



Glassbond

CONSTANT SYNERGY

Bonding Global Networks

From our inception in 1978, Glassbond has offered quality and service through its continuous programme of investment and process development. As a result, we have developed a worldwide reputation as a leading independent manufacturer of speciality cements.

Developed over the past twenty years, our extensive range of capping/basing cements reflect our unsurpassed knowledge of the requirements of modern lighting, as well as the statutory regulations, differing wattages and climatic conditions experienced around the world.

Approved by all of the world's leading lamp manufacturers, these cements offer a full range of applications including incandescent, fluorescent, automotive, high temperature and special lamp types.



Glassbond have over twenty years experience providing

solutions to the lighting industry

at **consistent** levels.

Innovation

We continue to explore the opportunities and application methods of our products. Whatever industry or market, Glassbond are uniquely placed to offer solutions to all your phenolic cement, high temperature inorganic cement and thermoset moulding powder requirements.

High Specification

Our wealth of experience is built on sound quality management principles, sustained investment and the very latest production techniques. With accreditation to British Standard ISO9002, our manufacturing techniques ensure all our products are of consistent high specification.



Glassbond have consistently provided high performance,

quality solutions, which has contributed
to our position as a **market leader.**



Capping Cements

Our full range of cements are manufactured in fine powder form. The paste viscosity is controlled during powder production, enabling every customer to add an identical amount of alcohol to every batch of powder. This ensures paste is made to the same viscosity every time, allowing customers to achieve efficient lamp manufacture.

High Temperature Cements

With a diverse range of inorganic adhesives, Sauereisen Cements offer solutions for high temperature bonding. Sauereisen materials withstand up to 1650°C, making them ideal for the most challenging assembly, encapsulation and sealing applications.

Moulding Powders

Manufactured at our UK base, Glassbond Bonddisc phenolic moulding compounds offer a variety of uses in communications, electrical, transport, domestic and leisure industries. By incorporating a variety of reinforcing fillers we are able to tailor materials to meet specific customer requirements.



Through its structured procedures Glassbond is capable of offering

worldwide support

and a unique ability to supply tailor made solutions.

Research and Development

In many cases, our grades are tailored to specific customer needs. Our experienced research team, plays a key role in achieving success by modifying core formulations or pursuing new techniques. Very often our products and technical support do result in our clients making cost savings.

Manufacturing

All raw materials used are tightly specified, pre-tested and approved prior to use. By using the latest technology available and structured procedures, we ensure consistently high quality products to satisfy the highest of customer requirements.

Quality & Traceability

All products are supplied to our customers with a batch number that is our guaranteed traceability system. All batches are quality control tested and approved prior to packing, ensuring each product is monitored and controlled for every customer. Q.C. results can be forwarded to our customers at the time of despatch.

GLASSBOND LAMP CAPPING CEMENT

Glassbond (NW) Ltd manufacture a complete range of capping/basing cements for the Lighting Industry. The range has been developed over the past twenty years, and reflects the changing requirements of modern lighting as well as statutory regulations which are now being adopted in many Countries around the world.

Lamp types, voltages and climatic conditions vary considerably around the worked and Glassbond has developed grades which function well under many different conditions and parameters.

In many cases, grades have been tailored to specific customer needs, and our knowledge of cement formulation enables us to change or modify to meet their particular requirements.

All Glassbond Cements are manufactured in fine powder form, with all necessary raw material blended in the correct proportions. The user therefore need only mix the powder with alcohol to produce the paste for use. Any viscosity adjustment of the paste can be controlled by either more or less alcohol without affecting the properties of the cement.

In some cases, the cement can be supplied as paste ready for use. There is however, a limited useable shelf-life for paste, which is affected by storage temperature.



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EXTENSION OF PASTE LIFE

Unlike cement powder, the paste has a definite shelf-life when the viscosity increases to a value which prevent its satisfactory use. However, this increase in viscosity can in the main be re-adjusted using extra alcohol. The paste must be re-mixed and the alcohol added to reduce the viscosity back to the desired level. This process is difficult to do and the '*Z-Blade*' types of mixer are best for this.

There are, of course, limitations as to how much extra alcohol can be added before problems of blowing and pin-holing at the soldering stage in lamp manufacture are observed.

Extending paste life using this method is not ideal - it is far better to use paste with its original life.

Some grades for very high temperature resistance produce a slow chemical reaction in the powder form even at room temperature and here the alcohol solubility is slowly reduced over a period of time, rendering the paste gritty and making it unsuitable for use.

USE

Glassbond Cement Paste can be used in pasting pots of the pressurised or non-pressurised type. Some adjustment to viscosity is usually required if pressure is used to assist in the cap pasting.

Sufficient paste should be used on each cap to achieve the optimum bond strength of the cement. However, too much paste can cause cracking due to the expansion of excess cement into the stem on curing.

As a guide the following paste weights can be used:-

E14	0.8 - 1.0
B22d/25x26	1.5 - 1.7 grams
E27/27	1.6 - 1.8 grams
B22d/22	1.2 - 1.4 grams
E14/17x25	0.9 - 1.0 grams
B15d.17x22	0.9 - 1.0 grams
T8	1.0 - 1.2 grams
T10	1.3 - 1.5 grams
T12	1.6 - 1.8 grams

However, lamp making machines can vary in neck mould shape, method of lamp assembly etc, and the above figures may need adjustment to suit individual cases.

CAPPING CEMENT PASTE

INTRODUCTION

It is important to understand and appreciate that Cement Paste Preparation should be done with accuracy and care.

To produce lamps having the optimum torque values, temperature resistance and life expectancy, it is vital to use paste of the correct characteristics.

In this respect, it should be part of the Lamp Maker's procedure **Always** to weigh out the correct quantity of cement powder and measure (or weigh) the appropriate volume of alcohol. **NEVER** allow operators to make up paste by 'feel' or 'sight'.

METHOD OF MANUFACTURE

Conventional paste or dough mixers are all suitable for the preparation of cement paste. Typical makes include - *Hobart, Morton, Winkworth, Bowers, Moltini, Kemutec etc.* The most efficient types are the so called '*Z-Blade Mixers*'.

Weigh out or measure by volume the appropriate quantity of alcohol and transfer this to the mixing bowl. **NOTE** - It is advisable to use Ethanol with minimum 91% alcohol content. Lower quality grades may contain too much water which does not produce the ideal paste. Other alcohols such as Methanol or Isopropanol can also be used satisfactorily, but volumes required may be different than Ethanol.

Weigh out the correct quantity of cement powder and transfer approx. half to the mixing bowl. Start stirrer and continue stirring for approx. 5 minutes. Add the remainder of the cement powder and mix for approx. 30 minutes. Stop stirrer and check the paste viscosity by any suitable method (a Penetrometer Test Machine is the ideal method which Glassbond can supply).

Any adjustment in viscosity can be achieved by the addition of more powder or alcohol as is necessary. Stir as the addition is made and continue mixing until dispersed (usually 10 minutes). The paste is then ready for immediate use.

At temperatures over 30°C alcohol will evaporate very quickly. An ideal mixing temperature is between 15-20°C.

PASTE STORAGE

All Glassbond grades have long working life in paste form, and can be successfully used under normal storage conditions of temperature (between 15-21°C) and humidity for 4-6 weeks. In cooler conditions, experienced in same conditions or in a refrigerated area, then this useful life can be extended further.

CURING

This is very important since undercuring can produce lamps with low torque value and the caps may well be loose in use. Over curing can be detrimental since thermal degradation of the adhesive bond can occur, resulting in poor torque values and reduced humidity resistance. The presence of a heat sensitive dye, such as '*Malachite Green*', can be a useful guide to the temperature at the cap, but the line speed or flame settings have to be adjusted to achieve the best results for maximum torque and humidity resistance. In general, cement paste will cure at temperatures as low as 160 °C, but may take up to 2.5 minutes, whereas if the cap temperature is 200 °C then curing times of 35 - 40 seconds are needed for optimum cure. Temperatures in excess of 250 °C should be avoided since thermal decomposition of the bond takes place above 250 °C and this can result in poor adhesion.

The type of cap and therefore the weight of paste plays a large part in the times required for the best curing. Obviously large caps with high quantities of paste, for example a T.12 Fluorescent will take a longer time to cure than the E.14 type, which would only require a smaller quantity of paste and therefore would need only a short cure time. (see Technical Data Sheet).

POWDER STORAGE

Glassbond cement powder can be stored in its original container - for example cartons, bags or drums for many years without any material change. However, moisture and pressure can cause some grades to compact and form lumps. If the moisture level is high these lumps, which initially are soft and easily broken up, can become hard. This makes the cement powder difficult to use, but if the lumps can be broken down mechanically and if necessary re-ground, then the powder will return to its normal state, and is totally unchanged and suitable for use.

Material supplied in 1,250 kilo (1.25 tonnes) big bags or "super sacks", are more susceptible to moisture and pressure because no polythene liners are present and these keep moisture from the powder, and also the pressure on the lower part of the bag is increased because of the weight above.

It is essential therefore, that every care should be taken to ensure that cement powder is not subjected to moist conditions in off loading or storage, and storage two or more high should be avoided.

LAMP CAPPING CEMENT GRADES FOR STANDARD INCANDESCENT LAMPS

<u>Grade Number</u>	<u>Description</u>
K11	Up to 100 watts with 1,000 hours lamp life
K111	Up to 100 watts with 1,500 hours lamp life with additional humidity resistance
K35	Up to 100 watts with 1,000 hours lamp life with modified processing characteristics
K12	Up to 150 watts with 1,500 hours lamp life
K112	Up to 150 watts with 1,500 hours with additional humidity resistance
K21	Up to 150 watts with 1,500 hours with low neck mould pressure
K215	Up to 150 watts with 1500 hours with low neck mould pressure and good paste cut off
K121	Up to 150 watts with 1500 hours with low neck mould pressure with additional humidity resistance
K60	Up to 100 watts with 1,000 hours lamp life
K61	Up to 100 watts with 1,000 hours lamp life with additional humidity resistance
K62	Will pass 2,500 hours @ 210°C
K76	Will pass 1,500 hours @ 210°C for GLS lamp types
K64	Up to 150 watts 2,500 hours lamp life also decorative and reflector lamps
K641	Up to 150 watts 2,500 hours lamp life also decorative and reflector lamps Only available in paste form
K66	Will pass 2,500 hours @ 210°C also decorative and reflector lamps
K966	Will pass 2,500 hours @ 210°C also decorative and reflector lamps
K18	Up to 500 watts with life up to 2,500 hours @ 210°C
K118	Up to 500 watts with life up to 2,500 hours @ 210°C with extra humidity resistance
K41	Will pass 2,500 hours @ 250°C for all incandescent lamp types

NOTES

- 1) The above descriptions are guide lines only. Glassbond strongly recommend that before deciding on a particular grade that both technical and commercial discussions take place between the two parties. Lamp types, groups and methods of manufacture vary considerably and to have the correct grade for a particular application can be achieved through these discussions. A questionnaire can be supplied to help focus the important parameters. Glassbond are always willing to manufacture grades to suit particular customer requirements.
- 2) The prefix K indicates grades in powder form where only alcohol needs to be added. The prefix P indicates grades in paste form where the material is ready for immediate use on lamp groups.
- 3) All the above grades are normally supplied with the ~~low~~ **temperature sensitive dye Malachite added. In this case the suffix /M is added.**



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BS EN ISO 9002 Certificate No. 3607

LAMP CAPPING CEMENT GRADES FOR SPECIAL LAMPS

<u>Grade Number</u>	<u>Application</u>	<u>Description</u>
K15	Automotive	Super white cement
K17	Automotive	Light coloured cement with good temperature and humidity resistance
K20	Automotive	White cement
K201	Minature and Automotive	Super white cement
K25	Automotive	White cement
K41	Oven Lamps	Temperature up to 250°C
K18	Oven Lamps	Temperature up to 275°C
K99	Discharge Lamps	10,000 - 12,000 hour lamps

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LAMP CAPPING CEMENT GRADES FOR FLUORESCENT LAMPS

<u>Grade Number</u>	<u>Application</u>	<u>Description</u>
K11	Linear Fluorescent Lamps	Basic Grade for Linear Fluorescent Lamps
K111	Linear Fluorescent Lamps	Basic Grade for Linear Fluorescent Lamps with additional humidity resistance.
K12	Linear Fluorescent Lamps	Additional heat resistance. Ideal grade where customers wish to use one grade for both fluorescent and incandescent.
K112	Linear Fluorescent Lamps	Additional humidity resistance
K16/S	Linear Fluorescent Lamps	This Grade uses Trioxance in place of Ethanol
K114	Linear Fluorescent Lamps	As K16/S but with additional and humidity resistance
K441	Compact Fluorescent Lamps	Basic Grade 8,000/10,000 hours lamp life

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Some of the worldwide companies who use our products.

Capping Cements

China Electric
Crompton Lighting
G E Lighting
Kumho
Leuci - FILE
Osram
Osram Sylvania
Philips Lighting
PT Sinar Angkasa Rungkut
SLI Lighting
Toshiba



High Temperature Cements

BLV
Cast
GE Lighting
Heraeus Electro-Nite
Laes
Osram
Philips Lighting
Radium
Rolls Royce
Soled



Moulding Powders

British Aerospace
Compression Moulders
Henselite
Intermotor
Manoplastics
Thomas Taylor
Watliff

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