

## Highest Coating Quality with Cast Coating Technology



**Cast coating is applied for board and graphical paper grades which require extremely high brightness, gloss, durability and appeal of the printed colors.**



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These are products such as:

**Paper:** High-grade printing paper (calendars, posters, catalogs)

Information-related products (labels, badges, ink jet/laser printed products)

**Cardboard:** Gift boxes, shipping boxes.

The demand for such high quality grades will grow, i.e. with the rapid spread of digital cameras and household printers in recent years, the demand for high quality coated paper has attracted attention and is a promising field for the paper industry in the long run.

Cast-coated paper for label paper applications has already shown steady growth within the last ten years. Voith IHI does

active development and continuously improves the cast coating process suitable to produce the required highest quality at max. possible speeds.

Historically, about 30 years ago the main investment into cast coating was in America and Europe, but afterwards, Japan and other Asian countries became very active in this field and the technological progress went ahead rapidly. Voith IHI is market leader for cast coaters (new lines and rebuilds) and has more than 30 years experience in this technology. The total number of lines is close to 40 units. Especially in the recent years, the technology has been improved considerably.

Method	Operating Speed [m/min]	Appeal on Consumers
Direct Method	20 - 40	Good
Gel Method	30 - 90	Superior
Rewet I	50 - 200	Good
Rewet II	30 - 100	Superior



There are three representative production methods, which can be characterized and evaluated as shown in the table above.

### Key features of the cast coating technology

Key of the cast coating process is to apply the coating color onto paper to achieve a hard, mirror-like surface while the coating color is still wet. After the application on the base paper the coating color is pressed against the cast coater cylinder in moist condition, which results in such extreme surface quality. Since gloss of cast coated grades tends to decrease with increased production speed and pin hole defects of the coat appear, it is extremely important to achieve higher speeds without such quality defects.

It is essential to mainly discharge water vapor from the uncoated paper side, be-

cause if water vapor is discharged from the coating surface, pin holes can occur, influencing the printability and appearance of the surface. A further key point is to control moisture (omit excessive drying) and curling after the coated paper left the cast coater cylinder.

There are various adjustment measures, such as application of a curling prevention agent onto the backside, application of steam to both sides or passing the paper through a hood with moisturized air. Voith IHI's longterm experience and accumulated know is a solid foundation for serving the industry with whatever is required to improve the cast coating process.

### Required base paper properties

For the base paper there are two main requirements: Porosity of the base paper is

**Fig. 1:** Examples for cast coated paper products.

**Fig. 2:** Voith IHI pilot coater machines in Japan.

**Fig. 3:** Cast coater cylinder from outside.

**Fig. 4:** Cast coater drying section.

**Fig. 5:** Moisturizing and reel section.

important to allow the paper to transfer the moisture/vapor during the drying on the cast dryer drum. In addition, the base paper's smoothness has a significant influence on the smoothness of the coated layer.

### Required coating color properties

The properties of the coating color differ slightly according to the production process. However, the main common point is that the size of the pigment particles, the pigment mixing ratio, and the binder type and mixing ratio are important elements.

Considering the market trends, this special coating technology will become even more important in the near future. Within the Voith Paper Group, Voith IHI will assume the role to continue the development of the cast coating technology together with the industry.

We trust that even with the improvement of other coating technologies, the challenge of cast coating remains important to the industry and we would like to invite interested customer to develop together with us business chances in this specific coating field.