



POLYURETHANE INSULATION SPRAY

BANG & BONSONER GROUP OY

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Polyurethane insulation, or PU insulation, is an effective and commonly used insulation material that has been used in construction and industry for over 30 years. PU insulations are the most commonly used insulations in Europe and the US. When it comes to renovating, improving heat insulation is always one of the key priorities. Good and tightly sealed heat insulation is one of the most important features of energy-efficient construction.

Good insulation decreases carbon dioxide emissions and prolongs the lifespan of a building as well as improves the comfort of living for its residents. The PU insulation spray can significantly improve the life span costs of building maintenance.

EKOSPRAY INSULATION

Closed cell Ekospray PU insulation provides **tight insulation, a vapour barrier, wind protection and support for structures**. Without a separate wind-protective panel or vapour barrier. No aluminium membranes that could interrupt telecommunications. **Closed cell Ekospray is not damaged by wetness during construction or moisture in structures**. The insulation does not gather mould nor does it rot. Ekospray insulations are made and **sprayed on the installation site to the desired thickness**.

Ekospray insulation enables insulating even the more complicated forms and structures in a seamless manner. **Closed cell insulation does not let draught through. Insulations do not require fasteners, studs or supporting structures, and they can be installed on tilted and unsealed bases**.

A 150 mm insulation layer meets the U value standards set in the Building Code of Finland (0.17 W/mK), and 35 mm layer of Ekospray insulation is already enough to create water vapour resistance, so a separate water vapour barrier is not needed.

PROPERTIES

The Ekospray product family includes closed and open cell plastic insulations with different properties. Finished insulation's density varies between 8 kg/m³ for open cell applications to 50 kg/m³ for closed cell insulations. In our range of products, the thermal conductivity of our closed cell insulations is at best declared 0.025 W/mK, and for open cell products, thermal conductivity is declared 0.039W/mK. Outside moisture does not affect the thermal insulation or strength of closed cell Ekospray insulation.

SUSTAINABILITY

PU insulation spray lasts for generations without changing. The tightness of the insulation guarantees that the insulation does not attract fungal growth, mould or rot. Micro-organisms cannot penetrate PU insulation. The insulation saves natural resources over 100-times compared to its manufacturing process. PU insulations taken from demolished structures can be burned for energy in combustion plants that handle sorted or general waste. The energy content of PU insulation is about 90% of fuel oil.

EKOSPRAY PRODUCTS HAVE BEEN RESEARCHED IN THE FOLLOWING CONTEXTS AND HAVE THE FOLLOWING APPROVALS:

- CE certified
- M1 emission classification (Ekospray, Ekospray HFO)
- Fire research and testing report by VTT (VTT-R-08734-12)
- TÜV fire testing classification reports TEK-47/11en, TEK- 76/12en, TEK-50/11en
- Tampere University of Applied Sciences research on water vapour transmission rate
- TRT/2074/2012
- Master's thesis at Tampere University of Applied Sciences - use in renovation works

EKOSPRAY INSULATION

- High-performance insulation foam
- M1 classified

Unit weight	475 kg	
Density	28...31 kg/m ³	EN ISO 845
Thermal conductivity in 10°C	0,022 W/mK	EN 12667/ EN 12939
Thermal conductivity $\lambda_{\text{declared}}$	0,025 W/mK/ 120 mm diffusion open surfaces	EN 14315-1
Compression strength	≥ 150 kPa...250 kPa	EN ISO 844
Closed cells	> 90 %	ISO 4590
Fire class	E	EN ISO 11925-2

EKOSPRAY HFO

- High-performance insulation foam
- Fourth-generation blowing agent (HFO)
- M1 classified

Unit weight	475 kg	
Density	28 kg/m ³	EN 1602
Thermal conductivity in 10°C	0,021 W/mK	EN 12667
Thermal conductivity $\lambda_{\text{declared}}$	0,024 W/mK/ 120 mm diffusion open surfaces	EN 12667
Compression strength	≥ 150 kPa	EN 826
Closed cells	≥ 90 %	ISO 4590
Fire class	E	EN 13501-1

EKOSPRAY OPEN CELL LIGHT

- Cost-efficient open cell insulation foam

Unit weight	480 kg	
Density	8 kg/m ³	EN ISO 845
Thermal conductivity	0,039 W/mK	ISO 8301
Closed cells	2,5 %	ISO 4590
Water absorption	≤ 16 kg/m ²	EN 1609
Fire class	E	EN ISO 11925-2

APARTMENT HOUSES

Old properties in need of façade renovations are insulated with Ekospray polyurethane to meet the current requirements for energy efficiency. While the thermal insulation of structures improves many times over, the insulation layer acts as a wind baffle and vapour barrier. In terms of moisture performance, the structure becomes **safe and modern**.

Spray PU insulation has all the advantages of polyurethane. The thickness-scalable insulation layer sits completely, firmly and seamlessly on an irregular and multiform wall structure. **In this way, façade renovations and other refurbishments can be performed without**

- Straightening structures
- Sealing structures
- Supporting structures or fasteners for the insulation

INDUSTRY

Polyurethane sprays adapt to the changing needs of different industrial sectors. For particularly hot or cold conditions, special Ekospray insulation materials have been developed which can be cast or sprayed on site.

THERE ARE PLENTY OF EXAMPLES OF EKOSPRAY PU INSULATION IN INDUSTRIAL USE.

- Cold pipelines in food and fish processing plants
- Additional insulation in and around cold storages
- Foam insulation in insulation gaps between pipes, vats and sheet metal cladding
- Outside insulation of steel and concrete vats
- Freight containers
- Cars, boats, ships

Insulating using Ekospray polyurethane maintains a high moisture performance all year. Even thin layers of closed cell Ekospray insulation act as a wind and vapour barrier, so they do not need to be separately installed. By combining different products, it is possible to create cost-efficient hybrid products (closed cell + open cell) for insulation of attic floors and other such applications.

REACTOR® 3

Graco's top of the line electric reactors for spray foam and polyurea applications.

THERE IS NOTHING LIKE A GRACO ELECTRIC REACTOR

Experienced contractors know the difference. Graco's range of professional electric Reactors for spray foam and polyurea applications are solid investments that perform reliably, year after year.



Automated on-ratio performance

In the Reactor 3 system all components from drum to gun can be fully connected. The Graco electric Reactor 3 communicates with all components for perfect ratio control, material supply, temperature control... which guarantees best performance while reducing the risk of suboptimal results or health risks.



Faster, lighter & easier

The Reactor 3 system is a dream to work with. You get more work done with less effort. The touchscreen means easy operation and monitoring. You can easily move the entire rig around to where you need it, thanks to the reduced reactor weight, size and power requirements.



Optimised productivity and profitability

Using the Reactor 3 allows you to optimise productivity and get a consistent high yield with less excess waste. Enjoy lower start-up costs thanks to a smaller generator, compressor and rig. Remote control and monitoring, quick pump changeovers and less downtime on the job mean you enjoy a substantial productivity increase.

Reactor3

NEW REACTOR 3 ELECTRIC PROPORTIONER

The Reactor 3 Electric Proportioner is easy to operate & maintain and runs quick & efficient. Pick your series; from simple straightforward Standard units to Elite units that are able to communicate with the entire system to improve performance and yield.



CORE

NEW CORE E1 PATENT PENDING TRANSFER PUMPS

Designed to optimize material supplied and minimize downtime. Quieter than your typical pneumatic pumps, while also able to communicate with the Reactor 3 to create a fully-connected system.

Picture shown represents an Elite model system

Standard and Pro models can upgrade hardware to activate Katalyst System Intelligence.

ReactorConnect

REACTOR CONNECT PATENTED

Control your system with Reactor Connect and be more productive. Access your Reactor right from the gun. Monitor and adjust your proportioner and keep right on spraying. No hassles. That means you can get more done in your day, with less downtime and with reports and proof of your quality work!

Xcelerator

NEW XCELERATOR HEATED HOSE PATENT PENDING

Xcelerator internally or externally heated hoses are independently temperature controlled. The internally heated hoses have 40% faster warm-up times and are 10% lighter than the traditional externally heated hose. Hoses are now available in 15m and 30m length sections to minimize weight and fluid connections.



WHICH SYSTEM IS RIGHT FOR YOU?

Easy to Upgrade. Add Elite Features Later as Your Business Grows

Purchase the Reactor 3 system that makes sense for your business now and add features along the way. The Reactor 3 line allows you to start with a Standard or Pro and upgrade to Elite capabilities at any time.

CHOOSE THE REACTOR 3 MODEL THAT BEST FITS YOU



Standard



Pro



Elite

- Touch Screen ADM
- Brushless Motor
- Active ISO Lube Pump
- Data Download (with USB)
- Small Recirculation Valves
- Simple Y-strainers

- Software:**
- Independent A & B Hose Heat
 - Resistance Control Mode



All the features of Standard PLUS...

- Larger Heater Options
- Large Easy Access Inlet Filters
- Reactor Connect Cell Module
- Large Recirculation Valves
- Drum Level Dipsticks

- Software:**
- Auto Pressure Balance
 - Power Management
 - Automatic Cellular Software Updates



All the features of Pro PLUS...

- Katalyst Full System Control
- Ratio Assurance
- Inlet Temperature & Pressure Sensors
- Generator Dashboard
- Optimized for Core E1 Transfer Pumps

- Software:**
- Smart Control
 - Smart Supply

WHAT'S INCLUDED IN EACH PACKAGE:

PACKAGE OPTIONS	STANDARD	PRO	ELITE
EXTERNALLY HEATED HOSE (EH) PACKAGES AVAILABLE	Yes	Yes	Yes
INTERNALLY HEATED HOSE (IH) PACKAGES AVAILABLE	Yes	Yes	Yes
WHIP HOSE LENGTH INCLUDED IN PACKAGES	3m Whip in EH packages, 6m Whip in IH packages	3m Whip in EH packages, 6m Whip in IH packages	6m Whip
ITEMS INCLUDED IN SINGLE HOSE PACKAGE	Reactor, Whip Hose, 1 - 15m Hose	Reactor, Whip Hose, 1 - 15m Hose	Reactor, Whip Hose, 1 - 15m Hose, Eng. CAN Cable
ITEMS INCLUDED IN MULTI-HOSE PACKAGE	Reactor, Whip Hose, 2 - 30m Hoses	Reactor, Whip Hose, 2 - 30m Hoses	Reactor, Whip Hose, 2 - 30m Hoses, Eng. CAN Cable

SELECT YOUR PERFORMANCE LEVEL

Every Business Need is Different

Reactor 3 has a performance point to meet every business need. Whether you are just starting your business and want a reliable machine at a reasonable price or are an established business looking to expand your capabilities and improve your productivity, we have a machine that will meet your needs.

CHOOSE AN OPTION THAT MEETS YOUR NEEDS

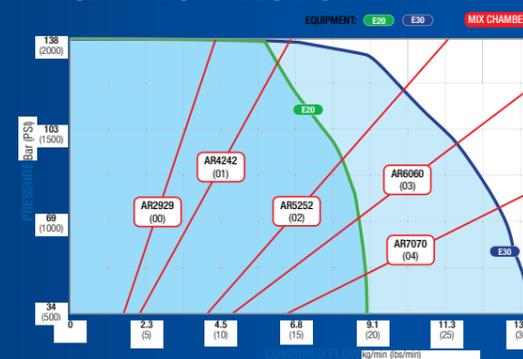
SPRAY FOAM OPTIONS

PROPORTIONER	STANDARD		PRO		ELITE	
MODEL	E-20	E-30	E-20	E-30	E-20	E-30
MOTOR	1.8 HP Brushless	2.5 HP Brushless	1.8 HP Brushless	2.5 HP Brushless	1.8 HP Brushless	2.5 HP Brushless
MAX FLOW	9 kg (20 lb)/min	13.6 kg (30 lb)/min	9 kg (20 lb)/min	13.6 kg (30 lb)/min	9 kg (20 lb)/min	13.6 kg (30 lb)/min
MAX PRESSURE	140 bar (2000 psi)	140 bar (2000 psi)	140 bar (2000 psi)	140 bar (2000 psi)	140 bar (2000 psi)	140 bar (2000 psi)
PRIMARY HEAT	7 kW Sngl. Block	10 kW Sngl. Block	7 kW Sngl. Block	10 kW Sngl. Block	10 kW Sngl. Block	15 kW Dual Block
MAX HOSE LENGTH	67m	97m	67m	97m	67m	97m

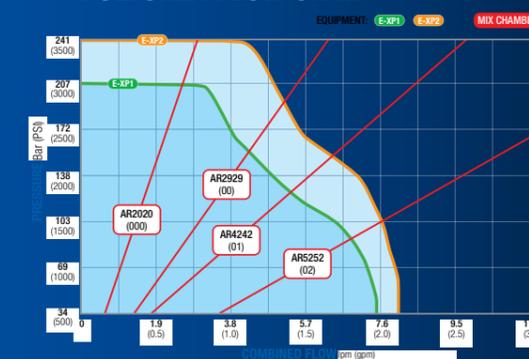
POLYUREA OPTIONS

PROPORTIONER	STANDARD		PRO		ELITE	
MODEL	E-XP1	E-XP2	E-XP1	E-XP2	E-XP1	E-XP2
MOTOR	1.8 HP Brushless	2.5 HP Brushless	1.8 HP Brushless	2.5 HP Brushless	1.8 HP Brushless	2.5 HP Brushless
MAX FLOW	5.7 L (1.5 gal)/min	7.6 L (2 gal)/min	5.7 L (1.5 gal)/min	7.6 L (2 gal)/min	5.7 L (1.5 gal)/min	7.6 L (2 gal)/min
MAX PRESSURE	206 bar (3000 psi)	240 bar (3500 psi)	206 bar (3000 psi)	240 bar (3500 psi)	206 bar (3000 psi)	240 bar (3500 psi)
PRIMARY HEAT	10 kW Sngl. Block	15 kW Dual Block	10 kW Sngl. Block	15 kW Dual Block	10 kW Sngl. Block	15 kW Dual Block
MAX HOSE LENGTH	67m	97m	67m	97m	67m	97m

SPRAY FOAM FLOW CHART



POLYUREA FLOW CHART





BANG & BON SOMER
DELIVERING SMART MATERIAL TECHNOLOGIES

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