

THE CURRENT SIGNIFICANCE OF TONER POWDER USED IN THE PRINTING HOUSE

Usmonov Isroiljon

e-mail: isroiljonusmonov@gmail.com

master, Andijan Machine-Building Institute, Andijan city,

Umarova Mavludakhon Nazirovna

e-mail: umavludakhon1970@mail.ru

Ph.D., Associate Professor, Andijan Machine-Building Institute, Andijan city,
Uzbekistan.

Annotation

This article mainly discusses the importance of toner in powder, which is widely used in printers, copiers, and printing houses.

Today the number of printing houses in Uzbekistan exceeds 150. It follows from this that if the toners used for printing are not produced or purchased in sufficient quantities, the printing machines will stop working. This leads to unemployment, lack of access to the information people need, negative impact on the productivity of enterprises and organizations, and so on.

However, it is believed that this product - toner - is mainly produced in several countries, and they vary in composition and quality.

Key words:

Toner, powder, copier, printer, typography, font, size.

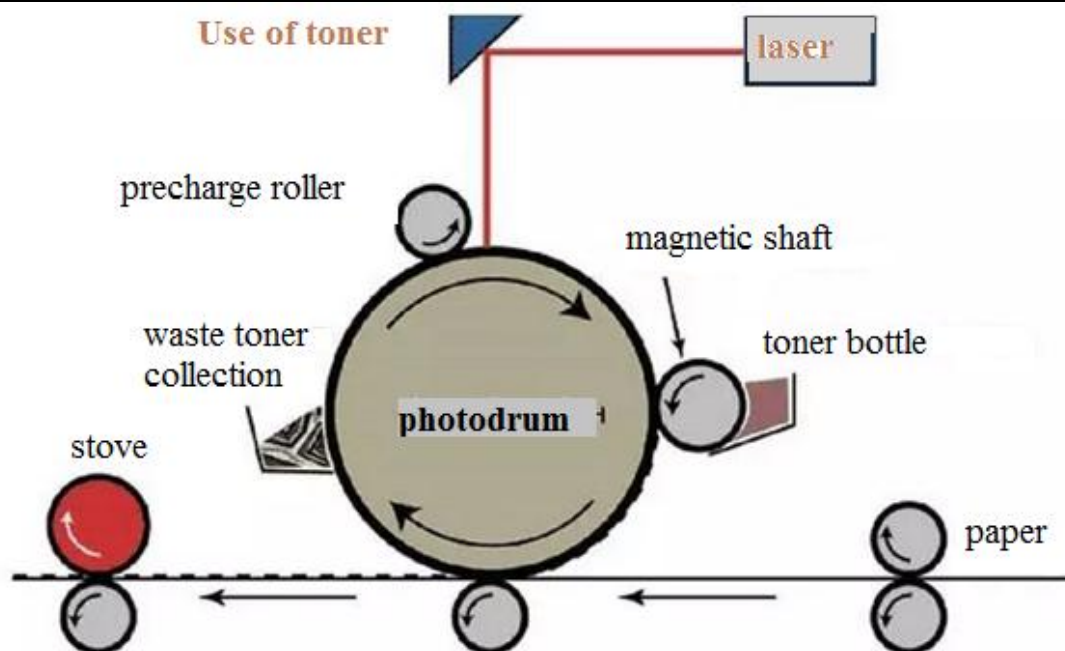
In today's fast-paced 21st century, toner has become one of the leading office supplies in the world. This is because hundreds of printers, copiers and scanners, such as information technology equipment, are widely used in various organizations and production offices. For this type of equipment, of course, a toner product is badly needed.

A **toner** is a black or colored powder with special properties, which is transferred using the electrographic principle to a specially charged photodrum in advance and forms a visible image on it, which is then transferred to paper.

The general definition of toner is roughly as follows - it is a fine powder that is used in a dry electrophotographic process (xerography) to develop a latent image on a photoreceptor and form a visible image on paper (or other material).

The toner in the cartridge is mainly used to print the required information on white paper. Its function is illustrated by the following example, which describes the process of applying toner to a laser printer cartridge:

1. The pre-charge shaft charges the drum with a charge opposite to the toner.
2. The magnetic roller "scoops" the toner from the hopper and transfers it to the surface of the photocell in the places where the laser "painted" the image for printing.
3. Powder from the drum falls on the paper, and that into the oven, where the text or picture is fixed under the influence of temperature.
4. Remaining paint residue on the surface of the photo roll is transferred to the waste compartment.



Many indicators affect the consumption of toner filled into a cartridge. The main ones are: font, its size, saturation (bold). It is logical that the larger the size and the selection with a more saturated color is applied, the consumption increases. For example, the use of "bold" letters entails a reduction in resource by a quarter. With the right approach to the print setup process, you can reduce the use of the amount of powder by a third.

Toner can be used not only in printers and copiers as mentioned above, but also in large-size printing machines for newspapers, publications, brochures, magazines, etc., is widely used in printing.

POLYGRAPHY is an industrial enterprise that produces printed products (books, magazines, newspapers, posters, letterheads, etc.). In ancient times, brochures were written mainly in handwritten form. In the East, paligraphers copied manuscripts in white, artists decorated them with ornaments, and binders sewed and sculpted pages and published them as a book. The first experiments on book printing were carried out in China in 1041-48. (Bi Shen).

He first printing house was in Germany. According to Gutenberg in 1445 it was established. The first printed book in Turkestan was published in 1868 at the Printing House of the Headquarters of the Turkestan Military District (Tashkent). The first official newspaper, Turkestanskije Vedomosti, was also published at the headquarters. The first book published in the Uzbek language was "Calendar" by Shohimardon Ibragimov (1871).

In 1874, Muhammad Rakhimkhan built a lithograph in Khiva, where many books were published back in the 1980s. For example, in 1880, the epic of Alisher Navoi "Hamsa", the poet Munis Khorezmi "Devoni Munis" and "Devoni Roji" were published. In 1898, the first printing house was opened in the old center of Tashkent, where textbooks were published in Uzbek, Tajik, Turkmen, Kazakh and Kyrgyz. At the same time, it became a training center for printers and print organizers.

Later, one after another, printing houses were built in Tashkent, regional and district centers.

Historically, the number of printing houses in the 18th century was much less than in the 19th century, and the number of printing houses in the 19th century was much less than the number of printing houses in the 21st century. That is, the number of printing houses is growing 20-30 times compared to the past. The use of printers and copiers has also increased 40-50 times over previous periods.

Today the number of printing houses in Uzbekistan exceeds 150. It follows from this that if the toners used for printing are not produced or purchased in sufficient quantities, the printing machines will stop working. This leads to unemployment, lack of access to the information people need, negative impact on the productivity of enterprises and organizations, and so on.

However, almost no one is interested and does not know how this product is mainly produced - toner, where it is produced, what are its physical and mechanical properties, what raw materials it consists of.

With this in mind, I, together with my scientific advisor as a master of materials science, set a goal to get acquainted, study and analyze information about the importance, composition, methods of manufacturing toner products.

As a result of our research, it became clear that, as we mentioned above, there is no information in the literature on printing powders and toners, and very little information is available on the Internet. However, it was found that there is not enough scientific work in this area.

Toner powder consumption depends on the brand of the printer, the brand of toner, the font of the text printed, the size of the font, the writing in the different kegs, and several other factors. For example:

- Times New Roman — 6,1%.
- Arial — 8,6%.
- Courier New — 4,3% filling the sheet with toner.

Powders for these toners are currently manufactured by various companies in several countries.

Below is information about manufacturers.

World-class brands	Mid-range toner manufacturers	Brands with unstable product quality
Static Control Components (CША); Katun (CША); Hanp Co., Ltd (Корея); Integral (Германия); Patron (Украина); Uninet (CША); MK Imaging (Япония); IMEX (Япония/США). Corporation (Япония/США).	LG Chem (Korea) ceased to exist in 2014; Cactus (China); Tomoegawa Paper Company (Japan / USA); Hi-Black (Russia); Bulat (Russia); Mitsubishi Kagaku Imaging (USA); IPM (Turkey / China); Trend Toner Imaging Inc. (Taiwan).	Boost (CША/Япония); Colortek (Россия); ColorWay (Китай); ProfiLine (Россия); Coloring (Россия); NV (Россия).

Based on the above data, we planned to carry out powder localization work for this type of toner during our research.

References

1. Турахонов А.С. Металлшунослик ва термик ишлаш. Тошкент, Ўқитувчи нашриёти 1968. - 423
2. Использованы материалы с сайта технической поддержки <http://ccfiles.ru/>
3. Нельсон, Р.Э. Что полиграфист должен знать о красках / Р.Э. Нельсон; М.: Принт-медиа центр, 2005. – 320 с.
4. Домасев М. В., Гнатюк С. П. Цвет, управление цветом, цветовые расчеты и измерения. СПб., Питер, 2009.
5. Cartridge printing theory / Uninet, 2010 (англ.)
6. Photocopiers and Laser Printers Health Hazards / Health and Safety Department, the University of Edinburgh, 19/04/2010 (англ.)
7. A Guide for Printers Архивная копия от 19 марта 2015 на Wayback Machine / Alberta, Occupational Health and Safety Practices (англ.)