DETERMINING WAX PATTERN DIMENSIONS IN INVESTMENT CASTING

1.0 Introduction

The

The wax pattern dimensions are determined using a three-dimensional finite element model for coupled thermal and mechanical analysis developed within ABAQUS$_{TM}$. The following factors are considered in the analysis: the restraint of geometrical features by the metal die, and process parameters such as dwell time,

models

introduced as a test method for asphaltic binders (Bahia et al., 1992). Robust procedures have been developed to determine master curves from the bending beam rheometer (Rowe and Sharrock, 2000). The BBR was specifically developed to

$$\sigma_0 = 3K(\varepsilon_0 - 3\varepsilon_T), \tag{7}$$

where is the bulk elastic modulus. The thermal strain,

data for estimating the heat transfer coefficient at that interface. The thermocouples

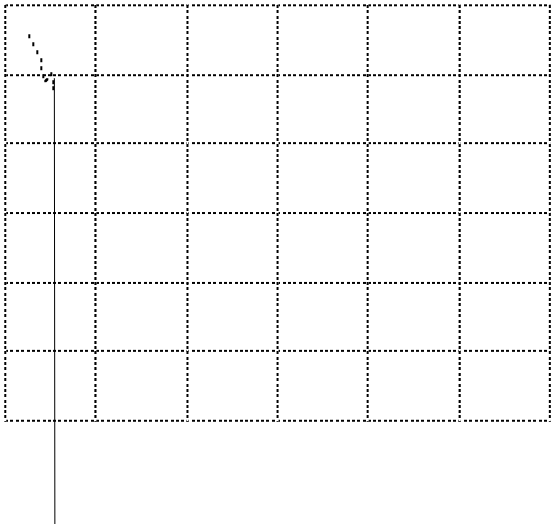
temperature profile. The data suggests that the wax behaves as a paste until about 29^{o}

The evolution of the temperature field and the ensuing displacements with

Craig, R.G., Eick, J.D., and Peyton, F.A., 1967, “Strength Properties of

Okhuysen V.F., Padmanabhan, K., and Voigt, R.C., 1998, “Tooling Allowance Practices in the Investment Casting Industry,” Paper No. 1, 46th Annual Technical Meeting, Investment Casting Institute.

Peters, F., Voigt, R., and Blair,



(a)

(a)

(b)

Figure 7: (a) Temperature (^{o}C) distribution and (b) displacement (cm) distribution right before removal of the wax from the die. Displacements are magnified 30 times.

(a)