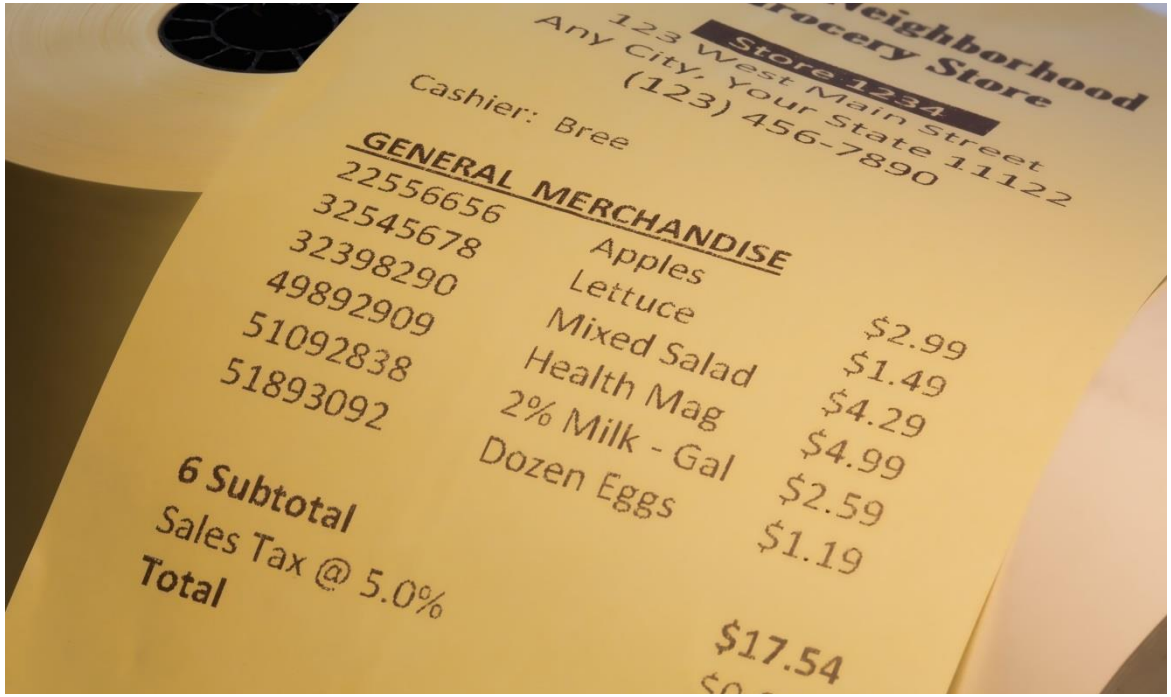


Thermal paper suppliers: Are you ready for the next wave of disruptive technologies?

Cover image courtesy of Appvion, Inc.

Introduction

Many of the end-use markets served by thermal paper are vulnerable to disruption or substitution through the advent of new technology. To date, thermal papers have survived as an important specialty paper sector, thanks to their ability to evolve according to the demands of technology, and the changing needs of the end-use markets.

For example, at the end of the 1980s there was a boom in demand for thermal fax papers. This was brought to an end by the emergence of laser and inkjet fax machines in the 1990s. By 1992, thermal fax paper consumption had peaked and began to decrease. Non-fax-based applications were able to compensate for the decline in thermal fax paper demand, however. New applications and markets – such as tag, ticket and label – sustained demand for thermal paper, and are still showing steady growth and diversity.

The next wave of disruptive technology emerging is electronic receipts. While the technology has already arrived, to date its impact has been minimised by a slow take-up by retailers, and a perceived or otherwise reluctance for the consumer to emthermal thermal paperrace 'paperless' receipts.

The questions for both suppliers and converters of point-of-sale (POS) thermal papers are:

- When will electronic receipts become the 'norm'?
- What will the impact be on overall thermal paper demand?
- What will be the impact on my business?
- How to identify and exploit new opportunities?

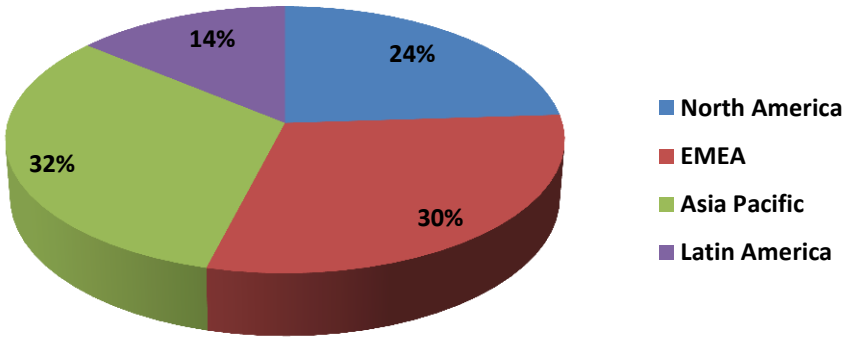
This paper gives some initial thoughts in response to these questions, by exploring current supply and demand for thermal paper; looking forward in terms of future demand; and assessing whether thermal paper will continue to survive in the years to come.

To assess the impact at a company level, however, will require the development of specific market data and analysis of the opportunities offered, and/or the potential threats to an individual thermal paper business.

Supply position

Thermal paper production is, in papermaking terms, a small and specialist area, served by a discrete number of players worldwide. Global production accounted for just under 1.4 million tonnes (2012). Production in Asia accounted for 32% of the total.

Figure 1: Global production of thermal paper by region



Note: EMEA = Europe, Middle East and Africa
Source: Smithers Pira

The Asia-Pacific market has been traditionally the domain of the Japanese, with Mitsubishi, Ricoh, Oji and Nippon being the largest players. China has been developing a thermal paper sector and there are a growing number of Chinese producers. Their output is currently serving local markets, and is not seen as a threat to the European or North American market at present (particularly for the top coated paper). With further increases expected and continued improvements in product quality, however, Chinese thermal paper production may be a developing competitive threat to the more established players.

The other major player in Asia-Pacific is Hansol, based in South Korea. The company has recently increased its presence in Europe through the acquisition of Schades, a Danish thermal paper roll converter; and Terol, a thermal paper label producer.

Although many of the European operations, like Mitsubishi Hi-Tec and Ricoh, are owned by Japanese companies, the world's largest producer is Germany's August Koehler. The firm has continued to invest in its thermal paper operation in Kehl and supplies products globally.

The US market is dominated by Appvion. Kanzaki (part of Oji Paper) and Ricoh represent the other major US producers. Other smaller producers include Nashua, now more of a converter than producer, among others.

In South America, the major player is Oji Ope. It currently holds 70-75% of the thermal paper market in Brazil.

Product portfolio

Thermal paper is printed using thermal transfer or direct thermal printing processes. Thermal transfer printing is mainly used in logistics applications where print durability is required. These include track and trace; product identification; logistics; and industrial end-uses in which environmental, physical, and chemical challenges mean the printed image must be robust.

Image: PRNewsFoto/Appvion, Inc.

Direct thermal printing is used mainly in retail end-uses and logistics. Benefits include ease of use, and relatively cost-competitive printing and scanning equipment, as paper is the only consumable. It is also possible to achieve good quality barcodes at high speed. The shelf-life of the print is usually short, although special thermal grades extend the durability of the print. Most retail POS demand is for 48-55gsm thermal paper grades.

End uses

Although both direct thermal and thermal transfer methods are relatively mature, market volumes are increasing in some regions due to growth in retail and manufacturing, a trend towards smaller packages, and online shopping.

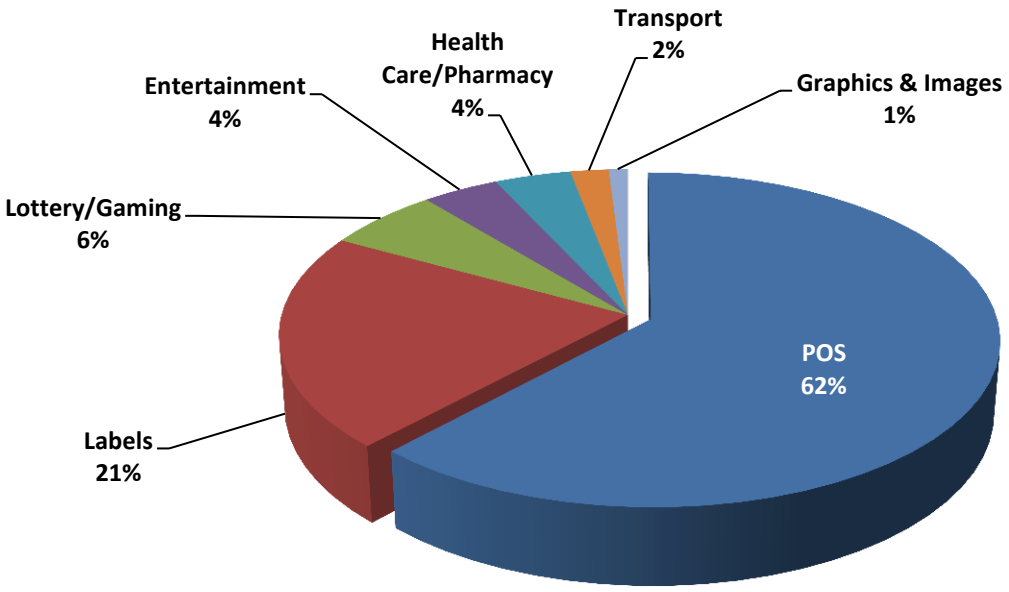
POS applications account for over 60% of global thermal paper demand. Thermally printed labels accounting for over 20% of demand have and continue to experience growth, particularly based around increasing demand from logistic and distribution-based applications.

There is continuing demand for sustainable thermal labels, which means recyclability and lightweighting requirements are ongoing. Double-sided thermal printing and the need for improved readability have stimulated label product innovation, although the increased need for durability has probably had greater impact on filmic label innovation.

Thermal paper labels presenting contents information on consumer products and in-store point of purchase receipts remain constant, due to a combination of economics, mandatory regulations and, importantly, preference. Consumers like hard copy proof of purchases, and many shoppers like to scrutinise labels in order to understand both the product contents, and the product and packaging provenance. In stores, retailers use label displays to drive impulse purchasing and receipts for promotions.

The breakdown of thermal paper by end use globally (2013) is shown below in Figure 2.

Figure 2: Thermal paper demand by end use



Future demand

Global thermal paper consumption is linked to the economic climate. Demand was severely hit by the economic recession of 2008-09, as consumer spending reduced and travel plans were put on hold. Unlike other printed paper products though, thermal paper demand has returned to pre-recession levels. Demand levels are increasing in the developing economies – for instance, in parts of Asia (notably China), Russia and Eastern Europe. By contrast, markets in the developed economies are static or experiencing only limited growth. Western Europe and North America are not expected to show any growth over the next five years.

The two largest end uses – labels and POS – are expected to grow throughout the next 3-5 years. Label use is expected to increase in both the developing and developed economies. Top coated labels in particular are expected to grow over the next five years. Barcode type printed labels are expected to show the highest increase.

"Complete substitution of the POS thermal paper product will depend on a number of major factors, which are likely to take years to happen."

Global POS growth is linked to the continued growth in the developing economies, notably China. POS as an end use is being subjected to a number of potentially disruptive technologies related to electronic substitution, however. These technologies could pose a significant threat to the POS market in the medium-to-long-term.

Nevertheless complete substitution of the POS thermal paper product will depend on a number of major factors, which are likely to take years to happen. These include:

- The 'cashless society'
- The availability and adoption by all of mobile communication technology
- The response by retailers to e-receipts.

The supermarket sector will likely be the key determinant of when the tipping point is reached between paper and e-receipts; but when and the degree of impact will need to be determined.

About Smithers Pira

Formerly Pira International, Smithers Pira is the worldwide authority on packaging, paper and print industry supply chains. Established in 1930, Smithers Pira provides strategic and technical consulting, testing, intelligence and events to help clients gain market insights, identify new opportunities, evaluate product performance and manage compliance.

Smithers Pira works with speciality papers suppliers to identify profitable growth opportunities. Services include bespoke consultancy reports

Dr Graham Moore

Over thirty years' experience of the paper industry, encompassing process and product knowledge, product performance, recycling, deinking, wet end chemistry, and strategic futures related research. Developed and initiated the Paper Perspectives research programme which assesses the impact of a range of issues and trends on the future demand of a range of paper products. Products have included office paper, magazines, thermal paper, promotional print products and commercial inkjet.

Current activity focused on working with individual paper companies to successfully develop and exploit higher margin products and markets.

Author of many papers and publications, including a number of books, e.g. Wet End Chemistry Strategies, Non Wood Fibres and Pulp and Paper Five-Year Technology Forecast. Contributed to other publications including the EC COST publication, 'Paper Recycling' and TAPPI's Paper 360 ◦ journal.

A member and Fellow of TAPPI (USA), member and National Chairman of PITA (UK) and a member and National Chairman of PITA (UK) and a member of PRIMA. Represented the UK on the European COST programme for Forests and Forest Products and has acted as an evaluator for the EC and the Finnish Academy of Science.
Has also acted as an external examiner for Manchester and Reading Universities in the UK and been an invited lecturer at the pulp and paper schools of Lappeenranta University of Technology in Finland and Seoul University in South Korea.

Contact Graham
Phone +44 (0)1372 802127
E-mail gmoore@smithers.com
Web www.smitherspira.com
Address Smithers Pira, Cleeve Road,
Leatherhead, Surrey, UK, KT22 7RU

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Smithers Pira works with packaging suppliers to identify profitable growth opportunities. Services include bespoke consultancy reports.

If you have a technical or market related question about the packaging, printing or paper industries, challenge our experts to find you the answer.

UK (Head office)

Smithers Pira
Cleeve Road, Leatherhead, Surrey
KT22 7RU
United Kingdom
Tel: +44 (0) 1372 802000
Fax: +44 (0) 1372 802079
Email: publications@smitherspira.com

US office

19 Northbrook Drive
Portland
Maine 04105
USA
Tel: +1 207-781-9800
Fax: +1 207-781-2150

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www.smitherspira.com