

An Industrial Reference Fluid for Moderately High Viscosity

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In industrial practice there is a demand for a reference standard viscosity of a readily available fluid in order to simplify the calibration of industrial viscometers for moderately high viscosities (100 mPa·s). Diisodecylphthalate (DIDP) has been suggested as that reference fluid and a number of studies of its properties have been carried out in several laboratories throughout the world, within the auspices of a project co-ordinated by the International Association for Transport Properties. That project has now progressed to the point where it is possible to collate the results of studies of the viscosity of the fluid by a number of different techniques, so as to lead to a proposed standard reference value which will be included in the paper. The paper will describe the various measurements conducted to date. To support this recommended value, studies have been conducted, including the effects of the sample purity. Density and surface tension measurements have also been performed. The paper will describe those ancillary studies and their relevance to the use of the viscosity standard. The conclusion of the paper will contain a specific recommended value for the viscosity of DIDP in the form of the isomeric mixture available commercially. The value will be supported by careful arguments connected to the likely effects of the isomeric content and other impurities.

It is not intended that the proposed reference standard is a substitute in quality for the reference value for the viscosity of water at 20 °C, which is known much more accurately. Rather it is intended as a reference value for practical application in an industrial context. It is also understood that the reference fluid proposed here has some features that make it not ideal for the longer term but it is a fluid for which a well characterised viscosity can be stated now.