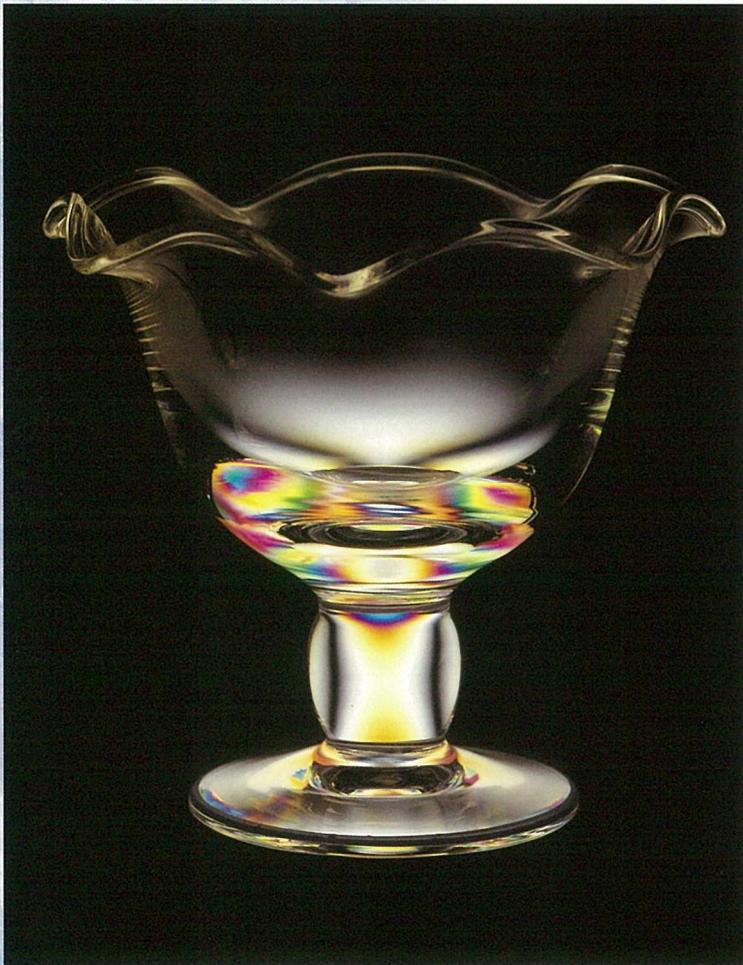
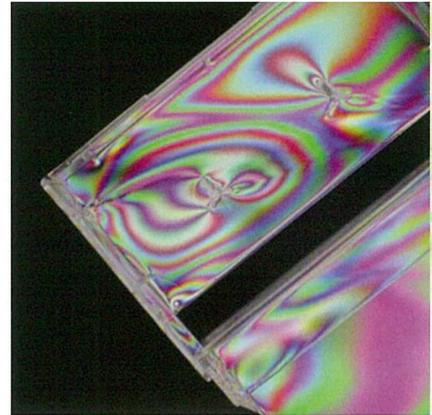


LUCEO Strain meter's Guide

Crossed nicols method



An example of appearance under inspection flowing state of resin.



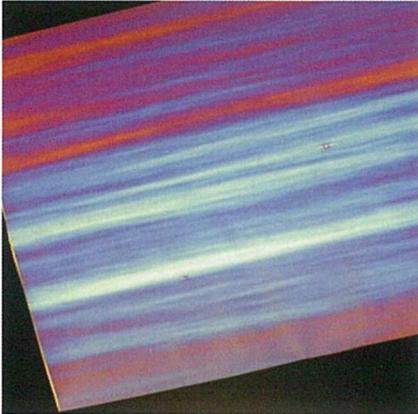
Remarks on Determination of Presence of Strain: In a strain meter, strain is inspected on the basis of color changes in a sample. When a sample to be inspected is inserted within a visual field, the sample gives no change in color and the visual field is maintained in the same appearance if the sample has no strain. However, when Senarmont Method is employed, even though the sample contains strain, there is a case where the whole or part of a sample gives no change in color and is kept in the same appearance as that of the visual field. Such a case is resulted from an occasion where the main stress direction of strain in the sample corresponds to the transmission axis of a polarizer or an analyzer.

Therefore, when a sample is observed under such a condition, the presence of strain in the sample may not be recognizable. As a remedy against this problem, a method to check changes in brightness and color in the whole or part of a sample while rotating the sample can be used. In this method, a sample is rotated by greater than 90° with gazing at the sample, and in case the sample gives no change in the brightness and color at any angles and appears in the same state as the visual field, it is determined that the sample has no strain in the whole or part. In case a change was found during the rotation of a sample, it is determined that the sample has strain in the part causing the change. Then, at the rotation angle at which the change was found, distribution and intensity of strain are to be evaluated.

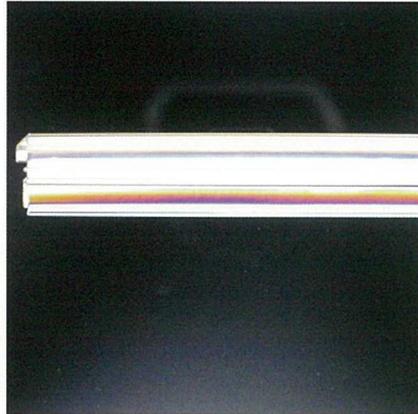
With use of Crossed Nicols Method, the entire visual field appears dark in blackish color. When an article to be inspected is placed in a strain meter, a region with strain appears bright in whitish color, while a region without strain appears dark in blackish color similarly to the appearance of the entire visual field. A region in which degree of strain is more significant appears in bluish, greenish or reddish color instead of the foresaid whitish color.

Crossed nicols method

Example of Appearance under Inspection
Unevenness of a Film



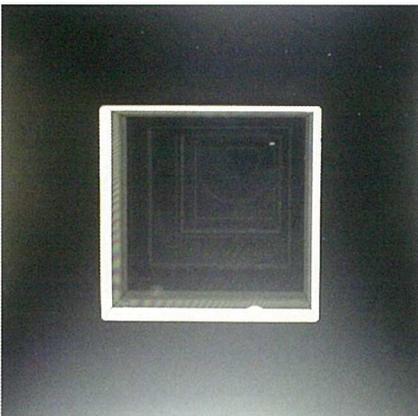
Example of Appearance under Inspection
Strain resulted from Processing



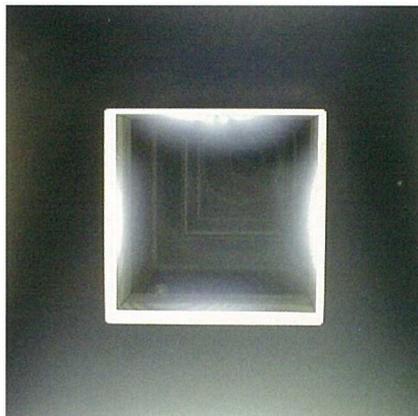
Example of Appearance under Inspection
Strain and cracks in a molded article.



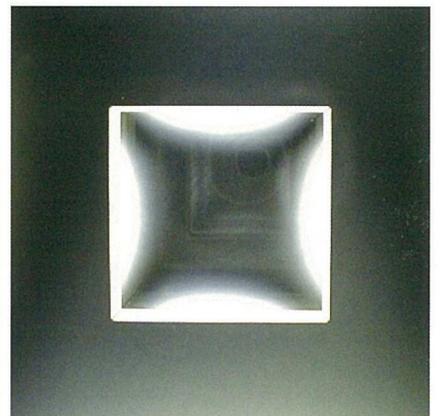
Sample with substantially no strain
The whole of a sample appears dark in
blackish color similarly to the visual field.



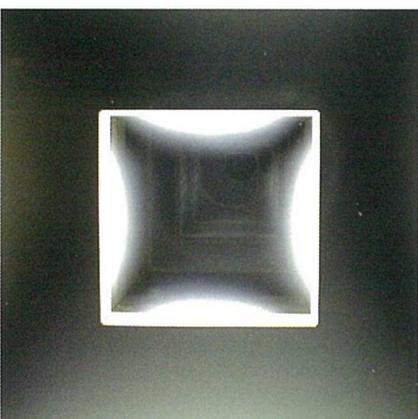
Sample with less degree of strain
Outer peripheral region of a sample appears
in whitish color.



Sample with greater degree of strain
Region in whitish color in the outer periphery
of a sample, where strain exists, extends
inwardly. Also, the whitish region appears
brighter than a sample with less degree of
strain.

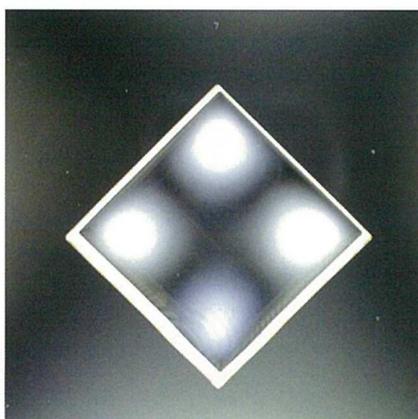


Sample at the Reference Position/
Rotated Angle 0°
X-shaped region in the transmission axis
direction of a polarizer or an analyzer
appears in blackish color.



Sample rotated by 45°

X-shaped region appeared in sensible color
remains in the same direction irrespective of
the direction change of a sample. Due to
this, the pattern of strain varies.



Sample rotated by 90°

Pattern of strain in a sample is same as that
of a sample at the reference position.

