overnight occurrence. It is the result of many years of total commitment, perseverance, dedication, thorough research & development and engineering excellence. Thanks to our state-of-the art R & D lab, modern tool room, engineering workshop, and modern manufacturing facilities, combined with our extensive knowledge, deep understanding and product know how, today, Jyoti Ceramic Industries, has to its credit, many self developed proprietary Ceramic Formulations such as High Purity 99.7% Alumina, Zirconia, Silicate etc. ceramics. Our products are considered at par with products manufactured by international leaders in the field.

Equipped with best cutting edge technology, latest generation equipment & machinery, we cater to the industrial and bio-ceramic requirements, not only of the domestic market, but also of over 55 countries spread across continents, like USA, Japan, China, S. Korea, Taiwan, Australia and regions like South East Asia and the Far East to name a few.

Consistent commitment in maintaining highest standards in quality, customer satisfaction, innovative technologies and driven by passion to discover new breakthroughs in industrial ceramics, Jyoti Ceramic Industries, now enters the Inorganic Ceramic Adhesive Cement segment, with a host of innovative products, and gives you “**ADMENT**” – A group of Inorganic Ceramic Adhesive Cements.

Armed with these and more, we shall continue to develop many more innovative products to fulfill our mission of giving the global industrial market, world class and cost effective products.

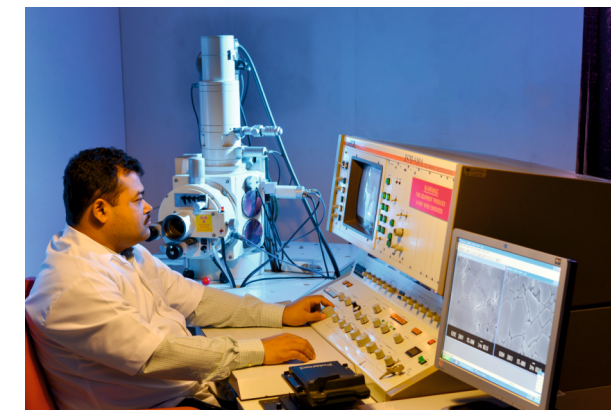
Sincerely  
Shyam Merani  
Managing Director



Plant II



Atomic Absorption Spectrometer (AAS)



Scanning Electron Microscope (SEM)



X Ray Fluorescence Spectrometer (XRF)



Universal Testing Machine (UTM)

## About Inorganic Ceramic Adhesive Cements



Inorganic Ceramic Adhesive Chemical Cements are made from selected quality of materials, binders, additives and chemicals to exhibit typical characteristics like high adhesion, high temperature resistance, thermal and electrical insulation etc.

Chemical setting cements are ideal for potting, bonding, sealing and coating applications because these cements contain a catalyst which hardens the mass or solidifies as needed for the application. Heat may be gradually applied to accelerate the curing process. These cements are made of either a single component or two components.

Inorganic Ceramic Adhesives Cements are used for cementing, adhering applications because they are known to perform far better than any polymer adhesive cements, at high temperatures. Moreover, they are non-toxic, non-hazardous, non-flammable and user friendly in characteristics.

### Benefits:

- Temperature resistance is approximately 15 times higher than most epoxy adhesives.
- Di-electric strength above 1000 Volts / mm
- Curing time may be adjusted to suit needs of application or user
- Thermal conductivity up to 20 btu in / ft<sup>2</sup> / hr / °F

### Criteria for Selection:

Correct selection of the cement depends upon many factors. Listed below are some of the considerations that govern this selection:

- 1) Nature of the application-Joining, Sealing, Insulation, Coating etc.
- 2) Maximum service temperature required from the ceramic adhesive cement
- 3) Expected thermal conductivity & thermal expansion from the cement
- 4) Frequency and type of quenching (in air / water / oil) the cement will be subjected to
- 5) Whether moisture absorption is a problem in cemented parts during curing
- 6) Expected pot life (working time) / setting time from the Cement Adhesive



Jyalucem-20 ceramic adhesive cement applied on electrical ceramic heater parts for joining / encapsulating



Ceramic caps cemented to glass high / low wattage halogen lamp with Zircocem-5

# Jyalucem-20<sup>®</sup>

## Alumina Based - Single Component - Heat Curing

Jyalucem-20 is an inorganic, low temperature (200°C / 392°F) curing, high temperature resistant Inorganic Ceramic Adhesive Cement.

After proper curing, this cement imparts high bond strength, thermal shock resistance and a hard surface.

It is available in a micro-fine dry powder form, to be mixed with clean tap water, in the ratio as specified below:

Mixing Ratio:	
Jyalucem-20 powder	: Clean tap water
80 parts by wt.	: 20 parts by wt.

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### Method:

Mix the cement powder thoroughly with clean tap water in the above mentioned ratio to prepare a smooth uniform paste of tooth paste consistency. Apply this paste with a suitable tool like a spatula, on thoroughly cleaned and abraded parts to be cemented and air dry them for 4 to 5 hours at an ambient temperature (25°C- 40°C). Heat cure the cemented parts at approximately 200°C (392°F) in an oven for 2-3 hours and maintain the same temperature for 30 minutes to 1 hour.

**Caution:** Due to the moisture that may be entrapped during the curing process, it is best to raise the temperature of the heating system gradually from room temperature to 200°C(392°F), to prevent development of cracks in the cemented area.

### Applications:

Jyalucem-20 is ideal for high temperature cementing / sealing / bonding of ceramic to ceramic, ceramic to metal, ceramic to glass, glass to glass, glass to metal, & refractories.

- Potting of lamps into lamp housing
- Encapsulation of resistor wires & electrical heating elements
- Lining of furnace doors and walls
- Potting elements into base
- High thermal conductivity
- Maximum service temperature 1575°C (2867°F)



# Zircocem-1<sup>®</sup>

## Zircon Based - 2 Component - Cold Curing

Zircocem-1 is a 2 component, Zircon based, inorganic ceramic adhesive chemical setting cement, having low thermal expansion. Its 2 components consist of a fine dry powder (Part I) and liquid (Part II) as the curing agent to be mixed together to form the cementing paste, in the ratio as specified below:

Mixing Ratio:	
Powder (Part I)	: Liquid (Part II)
2 Parts by wt.	: 1 part by wt.
80 Gms by wt.	: 40 gms by wt.

### Method:

Shake the liquid (Part II) thoroughly before weighing and place in a clean dry container. Add Zircocem-1 (Part I) powder gradually to this weighed liquid (Part II) and mix thoroughly to make a smooth uniform paste of tooth paste consistency. Mixing can be done by manually using a spatula or in a mixer at a slow speed. Use the cement paste immediately. Since Zircocem ceramic adhesive cement is quick to dry, it is important to finish the mixed quantity within 15-20 minutes of mixing, before it hardens. Leave the cemented parts to air-dry for a period of 18-24 hours at room temperature. If the room temperature is lower than 25°C / 77°F, gentle oven heating at 90°C (194°F) for 1½ to 2 hours may be implemented. Do not apply direct heat and avoid steaming (of entrapped moisture) while drying, as this may develop cracks in the cemented areas.

**Caution :** This cement can be mixed to a marginally thinner consistency by regulating the quantity of the (Part II) liquid component. However, use of excess quantity of liquid will reduce the mechanical strength and it may fail to adhere properly. Do not attempt to re- temper by adding more liquid to the cement paste.

### Typical Characteristics & Applications:

- Halogen lamp- cap fixing, embedding electrical heating elements, wire wound resistors etc.
- Lining and maintenance of furnaces, kilns, refractories
- Excellent chemical and thermal shock resistance
- Adheres glass to glass, glass to ceramic, ceramic to ceramic, glass to metal, ceramic to metal etc.
- Maximum service temperature 1250°C (2282°F)
- Excellent mechanical strength



# Zircocem-5<sup>®</sup>

## Zircon Based - Single Component - Ambient Temperature Curing

Zircocem-5 is a zircon based, single component cement which is non-corrosive and is resistant to high temperatures, high thermal shocks and cures by internal chemical setting. Ideal for bonding, joining, sealing of glass to glass, glass to ceramic, glass to metals, ceramic to ceramic, and ceramic to metals (except aluminium). Since, its chemical setting time is indefinite, and final curing occurs anytime between 18 to 24 hours, it is ideal for thin film bonding and coating from 2 to 125 mil thickness.

This single component cement is available in a fine dry powder form. Mix the Zircocem-5 powder with clean tap water in the ratio as specified below:

Mixing Ratio:	
Zircocem-5 powder	: Clean Tap Water
80 parts by wt.	: 20 parts by wt.

### Method:

Mix the Zircocem-5 powder and water thoroughly with suitable mixing tool to form smooth uniform paste as per desired consistency for cementing application. One can regulate the quantity of water as per the required consistency as desired for the method of application like trowelling, brushing or spraying. For better adhesion ensure that the parts to be cemented are thoroughly cleaned and abraded.

Leave the cemented parts for air drying at room temperature (25°C / 77° F) for 24 hours. In such cases, where room temperature is lower or to accelerate the curing process, we suggest gentle heating up to 110 °C (230° F) in an oven or suitable heating system for around 2 hours.

### Applications:

- Fixing / assembling, high intensity halogen incandescent lighting bulbs
- Embedding electrical heating elements
- Insulation coating for wire wound resistors and coils
- Mechanical sealing of parts, where high resistance to electricity and thermal shock is essential
- Maximum service temperature 1450° C (2642° F)



Zircocem-5 powder, ceramic electrical heater parts & wire wound resistors

# Alucem-HT 2<sup>®</sup>

## Alumina Based - 2 Component - Ambient Temperature Curing

Alucem-HT2 is a two component Inorganic Ceramic Adhesive Cement, resistant to high temperature 1500°C / 2732°F curing at ambient temperature (25°C / 77°F).

It consists of a fine dry powder (Part I) & a Liquid (Part II) to be mixed in the ratio as specified below:

Mixing Ratio:	
Powder Part I	: Liquid Part II
1 Part by weight	: 1 Part by weight

### Method:

Mix Alucem-HT2 powder and liquid in specified quantity to form a smooth uniform paste of tooth paste consistency and apply on thoroughly cleaned and abraded parts to be cemented and leave the parts to cure for 24 hours at room temperature (25°C / 77°F).

### Applications:

Alucem-HT2 is ideal for bonding, assembling, sealing and joining ceramic to metal, ceramic to ceramic, glass to ceramic, glass to glass, glass to metals, ceramic to quartz etc.

- Excellent thermal conductivity, electrical and mechanical properties
- Ideal for fixing ceramic pyrometry tubes with metal sleeves for thermocouple assembly
- Excellent bonding strength
- Maximum service temperature 1500°C / 2732° F
- Can be used for electrical applications such as bonding, potting and encapsulation of electrical heating elements, metal resistor elements, high wattage / high heat generating electrical bulbs
- Option to use as a thick or thin coating



Metal sleeve cemented to ceramic pyrometry tube with Alucem-HT 2

# Zircoat®

## Zirconia Rich – Water Based –Refractory Ceramic Coating Cements

Zircoat is specially formulated, water based, ready to use, revolutionary refractory coating cement, resistant to high temperatures. Zircoat has been tested to perform at 1500 °C (2372 °F) and 1800 °C (3272 °F). It seals the cracks developed on the inside walls of combustion chambers, kiln walls and prevents heat escaping through the cracks, thus saving considerable heat energy and fuel cost.

### These coatings are available in 2 grades:

1. Zircoat-HT is meant for use in furnaces and kilns upto 1800 °C.
2. Zircoat-M is meant for use in furnaces and kilns upto 1500 °C



### Advantages & Characteristics:

- Zircoat is easy to apply to any surface by trowelling, brushing and spraying.
- Good adhesion
- Excellent dry strength
- Good chemical resistance
- Reduction in slag adhesion
- Proven to considerably increase service life of refractory linings and thermal heating systems.



### Applications:

- Coating of steel shells, kiln / furnace doors & sections
- Refractory brick linings or brick lining mortar in industrial furnaces, boilers, electrical bobbins, heating chambers, ladles, funnels, spouts, soak pits, open hearth floors, rotary kilns, ducts, heat transfer walls, pulp dryers, steam boilers, silica linings
- Excellent to increase service life of Silicon Carbide, Mullite, Alumina and Cordierite ceramic refractory kiln furniture, ferrous and non-ferrous metal melting crucibles, etc.

\* Detailed product brochure available on request.

### Clean-up:

All containers, tools and equipments used for mixing, applying the inorganic ceramic adhesive cements and coatings, should be thoroughly cleaned with soap and water immediately after use and before the left over adhesive cement / coating get cured.

### Shelf Life:

All the inorganic ceramic adhesive cements (powder & liquid components) and coatings have safe shelf life of one year, when stored in original air tight plastic containers in a dry location at ambient temperature.

### Features at a glance

Product	Max. Service Temp.	Co-efficient of Thermal Expansion	Di-electric Strength Volts / mm (at 21 °C)	Volume Resistivity Ohm-cm	Thermal Conductivity W/m / °K
Zircocem-1	1250° C	4.5 – 5 X 10 <sup>-6</sup>	980 – 2000	10 <sup>7</sup> - 10 <sup>9</sup>	7 – 8
Zircocem-5	1450° C	2.5 – 3 X 10 <sup>-6</sup>	2165	1.45 X 10 <sup>11</sup>	7 – 8
Jyalucem- 20	1575° C	7 – 8 X 10 <sup>-6</sup>	450	3 X 10 <sup>11</sup>	10 – 12
Alucem HT-2	>1500° C	5 X 10 <sup>-6</sup>	700 – 1000	> 10 <sup>7</sup>	3

## Packaging

All the powder components of the Inorganic Ceramic Adhesive Cements mentioned in this brochure, are available in 1,5,10 and 25 kg. strong air tight HDPE plastic pails / buckets and the liquid components (curing agents) are packed in strong HDPE plastic bottles in proportionate quantities.





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