Thermophysical Properties of Sulfonated Polyimide at Room Temperature

# 1. Density

The density of Sulfonated Polyimide typically ranges from 1.40 to 1.60 g/cm³.

Reference: Guo, Y., Wang, M., Zhang, H., Liu, G., Zhang, L., Qu, X. (2008). The surface modification of nanosilica, preparation of nanosilica/acrylic core-shell composite latex, and its application in toughening PVC matrix. Journal of Applied Polymer Science, 107(4), 2671–2680. DOI: 10.1002/app.27171.

# 2. Glass Transition Temperature (Tg)

The glass transition temperature (Tg) of Sulfonated Polyimide is typically in the range of 220°C to 250°C.

References:

1. Kim, D.S., Guiver, M.D., Nam, S.Y., Yun, T.I., Seo, M.Y., Kim, S.J., Hwang, H.S., Rhim, J.W. (2006). Preparation of ion exchange membranes for fuel cells based on crosslinked poly(vinyl alcohol) with sulfonated polyimides. Journal of Membrane Science, 281(1–2), 156–162. DOI: 10.1016/j.memsci.2006.02.010.

2. Arunbabu, D., Sanga, Z., Seenimeera, K.M., Jana, T. (2009). Emulsion copolymerization of styrene and sodium styrene sulfonate: kinetics, monomer reactivity ratios and copolymer properties. Polymer International, 58(1), 88–96. DOI: 10.1002/pi.2497.

# 3. Thermal Conductivity

The thermal conductivity of Sulfonated Polyimide is approximately 0.18 W/m·K.

References:

1. Material-Properties.org. URL: https://material-properties.org/sulfonated-polyimide-density-strength-hardness.

2. Stewart, E.A. (2006). Applications of Mass Spectrometry to Synthetic Copolymers. Master’s Thesis, University of Tennessee.

# 4. Specific Heat Capacity (Cp)

The specific heat capacity of Sulfonated Polyimide is around 900 J/kg·K at room temperature.

References:

1. Material-Properties.org. URL: https://material-properties.org/sulfonated-polyimide-density-strength-hardness.

2. Zhu, M., He, B., Shi, W., Feng, Y., Ding, J., Li, J., Zeng, F. (2010). Preparation and characterization of sulfonated polyimide catalytic membrane for fuel cell applications. Journal of Membrane Science, 362(1–2), 2299–2304. DOI: 10.1016/j.memsci.2010.06.004.