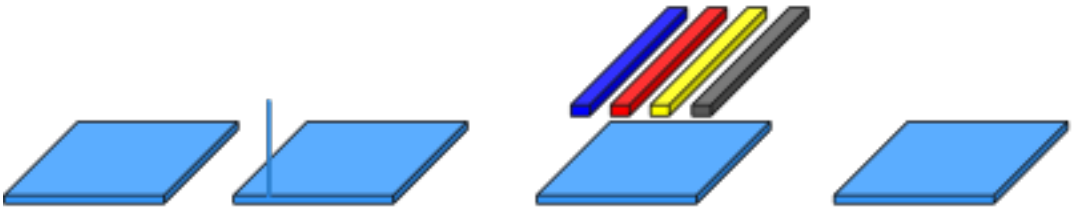
# Ink Jet Ceramic Tile Printing Analysis - 2014

The ceramic tiles market is a market for home and commercial decorative tiles of varying sizes, which are made of clay, baked hard and then glazed prior to printing. Printing takes place with a ceramic pigment containing ink that is then further baked in a kiln, which causes the ceramic pigments to become molten and integrate to the glaze substrate in a glass-like permanent 'frit.' Printing needs normally to be fully integrated to kiln-driven pre-print manufacture, and to the kiln-driven print-fixing stage.



## *Analog Market & Specifications:*

The market for ceramic tiles represents around 10-11 billion square meters ($M^2$) per year globally. The total market is growing at around 7% per year a rate driven beyond the growth rate of the underlying construction market by the ability with digital printing to create new demand among new and old consumers for products whose appeal goes beyond traditional ceramic tiles and markets of the past (see digital drivers below). Ceramic tiles is one of four major sectors of the ceramics industry, the other three being: sanitary ware (toilets, basins), tableware (dishes and cups) and refractory materials (non-metallics able to withstand very high temperatures). Of all the sectors tiles is the biggest and most valuable. A small percentage of tiles are porcelain, which is a material that is rendered impervious to external agents during manufacturing without the need to glaze, though they can be glazed for decorative purposes. These tend to be lower value tile products.

This is I.T. Strategies' best estimate of the current regionality of ceramic tile manufacturing:

China 50%
Europe 15%

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|---|---|
| China | 50% |
| Europe | 15% |
| South America (Brazil) | 10% |
| Rest of Asia | 25% |

The ceramic tiles market collapsed with the effects of the great recession on construction markets from 2008, though growth has picked up during the last two years back to its original organic growth rate. But in the meantime European manufacturing, which is almost entirely focused on Spain and Italy, went down by approximately half with Italy and Spain going down to about 350 million $M^2$ and 380 million $M^2$ respectively. Meanwhile China has now become the epicenter of digital ceramic tile printing in terms of numbers and capacity, though not in terms of output quality.

Analog ceramic tile printing today is mostly undertaken using specially adapted flexo-type silicon rollers. A set of five rollers might cost 5,000 EUR. Almost no new analog equipment is now sold in this market, and the industry is well on its way to full substitution by digital print systems. Some say that the penetration rate as a measure of productive capacity is now over 40%. A typical analog production line can generate between 5,000 and 10,000 $M^2$ per day if it does not stop. The speed is determined by the level of print coverage and the quality of the print coverage. This tends also to relate to tile value. The industry is motivated to higher value in core markets so that average daily productive capacity is likely to tend to the lower end of the scale. Ink coverage is between 4 and 8 GSM, with an average around 6GSM. There are said to be about 10,000 kiln lines for manufacturing ceramic tiles worldwide including China. Ceramic tile printing lines are on average about 1.8M wide, though narrower (for test and sample printing) and wider (for multiple lines in different formats and sizes) lines are also used.

In general in the analog tiles market as it has developed until recently almost every tile manufacturer uses similar equipment and uses similar materials addressing a similar client base. In other words, until digital printing arrived, the market offered few avenues for differentiation of product or value. There is a sense that the dominant and driving grouping in the productive industry is of glaze chemistry manufacturers who are also sometimes the ink (analog and digital) manufacturers. That is not to suggest that the print equipment manufacturers are not also highly innovative with ink jet. It is to be noted that glaze chemistry in volumetric terms is a market up to ten times as big as the ink market. On the other hand, glaze is relatively unspecialized and is sold at EUR 5-7/KG where digital ink jet inks are sold around the EUR 20 level.
This is a representative list of the main ceramic glaze and ink manufacturers:

- Torrecid: www.torrecid.com (Spain)
- China Glaze: www.china-glaze.com.tw (China)
- Colorobbia: www.colorobbia.it (Italy)
- Esmalglass-Itaca: www.esmalglass-itaca.com (Spain)
- Ferro: www.ferro.com (USA)
- Smalticream: www.smalticream.it (Italy)

These are some smaller participants/claimants:

- Inco
- Zschimmer & Schwartz
- Endeka
- Vidres
- Metco
- Megcolor
- Color Esmalt
- Colores
- Fritta
- Chimigraf
- Bonet

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## *Digital Market Size:*

This is I.T. Strategies' current summary of market size and dynamic to 2017. Some observers state that the analog ceramic tiles production market whose underlying extent is assumed at about 10,000 kiln lines globally corresponding to one print system per line, is already over 40% penetrated by digital systems, and our numbers reflect this. Our projection assumes an 86% penetration by 2017. No one is buying analog print systems any more and the use of digital printing has become a basic term of competitive viability. In Europe penetration has nearly reached its maximum extent with penetration rates of close to 90%.

Our projection puts vendor revenues for systems and ink at $713M for 2012 rising to $1.3B by 2017. We assume a 9% decline in hardware prices per year and an 8% decline in ink prices. In 2012 hardware is more valuable than ink by about 20%. By 2017 ink has come to have five times the value of hardware. That is on the hardware side a function of market saturation as much as of price decline for hardware. At this time China is experiencing a boom in sales of systems. That will inevitably start to cool even by next year.

The action in digital has now shifted to Brazil, China and the rest of Asia. In China domestic digital print system manufacturers are selling at a rate of close to 100 per month mid-2013. This rate of sale will moderate, but China has 50% of world ceramic tiles manufacturers, and has a lot of ground to make up in digital. In China most digital systems are likely to be of Chinese manufacture, but the high end of that large market will still require a certain proportion of what are perceived today to be higher quality systems made in Europe. Some European system manufacturers are even said to be examining manufacture in China.

Globally ink jet inks from the European chemistry manufacturers are currently dominant and seem likely to remain so given the specialized nature of the ceramic pigments of which these companies are the lone suppliers, and which are very specialized products. Additionally the same chemistry companies dominate the glaze chemistry supply to much of the world in terms of channel control going to secure the ink market, though in China most glaze chemistry is in fact locally supplied. Chinese glaze manufacturers do not have an extensive capability today to develop and supply ink jet inks, which are highly specialized chemistries that took ten years to develop in Europe.

The ink jet ink market for ceramic tile manufacture has a total size at full market penetration at current pricing of over $1B revenue to suppliers, with an underlying market organic growth rate of around 7% driven by market extension, not just construction industry health. The prices of inks are between $20-30/KG. For ink jet ink that is relatively low and it is also in decline as a function of fierce competition between suppliers mostly from Europe.

The dynamic of this market is very fast.  Growth in China has dramatically accelerated unit growth in 2012 and will result in market saturation probably within less than five years (compared to earlier I.T. Strategies Forecasts). One of the likely consequences of this dynamic may be also a rapid consolidation resulting in a very few successfully dominant companies in hardware and separately in chemistry. The outcome is as yet far from settled.

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