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Rheological properties of encaustic painting JORGE ARROYAVE, SANDRA ZETINA, Universidad Nacional Autonoma de Mexico, ROBERTO ZENIT, Brown University — Encaustic is a painting technique characterized by the use of wax as the main binding media. In addition to wax and pigments, some resins and solvents are used to create the painting media. Since the material is semi-solid at ambient conditions, the painting is often conducted with the aid of heated pallets and torches. As a result, mastering this technique is extremely challenging. In this work we investigate how the composition of the encaustic affects its rheological properties focusing on the effect of pigment color and concentration. We prepare encaustic paints following Diego Rivera's, used for his first large-scale mural which was painted with this technique. In addition to determining the viscosity, using a rheometer, we also conducted controlled painting experiments: a device was designed and built to apply a drop of paint to heated surface at different shear rates. We found that all the paints were shear-thinning with small viscoelastic effects; surprisingly, the viscosity of the paints was significantly affected by the pigment color despite the fact that its proportion in the paints was always small (less than 10%). The size of the traces was found to scale with the shear Reynolds number. A discussion on the implications of these results for artists is presented.

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