

## HEAT SETTING

Heat setting is the most common ink drying method in printing reels, whether in the offset, rotogravure or flexography print systems. While in all three systems ink setting is achieved through the application of heat, there are some differences:

- ✦ **Type of ink:** While oil-based inks are employed in offset printing, the inks for rotogravure and flexographic impressions are liquid. The vehicle of oil-based inks consists mainly of mineral oils with a high boiling point. As for liquid inks, the vehicle is made up of solvents with a low boiling point and in some cases, for example flexographic printing, water.
- ✦ **Temperatures:** In offset printing, petroleum-based mineral oils evaporate in the drying devices of machines that reach temperatures close to 180°C. In rotogravure and flexographic printing, both the solvents and the water are more volatile and do not exceed a temperature of 100°C.
- ✦ **Drying during printing:** In the offset printing system, both sides of the paper are previously and simultaneously printed with four colors; the drying device is situated behind the printing units. In the other two systems, the drying device is situated immediately after each color, and only one side is printed. If both sides of the paper need to be printed, the machine will have a paper reversing device for printing the other side of the paper.
- ✦ **Recommended paper type:** The high temperatures in offset printing, along with the fact that both sides are printed simultaneously, necessitates the use of more porous paper in order to avoid blistering due to the evaporation of water. In rotogravure printing, however, the most important characteristics of the paper are smoothness and compressibility, which allow print areas, situated at a lower relief than non-print areas, to deposit the ink on the paper. In flexography, especially if water-based inks are used, it is highly recommendable that the Cobb value of the paper be around 20 g/m<sup>2</sup> so as to avoid ink transfer.

Another drying system by heat is infrared drying. This is common for offset printing of sheets and is supplementary to ink drying by selective filtration.

When printing reels, the use of ultraviolet radiation for setting is very common with certain products. This method of drying, which is also used with sheets, does not employ heat



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# Technical knowledge

## INK DRYING WITH HEAT

but, rather, radiation. Even though machines with ultraviolet setting devices produce heat, it is the radiation, not the heat, that dries the ink.

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