SI Analytics
a xylem brand

Glass tradition connects people – highly precise flow measuring technology

Precision and reliability are the main requirements for the manufacture of glass capillary viscometers. To meet the high demands of analysis technology, the combination of material, manufacturing expertise and many years of experience come together. This combination ensures uniformly high quality that is ensured even today. The special glass manufacturer, Duran Group, supplies KPG capillaries to SI Analytics for use in their viscometers. The former colleagues now cooperate as partners.

The numerous applications from Duran precision glass reflect the quality and precision of these special glasses from borosilicate glass 3.3. The material is characterized by outstanding chemical and physical properties. Due to minimal thermal expansion and its lack of sensitivity to rapid temperature changes, Duran borosilicate 3.3 glass has numerous and varied uses.
The Duran Group produces is calibrated precision glass (KPG) in Wertheim. Glass tubes are heated in a special hot forming process and vacuum snap-back formed on precision tools. Using this method, the calibrated Duran cylinder attains a defined inside diameter with the lowest possible tolerances up to the µm range.
Unique here is the breadth of variety and product options with these glasses. The Duran cylinder can be manufactured from the smallest capillary inside diameter of 0.15 mm to the glass tube with an inside diameter of 240 mm. The customer-specific further processing of these cylinders is handled at the Wertheim location.

Use in different industries
The production expertise also includes a precise, individual cold or hot processing of Duran tubes. The broad range of KPG tubes and capillaries is characterized by its use in the most varied of industries. In addition to chemical and analysis technologies, the glasses are used in machine and system construction, medical technology and the electrotechnical industry.

Figure 1: 4x AVS 370 measuring plate from SI Analytics GmbH

The demand for precision is precisely defined. Because SI Analytics and the Duran Group had common roots with Schott AG, both companies know about the high demands from customers. Nowadays, the Duran Group manufactures KPG capillaries for SI Analytics, which integrates them into their capillary viscometers. Capillary viscometers, which are used to determine inherent viscosity, are used in various industries. In food testing, for example, the different origins and composition of milk and milk products results in different types of rheological behavior of milk productions. The viscosity of milk, cream, condensed milk, etc. is impacted by fat content, dry agent concentration and, to a large degree, by the processing conditions, for example homogenization. Adding hydrocolloids (thickening, binding and gelling agents) as well as stabilizers, greatly increases viscosity. To clarify their chemical structure and impact in connection with the microcomponents, measurement of viscosity provides valuable information. Then: Who wants to spoon their refreshing yogurt drink just after two days in the refrigerator?

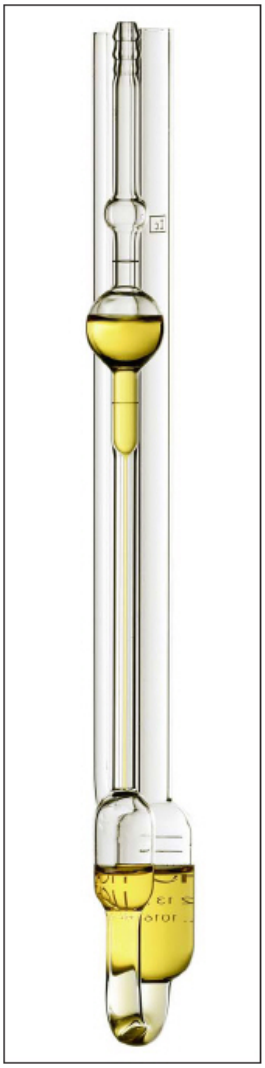

Figure 2
DIN thaw point viscometer

Main area of application: polymer industry

The main area of application for viscometers from SI Analytics is, of course, the polymer industry. Viscosity measurements help determine the viscosity for plastic solutions in suitable solvents. This allows for analysis of the middle chain length, processability and polymer quality. Thus, in polymer research, polymer manufacturing and polymer processing, in addition to analysis of chemical and physical properties, optimal process parameters are determined as well as the characterization of the end product. In order to ensure universal exchangeability, the viscometers from SI Analytics in comparison measurements are checked with reference viscometers at the Physical Technical Federal Office (PTB) in Brunswick.
High qualitative requirements are set for viscometers primarily on the capillaries. A constant dimensional stability as well as high-value quality of the glass must be ensured because of the significant range of measurement occurs in the capillaries. The transparency is needed mainly for the measurement of the processing time along with better control and handling. For this, flow of the liquids to be studied is measured via an optical sensor. The low tolerance on the outside diameter also plays a role here. Only with relatively constant wall thickness can reference measurements be standardized for calibration. There is also demand of the material used. With the exemplary chemical resistance against acids and lyes, Duran is predestined for use with highly aggressive solutions, which contain dissolved plastics for instance. Finally, the precise measurements are ensured relatively by the low inside diameter tolerances of the calibrated Duran capillaries.

The connection of the Duran Group with SI Analytics, which is already rich in tradition, includes numerous advantages. Duran combines decades long experience with the material with comprehensive expertise in viscometry to make both companies ideal partners for high quality standards in chemical analysis technology.

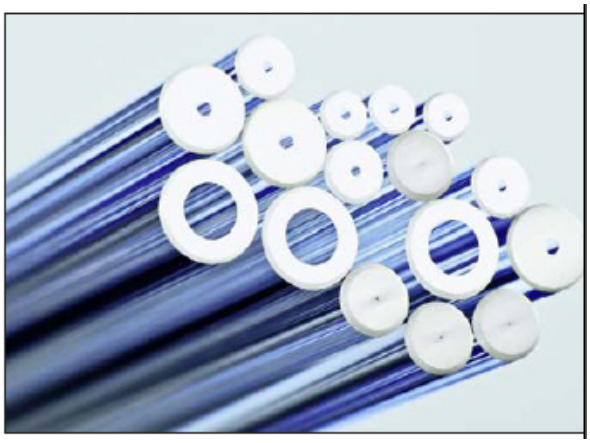

Figure 3
Calibrated precision glass capillaries from Duran

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