February 10, 2009

Launch of “NV film”, film for liquid crystal displays

Nippon Oil Corporation (President: Shinji Nishio) is pleased to announce that we have started to sell “NV film”*1 which improves the viewing angle*2 for the latest types of liquid crystal displays (LCD) used in cell phones and LCD televisions.

*1 NV film derives from the N of Nippon Oil or New and the V of Viewing angle.
*2 An index which shows how many degrees the display can be viewed normally when tilted

Due to rapidly advancing LCD technology, the latest types of LCD, called VA LCD*3 and IPS LCD*3, have achieved high quality and been adopted in top-end models of cell phones and LCD televisions. Although these types of LCD have a wide viewing angle from top, bottom, left and right directions, problems remain with diagonal viewing angles. “NV film” which uses liquid crystalline polymer*4 as a raw material, uniquely developed by Nippon Oil Corporation, improves these diagonal viewing angles, and enables the viewing of clearer images.

*3 Types of LCD which have higher quality in contrast (sharpness) and viewing angle, by devising the alignment structure of liquid crystal molecules in the LCD
*4 A high-molecular compound which has the characteristics of both liquid and crystal in the same way as liquid crystal molecules in LCD

Nippon Oil Corporation started research and development relating to films utilizing liquid crystalline resin in 1988, as one of our petrochemical product businesses. We started to manufacture and sell “LC film”*5 for improving image quality in 1996 and “NH film” *6 for improving viewing angle in 1998. Currently, these are extensively adopted in displays for cell phones, portable music players and digital cameras worldwide.
By newly including “NV film” in our line-up, we further develop more leading products in this area.

*5 LC film derives from Liquid Crystal
The film is used to improve color purity and sharpness for downscale model LCD known as STN LCD.
*6 NH film derives from the N of Nippon Oil or New and the H of Hybrid structure of molecule alignment.
The film is used to improve the viewing angle for medium model LCD known as TFT LCD, which is widely used in notebook PCs etc.

Details


<Product rolls>

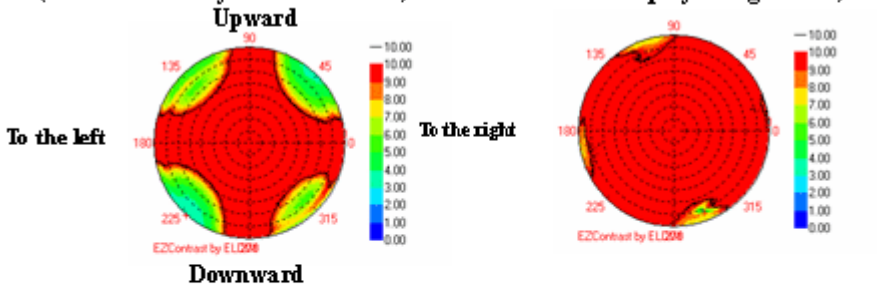
1. Overview of “NV film”
(1) Start of sales: February 2009
(2) Sales destination: polarizer manufacturers
(3) Production base: Tatsuno plant (Tatsuno-Machi, Kamiina County, Nagano Prefecture) of Nippon Oil LC Film Co., Ltd. (a 100% subsidiary of Nippon Oil Corporation)
(4) Shape of products: film rolls with width 650mm and length 450m

2. Characteristics of “NV film”
(1) Improved viewing angle for the latest types of LCD, such as VA LCD and IPS LCD
(2) Usage of the liquid crystalline polymer uniquely developed by Nippon Oil Corporation
(3) Realization of a thickness of as thin as approximately 13μm as stand-alone “NV film”

3. Advantage of “NV film”

Distribution chart of contrast (sharpness) (Isometric contract chart)

(The further away from the centre, the more tilted the display being viewed)



<An example of the latest LCD>

Although contrast is good no matter how far it is tilted in directions to the top, bottom, left and right, there are problems remaining when tilted diagonally.

<An example when "NV film" is installed>

Contrast is good, no matter in which direction it is tilted.

The red area is the range with good contrast.

4. History of Nippon Oil Corporation group LCD film business

1988: Start of research and development into films utilizing liquid crystalline polymer

1995: Establishment of Nippon Oil LC Co., Ltd. (renamed to Nippon Oil LC Film Co., Ltd. in 2002) in Tatsuno-Machi, Kamiina County, Nagano Prefecture

1996: Start of sales of "LC film" for improving image quality

1998: Start of sales of "NH film" for improving viewing angle

2003: Establishment of Nippon Oil LC Film (Suzhou) Corporation in Suzhou, Jiangsu, China

2005: Start of commercial production at Suzhou plant