

## **Levelling and Sag Tester Model 419**

Time-saving and  
practice-oriented  
testing method for  
determining  
the flow properties  
of coating materials



testing equipment for quality management

**ERICHSEN**

**Technical Description and Operating Manual**

**ASTM D 2801  
ASTM D 4400  
DIN 55 677**

## Testing principle

Parallel strips of wet film are applied to a substrate using a special paint applicator frame made of stainless steel and featuring slots of various heights.

The sag tendency is determined in a *vertical* flow test, the levelling tendency is ascertained when the specimen is *horizontal*. The specimen panel is examined visually after the coating has hardened.

## Levelling and Sag Tester, Model 419-ASTM

### Design and function

Slots are cut into two sides of the film applicator frame:

- The drawing blade for the levelling test features 5 pairs of slots (see fig. 1a). The slot widths, the span of each slot and the distance between the pairs of slots are predefined. The heights of the individual pairs of slots are graded in doubling steps ranging from 250 µm to 4 mm.
- The drawing blade for the sag test features 10 slots (see fig. 1b) which are graded in 25 µm steps, increasing from 75 µm to 300 µm.

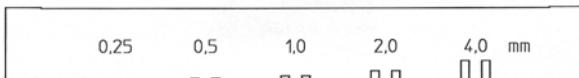


Fig. 1 a

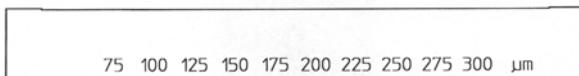


Fig. 1 b

### Levelling test according to ASTM D 2801<sup>1)</sup>

The wet film strips are applied to a predefined substrate using the doctor blade for levelling tests.

After the specimen has hardened in the horizontal position, the number of double strips which have merged with each other is established.

<sup>1)</sup> This standard was withdrawn in 1990

### Sagging test according to ASTM D 4400

#### Method A

The strips of wet film are applied to a black-and-white contrast card<sup>2)</sup> using the doctor blade of the applicator for sag tests (application rate approx. 150mm/s).

Immediately after application, the card is positioned vertically in such a way that the strips of film are horizontal, with the thinnest strip at the top.

After hardening, the level is determined which has not quite spread to the strip below.

Further evaluation details are described in ASTM D 4400, Procedure A.

#### Method B

The strips of wet film are applied to a contrast card<sup>2)</sup> as described in method A. Prior to application, however, two marking lines are drawn on the card at right angles to the direction of application. 15 seconds after application the specimen is placed in a vertical position in such a way that the strips of film are vertical and the reference markings are horizontal. After hardening, the level is determined at which a shift of marking is just recognizable in relation to the original reference line. A detailed description is given in ASTM D 4400, Procedure B.

<sup>2)</sup> Contrast cards, model 451, are suitable for this purpose.

# Sag Tester, Model 419-DIN

## Design

The four drawing blades of the film applicator frame feature a total of 24 slots (s. fig. 2). As in the case of Model 419-ASTM, the slot width and the distance between the slots is predetermined. The slot heights vary between 75 µm and 1300 µm.

## Sag test according to DIN 55 677

The strips of wet film are applied, preferably to a standard specimen panel made of steel. Subsequent to application, the specimen panel is positioned vertically (film strips running across the panel with the thinnest strip uppermost) and the coating allowed to dry. A suitable thickness gauge is used to determine the thickness of the thickest layer where no change is evident as a result of sagging. This layer is regarded as the flow index for the sag properties.

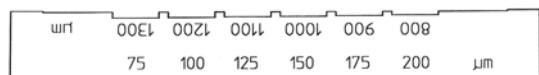
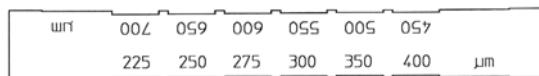


Fig. 2



Subject to technical modifications.  
Group 2 - TBE - I/00

## Technical Data

### Model 419-ASTM

Dimensions:	115 x 30 x 15 mm
Net weight:	approx. 0.1 kg
Thickness of drawing blade:	3 mm
<u>Slot height:</u>	
Levelling test:	75 µm - 300 µm (in 25-µm steps)
Sag test:	2 x each 250 µm, 500 µm, 1 mm, 2 mm and 4 mm
<u>Slot width:</u>	
Levelling test:	6.4 mm
Sag test:	1.6 mm
<u>Distance between slots:</u>	
Levelling test:	1.6 mm
Sag test:	2.5 mm (span of each slot pair) 12 mm (between the pairs of slots)

### Model 419-DIN

Dimensions:	115 x 30 x 15 mm
Net weight:	approx. 0.12 kg
Thickness of drawing blade:	5 mm
<u>Slot heights:</u>	
Levelling and Sag Tester <b>Model 419-ASTM</b> , incl. case	75 µm - 300 µm (in 25-µm steps) 350 µm - 700 µm (in 50-µm steps) 800 µm - 1300 µm (in 100-µm steps)
Slot width:	10 mm
Distance between slots:	2 mm

## Ordering Information

Order No.	Product Name
0053.01.31	Levelling and Sag Tester <b>Model 419-ASTM</b> , incl. case
0229.01.31	Sag Tester <b>Model 419-DIN</b> incl. case