A research project is underway to create a physical library of artist material samples and corresponding BRDF measurements that characterize their optical properties. This collection will provide necessary data for the development of a gonio-imaging system for use in museums to more accurately document their collections. A sample set has been produced consisting of 26 panels containing over 600 unique samples. Selected materials are representative of those commonly used by artists both past and present. These take into account the variability in visual appearance resulting from the materials and application techniques used. Five attributes of variability were identified including medium, color, substrate, application technique and overcoat. Combinations of these attributes were selected based on those commonly observed in museum collections and suggested by surveying experts in the field.