broadcast
BENTLEY CHEMICALS LTD
25 Years 1978 - 2003
Spring 2003

SMASH HIT

Bentley Chemicals has developed and supplied special effects materials for the last four Bond films but the recent blockbuster **Die Another Day** proved to be record breaking business for the Company. Over eight tonnes of special polyurethanes and silicones were required to help create the spectacular ice palace sequence which featured a stunt which has now gone into the Guinness Book of Records.

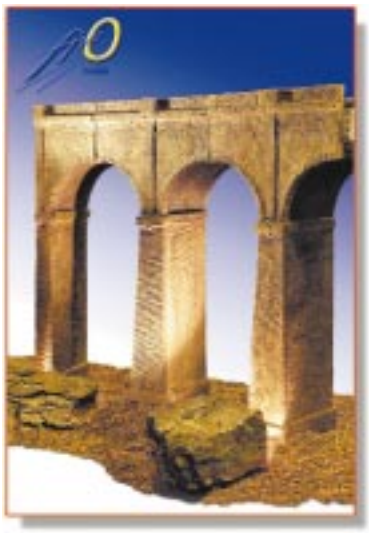
The Company provided six and a half tonnes of "Smash", a special polyurethane developed by Smooth-On, and over one and a half tonnes of flexible "rubber glass" silicone for the scenes in the ice palace and the special series of car chase stunts. The most spectacular sequence required James Bond's Aston Martin to crash through the huge ice palace doors constructed out of 400 kilos of "Smash." The high speed stunt has now been recognised as the biggest single use of breakaway glass.

"Our range of translucent and transparent silicones and polyurethanes were ideal for creating the spectacular ice effects and scenery," said Peter Turnock, sales and marketing director of Bentley Chemicals, "each new Bond film brings its own unique challenges. We are looking forward to the next."

James Bond's Aston Martin Vanquish crashing through the "Smash" ice doors of the Ice Palace in 'Die Another Day'. (Copyright: "Die Another Day' © 2002 Danjaq, LLC and United Artists Corporation. All rights reserved.")

On the Right Track

Five O Models of Cleethorpes are producing a range of polymer concrete viaducts for enthusiasts with large railway sets at the bottom of the garden! Made in O gauge scale, the viaducts are finished with a fine detailed, weathered, dressed stone finish complete with buttresses and ledges, insets and capping stones.



5 "0" Models' Viaduct

Bentley supplies Five O with all their polymers and moulding rubbers with Matrix C additive used to enhance the physical and performance properties of the concrete. The main benefits of using Matrix C are that water/salt absorption is reduced; "micro cracks" are virtually eliminated; the freeze/thaw chemical and UV resistance is considerably enhanced and demould times are speeded up, which means that the company can significantly increase production.

The weathered look is achieved by the addition of dyes introduced into the concrete at the casting stage and Five O Models describe them as "having all the character of those tall, slender Victorian viaducts that still adorn the skylines of the British countryside to this day."

2003 has also seen the first live tour of Thomas the Tank Engine. **Thomas & Friends – The Big Live Tour** completed a highly successful tour around the UK, playing to packed audiences of delighted youngsters. Polyurethane supplied by Bentley was used extensively throughout the sets as well as for the construction of the engines.

Thomas & Friends – The Big Live Tour

25 Years

This year Bentley Chemicals is celebrating 25 years of distributing silicones, polyurethanes, polyester resins and specialised chemical products to a wide variety of industries. From record breaking special effects to the most daunting specialised moulding challenges, the Company has built its reputation on working closely with its clients to deliver creative solutions.

Established as supplier for the Rhodia company in 1978, the very first customer that Bentley ever had is still a customer today. Design Cast Ltd (originally called Cirencester Replicas) was exploiting silicone rubber as a mould making

material, supplying replicas to museums for both display and for educational purposes. "Our business grew through having access to new materials to create new markets" commented Leigh Chapman, managing director of Design Cast, "From the start Bentley was able to introduce us to those new materials and work with us. They have always been on the ball." Today Design Cast is exporting all over the world, using silicone rubbers and polyester resins to produce a wide variety of products.

As the supply of silicones, polyesters and polyurethanes for the giftware market became established, the Company's ability to provide a comprehensive range of products, backed up with the full technical support of companies such as Smooth-On and Rhodia, became the key to developing the specialised mouldings sector. Applications were varied, ranging from garden statues to ornamental fireplaces.

At the same time Bentley began to dip a toe into the water of special effects. Supplying the materials for making a large glass of pink champagne in a **Pink Floyd** pop video was the starting point for what was to become a dynamic and major sector of the business. Today the Company has become the first choice for the special effects experts in film, TV and theatre. The supply credits are too long to list, covering hundreds of productions - everything from **Harry Potter** to **Holby City.**

In more recent years, Bentley Chemicals has also become a supplier to the rapid prototyping industry. Last year it launched RTV 3040, one of the most flowable grades of prototyping silicone elastomers available, along with the Task series of high performance urethane casting resins, providing the industry with a complete system which can take the original through to the end component part.

"We have come a very long way in 25 years" commented Richard Watson, managing director, "What keeps us at the front is our reputation as a company with an outstanding range of silicones, polyurethanes, polyester resins and specialised chemical products, and our ability to provide a total service package with full technical support. We are excited about the next 25 years!"

Decorative Pedigree

The name of Clark & Fenn has been at the forefront of classical and contemporary decorative plasterwork for many years. Founded in 1912 by a plasterer and a surveyor, the company has won ten national awards over the last ten years for its work in both the commercial and classical fields. Bentley Chemicals has supplied the company with a range of products from all of its silicone rubber mould making materials, to glass reinforced gypsum used on many prestigious projects.

Tate Britain, London

Clark & Fenn's early growth was fuelled by the demand for ornate plasterwork for the rapidly expanding cinema and theatre chains. Today the company as Clark & Fenn Skanska has diversified and recent award winning projects include the Trafford Centre, Tate Britain and Aspinall's Casino in London.

Aspinall's Casino, London

CORONATION COACH

In celebration of the Golden Anniversary of Her Majesty Queen Elizabeth's Coronation in 1953, Border Fine Arts has produced an exclusive 24 carat gold-plated, limited edition figurine of the Gold State Coach made from polyurethane supplied by Bentley Chemicals.

The figurine depicts the scene as Queen Elizabeth and the Duke of Edinburgh left Buckingham Palace for Westminster Abbey on the morning of 2nd June 1953. Border Fine Arts are renowned for their amazing attention to detail, and special techniques had to be developed to reproduce the illustrious Gold State Coach with the intricately applied 24 carat gold plate.

Built for George III, in 1762, the Gold State Coach is rarely seen, only being used for ceremonial Royal processions. An important part of Queen's Elizabeth's Golden Anniversary celebrations in 2002, millions were entranced by the regal splendour of the Gold State Coach during its most recent outing. Elegant and dramatic, the Gold State Coach was actually borne out of George III's desire to have the grandest carriage in London; to have one fit to promenade the capital's newly widened and better-paved streets.

Border Fine Arts "The Coronation 1953"

The coach was built in the Great Queen Street workshops of Samuel Butler, who received £1,673 for his lavish creation. Royal archives show that the biggest fee of £2,500 actually went to Joseph Wilton, the Royal Academy sculptor whose intricate carvings decorate the coach. Some contemporary commentators were concerned about the excessive costs but even the most stern couldn't help but admit that the coach was 'a beautiful object'.

"Lifecasting" Revolution

The introduction of a new silicone "lifecasting" elastomer by Bentley Chemicals is set to have a revolutionary impact in film and theatre special effects, as well as in the world of art and sculpture.

"Skinsil" is a new, premium two component silicone elastomer which has been specially developed for facial and body lifecasting. It brings huge time and labour savings over the current, traditional and complex methods of taking life-like casts from models using alginates. It gives the life-caster the ability to produce a production mould from the original in one very fast, comfortable and convenient operation.
It is easy to apply, directly to skin, through convenient, disposable cartridges and cures within 4 minutes to give remarkable, detailed reproduction. It does not distort during or after curing, has practically no shrinkage, is very quickly demoulded and has good mechanical properties when cured. Skinsil offers a very fast, comfortable and clean process for both the subject and the mould maker.

Easy Application

Application is very easy. The subject area is washed with soap and water and once dry, a proprietary brand of moisturising cream is applied. Skinskil is then applied to the prepared area, working into any detail with the fingers. Cotton scrim bandage can be applied to the initial coat whilst it is tacky to enhance its structural strength. Subsequent coats can be applied until the desired thickness is reached. If required, plaster, plaster bandage or VARAFORM can be applied to cured Skinsil as a support case.

Adding Structure

This new silicone lifecasting elastomer brings dramatic savings in time and labour costs and opens up new possibilities in both creative arts and special effects. The special effects industry is already talking in terms of "revolution" when it comes to the savings that can be realised – it is already being used on the production of **Harry Potter 3** with many more in the pipeline. The potential for wider applications outside special effects and art is also being actively explored. Watch this space!

Fast and Clean Process

Handi Foam

Bentley Chemical's quick cure polyurethane foam "Handi Foam" has found some successful and unusual new applications: ***The School of Ocean Sciences*** in Anglesey has a research raft permanently moored in the Menai Straits which is used for growing biological samples. When it was noticed that the raft was gradually getting that sinking feeling, they turned to Handi Foam to successfully fill the raft's flotation chambers. At ***Canary Wharf*** they have discovered how to replace a high rise broken window without showering the street below with potentially lethal broken glass. They use Handi Foam to fill the frame and capture all the glass, making removal a safe and easy operation.
Ever watched the ***Rockface*** TV series and wondered what material their portable rock face is made of…?..Yes, you've guessed it, Handi Foam!

The School of Ocean Sciences Research Raft

The two part polyurethane foam is being successfully used across a variety of industries including building construction, renovation and repair, roofing, insulation, cold storage, vehicle refrigeration, films and marine work.

Concrete & Plaster Performance

Bentley Chemicals now offers a complete "performance package" for concrete and plaster work across a whole range of applications, from ornamental casting to concrete panelling and from architectural restoration through to detailed building construction.

Two products spearhead the new package – Matrix C and NEO. Matrix C is a new polymer additive, which enhances both the physical and performance properties of cements and mortars, and NEO is a new gypsum based polymer casting system that has superior physical and performance properties compared to regular gypsum products. "The real attraction of what we are offering is that we have a complete package of products – a real one-stop-shop for any application in concrete and plaster work. These products bring substantial savings in time, labour and material costs and both Matrix C and NEO are very exciting new products." commented Peter Turnock, sales and marketing director. The package also features an extensive range of moulding rubbers - which can produce moulds ready for casting in a day - special release agents, accelerators and additives.

Above left: A Gathering of Gargoyles made from Matrix C"
Above: A Neo Casting

new products

Reoflex

The Reoflex line of urethane rubbers has now been introduced as a successor to the highly successful PMC 121 Series. The new, improved chemical formulation gives end-users an edge when casting plasters and concrete. It offers easier mixing, a longer pot life and better release properties when casting concrete, plaster and wax. Currently available in Shore 'A' - 30A, 40A, 50A & 60A (wet or dry) and shortly also in 20A wet or dry. All grades are neutral in colour, being off-white or beige.

Flame Out 7

Following demand from the special effects trade, Smooth-On have now developed Flame Out 7 rigid foam. This grade is flame resistant and has been tested in accordance with ASTM E84-90 Standard Test Method and qualifies for a Class 1/ Class A rating. It is suitable for making flame resistant architectural columns and wall panels, as well as facades for theatre, film sets and amusement parks. This product increases the existing Bentley range of flame resistant and fire retardant plastics, resins and textile grades.

SFX News

The supply of specialised mouldings materials for special effects in film, TV and theatre continues to grow apace. In addition to the Company's extensive involvement in the last four **Bond** films, Bentley is actively involved with many current productions including **Round the World in 80 Days, Thunderbirds, Troy** and **King Arthur**.

A variety of products have been used in **Tomb Raider 2** as well as in both **Harry Potter** films,

creating everything from snakes, to Fluffy the giant guardian dog - and **Harry Potter 3** looks as though it will be eating up even more of Bentley's products than the two prequels.

For those hooked on medical TV dramas, both **Holby City** and **Casualty** regularly feature the Company's materials - particularly in the gory parts - watch out for pumping hearts, severed limbs and various open wounds! If your taste is slightly more cultured, then a trip to **the Royal Opera House** will reveal a whole host of props made out of Bentley's products, from chandeliers to thrones and statues.

Painting Translucent Silicone RTV 4408 & 3320

We receive many calls from customers wanting to paint on to silicone or polyurethane rubbers. To obtain the best adhesion for paint to adhere to silicone:

- Use a one part low modulus silicone sealant Rhodorsil 10 translucent, from our sealants range.
- Add either white spirit or Di-Limonene solvent to dilute and lower the viscosity of the one part silicone (The amount of solvent use depends on the application).

Painting Evergreen 10 Polyurethane

Evergreen 10 is now being used more and more in place of translucent silicones. It is very competitively priced with a low shore hardness, high tear strength and a great translucency to its appearance. There are two possible methods for this job:

Method One - Use Precote 21 Clear, inmould primer & Mac-Wax release agent (must be a wax based release agent).

- Spray wax release agent inside mould covering all areas and allow to dry.
- Apply a thorough coverage swill coating of Precote 21 (this s a low viscosity liquid, so drain back into the pot). Allow to dry for half an hour.
- Mix rubber and pour into mould cavity.

When rubber is demoulded 16 hours later, the Precote should leave the rubber surface etched and ready for acrylic inks and other paints to be applied. Once painted, a second Precote coating can be applied over the top if required.

Method Two - Take some mixed Evergreen 10 and add oil based So-Strong pigments to achieve different colours. Then stipple onto the surface of the rubber. This method was used by Jim Henson's creature shop when a creature being made had high percentages of flexbilzers to soften certain parts, and it was leeching oil. Remember when using Evergreen 10 as a paint base, only mix small amounts that can be used within the pot life time.

Wimbledon Champion

Daniel Scott, a final year student on the Technical Arts Interpretation course at Wimbledon School of Art has been awarded the Bentley Chemicals and Smooth-On Annual Award for Outstanding Technical Achievement.

Last year the Company announced the award as part of its sponsorship of a new workshop at the School, one of the country's best facilities for

education in specialist art and theatrical design. The award is open to all students in their graduation year and is given to the student who has made an outstanding achievement in the imaginative and skillful use of a range of materials, including liquid resins and elastomers, during their final year of study.

Daniel was both shocked and delighted at having won and was looking forward to making the most of the opportunity. The prize includes a trip to the States to visit the headquarters of Smooth-On.

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