

ORIGINAL preeflow® ACCESSORIES & CONSUMER

1 & 2 COMPONENT APPLICATIONS IN FOCUS



preeflow®

MADE BY VISCOTEC

The brand preeflow[®] was created in 2008 by Customer satisfaction is our top priority. We work ViscoTec. Since then, the microdispensing products of the eco-PEN and eco-DUO series have your expectations worldwide. been successfully used in dispensing applications worldwide.

preeflow[®] systems stand for volumetric, repeatable and economical dispensing of low to high viscosity liquids. They can be used individually as well as easily integrated into semi or fully automated systems. The fluids can range from watery to pasty, from self-lubricating to abrasive, from thixotropic to dilatant. There are almost no limits to the types of materials which can be dispensed.

as a team to provide the perfect solutions to meet

Sales are carried out via an international distributor network. In addition, the preeflow® team is available to answer any questions you may have. A high quality standard and punctual delivery are very important to us. All standard components are available from stock. Our customers can rely on perfect service and support. And that's a promise!



TECHNOLOGY & USP

HOW IT WORKS EVEN WITH THE MOST SOPHISTICATED MATERIALS

THE ENDLESS PISTON PRINCIPLE

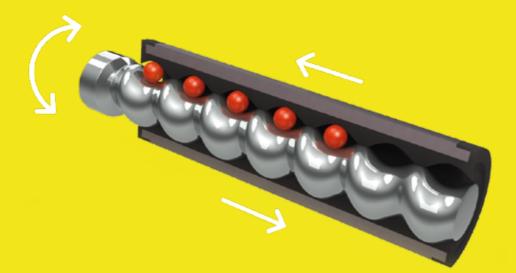
The functional principle of the preeflow[®] dispenser is similar to that of an endless piston dispenser.

The special conveying geometry enables continuous, pulsation-free dispensing flow. Reversing the direction of rotation (suck-back function) prevents dripping and leads to a controlled thread break of the material. preeflow[®] delivers high-precision and clean dispensing results.

Particularly sensitive material with high viscosities and fillers are treated gently due to the low shear stress and low pressures.

MANY TASKS - ONE PRINCIPLE!

- Volumetric
- Viscosity-independent
- Pulsation-free





MADE IN GERMANY

From the initial idea to the quality control of the outgoing goods: All steps in the process are developed and implemented at the headquarters in Töging. In addition to the quality feature "Made in Germany" and the "Think global, act local" approach, we at preeflow® not only ensure the quality of the systems, but also offer optimum coordination and process reliability in all projects.



EXPERIENCE

We have more than 20 years' experience in the dispensing of fluids. This comprehensive know-how in dispensing technology distinguishes ViscoTec. In 2008, this wealth of experience was expanded with the introduction of the preeflow[®] brand. With success: For 10 years preeflow[®] has stood for precise and pure volumetric dispensing of liquids in small and very small quantities. A variety of industries worldwide rely on preeflow[®] products.



INNOVATION

We are convinced: Standstill means regression – only those who move forward progress. Creativity and ingenuity create innovations. In our Customer and Innovation Center (CIC) we have the opportunity to test your application together with you and adapt it optimally to your process.



SERVICE

Our team consists of specialists in all aspects of microdispensing technology. Always technically up to date, we assure you the best service and quick response times. Our ultimate goal is the solution to your technical questions and the optimization of your processes.







DOT & BEAD DISPENSING - INTERESTING FACTS

DROPLET SIZES

One microliter (0.001 ml) is the smallest dose quantity possible with a preeflow[®] dispenser. For illustration: This volume corresponds to a cube of only one millimeter edge length. As droplets on a substrate with a contact angle of 90°, this has a diameter of only 1.56 mm. Larger droplets are possible at any time during the process thanks to the technology used.

•	9	•	9	9	\$
	v: 0,0003 d: 1,05			v: 0,003 d: 2,25	

BEAD STRENGTH

Due to pulsation-free dispensing technology, high-quality beads can be produced with preeflow® dispensers. Beads with a diameter of less than one millimeter can also be produced. With flow rate linked to speed of movement, consistent and stable beads can be dispensed along multi-dimensional paths.

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v: ml (volume) d: mm (diameter)



v: 0,01

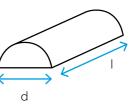
d: 3,37

v: 0,03 d: 4,86



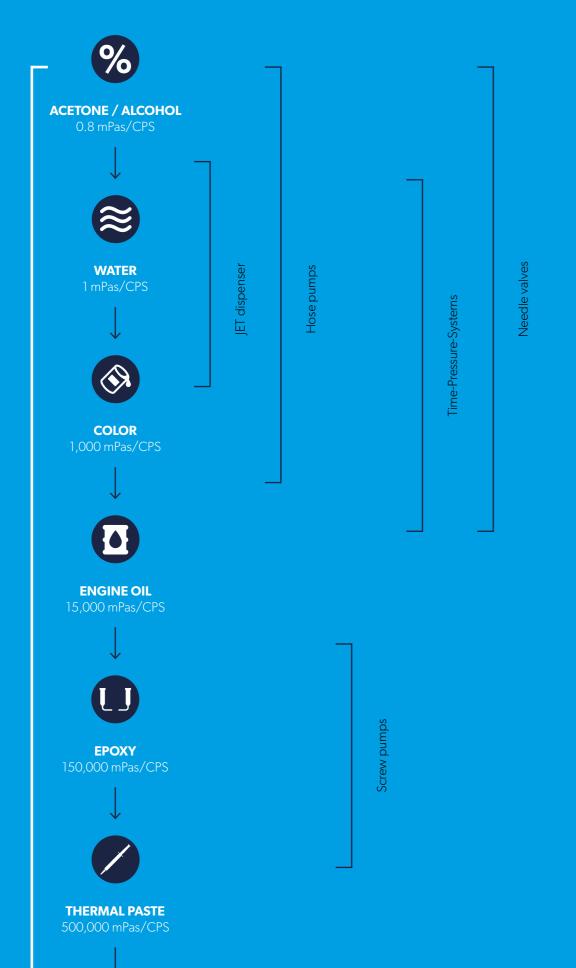


v: 0,05 v: 0,1 d: 5,78 d: 7,26



r: mm (radius) I: mm (length) d: mm (diameter)

COMPARISON OF DISPENSING TECHNOLOGIES



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preeflow[®] Endless Piston Principle by ViscoTec





the smallest amounts of single-component fluids – for high-pre- to dispensers. Always true to the motto: "smaller, more precise, cision dispensing technology. Thanks to the proven endless pis- more economical". They are suitable for manual workstations, ton principle, watery to pasty liquids are perfectly dispensed. A such as workbench applications, or for semi and fully automaclean, process-reliable dosage is achieved regardless of fluctuations in viscosity.

Our eco-PEN is a true volumetric dispensing system that applies preeflow[®] stands for high-quality products, from control units ted operation.

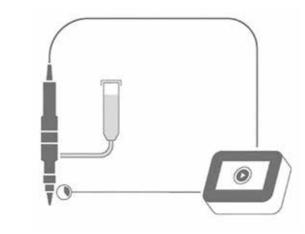


Description	eco-PEN300	eco-PEN330	eco-PEN450	eco-PEN600	eco-PEN700 ^{3D}
Art. No.	20505	21525	20092	20048	20723
Measurements	length 216 mm, Ø 33 mm	length 225 mm, Ø 33 mm	length 228 mm, Ø 33 mm	length 274 mm, Ø 40 mm	length 274 mm, Ø 40 mm
Weight	280 g	300 g	300 g	650 g	650 g
Operating pressure	0 – 6 bar	0 – 6 bar	0 – 6 bar	0 – 6 bar	0 – 6 bar
Max. dispensing pressure (1)	20 bar	20 bar	20 bar	20 bar	10 bar
Viscosity	watery to pasty	watery to pasty	watery to pasty	watery to pasty	watery to pasty
Volume flow	0.12 – 1.48 ml/min	0.2 - 3.3 ml/min	0.5 - 6.0 ml/min	1.4-16.0 ml/min	5.3-60.0 ml/min
Min. dispensing quantity	0.001 ml	0.002 ml	0.004 ml	0.015 ml	0.060 ml
Dispensing accuracy (2)	±1%	±1%	±1%	±1%	±1%
Stator material	VisChem	VisChem (optional VisLas)	VisChem (optional VisLas)	VisChem (optional VisLas)	VisChem
Material inlet	G 1/8" DIN/ISO 228	G 1/8" DIN/ISO 228	G 1/8" DIN/ISO 228	G 1/4" DIN/ISO 228	G 1/4" DIN/ISO 228
Material outlet	Luer-Lock (patented)	Luer-Lock (patented)	Luer-Lock (patented)	Luer-Lock (patented)	Luer-Lock (patented)
Wetted parts	POM / stainless steel / VisChem / HD-PE	POM / stainless steel / VisChem / HD-PE (optional VisLas)	POM / stainless steel / VisChem / HD-PE (optional VisLas)	POM / stainless steel / VisChem / HD-PE (optional VisLas)	POM / stainless steel / VisChem / HD-PE
Operating conditions	10-40 °C	10-40°C	10-40 °C	10 – 40 °C	10-40 °C
Repeat accuracy	> 99 %	> 99 %	> 99 %	> 99 %	> 99 %

(1) Max, dispensing pressure and self-sealing decrease with decreasing viscosity, increase with increasing viscosity. Consult the manufacturer, (2) Volumetric dispensing as absolute deviation related to one revolution of the dispenser. Depends on the viscosity of the dispensing material.

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SYSTEM PRESENTATION

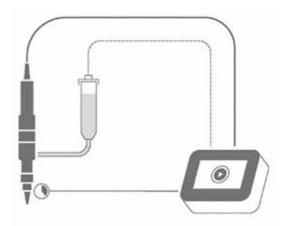


Self-levelling liquid, low viscosity material

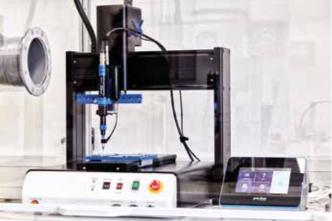
APPLICATION EXAMPLE

In the field of electronics, more and more devices and enclo-True to the motto "plug'n'dose", both the 1 component dispensures are being bonded instead of screwed or fastened. The ser eco-PEN and the 2 component dispenser eco-DUO are reaeco-PEN series from preeflow® meets the demands of the dy to use after a simple stator installation and connection to the market for miniaturization. The micro-dispensing units achiecontroller. The operation of the dispenser and the controller is ve the smallest dispensing results of up to 0.001 ml and can intuitive. In addition to the ease of commissioning and the capatherefore be implemented into almost any dispensing applicability of applying a large number of different materials, there are tion. Among the advantages that the customer benefits from, other advantages: the viscosity-independent, purely volumetric through the integration of the eco-PEN into their system, are dispensing in small and very small quantities. precision, a repeat accuracy of \geq 99 %, a stable process and a clean dispensing application.





Non-self-levelling liquid, medium to high viscosity material, incl. pressure feed



TÉC

MORE INFORMATION CAN BE FOUND AT



www.preeflow.com/en/ products/1k-dispenser/



- Genuine volumetric dispensing
- Dispensing regardless of viscosity
- Dosing independent of input pressure
- Pressure-tight without valve
- Suck-back effect
- Adjustable dispensing flow
 - Dispensing pressures from 0 to 20 bar

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OUR TIP

blished.

By continuously monitoring of the dosing process with the flowplus¹⁶, errors can be detected, and a reliable process esta-



ONE SENSOR, MANY APPLICATIONS

- flowplus¹⁶



Description	flowplus ¹⁶
Operating principle	Gauge pressure sensor
Measuring range	0 – 16 bar
Measuring tolerance	± 2 % of measured value (FS)
Sample rate	3 kHz
Supply	24 VDC ± 10 %
Output signal	0.1 – 10 VDC
Operating temperature	+15 °C to +45 °C
Mechanical connection	Luer-Lock DIN EN 1707

DESCRIPTION

Incorrect dispensing affects the quality of the entire process and high sampling rate of 3 kHz as well as the integrated pressure leads to waste of the material. This can be due to a constriction or blockage within the dispensing needle, an incorrect distance to the substrate or air trapped in the material interrupting the material application.

By continuously monitoring the dispensing process with the automation. flowplus¹⁶, errors can be detected, and a stable process established. Thanks to the standardized Luer-Lock connection, the

sensing and compact size, the fields of application of the flowplus¹⁶ are almost unlimited.

flowplus¹⁶ – the Plug and Play solution for: process monitoring - process optimization - process documentation - process

AREAS OF APPLICATION

Electronics



Analytics





Industrial







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preeflow[®]: true volumetric output for 2 component materials. The smallest quantities of 2 component fluids and pastes are process reliability due to pressure monitoring and further funcprecisely mixed and dispensed. The mixing ratio is set to the second decimal place by targeted control of the individual components. A clean, process-reliable dose is achieved regardless nics combined with state-of-the-art digital control technology. of fluctuations in viscosity.

The 2 component mixing and dispensing systems from The preeflow® devices of the eco-DUO series are characterised by controlled thread break-off thanks to the suck-back effect, tions. With simple and safe operation, the 2 component dispensers can be used widely. Experience for yourself precise mecha-



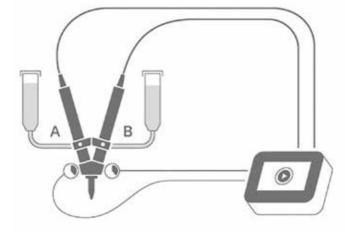
Description	eco-DUO330	eco-DUO450	eco-DUO600
Art. No.	21529	20639	21175
Measurements	228 mm x 163 mm	228 mm x 163 mm	301 mm x 163 mm
Weight	1230 g	1230 g	1880 g
Operating pressure	0 – 20 bar	0 – 20 bar	0 – 20 bar
Max. dispensing pressure	40 bar	40 bar	40 bar
Viscosity	watery to pasty	watery to pasty	watery to pasty
Volume flow (3)	0.1 – 6.6 ml/min (at 1:1)	0.2 – 12 ml/min (at 1:1)	0.6 – 32.0 ml/min (at 1:1)
Min. dispensing quantity	0.005 ml	0.010 ml	0.030 ml
Dispensing accuracy (2)	±1%	±1%	±1%
Mix ratio	1:1 – 10:1	1:1–10:1	1:1 – 10:1
Stator material	VisChem (optional VisLas)	VisChem (optional VisLas)	VisChem (optional VisLas)
Material inlet	G 1/8" DIN/ISO 228	G 1/8" DIN/ISO 228	G 1/4" DIN/ISO 228
Material outlet	static mixer, bayonet lock	static mixer, bayonet lock	static mixer, bayonet lock
Wetted parts	Aluminium, anodized / POM / stainless steel / VisChem / HD-PE (optional VisLas)	Aluminium, anodized / POM / stainless steel / VisChem / HD-PE (optional VisLas)	Aluminium, anodized / POM / stainless steel / VisChem / HD-PE (optional VisLas)
Operating conditions	10-40 °C	10-40 °C	10-40 °C
Repeat accuracy	> 99 %	>99%	>99%

(1) Max. dispensing pressure and self-sealing decrease with decreasing viscosity, increase with increasing viscosity. Consult the manufacturer.

Volumetric dispensing as absolute deviation related to one revolution of the dispenser. Depends on the viscosity of the material dispensed Max. flow rate depends on viscosity, inlet pressure and mixing ratio.

(4) Depending on the mixer.

SYSTEM PRESENTATION



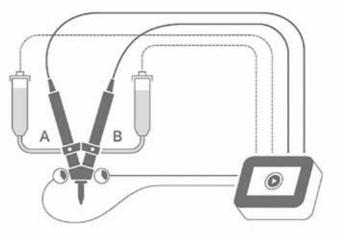
Self-levelling liquid, low-viscosity material, incl. sensor technology

APPLICATION EXAMPLE

Precise application, repeat accuracy, exact dispensing volume, Ever smaller, ever thinner and ever more powerful - in the elecviscosity independence and the right mixing ratio: the ecotronics industry, innovative and space-saving joining technolo-DUO450 performs to your expectations. The 2 component gies are in demand that neither stand in the way of miniaturimicro-dispenser from preeflow® is therefore perfectly suited for zation nor mass production. The micro-dispenser, in particular applications in medical technology, for example. By using an the 2 component dispenser eco-DUO330, performs well with eco-DUO450, the customer can benefit from numerous advana minimum dose of 0.001 ml. In every adhesive application, tages such as increased productivity, lower material consumpno matter how fine it may be, such as when bonding miniatution and reduced waste. re cameras into smartphones, the micro-dispenser proves itself with its clean adhesive application.







Non-self-levelling liquids, medium to high viscosity material, incl. sensor technology and pressure feed



TECHNICAL FEATURES

MORE INFORMATION CAN BE FOUND AT



www.preeflow.com/en/ products/2k-dispenser/



- Genuine volumetric dispensing
- Dispensing regardless of viscosity
- Dosing independent of input pressure
- Pressure-tight without valve
- Suck-back effect

Easy cleaning



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Adjustable mixing ratio

Dispensing pressures from 0 to 40 bar





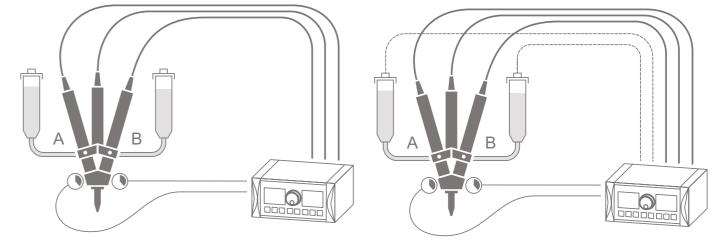
mixing capsule optimized for dead space, which can be used for dynamic mixing for the first time. Materials with the same are difficult to process, despite the small volume. and/or different viscosities were developed and evaluated.

mixing spiral, is available as a consumable and is installed direct-

Instead of a mixing helix, the eco-DUOMIX is equipped with a ly at the outlet of the dispenser. Inside the capsule, the motordriven mixer ensures optimum mixing, even of components that

An exact application of even the smallest sealing beads is achie-The dead space optimized mixing capsule used, instead of a ved by means of a replaceable metal dispensing needle, which is mechanically connected to the mixing capsule.

SYSTEM PRESENTATION

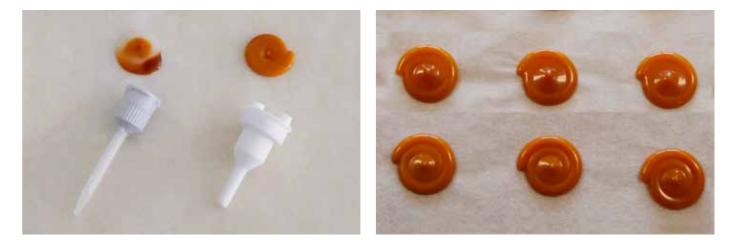


Self-levelling liquid, low-viscosity material, incl. sensor technology

DISPENSING TEST

Comparison of mixing results at static and dynamic mixing with the same volume flow and identical laboratory conditions:

The samples were run with the same control unit (calibration optically does not differ from the samples with higher dosing and program were identical) and the same base pump (drives, speeds and mixer speeds. pump housing, rotor and stator, etc.). Only the way of mixing the material was changed. For the dosing tests, a difficult to pro-Result: The 2-component epoxy adhesive, which could not be cess 2-component epoxy adhesive was used. The mixing ratio processed by static mixing, is reliably mixed by dynamic mixing is 10:1 (A:B) by weight. The samples were prepared at different even at the lowest mixer speed and can be processed optimally. dosing speeds (0.5 ml/min - 6 ml/min). As can be seen in Figure 1, the test material with the static mixing is not processable by default - the material is only partially mixed and does not cure completely.



Comparison: Mixing result static mixing (left), mixing result dynamic mixing (right)



Description	eco-DUOMIX450
Art. No.	22108
Measurements	228 mm x 163 mm
Weight	1600 g
Operating pressure	20 bar
Max. dispensing pressure (1)	20 bar
Viscosity	watery to pasty
Volume flow (3)	0.2–12 ml/min (at 1:1)
Min. dispensing quantity	0.008 ml
Dispensing accuracy (2)	±1%
Mix ratio	1:1 – 10:1
Stator material	VisChem (optional VisLas)
Material inlet	G 1/8" DIN/ISO 228
Material outlet	LuerLock
Wetted parts	Aluminium, anodized / stain- less steel / VisChem / HD-PE / PP / PA (optional VisLas)
Operating conditions	10-40 °C
Repeat accuracy	> 99 %
Max. speed mixer (3)	2,000 rev/min

Max. dispensing pressure and self-sealing decrease with decreasing viscosity, increase with increasing viscosity. Consult the manufacturer.
Volumetric dispensing as absolute deviation related to one revolution of the dispenser. Depends on the viscosity of the material dispensed.
Max. flow rate depends on viscosity, inlet pressure and mixing ratio.

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Non-self-levelling liquids, medium to high viscosity material, incl. sensor technology and pressure feed

For the tests of the dynamic mixture, speeds of ~200 rpm, up to ~2000 rpm were used. As can be seen in Figure 2, this material is already homogeneously mixed at the minimum speed, which

Mixing result eco-DUOMIX (dynamic mixing)

MORE INFORMATION CAN BE FOUND AT



www.preeflow.com/en/ products/2k-dispenser/



Dynamic mixing



Dispensing regardless of viscosity

Dosing independent of input pressure

Pressure-tight without valve

Suck-back effect



Easy cleaning

Ń Dispensing pressures from 0 to 20 bar

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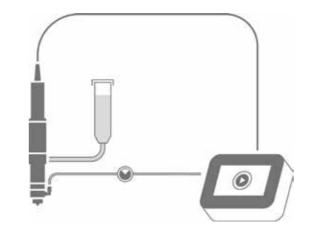


wide variety of spray operations. The spray system consists of a revolutionary combination of the proven endless piston principle and a low-flow spray chamber. This guarantees perfect spraying of low to high viscosity material with high edge sharpness.

highly viscous materials. The system can apply and precisely

ViscoTec's precision volume dispenser enables applications in a position exact quantities independent of viscosity and input pressure. Depending on the desired layer thickness, the dose can be adjusted by simply changing either the air pressure, adhesive volume, distance to the substrate or the speed of the application. The utilization of the eco-SPRAY is intuitive. In addition, the combination of different needle diameters and sup-The eco-SPRAY is particularly impressive when processing plied air caps allows individual adaptation to materials as well as to dispensing processes.

SYSTEM PRESENTATION



Self-levelling liquid, low-viscosity material

APPLICATION EXAMPLE

The preeflow[®] eco-SPRAY has become an important element Even materials that change their aggregate condition when the in the production of loudspeakers and headphones. The spray temperature rises can be sprayed automatically with the ecodispenser fulfils the most important aspects when applying a SPRAY thanks to the optional integrated heating assembly. The special coating, which acts as a damping layer on membranes temperature in the microspray dispenser, e.g. for wax or ethyof the loudspeakers. The damping material is applied homogelene carbonate or other materials that change when the tempeneously over the entire surface using the eco-SPRAY. Thanks to rature rises, can be maintained above the melting temperature. a low spray pressure of less than one bar, the spray pattern is Also perfect for high viscosity materials to enhance flowability. perfectly uniform. For outstanding sound quality of the finished The supplied heating assembly cable is compatible with any product. standard heating controller.





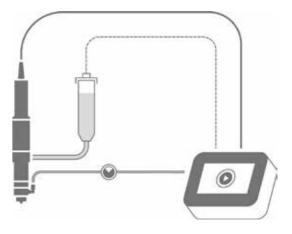
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Description	eco-SPRAY
Art. No.	21448
Measurements	length 228 mm, Ø 35 mm
Weight	650 g
Spray pattern	Round jet (adjustable)
Spray angle	15 – 30 °
Viscosity	watery to pasty
Volume flow (2)	0.5 – 6.0 ml/min
Min. spray quantity	50 µl
Atomized air	0.1 – 6.0 bar
Spray accuracy (3)	±1%
Nozzle diameter	Ø 0.2 mm / Ø 0.3 mm / Ø 0.5 mm
Stator material	VisChem (optional VisLas)
Material inlet	G 1/8" DIN/ISO 228
Wetted parts	HD-PE / VisChem / stainless steel (optional VisLas)
Operating conditions	+ 10 °C to + 40 °C
Repeat accuracy	> 99 %

(1) Max. dispensing pressure and self-sealing decrease with decreasing viscosity, increase with increasing viscosity. Consult the manufacturer.

(2) Max. flow rate depends on viscosity and inlet pressure.

(3) Volumetric dispensing as absolute deviation related to one revolution of the dispenser. Depends on the viscosity of the dispensing material.



Non-self-levelling liquids, medium to high viscosity material, incl. pressure feed



TECHN

MORE INFORMATION CAN BE FOUND AT



www.preeflow.com/en/products/ spraydispenser/



Spraying of defined quantities



Dosage independent of input pressure

Pressure-tight without valve

Optional heating

Easy cleaning



Adjustable omnidirectional jet

Uniform spray pattern





FECEN FEATURES

ORIGINAL preeflow® ACCESSORIES **& CONSUMER MATERIALS**

HIGH PRECISION NEEDLES

• Higher precision than standard dispensing needles

- Tapered tips for easy material flow
- Industrial Luer-Lock thread

STATIC MIXERS

- Suitable for a wide range of cartridge sizes and material ratios
- Reduces material waste
- Suitable for low, medium and high viscosity materials

DISPENSING NEEDLES

- Standard dispensing needles for the eco-PEN
- Ideal for highly viscous or filled materials (silicones, solder pastes, greases etc.)
- Luer-Lock thread made of polypropylene .

FURTHER ACCESSORIES

The original preeflow[®] mounting, process and electronic accessories for the eco-PEN, eco-DUO and eco-SPRAY are always in stock.

WE WILL BE HAPPY TO **ADVISE YOU**



www.preeflow.com/en/contact



Simple machine integration

Details on request









DISPOSABLES

ACCESSORIES

1 & 2 COMPONENT APPLICATIONS

IN FOCUS

BONDING

ADHESIVE DISPENSING FOR INDUSTRIAL ASSEMBLY

Bonding is also referred to as structural gluing with a dispenser. Almost all material combinations are bonded with volumetric adhesive dispensing. The adhesive dispensers from preeflow® guarantee a reliable and stable process. Absolute precision makes the dispensing systems for adhesives the ideal application partner.



CONFORMAL COATING

COMPREHENSIVE APPLICATION OF A PROTECTIVE VARNISH

Conformal coating is the application of a protective coating. Opaque or transparent lacquers are applied partially or completely to printed circuit boards. The materials are usually highly viscous, thermal or UV-curing. They are dispensed onto a microscope slide in a thin or thick film process.

OPTICAL BONDING

ADHESIVE DISPENSING FOR BETTER IMAGE QUALITY

Optical bonding is the joining of two layers of material with a clear adhesive. The adhesive is applied with a dispenser. Compared to other methods, this method enables a significantly improved display performance. The optical bonding process eliminates the air gap between the glass and the display. This results in increased robustness and excellent image quality.



DAM & FILL

PROTECTION OF HIGHLY COMPLEX AREAS

Dam and fill methodology is used to protect highly critical areas on electronic assemblies, such as wire bonds. The first step is to apply a highly viscous barrier - the dam. In the next step, the dammed area is filled with a lower viscosity, self levelling material. Accurate amounts of dispensed dam and fill resins are essential for this process.







GLOB TOP

PRECISE DISPENSING FOR RELIABLE PROTECTION

The glob top encapsulation protects highly sensitive electronic components safely and reliably. External environmental influences or mechanical stress no longer have a negative effect on the components. Epoxy or fast curing UV resins are used for this application. If this encapsulation is underneath the component, it is called an underfill - providing structural strength and stress relief as well as environmental protection.



MICRODISPENSING

HIGH PRECISION DISPENSING OF LIQUID MATERIALS

Microdispensing means the dispensing of flowable material within a volume range of one microliter. The dosing is carried out by means of a dispenser. The dispensed form can be either dots or beads - as 1 component or 2 component dispensing. Exact precision and a high level of repeat accuracy are of particular importance here. At the same time, the dispensers must be absolutely reliable.

UNDERFILL

ADHESIVE DISPENSING FOR CONDUCTIVE **ADHESIVES**

Electrically conductive adhesives can be used for interconnects between components and/or circuitry. They are usually thermally cured epoxies. Precision application is needed to prevent short circuits.

ENCAPSULATING

DISPENSING OF POTTING COMPOUND FOR THE ELECTRONICS INDUSTRY

Electronic potting compound applied to a specific component or surface: this is how the encapsulating process can be described. Adhesive dispensing protects the component during transport or from environmental influences. This includes vibrations, shock, moisture, dust and extreme temperatures. However, the electronic potting compound not only protects, it also improves electrical insulation, chemical resistance and protection against damage.





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