*Preparation of Anhydrous Potassium Glyceroxide Catalyst Formulation* (KGly2)

Potassium glyceroxide catalyst formulation (KGly2) was prepared by mixing 861g of 50wt% aqueous KOH (6.52 mol KOH, 1 eq) with 1.228 kg (13.05 mol, 2 eq) of glycerol. The mixture turned pale yellow, and water was removed by vacuum distillation. Water removal is complete (<25 ppm) when glycerol begins to boil, and the liquid temperature reaches 180°C (4 torr). Just prior to the catalyst formulation (ethanol addition) the glycerol-glyceroxide solution was allowed to cool near its melting point (140oC), and 1140 g (31.26 mol) of ethanol was added using an addition funnel. While stirring, the mixture was maintained at a temperature of 150°C during the initial addition of ethanol; as more room temperature ethanol was added, the mixture cooled rapidly. The solution was allowed to cool to room temperature, and its color deepened to a uniformly transparent yellow. This strongly alkaline solution has a low viscosity at room temperature and is very easy to handle.

To determine the moles of potassium glyceroxide (KG) per gram of catalyst solution, 0.05 g of the catalyst solution described above was titrated against standardized 0.004M HCl. On average (*n* = 18), catalyst solutions contained 52.43% (±4.85%) ethanol, 28.26% (±2.93%) KG, and 20.03% (±2.06%) glycerol by mass.