TA Instruments

Thermal Analysis & Rheology

RHEOLOGY SOLUTIONS

SELECTING LITHOGRAPHIC INKS

PROBLEM

Manufacturers of lithographic inks want to minimize the time and cost involved with selecting inks that will provide good “dot quality” during the printing process. Traditional methods based on plant trials using large batches of candidate inks are not efficient.

SOLUTION

Controlled stress rheology which measures the viscoelastic properties of materials, however, can rapidly screen inks for satisfactory printing. Figures 1 and 2 show the comparative dynamic modulus (G') and complex viscosity (η*) results respectively for a series of four lithographic inks. Ink A, which ultimately performed poorly because of excessive flowability, has the lowest G' and η*. Ink D, on the other hand, ultimately performed poorly because of insufficient flow during printing, exhibits the highest G' and η*. Inks B and C, which performed satisfactorily during printing, have G' and η* values between the A and D extremes. By running several “standards” such as these is possible to convert either Figure 1 or 2 into a reference plot which can subsequently be used to rapidly screen future batches of ink for suitability before wasting time and money.

Figure 1. DYNAMIC MODULUS COMPARISON (Lithographic Inks)

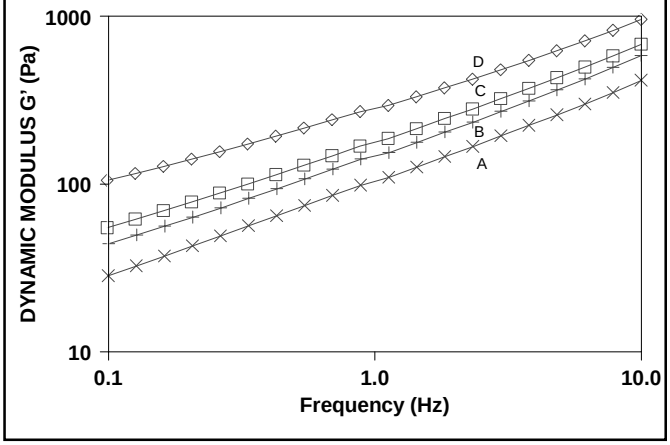
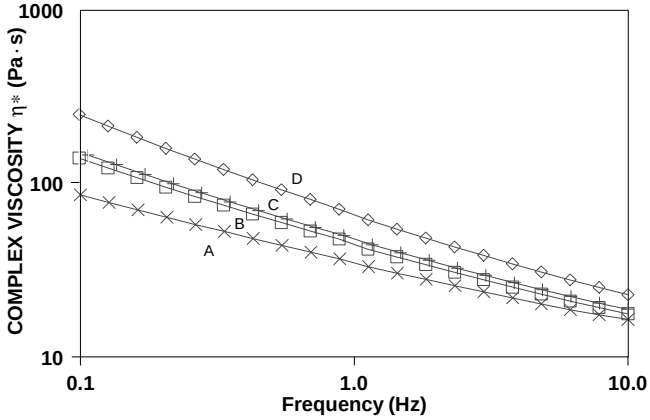


Figure 2. COMPLEX VISCOSITY COMPARISON (Lithographic Inks)



For more information or to place an order, contact:

TA Instruments, Inc., 109 Lukens Drive, New Castle, DE 19720, Telephone: (302) 427-4000, Fax: (302) 427-4001
TA Instruments S.A.R.L., Paris, France, Telephone: 33-01-30489460, Fax: 33-01-30489451
TA Instruments N.V./S.A., Gent, Belgium, Telephone: 32-9-220-79-89, Fax: 32-9-220-83-21
TA Instruments GmbH, Alzenau, Germany, Telephone: 49-6023-30044, Fax: 49-6023-30823
TA Instruments, Ltd., Leatherhead, England, Telephone: 44-1-372-360363, Fax: 44-1-372-360135
TA Instruments Japan K.K., Tokyo, Japan, Telephone: 813-5434-2771, Fax: 813-5434-2770

Internet: http://www.tainst.com

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