



Security papers and cardboards are used to produce security documents such as bills, checks, passports, identification cards and driver's licenses

Security paper and cardboard growing in the same rhythm as the evolution in demand

The quality and security contained in products and the reliability of the supplying manufacturer are determinant for competitiveness in the market

Of all the printing products produced in Brazil, packaging accounts for the greatest share (40.2%). Publishing products (earmarked for books, magazines, manuals and guides) represent 29.2%, while security, tax and document forms correspond to 8.4%, as reported in a study divulged by the Brazilian Printing Industry Association's (ABIGRAF) Department of Economic Studies (DECON).

Safety paper and cardboard are the materials used to produce security forms. Breaking down the definition of "security", these papers and cardboards are those that contain specific elements that can be identified on the paper produced, such as watermarks, fibers only visible under ultraviolet light and reactive chemical agents. "They are

papers used to produce security documents like bills, checks, passports, identification cards and driver's licenses," said researcher Maria Luiza Otero D'Almeida, responsible for the Institute of Technological Research's (IPT) Pulp and Paper Laboratory. This type of paper can also be used in other documents, including diplomas, street-parking vouchers, certificates, stamps and tickets, such as those used for events.

All documents mentioned also contain security elements in their printing. In other words, these products combine security elements present in the paper and in the printing of the document. The combination results in the security desired. "A document's level of security varies according to type and number of security elements



Maria Luiza: "a document's level of security varies according to type and number of security elements incorporated into the paper and in the printing"

incorporated into the paper and in the printing', said Maria Luiza.

Also according to IPT's researcher, the quantity of security elements that can be introduced during the paper or cardboard production process is significantly smaller than what can be incorporated in the printing of the document. "This is because in the printing process the elements can be incorporated in the print design (such as numismatic background and microletters), printing inks (invisible ink, erasable ink, bleeding ink, among others) and finishing (peeling, in the case of adhesive labels), as well as holographs, which can also be put in the document."

Daniel Grassiotto, commercial manager at Filiperson, says that the main function of a security paper or cardboard is to ensure a given guarantee of authenticity to the document. "Therefore, the main advantages between the segment of security paper and printing paper in general include differentiation, exclusivity and control over supply," he said. For these exact reasons manufacturers of these products maintain maximum secrecy over their characteristics. "This is where one of its main security aspects resides," he said.

Participation of the Brazilian industry

In the paper area, the main emphasis of production in Brazil are commodities, which makes the country not very active in terms of specialty papers. Within this niche, security paper is one of the segments that stands out the most. However, obtaining figures as to the actual size of this particular segment is quite difficult. As explained by Multiverde Papéis Especiais' CEO, Marcus Vinícius Melo, customization and security of products makes it difficult to measure demand and production in Brazil. "Additionally, there is no relation

or entity that controls these figures, considering the volatility of niches that utilize products in given moments and later discontinue their use," he said about the lack of specific data.

This is truly a unique segment, where paper prices are not the main decision element when it comes to buying and choosing a supplier. Product quality, reliability of the manufacturer supplier and security contained in the paper are key factors.

Security printers are the main target group of security paper and cardboard manufacturers. They base their activities on the same quality and security requirements that guide the producing industries. "Due to the imposition on the part of their clients, the end recipients of print papers, security printers adopt stricter and more technical standards of conduct and logistics," said Grassiotto in relation to regular printing companies. "From the paper consumer's point of view, the clear objective is security that the end product will not be falsified or lost at the source. For such, a certain level of physical security and well-assisted production is necessary, in order to eliminate the possibility of misappropriation or loss during production," said Melo.

The array of possibilities for satisfying all sorts of demand is extensive. According to Filiperson's commercial manager can be cited as examples: the insertion of colored and/or invisible and UV reactive synthetic fibers in the stock during the production process; the use of chemical elements in the paper's formulation, allowing to check authenticity through the use of reagents; the insertion of magnetic strips, star lights or other visual elements in the stock; the composition of watermarks via localized densification or thinning of fibers in the stock; the use of different pigments such as thermo-chromatic, photo-chromatic, iridescent, fluorescent, phosphorescent and others; the insertion of elements in the stock that allow, with assistance from specific equipment to, at any time, determine the paper or cardboard manufacturer; the production lot number and date; the insertion of non-scratching elements in the stock, causing it in the case someone attempts to alter the data printed on it, to expose its fibers or even reveal colored stains where it was scratched, and many other security elements are examples of potential methods for satisfying the needs of clients.

"Upon combining a few of these items at the client's discretion, depending on the type of document, we can have an infinite number of different types of security paper and cardboard. Also, if we consider that the watermark can have infinite graphic forms, with clear, dark or mixed nuances, the number of combination possibilities is incalculable," said Grassiotto.

PAPER CURRENCY SUFFERS THREATS FROM OTHER MATERIALS, BUT MAINTAINS A STRONG POSITION IN THE BRAZILIAN MARKET

Of the products made using security paper, bills stand out as the product that suffers the most competition from other materials. In 2000, for example, Brazil introduced plastic bills in the market. The new material did not move forward, and bills printed on fiduciary paper, which possesses a firmer and rougher texture than common paper, gained space once again.

According to the Brazilian Central Bank (BCB), the two substrates (paper and plastic) are viable for producing bills, both with technical justifications for opting for either of them. It is necessary to point out that each one requires different handling on the part of people, as well as adjustments to equipment and systems for counting, authenticating and storing bills, which can be a key factor for obtaining the specific advantages of each substrate. Any change leads to adaptation costs for the public and players in the supply chain. BCB reserves the right to observe the evolution of these technologies.

The growing use of credit and debit cards are other threats to the use of paper money. However, bills are far from being totally substituted. Also according to BCB, the Brazilian Real (R\$) is consolidated as a strong currency, used more and more in daily transactions and as store of value.

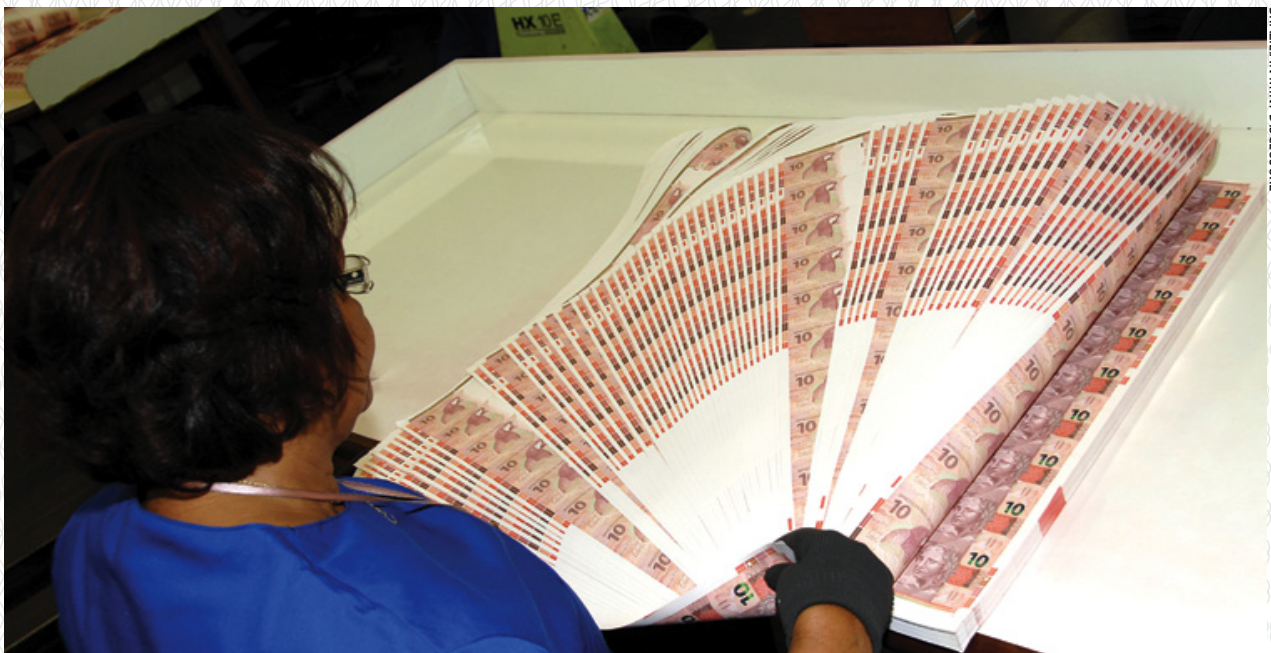
The recent decision to launch the Second Family of the currency is proof of this and was made with the objective of equipping bills with graphic resources, and more modern anti-forgery elements capable of continuing to ensure the security of Brazilian money in the future. It's important to point out that the Real bills from the First Family will continue being valid and will be substituted

gradually, as they suffer their normal wear and tear.

Brazil's Mint House (Casa da Moeda do Brasil - CMB) is responsible for satisfying the demand for currency in the country. For over 300 years, the state-owned company is responsible for the production of Brazil's money supply. In practice, the CMB acquires security papers through international public bids for use in various security products, maintaining direct contact with manufacturers, producing the respective supply agreements, as explained by the Brazilian Mint's Matrices Department superintendent, Joaquim Paulo Monteiro.

In terms of requirements related to this type of paper, it informs that "each raw material" requires distinct specifications, compatible with the technical requirements and premises of the respective products to be produced. But in general, raw materials comply with standards adopted internationally and are an integral part of contracts." Monteiro explains that, over the years, the characteristics of raw materials have been complying with requirements continuously perfected in CMB product projects with the objective of updating the set of their security elements, providing the appropriate level of security to new situational requirements. "In satisfying these procedures, raw material suppliers have been complying with new requirements that overlap previous ones, adequately contributing to this objective," he said.

The supply of paper money is another aspect that complies with contractual requirements and is managed by CMB. In turn, security schemes comply with standards normally in effect for the transit of valuables.



BRAZILIAN MINT DISCLOSURE

For over 300 years, Brazil's Mint has been responsible for satisfying the demand for currency production in the country

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With all these characteristics, security paper and cardboard can be considered exclusive, that is, customized for each particular case – another factor that drastically differentiates them from traditional printing paper where the lots produced are enormous and the standards are limited.

What also sets it apart from regular printing paper is that there exist very few security paper makers in Brazil. “Eventually, a few companies try to enter this market, be it importing or producing these papers, but it is precisely this fewness of suppliers that helps the selling process controlled by security papers, making them even safer”, said the executive at Filiperson.

Decreasing demand is offset by the arrival of new niches

A trend certain to establish itself in the security paper and cardboard segment is the falling demand due to the substitution of new types of substrate, such as the

increased use of credit and debit cards in relation to the use of money, which aspect has a direct effect on the consumption of paper money.

This scenario is seen in the global market. According to John Maine, vice-president of graphic papers at RISI, the security paper segment in the United States is small and lessening. “This is a market that currently has a production of less than 8 thousand tons. The trend in this segment is that it is shrinking, in view that just a few years ago, production exceeded 40 thousand tons,” he said. The perspective of shrinking is also based on the electronic technology, which is substituting the need for many security documents, such as stock certificates and property deeds.

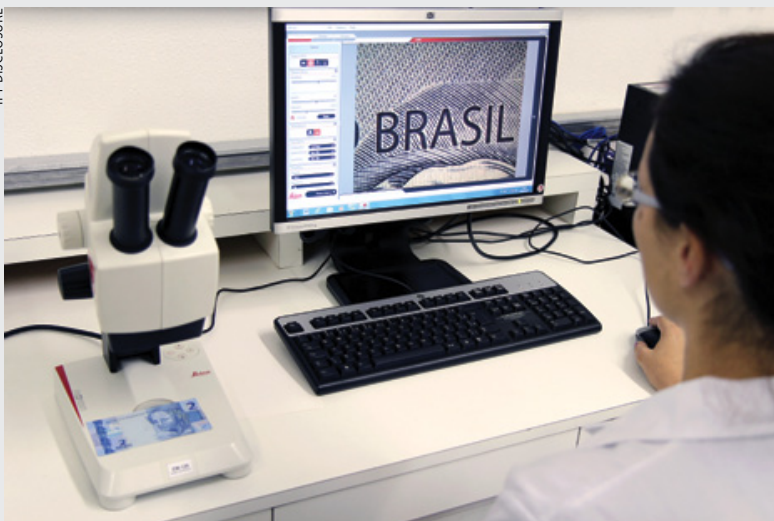
On the other hand, new niches are surfacing, where security papers are necessary and stand as important solutions. Maria Luiza, researcher at IPT, believes that the fact that the segment requires special technology and produces high value-added products does not constitute an impediment for its growth, for there is growing – and very specific – demand for this type of product.

The opinion of Filiperson’s commercial manager follows the same direction: “for the past 15 years, a lot has been said about this threat to security papers. There’s no doubt that many products that were produced using security paper now come in plastic or had their productions significantly reduced, such as bank account checks. However, during this same period many other documents of high demand began to require security items incorporated, such as security seals, safety seals, tickets and others. Therefore, we believe that a change is going on in security paper applications, besides the natural progression in the utilization scale of traditional documents, such as IDs, certificates and authenticity documents.”

The 2013 result for Filiperson confirms the commercial manager’s optimistic vision. Last year, the company boosted sales by 13.5% in the security paper segment and the perspective for 2014 is that sales will increase 10% over 2013 figures.

To continue competitive in this market, the company invests heavily in innovation – be it in materials, acquiring production and control equipment, modernizing facilities, or yet, boosting human capital, maintaining teams trained and up-to-date on the latest market technologies. “Security papers have been evolving at the same rhythm as the evolution in demands. For every new security technique, there is always a new forgery, tampering or counterfeiting technique. Therefore, it is necessary to always be innovating, not only introducing new security items, but also improving existing ones,” said Grassiotto.

IPT focuses mainly on the identification of security elements present in documents and in the development of better methodologies for them



Multiverde also follows new demands closely and bets on innovation to remain competitive. "No company survives if we don't have innovative improvements in various fronts (raw materials, service, production, processes and controls). Multiverde seeks flexibilization with utmost responsibility and looks to understand and satisfy the focus of clients in order to jointly come up with long-lasting solutions," said Melo.

Multiverde's CEO informed that the company's performance in 2013 was excellent. "We grew a lot, conquered important opportunities and established ourselves in some of them." Our goals for 2014 are very aggressive and focus on sustainable growth. "We are absolutely focused in consolidating our company as a specialty paper maker," he said about the strategy, without going into any details.

Production process: another unique aspect

The specificity of security paper causes every productive process to be different from common graphic papers - beginning with lot size. But the differences are not limited to volume produced: the raw materials of security elements are mostly imported. "The production control systems, wastepaper generation and cuttings, as well as the destruction of excess production, are much stricter and complicated. The production teams involved, as well as quality control, finishing and logistics, are all different, said the commercial manager at Filiperson. Grassiotto pointed out that even production scale of these papers is concentrated in periods when only these papers are produced and access to the production, finishing and logistics areas is controlled.

The equipment used to produce security papers and cardboard also have peculiar characteristics. "Machine characteristics are very specific, offering flexibility to use different components and raw materials," said Multiverde's CEO.

In addition to the paper machine being adjusted to the process, Filiperson possesses four different coaters with totally different technologies; equipment for coloring fibers; sprayers, and some specific machines that go with the paper machine. "The main suppliers of technology, equipments and raw materials are European, Asian and North American," said the commercial manager.

According to IPT's researcher, these past few years were marked by a series of evolutions in the segment of security products. "It is an area in constant evolution, driven by a market that requires solutions to prevent or minimize forgery and/or tampering of documents, which leads to increasingly sophisticated products and, consequently, the technological development of the segment overall," she said.

Although it is difficult to pinpoint a particular aspect



that truly stood out in terms of technological evolution, Maria Luiza says watermarks would be one of them. "Today, they present combinations that in the past would be considered impossible to do. Even so, the number of new features is even greater in printing and finishing operations," she said.

At the helm of IPT's Pulp and Paper Laboratory, she says that the institute focuses mainly on the identification of security elements present in documents and in the development of better methodologies for them. "IPT has a proven capability in this area and is invited a lot to prepare conformity reports of security documents in public bids," she said. "We also participate in important technical committees in the segment, such as ABTCP's 'Security Paper and Cardboard', ABTG's 'Security Documents' and ABNT's 'Forensic Sciences Special Studies'."

Maria Luiza also said that the agendas/topics discussed in the studies committees vary considerably. ABTCP's "Security Paper and Cardboard" committee recently concluded a standard for determining watermarks, the objective of which is to help identify the presence, or not, of watermarks in documents based on differentiating between potential types of images. "The standard generated a lot of controversy, however, at the end of the process, the text prepared was approved by everyone in the committee," she said, satisfied with the work done in favor of the segment.

After having been approved by the members of the Paper Studies committee of ABNT/CB 29 – Brazilian Technical Standards Committee for Pulp and Paper, the project ABNT NBR 14928:2003 for determining the presence of watermarks in security paper underwent a national consultation process and became a standard effective November 2013. ■

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