



# ALL PORCELAIN WAS NOT CREATED EQUAL

By Anthony Stock with comment by Colin Cass

Top quality polished porcelain provides a highly desirable finish that is very popular, particularly in Asia. (image courtesy of Ariostea SpA)

Between mid July and mid August I received no less than ten reports about major problems related to tile installations, which primarily featured polished porcelain materials. The prime complaints related to:

- a) Wax that could not be fully removed
- b) Surfaces that could not be sealed
- c) Tiles that could not be cleaned adequately

A well known member of the Australian Tile Council in New South Wales described how he visited the home of a prominent restaurateur who was having tiles removed that cost \$40,000 in terms of materials and labour.

One email from a consumer described her bitter disappointment about having to completely remove 22 square metres of tile.

A very reliable individual who specialises in sealing, cleaning and maintaining ceramic tiles called to say that after attending five sites where a tile supplier had supplied the same polished porcelain tile, he had been forced to tell the tile retailer and their various clients that the tile in question could not be cleaned or adequately maintained.

I received another complaint from a builder who had laid more than 100 square metres of polished porcelain that, "simply cannot be cleaned."

## STRANGE IRONY

For more than 30 years retailers in Australia have maintained that one of the chief benefits associated with the use of ceramic tile was ease of maintenance. Light mopping and sweeping with a soft broom was generally all that was required.

It's therefore ironic to discover that one of the prime attributes associated with tile is fast becoming a negative, because of problems related to cleaning and maintaining some polished porcelain products.

Nobody wants to create a negative image of the tile industry or its practices, but it's very evident that some retailers are either confused about the problems associated with porcelain tile, or they simply don't understand the products they are handling.

Last Christmas I attended a BBQ at my brother in law's home. Patrick had purchased 54 square metres of polished porcelain from one of Melbourne's major retailers.

With more than 40 family members and friends in attendance, the new floor was being subjected to a fair amount of foot traffic.

Patrick virtually built his own home and had purchased and laid his own tiles. He finished grouting 24 hours before the family gathering.

When I asked him if he had sealed his new floor, he gave me an incredulous look. I explained to him that many polished porcelain tiles require sealing.

We went outside and poured some red wine over a large tile off-cut. When we returned minutes later and attempted to wipe away the wine we discovered a substantial stain.

Patrick quickly encouraged everyone to adjourn to the garden. When we examined the floor closely we noticed black texta marks, which Patrick had made when he marked tiles for cutting, these marks could not be removed.

In addition we discovered that a number of tiles had one 'chittered' edge. I urged Patrick to contact the retailer in question to ask why he had not been advised to seal the tiles. He later advised me that the retailer, who was also the importer, did not know that this new line required sealing. Patrick was given 'free' sealer and no advice about its use or how to solve the texta problems.

Examination of the boxes revealed that the tiles were 'Made in China'; there was a logo but no decipherable manufacturer's name.

Patrick paid \$27.95 per square metre.

## IS THE PROBLEM SOLELY RELATED TO POLISHED PORCELAIN?

Former Australian Tile Council President, David Graham has come across some problems related to glazed porcelain.

However, all the major complaints received at our office relate to polished porcelain.

According to one sealing and maintenance professional some retailers are simply unaware of how or why problems occur. Apparently 'grout haze' is a popular excuse that directs the complaint to the tiler in preference to the supplier or the manufacturer (grout haze is a fine

residue of grout left on the surface after tile installation).

Lack of understanding or concerns about the various problems associated with polished porcelain materials has prompted many retailers to issue a blanket ultimatum, which states that all polished porcelain must be sealed.

For decades Australian importers and retailers have been influenced by trends that emanate from Italy. While porcelain remains the hot ticket item in Italy, polished porcelain is not as favoured in Europe as it is in Australia and in Asia generally.

In issue # 67 (May-June) of Ceramic World Review (CWR), Ivanno Ligabue (IL), Chairman of LB Officine Meccaniche answered questions about the future development of porcelain tile. Mr Ligabue is regarded in Italy as one of the industry's leading authorities in relation to porcelain tile.

**CWR: what are the factors underpinning the success of glazed porcelain tile?**

**IL: It is important to remember that porcelain tile production first began in Italy and that the Italian tile cluster was known for years as the 'glazing valley'. In my opinion, the success of glazed porcelain tile is an aesthetic legacy carried over from decades of production dominated by double and single fired tiles, which feature a wide use of different colours and sizes.**

**To reproduce colours and aesthetic effects that were originally impossible using a clay body alone, glaze was applied to porcelain tile.**

**However, there is a strong risk of aesthetically saturating the product. I personally take a positive view of the recovery in unglazed porcelain tile production in Italy over the last two years.**

**CWR: do you think the scenario is likely to change?**

**IL: We are only likely to see a stronger shift towards unglazed porcelain tile if we are able to develop new materials capable of meeting the needs of architects, who are in any case encouraging the tile producers and suppliers of technologies and glazes to develop original materials that are capable of integrating into large commercial and up-market residential projects.**

**Producer companies and technology suppliers must therefore seek new fields of application and solutions that allow for a more sophisticated use of through-bodied colours and decoration. But above all they must take advantage of the product's superior aesthetic and technical qualities to convey a concept of luxury and opulence that is increasingly in demand from consumers in the most advanced markets.**

**CWR: is the imbalance between glazed and unglazed products likely to be redressed in the future?**

**IL: Not in the short term. This is partly due to the current situation in which tile producer companies are disinclined to go against the trend of a market that prefers glazed porcelain tile. We should also bear in mind that colour by its very nature is a source of emotion and is essential as a way of appealing to curiosity and interest of consumers.**

**CWR: what about polished tiles?**

**IL: In the high-end porcelain tile segment, polishing is a way of enhancing decorations and design, as can clearly be seen in the case of several leading Italian companies. Furthermore, the high production costs make polishing feasible only for the highest quality products.**

**On the other hand, polished tiles are very popular outside Italy, especially in Arab and North African countries as well as in Asia where there is a preference for glossy products that reflect ostentatious wealth and baroque tastes.**

Clearly, high quality polished porcelain is regarded as being a product of distinction, which is largely produced by leading Italian companies. Mr Ligabue points out that, "High production costs make polishing feasible only for the highest quality products."

While everyone appreciates that production costs in China are lower than in Italy, one wonders what percentage of imported Chinese polished porcelain products are subjected to questionable polishing processes.

In Tile Today Asia issue #1 (China No Secret Anymore) we reported that polished porcelain manufacturing processes in Foshan rely heavily on coal gas, which according to Giorgio Prodi, "Leaves many impurities on the tile surface, so Chinese producers have to polish these tiles to obtain higher quality." Mr Prodi concluded, "Without polishing they cannot achieve the same results that are possible today in Italy."

**"For these reasons it is recommended that all polished porcelain should be put through some simple tests before they are sold. Check if the tiles stain (pencil, texta, coffee), check that the surface reflectance of stock matches the sample, and check for flatness, size and colour variation. Check how easily it scratches. Advise customers about the product's characteristics and cleaning and maintenance issues. Spell out your policy on wax removal."**

**Colin Cass**

This article is not intended as a dismissal of all Chinese polished porcelain. In the same article we stated, "The cheaper products often show signs of excessive polishing, which ultimately detracted from the overall appearance of the tile. This in turn can produce on going maintenance issues of the kind which can lead to dissatisfaction. Better products are available (from China), at affordable prices, but to make buyers aware manufacturers in Foshan need to embark on a charm offensive."

Many importers are selecting good products from Chinese suppliers, but with imports from China increasing from less than 100,000 square metres a few short years ago to 11.6 million square metres per annum, it's clear that some inferior products are creeping under the radar.

The industry has taken a giant leap forward in many regards. The sheer diversity of available product in relation to colour, texture and size is both bewildering and encouraging. Unfortunately every new technological advance brings with it a challenge to manufacturers, who must explain the relevance and advantages associated with these developments.

## COMMUNICATION BREAKDOWN

The fear of being imitated is forcing many tile manufacturers to limit the amount of 'real' information they provide to buyers about their new novelties. If the buyer (importer) is poorly informed, then so are his representatives, who are responsible for imparting product knowledge to retail sales staff in outlets across Australia. If the sales staff are poorly informed what hope do their customers have?

Before we proceed let's look at this problem from industry authority

Colin Cass' perspective:

## PORCELAIN: WHAT'S IN A NAME?

In the 1980's the ceramic tile industry in Australia was very negatively affected by excessive irreversible moisture expansion of some ceramic tiles which led to an epidemic of 'pop up' failures. I believe the failure of the industry to differentiate between good and poor quality polished porcelain will see another wave of litigation that will cost the industry dearly.

Tiles are generally perceived as a hard wearing, low maintenance, easy to clean product. However, some low quality porcelain seems to attract dirt, mark indelibly and generally perform badly. It would be a disaster if the image of tile is damaged by the promotion of all polished porcelain tiles as being equal. **Not all polished porcelain is equal**, and the overselling of poor quality polished porcelain tiles has the potential to damage the whole of the ceramic tile market.

In my work as a consultant on tiling issues, I am finding a rapid increase in complaints about polished porcelain. Frequently the problem relates to the actual tiles and not the installation. The two largest areas of complaint are about the **reflective qualities of the surface**, and **staining**. Though there are still issues with **flatness**, **size** and **colour variation**.

Many of these problems are not being picked up prior to the tiles being installed because the face of the tiles has been masked by a coating of paraffin **wax** applied by the manufacturer to protect the tiles in transit and during installation. This wax means the old "fall back" defence of not being responsible for problems after installation is no longer available. There have been cases where the tile retailer has been responsible for full removal and replacement costs and liquidated damages because of problems detected when wax was removed after tile installation.

On top of this, controversy still rages over the issue of **sealing** polished porcelain, with some manufacturers saying it is not necessary and others recommending it. Not all sealers are equal and according to some industry experts the principal role of the sealer is one of delaying impregnation thus enhancing the prospects of early removal of offending contaminants. In some instances this clouds the issue (sorry about the pun) as the staining of the tiles can then be argued as a failure of the sealer, not the tiles.

I have already flagged some problems with polished porcelain tiles in articles in *Tile Today* "Don't be a slow learner in the tile industry" and "Should tilers charge more to lay porcelain tiles?" Scott Worthington's article "Porosity and Pores" and Tony Stock's article "Monocottura, porcelain and glazed porcelain" and articles by David Graham and others have also added technical data about porcelain. But what is porcelain?

## DEFINING PORCELAIN

Traditionally porcelain has been described as the finest form of ceramic ware. The introduction of porcelain tile saw the ISO introduce the new classification of **B1a Ceramic Tile**, with water absorption of less than 0.5%. Since the nature of porcelain tile has changed rapidly; some tiles marketed as porcelain now have water absorption rates of more than 3%.

Porcelain tile is being presented in the market as the finest form of tile, but the word porcelain is not a definition and it tends to be used loosely by manufacturers and importers, and even more loosely by

some showroom staff. Setting up false expectation in clients by the loose use of terms is poor business as it leads to disappointment and disputes. However, using the right term is difficult when many of the terms are not clearly defined.

Richard Bowman has written in this magazine about the difficulties of selecting test methods because polished porcelain is sometimes very lightly glazed. Also abrasion or loss of gloss may effect stain resistance but ambiguous tile classification may see suspect tiles avoid having to report important characteristics.

ISO technical committee 189 on ceramic tiles, Standards Australia and Tile Associations around the world have not clearly defined the types of tile in the market. Maybe it is time for an expert panel to provide guidance on this matter to ease the confusion and ambiguity. However, defining porcelain would need to involve the other poorly defined words such as vitrified, glazed vitrified, homogenous, full body, and there may well be the need for sub-categories of porcelain. ISO/TC 189

is acting on the problem, albeit slowly, such is the nature of large bureaucratic organisations. For Australia to go it alone, we would probably require extensive independent testing of each batch of tiles.

If those definitions were endorsed by industry bodies such as the Australian Tile Council, TAFE and Standards Australia, and they were promulgated through magazines such as *Tile Today*, some serious litigation could be avoided.

Showroom staff and tile professionals have an obligation to understand their products. If the tiles sold don't perform as expected there can be a loss of faith in tiles generally, and if the problem is in a public place the negative effects are magnified.

However, it is difficult to keep up with the changes as new methods of manufacture are always being tried, new raw materials are used, and tiles vary.

Guidance in the form of clear definitions should see poor performing polished porcelain identified so that appropriate warnings and recommendations can be provided to customers. Disclaimers may help in the case of litigation, but avoiding the complaint is better.

For these reasons it is recommended that all polished porcelain should be put through some simple tests before they are sold. Check if the tiles stain (pencil, texta, coffee), check that the surface reflectance of stock matches the sample, and check for flatness, size and colour variation. Check how easily it scratches. Advise customers about the product's characteristics and cleaning and maintenance issues. Spell out your policy on wax removal. Advise that large tiles require truer substrates. Making a sale that leads to a complaint is no good for anyone. The industry's catch phrase should be **KNOW YOUR PRODUCT AND MARKET IT HONESTLY OR PAY THE PENALTY**.

Colin Cass


## HOW SERIOUS IS THE PROBLEM?

Clearly the complaints lodged with *Tile Today*, Colin Cass, Richard Bowman and David Graham are not the only problems of this kind. Perhaps, they are just the tip of the iceberg.

11.6 million Square metres of ceramic tiles were imported from China in the last financial year. Much of it is polished porcelain.

China produced 3 billion square metres of tile in 2004. There are approximately 2,500 manufacturers, yet comparatively low amounts of tile are exported.

Paul Ricci of Moorabbin Tile has previously stated that the number of



The haze that can be seen on the reflected surface of the tiles can cause complaint. This haze is the result of incomplete polishing, but as there are no standards for polishing of tiles the problem cannot be classified as a defect. However, retailers of tiles could be in trouble if the samples in the showroom reflect differently to those delivered. (Image courtesy of Colin Cass)

Chinese manufacturers geared to export high quality product to these shores, may be as low as 40.

However, the prospect of importing product from China at very favourable rates is a huge temptation, particularly at a time when residential construction is low. A glance at Peter Halliday's report on imports (page 52), which looks in detail at the last six years, reveals that while the overall trends are relatively positive, it's a roller coaster ride.

At this point in time imports are declining in all states, with the exception of Western Australia.

Quality not quantity is a maxim that is frequently espoused in many walks of life. Clearly many importers are buying polished porcelain. I wonder if buyers are conducting the simple tests suggested by Colin Cass. How many sales staff know what the terms double loaded or fourth generation mean in relation to porcelain tile?

As previously stated this article is not intended to be a derogatory attack on Chinese manufacturers. In fact it's interesting to note that according to Mr. Chan Ju-sen the President of Shanghai Fortune Ceramic Co. and ASA Ceramic Co. The industry in China is undergoing a radical change.

ASA Tiles are regarded by the China Building Ceramic and Sanitary Ware Association as one of the 10 leading brands in China.

Mr. Chan Ju-sen recently stated, "Already last year numerous companies went out of business. Out of a total of about 3,000 companies in the sector at least an estimated 20 per cent have closed down. The industry is slowly but surely restructuring, a process that is likely to result in the survival of only the most advanced and best organised companies."

Significantly, Mr Chan Ju-Sen said, "...all the indications are for a rise in production. It will surely take a certain period of time for the market to digest the supply from all manufacturers but I think that in the future the demand will interest the higher quality products, forcing low level productions out of the market."

This can only be good news for our industry.

### ARE WE BEING OVER ZEALOUS?

When we published Peter Hartog's article 'Tiling at the Deep-End' we revealed a serious problem that had caused a number of major failures in swimming pools. The basic problem related to the use of an incorrect PVA that was employed to adhere the mosaic to the mesh.

As a result of the original article and Hartog's second submission 'Tiling at the Deep-End Revisited' we have received messages of thanks from two mosaic manufacturers who have changed their approach in regard to mesh mounting of mosaic.

The lack of understanding in relation to polished porcelain can be absolutely astonishing!

Peter Hartog's company Building Diagnostics Asia Pacific was commissioned to investigate a commercial tiling failure at a hyper market on the outskirts of Cairo, Egypt.

The architect's specification called for installation of 29000 square metres of high quality Italian polished porcelain. The specification stipulated that the tiles should be bedded in sand and cement. The product in question fully complied with ISO B1a that covers ceramic tiles that have water absorption below 0.5 per cent.

The Egyptian tilers asked the French architect to amend the specification so the tiles could be laid in thin-set adhesive. The architect refused, claiming that the contractor was seeking a variation and an opportunity to earn more money.

Within one year large areas of tile were breaking away from the sand and cement bed. Peter Hartog and other experts recommended the removal and replacement of the entire 29000 square metres. It is anticipated that the work will take one year. This problem presents a mammoth logistical challenge to the owners of the hyper market who have to relocate whole departments on a regular basis.

The owners of the hyper market are considering the use of granite in

# DESIGNBUILD

## CONTEMPORARY COMMERCIAL TILING AWARDS



## DESIGNBUILD CONTEMPORARY COMMERCIAL TILING AWARDS ENTER NOW!

Diversified Exhibitions Australia and Australian Tile Publications invite architects, interior designers, builders, tile retailers and fixers to submit entries in the Designbuild Contemporary Commercial Tiling Awards.

Our objective is to display how tile is used in our built environment. All entries will be displayed on concept boards at Designbuild 2007 in Sydney.

### ENTRY IS FREE!

#### Entry conditions:

- 1 The project has to be specified by a registered architect and completed after 1st July 2005.
- 2 Entries must feature ceramic tile eg porcelain, monocottura, mosaic, klinker etc. Combinations of tile, stone, metal and glass are eligible.

We require: A brief overview of the project, that provides as much detail as possible about the project and the specified tiles. This should be accompanied by a minimum of three high resolution images; JPEG, EPS, or in TIFF format.

A proof of the entry will be provided.

Presentation: The award winner will receive a valuable award sponsored by Diversified Exhibitions Australia and Australian Tile Publications that will be presented by a member of RAIA at a cocktail event which will be held during Designbuild.

Call Fiona Bremner or Anthony Stock on

# 03 9888 2246

if you wish to promote ceramic tile in the Designbuild Contemporary Commercial Tiling Awards.

preference to polished porcelain.

Ironically one of the problems facing importers of Chinese polished porcelain relates to determining if a product is actually porcelain as defined by ISO B1a.

Michael Patterson from Davco, Singapore, reports that only 2 per cent of tiles laid in China are laid in thin set adhesive. In general tiles are laid in sand and cement with a loose topping of a cement additive. In many instances this method works because in spite of the fact that the manufacturers describe the material as porcelain, many of these tiles have porosity levels of 3 per cent or greater. The surface may be polished, but this process alone does not define the products true nature.

Remember Giorgi Prodi's comment in regard to polished porcelain manufacturing processes employed in China which, "leave(s) many impurities on the tile surface, so the Chinese producers have to polish these tiles to obtain higher quality."

On the one hand we have an architect making an error which resulted in 29000 square metres of high quality polished porcelain being laid in sand and cement in preference to thin set adhesive. On the other hand we have numerous examples of polished porcelain, laid locally, which either cannot be cleaned or maintained adequately, or suffers in terms of appearance because of polishing marks or issues related to reflectance of light.

Clearly there is a problem, one that needs to be addressed by the industry at large. While the project in Egypt is remarkable because of its size, the impact on our industry created by a sustained series of smaller claims could be very detrimental.

### A POTENTIAL REMEDY

In the next issue of Tile Today we will publish a glossary of descriptive terms that relate to all types of porcelain, which will be accompanied by simple generic descriptions.

A bonus wall chart will be enclosed, which will be circulated to every tile shop and tile fixer. Terminologies/Products described will include:

- Soluble salts
- Single loaded
- Double loaded
- Multipipe
- Micronised powders
- 1st, 2nd, 3rd and 4th generation materials
- Super polished/Nano Clean Technology
- Unpolished
- Glazed porcelain

According to our sources exciting new decoration processes and products are being released in Italy. We cover one or two of these developments in "Intelligent Tiles - Avant Garde Materials & Processes" on page 12. The bar is being raised in China. There is an abundance of excellent product available, careful scrutiny and buying policies should sort the good from the bad and the ugly.

Tony Scotland of Brooks Moylan said, "In the last 12 months we have sold substantial quantities of polished porcelain - with no problems."

Tony is excited about Brooks Moylan new super polished porcelain. Find out more about these and other porcelain products in issue #53 of Tile Today. 