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2003 International Exhibition, Conference & Seminar Schedule

During 2003, Thermo staff will be traveling the globe to participate in a number of key events. These events will provide the forum to showcase their latest product innovations, new products and technologies across the breadth of their range. Their international partners from the country where the exhibition is being hosted will join them to support customer enquiries. The timetable for 2003 is:

February

- 3 - 6, Arab Lab, Dubai - UAE
- 15 - 20, Plast India, New Dehli - India

March

- 9 - 14, PITTCON, Orlando FL - USA
- 10 - 14, Brasilplast, Sao Paulo - Brasil
- 16 - 20, SaudiPlas, Riyadh - Saudi Arabia

May

- 4 - 8, Antec, Nashville, TN - USA
- 6 - 10, Plast Milan, Milan - Italy
- 14 - 16, Paste & Thickened Tailings, Melbourne - Australia
- 19 - 24,ACHEMA 2003, Frankfurt - Germany

June

- 23 - 27, NPE, Chicago - USA
- 30 June - 3 July, International Rubber Conference, Nürnberg - Germany

July

- 7 - 10, PPS 19, Melbourne - Australia

September

- 9 - 12, ChinaPlas2003, Beijing-PR China
- 1 - 4, Plasto Ispack, Tel Aviv - Israel
- 3 - 5, Abrafiti, 8th International Exhibition of Paint Industry Suppliers Sao Paulo -

October

- 14 - 18, Fakuma 2003, Friedrichshafen - Germany
- 28 - 30, Powder Coating Show Indianapolis - USA

Make sure you drop by if you are attending these events to catch up with the staff and the latest Thermo products and innovations.

2003 International Seminar on Paste and Thickened Tailings

14 - 16 May, 2003 – Melbourne, Australia

The Australian Centre for Geo-mechanics (ACG) in collaboration with Particulate Fluids Processing Centre (PFPC) presents the 2003 International Seminar on Paste and Thickened Tailings (P&TT) to be held 14 - 16 May 2003 in Melbourne. The seminar will provide an insight into global technological advances in the safe and environmentally sound disposal of tailings as well as the latest developments in this field.

Rheology has been identified as being highly relevant to all aspects of P&TT operations and minerals processing.

The seminar expects some 100 plus international visitors. The seminar will address the latest technical issues confronting tailings disposal, providing a forum for the world's best research and practice to be disseminated to professionals involved in this industry.

Full details covering the program for the Seminar can be obtained from the ACG website. www.acg.uwa.edu.au



First Minerals Processing and Tailings Workshop

17 May 2003 – Melbourne, Australia

This workshop has been developed by the ACG and PFPC and is proudly sponsored by RioTinto Technical Services, Thermo Haake, Rheology Solutions and Outokumpu Technology.

A special one-day workshop following the Paste Seminar (14 - 16 May) has been developed to demystify the complexities of rheology. This will enable attendees to further understand how slurry operations and minerals processing plants benefit from this innovative technology.



The highlight of the workshop will be a "hands-on" approach using the Thermo Haake ViscoTester VT550 to measure the rheological properties

of slurries that will be produced during the workshop in a 10m high pilot plant. The plant has especially been established for the workshop and will demonstrate how to manipulate the slurry. The workshop will offer a combination of rheology basics and practical applications of conducting rheological measurements such as:

- measurement techniques, and
- the rheology associated with thickening, pumping and storage discharge processes.

Full details covering the program for the Workshop can be obtained from the ACG website. www.acg.uwa.edu.au

International Trade Fair Report – October, 2002

October, 2002 was a busy month for Thermo Haake with booths at two important internationally renowned trade fairs in Germany and booths at one exhibition and conference in Australia.

A review of each of these follows:

FAKUMA 2002, Friedrichshafen, Germany

The FAKUMA has been a regular event for Thermo Haake over the last ten years. This year's show took place for the first time in the newly



The Thermo stand at FAKUMA

opened exhibition center in Friedrichshafen. Thermo Haake exhibits included two MFI instruments, the RheoStress 600, a 25mm PRISM extruder, and the on-Line melt pump ProFlow (which attracted a lot of special interest).

The show itself can be judged as very successful with a total of 1105 companies and 153 additionally represented firms from 23 different countries presenting their products from the fields of injection moulding, refrigeration technology, raw materials and auxiliary materials, as well as peripherals and much more to highly interested expert visitors on just under 700,000 square feet of floor space.

36,431 visitors once again took advantage of this opportunity to gather information regarding innovations and process technologies.

During the weeks preceding the FAKUMA 2002, the entire plastics industry was excited to see how the 15th event would progress at the new trade fair center. It became apparent just halfway into the exhibi-

tion that the FAKUMA would again be a complete success.

"We're quite satisfied. The general atmosphere amongst exhibitors and visitors is particularly good. The new Friedrichshafen Exhibition Center has received positive feedback as well. Our exhibitors are also profiting from the improved infrastructure." These were the initial impressions expressed by Paul E. Schall, managing director of the FAKUMA.

The FAKUMA exhibition has been at a very high level ever since its beginnings in 1981, demonstrating concentrated expertise and providing specialists with good contacts and excellent information. Friedrichshafen, located in the three-corners region where Switzerland, Austria and Germany meet, provides the FAKUMA with an ideal location as well, drawing visitors not only from all over Europe, but from Asia as well. Our relatively large number of qualified leads from the FAKUMA justified our presence there this year and underlines our intention to continue to take part in future!

TechnoPharm 2002, Nuremberg, Germany

The TechnoPharm exhibition provided Thermo Haake with a platform to exhibit a small range of products to a very select audience. We took part with a 15 sqm booth and displayed the MiniLab and a PRISM PharmaLab extruder. A number of positive contacts were made during the three exhibition days in Nuremberg and whilst the show was generally overshadowed by the current overall downturn in the world pharmaceuticals market, we were still impressed by the quality of visitors on our booth.



The Thermo stand at TechnoPharm

The show in general ended with an increase in the number of exhibitors to 865 and a drop in the number of visitors (1,250) and congress participants (1,550) to 13,405. "In view of the still poor economic situation, we are satisfied overall with this result", sums up Claus Rättich, Director of Exhibition Management at Nürnberg Messe. The international mix of the visitors (27 %) commands respect: visitors came to the combined trade fairs from more than 40 countries.

EXPOPLAS, Melbourne, Australia

Rheology Solutions represented Thermo Haake and Thermo PRISM at this International plastics exhibition. The stand provided a comprehensive range of operational products to characterise plastics and rubber across the entire spectrum of development, production and QC.

Brian DuBois, Customer Support Director of Thermo PRISM, joined Rheology Solutions. Brian was busy providing expert technical information covering applications and operations across their product range to all visitors to the stand.

At various times during the exhibition there were customers up to three deep listening to the explanations being provided to the technical and applications questions being asked of Brian.

The Thermo product range displayed included the:

EUROLAB – Compounder and Masterbatch Twin Screw Extruder from PRISM

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 114 for the ERUOLAB

MiniLab - Micro Compounder, RheoScope - Optical Rheometer and Meltflicker MT Melt Flow Indexer from Haake.

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 115 for the MiniLab Quote: No: 116 for the RheoScope Quote: No: 117 for the Meltflicker



Brian DuBois of Thermo PRISM

"The level of customer enquiries, and the strong interest from key decision makers at this exhibition certainly reinforce the value of attending this exhibition", responded Brian, when asked about making the trip to Melbourne. He then added, "yes, it was a successful trip and I would be happy to return to Australia."

Customer Profiles

Users of any Thermo Haake, Thermo PRISM or Thermo CAHN products are invited to submit a story on their specific application and or use of the Thermo product.

Interested? Send an email to newsletter@thermohaake.com with a brief overview of your company and application.



Calibrating with Thermo Haake circulator baths

We are receiving an increasing number of inquiries as to whether our circulator baths can be used for calibrating tasks requiring a constant temperature, such as checking temperature sensors.

On the following pages we demonstrate that every Thermo Haake circulator can be used as a calibrating bath.

Definition of terms

To begin with the following points have to be clarified:

The circulators supplied by Thermo Haake are not measuring devices; they are not intended to be used to measure the temperature!

A circulator or cryostat's task is to keep liquid baths or external objects at a specified temperature level within a system-specific control range (temperature accuracy). In view of these characteristics, circulators are in fact excellent calibration devices.

Use of circulators as calibrating baths

Temperature constancy

As already stated above, circulators provide the general conditions for a constant temperature at a specific position in the temperature stabilization

cycle. Thermo Haake circulators attain a high control accuracy of ± 0.01 K in accordance with DIN 12876 (former DIN 58966).

Temperature accuracy

The display integrated in the circulator states the temperature at the location of the control sensor with a corresponding measurement uncertainty. The temperature deviance arising at the position relevant for the respective trial in the temperature stabilization cycle depends on a number of actuating variables.

For applications in the sensor calibration field, it is important to attain a high temperature constancy and accuracy at the position of the test object. Thermo Haake circulators feature functions enabling the necessary test conditions to be created with the constancy and accuracy required.

Open baths with cooling

Open circulators with integrated compressor cooling are ideal when simultaneously testing many small objects at temperatures at or below room temperature.

Thanks to the large bath opening, the test objects can be changed easily; the large bath capacity has a high buffer effect so that a good temperature accuracy is ensured.



The DL30-V26 cooled open bath is shown here as an example.

The stainless steel bath has a large opening of 300 mm x 350 mm and a depth of 200 mm. The working temperature range is between -10°C and $+150^{\circ}\text{C}$.

Thanks to the integrated RS232C interface, connection to a PC is possible for documentation purposes. The V26 cooling bath can be combined with other circulator heads from the DC or Phoenix line as required.

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 118 for DL30-V26

Temperature calibration with the RTA function

Due to the large bath opening it is not guaranteed that the temperature at the control sensor of the circulator is the same as that at every other position of the bath. With the RTA function (RTA = real temperature adjustment) the reading of the actual temperature in the display is calibrated for all Thermo Haake circulators of the DC and Phoenix line to the value at any desired point in the temperature stabilization bath.

To this end, the temperature is determined at the position desired in the bath using a calibrated measuring device and compared with the reading in the circulator display. The difference between the temperature measured and the one displayed is the RTA value which is entered into the device by means of a menu. Following this, the reading on the display is automatically corrected by the RTA value so that the correct temperature is always displayed at the measurement point. The RTA values determined however always only apply to one defined system. Changes in the ambient temperature, mains voltage and frequency etc will be evident as measurement inaccuracies (variance).

Open baths without cooling

The circulator baths do not need to be cooled for tests well above room temperature ($>35^{\circ}\text{C}$). For such cases Thermo Haake offers a wide range of different bath sizes between 5 and 46 liters capacity. These baths can be combined with all circulator heads from the DC and Phoenix line.

One example is the combination of a DL30-controller with a W15 bath. The DL30-W15/B has a stainless steel bath with a bath opening of 300 mm x 175 mm with a depth of 200 mm.

The working temperature range is between $+25^{\circ}\text{C}$ and $+200^{\circ}\text{C}$.

Another example of a possible combination is a W45 stainless steel bath with a P2 circulator head from the Phoenix line. The P2-W45 circulator has a stainless steel bath with a bath opening of 300 mm x 350 mm and a depth of 300 mm. The working temperature range for this combination is from $+28^{\circ}\text{C}$ up to $+280^{\circ}\text{C}$.

Phoenix circulator are equipped with standard functions which are partially unique for laboratory circulators.

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 119 for Open baths without cooling.



Highlights of the Phoenix line:

- FuzzyStar control with neural adaptation guarantees high temperature accuracy
- Devices are easy to use thanks to their large graphic display with full text and a clear user guidance
- Very powerful combined pressure and suction pump with automatic speed recognition for homogenous temperature distribution in the bath
- 4 set temperatures can be saved with respective RTA values for rapid temperature change
- Flexible interface concept with RS232C, multi-functional port, RS485 (for P2) and profibus as an option to be incorporated in laboratory documentation systems
- Permanent date and time display.

Looking for Product Information?

If you are seeking specific products and or technical information, visit the Thermo Haake website and use their search function to direct you to the appropriate pages. Visit www.thermohaake.com or send an email direct to newsletter@thermohaake.com with your product enquiry.

The calibration function

In addition to the RTA function described above, the P2 circulator combinations are equipped with a 3-point calibration function for the control sensor.

An electronic Pt1000 sensor is installed in the circulator head as a measurement and control sensor which has a resistance versus temperature steady state characteristic. Due to physical reasons, for wide temperature ranges, this characteristic becomes non-linear.

At Thermo Haake, the sensors are calibrated to a set point (+70.00°C) so that the reading in the display at this temperature corresponds to the real value at the location of a control sensor. With the calibrating function this calibration can be carried out for an entire temperature range.

To this end, the values of three set temperatures (T1 to T3) and the pertaining temperatures measured (RT1 to RT3) have to be determined and entered into the device.

Example

The control sensor should be calibrated for the temperature range between +5°C and +95°C. +005.00°C is to be entered as temperature T1, and for T3 +095.00°C accordingly. Temperature T2 can be freely selected, ideally it should be the mean of T1 and T3 (here: +50°C).

These three specified temperatures are now set in succession as target temperatures on the circulator. As soon as the value in the display is stable, the temperature is determined at a position near the control sensor of the circulator with a resettable calibrated thermometer or thermal element. The values determined in this way are entered into the device as real temperatures RT1 to RT3.

If the calibration function is now activated, the control sensor of the circulator is automatically calibrated to the real temperature for the temperature range between T1 and T3.

Low-temperature circulators for calibrating

Low-temperature circulators are suitable if temperatures below 0°C are required for calibrating tasks.

All kinds of combinations of circulator heads from the DC or Phoenix line with cooling baths are possible. They enable bath temperatures down to -50°C with a high temperature accuracy.

Due to insulation reasons, these baths usually have smaller openings than for the heated baths.

The Phoenix P2-C35P low-temperature circulator is a frequently used refrigerated circulator offering a wide temperature range.



Phoenix P2-C35P

The working temperature range of the P2-C35P is -35°C to +200°C. The cooling capacity at 20°C is 400 W.

Due to its low height, the circulator is well suited as a table-top device. The bath opening is 220 x 140 mm, the bath depth 150 mm. This also offers space for larger objects. Of course the device is also equipped with a port for an external Pt100 sensor, RS232C and RS485 interface as well as RTA and calibration function.

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 120 for Low Temperature Circulators

For further details, send an email to newsletter@thermohaake.com with an overview of your sample and testing requirements.

Summary

From the information above, it is evident that Thermo Haake temperature control systems can be used for calibration tasks. This is only applicable however if a testing procedure is in place in line with QA standards involving the recording of the measurement conditions and the use of suitable measuring equipment.

This type of test can only be carried out in the field and thus under real application conditions and is to be matched with the demands of every individual application case.

At Thermo Haake, the integrated control sensor is factory calibrated at a set temperature of +70°C for all circulators. This is done under the special conditions as required by DIN 12876 (former DIN 58966) for determining tem-

perature accuracy. This calibration is however only valid for these conditions. In connection with this, only certified laboratories can guarantee the user maximum security. These certificates are internationally valid for most industrialized countries. Existing circulators or thermometers can be calibrated in this way.

If you do not have a suitable temperature measuring device / thermometer capable of being calibrated, we recommend that you seek professional advice from the relevant specialists.

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 121 for a full catalogue on the range of Circulators, Cryostats and Coolers.

RheoFuture® conference December 2-3, 2002

The main event of Thermo Haake's RheoFuture® initiative in 2002 was the "International Forum For Material Characterization" which took place in Karlsruhe on December 2 - 3. Renowned experts were invited from different application areas like food, polymers, pharma and construction materials to discuss trends in rheology and material characterization¹. (see Footnote 1).

The highlight of the event was the presenting of the Thermo Haake "Young Scientists Award" which was offered for the first time. Since the beginning of 2002, young scientists worldwide have been invited to submit their application oriented papers.

Thermo Haake established an international jury from industry and academia. The jury included representatives from Nestlé, L'Oréal,

Petrobras, Deutsches Kunststoff Institute and a total of 52 papers were accepted for the competition.

The winners of the award are Christian Clasen from Germany² (see Footnote 2), Wendy Loyens from Belgium³ (see Footnote 3) and André Studart from Brazil⁴ (see Footnote 4). Their papers were selected as they each represented the most outstanding innovative contributions using rheological techniques.



The winners of the Thermo Haake "Young Scientists Award" Christian Clasen, Wendy Loyens and André Studart

Part of the prize awarded to each of the three winners was a weekend trip for 2 people to Paris or Berlin, respectively.

After the award ceremony Thermo Haake held a press conference. Here the winners, representatives from companies and the RheoFuture® founders were available for questions from the journalists representing the technical press. The main part of the discussion covered the requirements and profiles of the candidates and the opportunities available for their careers as researchers within industry.

Because of the positive resonance from the participants and the scientific community, Thermo will continue its RheoFuture® initiatives in the future.

The main focus will further be on the support of young scientists on an international level.

Together with strategic partners RheoFuture® will expand and be visible on the main conferences and events in rheology.

More Info?
Details on RheoFuture® can be obtained by visiting www.rheofuture.de



The RheoFuture Conference

Footnotes:

1. Trends in rheology/ discussions at RheoFuture®

There were three main topics at the RheoFuture® conference:

Combined methods

- Lecture Norbert Willenbacher, BASF Ludwigshafen
- Chairman Manfred Wilhelm, Max Planck Institut Mainz

On-line

- Lecture Sejal Ravji, Nestlé Nestec Research Center Lausanne
- Lecture Christian Fuchs, Fuchs-Oil Mannheim
- Lecture Guy Schlatter, University of Straßburg
- Chairman Manfred Wilhelm, Max Planck Institut Mainz

Reactive Extrusion

- Vortrag Alain Michel, University of Lyon
- Vortrag Françoise Couenne, University of Lyon
- Chairman João Maia, University of Minho

2. Christian Clasen,

- Dr. rer. nat., 29 years old
- Study of chemistry at the university of Hamburg, Germany 1992- 1998
- PhD in chemistry university of Hamburg, Germany 2001
- Postdoc at MIT Cambridge, USA 2002
- (making of Award contribution)
- Current position: Assistant Professor at University of Hamburg

Title

"A new flexure based microgap rheometer (FMR)"
Academic supervisor:
Prof. Gareth McKinley,
MIT Cambridge Boston USA

3. Wendy Loyens,

- Dr. rer. nat., 29 years old
- Study of chemical engineering (KIHl Diepenbeek), Belgium
- Master Polymer and Composite Engineering, Belgium 1996
- PhD in chemistry university of Leuven, Belgium 2001
- (making of Award contribution)
- Current position: Postdoc Lund Institute of Technology, Schweden

Title:

"Phase morphology development in reactively compatibilised polyethylene terephthalat/ elastomer blends"
Academic supervisor: Prof. Groeninckx, Universität Leuven, Belgium

4. André Rocha Studart,

- Dr. rer. nat., 28 years old
- Study of chemical engineering, University of Sao Carlos, Brazil 1992- 1997

- PhD Materials Engineering University of Sao Carlos, Brazil 2001 (making of Award contribution)
 - Current position: Postdoc Materials Department ETH Zurich, Switzerland
- Title**
"Gelling of ceramic suspensions using an algae derived polymer"
Academic supervisor:
Prof. Victor Carlos Pandolfelli, Universität Sao Carlos

Universal Temperature Control Unit (UTC) for RheoStress 600

A new Peltier temperature control unit for cone/plate measuring geometries is available for the RheoStress 600. The UTC (Universal Temperature Control Unit) is an improved Peltier system with additional heating, covering the whole temperature range with one circulator setting.

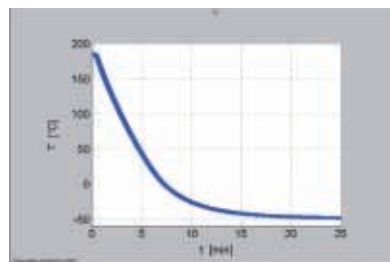


Fig 1. Temperature-Time-Curve for UTC (RheoStress 600), Circulator filled with Synth 60 and set to -20°C

More Info? Send an email to newsletter@thermoaake.com and Quote: No: 122 for UTC for RheoStress 600

Measurements on glue using the HAAKE CaBER 1 – a simple method for quality control

Extensional rheometry

Many different experimental techniques for measuring the elongational properties of non-Newtonian fluids have been developed over the last 30 years. All these techniques were difficult to operate, generated complex flows and therefore confusing results. The HAAKE Capillary Break-up Extensional Rheometer (CaBER, see fig. 1), developed by the Cambridge Polymer Group and designed and manufactured by Thermo Electron Karlsruhe, is the first commercially available instrument to change this.

The HAAKE CaBER 1

A small quantity of sample (< 0.2 ml) is placed in the HAAKE CaBER 1 between two circular plates. The top plate is rapidly separated from the bottom plate, thereby forming a fluid filament by imposing an instantaneous level of extensional strain on the fluid sample. After cessation of stretching, the fluid at the mid-point of the filament undergoes an extensional strain rate defined by the extensional properties of the fluid.

A laser micrometer monitors the midpoint diameter of the gradually thinning fluid filament as a function of time (see fig. 2).



Fig. 1: CaBER 1

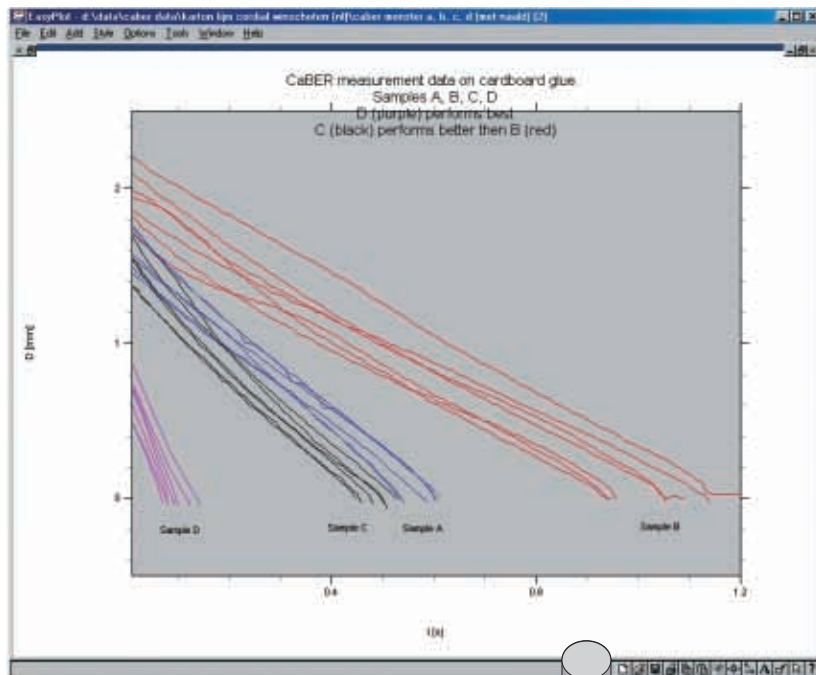


Fig. 4: Cardboard glues experimental results.

Application

Corrugated cardboard consists of multiple cardboard layers that are glued together. The glue is applied using a roll as shown in fig 3. Extensional flow occurs at the position where the roll leaves the cardboard. When the rheological properties are not optimal the glue will show a "misting" behavior which is not desirable. The extensional flow in this application is well simulated in the HAAKE CaBER 1.

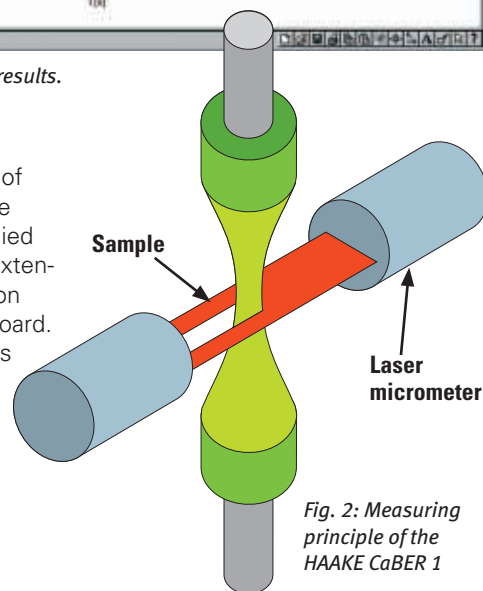


Fig. 2: Measuring principle of the HAAKE CaBER 1

Experimental results

Measurements on four different cardboard glue samples have been carried out using the HAAKE CaBER 1. The four samples show a different behavior: B performs badly, A and C are useable, only D performs very well regarding "misting". A shorter filament break-up time corresponds to less "misting". This is directly mirrored in the measurement results (see fig. 4), where sample D clearly shows the shortest break-up time.

Conclusions

With the HAAKE CaBER 1 the cardboard samples are characterized using a measuring technique that is closely related to the actual application. Measurements only take minutes, making this instrument optimally suited for quality control.

More Info? Send an Email to newsletter@thermoaake.com and Quote: No: 135 for HAAKE CaBER 1 No: 136 for a reprint of CaBER 1

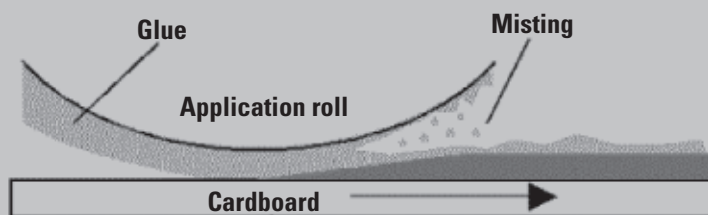


Fig. 3: Application of cardboard glue.

New accessories for the HAAKE MiniLab micro compounder.

Force feeder for continuous extrusion

The HAAKE MiniLab product is extended to include new feeders and dies for an increased performance of the system. The new force feeder for the MiniLab allows for a continuous compounding with the MiniLab for up to 3 g extrudate per minute.

The feeder can be used for powders, middlings and pellets up to 2.5 mm. The completely sealed funnel of the force feeder combined with an inert gas inlet, allows for moisture or oxygen sensitive samples to be easily processed. The feeding zone is equipped with a cooling jacket to avoid melting and sticking of the test material. Compressed air or water as coolant can also be used.

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 123 for force feeder



HAAKE Force feeder for the HAAKE MiniLab

Dies for the MiniLab

Dies to shape the extrudate include a set of rod dies – 0.25 to 1.75 mm diameter - and slit die – 0.5mm x 5mm – which are now available.



Sheet and ribbon die for the HAAKE MiniLab

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 124 for dies

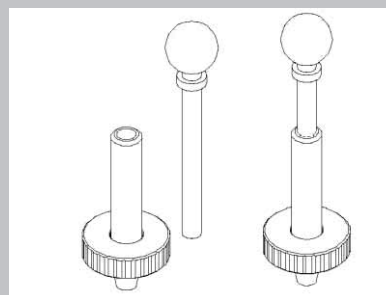
Looking for Application Information?

Thermo Haake provides application support worldwide. If you would like to discuss your particular application and find out where Thermo Haake can offer technical product support contact your local distributor or Email newsletter@thermohaake.com

Manual feeding device for powders

A new easy to use manual feeding device for the MiniLab is now available. For applications where the MiniLab is used in the cycling mode this feeding device can be used instead of the standard pneumatic feeder.

Fine powders, which melt in the feeding funnel causing a clogging of the pneumatic feeder, can be handled with this new manual feeder. The manual feeder can be completely disassembled which facilitates easy cleaning. There are just two pieces to clean - the plunger and the funnel.



Manual feeder for the MiniLab

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 125 for manual feeder

Thermo – your partner to test the physical properties of polymers

For all who need a comprehensive characterization of polymers, Thermo is the partner of your choice.

An extensive range of products is available and the following overview highlights the breadth and extent of the range.

Melt Flow Index

To generate melt flow index data Thermo offers the HAAKE MeltFlow family. Choices range from:

- Simple rugged manual instruments, which are ideal for small injection molding companies, to
- Semi automatic MFR/MVR testers designed for QC, to
- Automated robotic and on-line systems that provide production feedback for 24 hour operation

More Info?
Send an email to newsletter@thermohaake.com and Quote: No: 126 for HAAKE MeltFlow ST

Rotational Rheometers

For the measurement of rheological data a wide range of rheometers from the HAAKE RheoStress family are available for dynamic testing.

More Info?
Send an email to newsletter@thermohaake.com and Quote: No: 127 for HAAKE RheoStress Rheometers



HAAKE MeltFlow ST



HAAKE RheoCap S20 high pressure capillary rheometer



HAAKE pvT 100

Capillary Rheometers

High pressure capillary Rheometers from work horse single bore Rheo-Cap S20 to the top of the range HAAKE RheoCap T100 a double bore rheometer. Those Rheometers can be used with rod, slit and elongations dies to measure extensional viscosity.

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 128 for HAAKE RheoCap S20
Quote: No: 129 for HAAKE RheoCap T100

Contract Testing

If you think these instruments might be too expensive, or could take too much time to train staff and to operate them – please contact us as we can offer you contract testing utilizing any or all of these instruments.

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 133 for Contract Testing

For a complete catalogue covering the entire product range for characterization of polymers
Quote: No. 134

Determination and analysis of all important thermo dynamic material data of polymers

To measure and analyze the specific volume behavior and the thermal conductivity of polymers as a function of pressure for detailed studies on polymers the HAAKE pvT100 is the instrument of your choice. The HAAKE pvT 100 gives you access to the data you need for your simulation programs of moulds and dies.

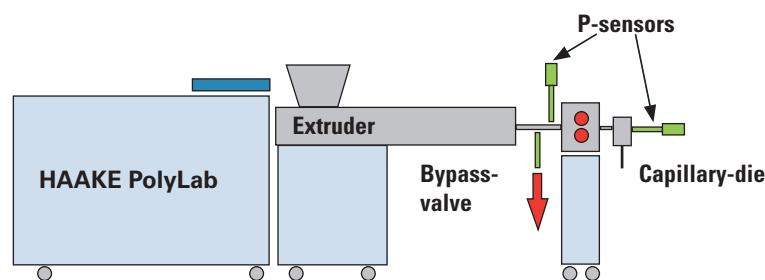
More Info? Send an email to newsletter@thermohaake.com and Quote: No: 132 for HAAKE pvT 100

Torque Rheometer & On Line Rheometer

For continuous rheological measurements the HAAKE PolyLab System and the HAAKE ProFlow On-Line System are the instruments to measure viscosity and extensional flow properties with a wide variety of rheological dies.

Meltindex measurements and comprehensive rheological studies can be transferred from laboratory extruder to production extruders.

More Info? Send an email to newsletter@thermohaake.com and Quote: No: 130 for HAAKE PolyLab
Quote: No: 131 for HAAKE ProFlow



HAAKE PolyLab torque rheometer

Editors Note:

There is no guarantee that comments or feedback received will be published. However, we will answer all communications direct.

Free Sample Testing

Thermo Haake will measure two of your samples with the RheoScope (a high-end rheometer with a built-in microscope and video camera) for free. To arrange to have your samples tested for free, register on-line at www.thermohaake.com and follow the prompts to RheoScope 1 and complete the Free Sample Testing Form