

BRONYA

Superfine Heat Insulation

Application Sheet for Bronya Liquid Ceramic Heat Insulation

with Graco airless high pressure spraying guns

1. General recommendations

Maximal efficiency apart from reduction of working hours is an important criterion during works. Similar tasks are set for heat insulation works. Despite simplicity of Bronya application with a painting brush, for areas of more than 100 m² it is more efficient to use mechanical devices such as airless high-pressure spraying guns.

Please note that Bronya liquid ceramic heat insulation is considerably different from common paints in respect of viscosity, brittle elements such as ceramic microsphere etc. in its structure. It poses certain requirements for equipment used for application:

1) **Only airless sprayers are allowed.** Common compressor sprayers cannot be used because they are not able to pump the product at low pressure, and if high pressure is set, the speed rate of the outgoing product from a spraying tip is so high that the microsphere smashes onto the surface being coated. Moreover, the product mixes with air in a spray gun, which causes damage of the structure;

Only recommended and approved airless sprayers should be used. So far we have tested and recommended a number of Graco sprayers. Certain models and recommendations concerning their adjustment are given below. Equipment with an excessive mechanical effect on material, for example, diaphragm and gear pumps, destroy material particles. Do not use such equipment for heat insulation application.

DO NOT USE WAGNER, POTGUN, MKM SPRAYERS OR THEIR CHINESE VERSIONS!!!

2) **Recommended guns, guards and spraying tips for application of Bronya insulating materials should be used.** Selection recommendations are given below. If you have any questions, please feel free to contact a manufacturer or your regional representative of Bronya;

3) **Equipment should be appropriately adjusted: all filters should be removed, correct pressure should be set, etc.**

IMPORTANT!!! If inappropriate equipment is used or incorrect adjustments are made, there is a major risk of damaging the main Bronya component, ceramic microsphere, which leads to a considerable overconsumption of the product because of significant shrinkage and, which is the most important, to a loss of thermo-physical properties of the coating.

2. Recommended list of equipment for Bronya polymer heat insulation

Further we specify sprayers, which are the best choice for application of polymer heat insulation. Please use this list as a detailed guidance. Description of the airless sprayers for liquid ceramic heat insulation is given below.

Electric driven equipment:

GRACO MARKVPro-Connect



This sprayer is the most widely and successfully used for liquid ceramic heat insulation of Bronya series.

It's equipped with SMARTCONTROL 2.0 system, which controls the operating parameters.

The sprayer specifications are listed below:

- Motor type: electric (220 V, 50 Hz)
- Motor rated power: 1.65 kW
- Capacity: 5.5 l/min max.
- Working pressure: 230 bar max.
- Permitted pressure for Bronya application: 80 bar max.
- Weight: 59 kg
- Generator requirements: 5 kW



A 90-liter tank could be installed as an option; it will reduce the number of buckets with insulating materials needed during application.

If you use a tank, you should stir the product regularly (once in 3-5 minutes)!

***Do not exceed rotations while stirring – maximum 100 rpm.**

GRACOUltraMAXII (Models 695, 795 and 1095)

Ultra Max devices are designed for spraying the medium- or high-viscosity products. They perfectly fit for painting in professional construction and repairs.

ULTRA ® MAX II 695 is a versatile and multifunctional device. It is perfect for finishing works.

ULTRA ® MAX II 795 is intended for big volumes and large-scale housing construction.

ULTRA ® MAX II 1095 is used for application of materials with a high viscosity. It is designed for large-scale housing construction, commercial and industrial works and capital construction.



A type of a certain model depends on complexity of facilities and a volume of works.

Specifications of UltraMAX II sprayers:

	ULTRA ® MAX II 695	ULTRA ® MAX II 795	ULTRA ® MAX II 1095
Motor type	Electric direct current brushless (220V, 50 Hz)		
Motor rated power, kW	1.3	1.5	1.65
Max.capacity, l/min	3	3.6	4.1
Max.pressure, bar	230		
Max.working pressure, bar	80		
Weight, kg	43	45	55
Generator requirements, kW	5		

GRACO ST MAX II (Models 495 and 595)

Mobile, simple in maintenance and operation. Electrically powered, 220 V; perfectly fits for application of medium viscosity paint materials. Small dimensions and weight of these sprayers allow using them in a restricted space and at different heights.

Graco STMAXII is a basic product range of sprayers for professional painting contractors.



Specifications of STMAXII 495 (Stand Mount):

- Motor type: electric (220 V, 50 Hz)
- Motor rated power: 0.89 kW
- Capacity: 2.1 l/min max.
- Working pressure: 230 bar max.
- Permitted application pressure: 80 bar max.
- Weight: 15.5 kg
- Generator requirements: 4 kW



Specifications of STMAXII 595 (Hi-Boy):

- Motor type: electric (220 V, 50 Hz)
- Motor rated power: 1.05 kW
- Capacity: 2.3 l/min max.
- Working pressure: 230 bar max.
- Permitted application pressure: 80 bar max.
- Weight: 33 kg
- Generator requirements: 7 kW

GRACOSTMAXII 395

This sprayer is used only for small-scale works as it provides the necessary pressure for the product application strained to the limit.

If you use THIS sprayer, the following actions should be taken:

- ❖ Dilute the product in the ratio of 1:20 (1 liter of water for 20 liters of the product),
- ❖ Application should be made with short breaks to maintain the necessary pressure in the system,
- ❖ Pressure on the sprayers should be minimum to allow for the product application.



Gasoline motor equipment:

GRACOGMAXII (Models 5900 and 7900)



Standalone airless spray devices of GMax series are equipped with a gasoline motor and are designed for works without power supply and compressed air lines.

Specifications of GMAX II 5900 HD ProConnect Optimum:

- Motor type: gasoline (Honda)
- Motor rated power: 4.1 kW
- Capacity: 6.0 l/min max.
- Working pressure: 230 bar max.
- Permitted application pressure: 80 bar max.
- Weight: 64 kg



Specifications of GMAX II 7900 HD ProConnect Optimum:

- Motor type: gasoline (Honda)
- Motor rated power: 4.8 kW
- Capacity: 8.3 l/min max.
- Working pressure: 230 bar max.
- Permitted application pressure: 80 bar max.
- Weight: 67 kg

Area of the autonomous spraying may be increased due to usage of a feeding box.

Pneumatic motor equipment:

GRACO XTREME KING 45:1



These sprayers are powerful and easy in operation, designed for application of high and extra high viscosity coatings under severe conditions. Low maintenance costs. Extended operation life: rods are made according to PlasmsCoat Technology and XtremeSeal packings increase the operation life more than twice.

Suitable for severe conditions. A quick-connection coupling quickly and easily connects a pump rod without tools.

Specifications of XTREME King 45:1:

- Motor type: pneumatic NXT 6500
- Input pressure: 7 bar max.
- Capacity: 8.3 l/min max.
- Working pressure: 313 bar max.
- Permitted application pressure: 80 bar max.
- Weight: 117 kg

3. Recommendations for adjustment of equipment and selection of accessories

It is necessary to follow the adjustment instructions for appropriate operation of the Graco airless sprayers. It is an important consideration which should be noted to maintain the integrity of Bronya coatings during application and further polymerization.

Ceramic microsphere is the key Bronya component. It has a form of vacuum-processed foam glass balls. These spheres are responsible for thermo-physical properties of the insulating coating, as well as for maintenance of thickness (significant shrinkage of the material is one of the signs of microsphere destruction).

Main recommendations are listed below:

- Before starting **ALL filters should be removed** from the device (including a gun filter, if any)! Filters are capable of retaining microsphere from the product, that's why they should be removed.
- The device should be clean and properly functioning. Use of extremely contaminated equipment may lead to loss of efficiency at a low pressure and necessity to increase the pressure, which in its turn may cause destruction of the product.
- Bronya insulation should be applied at a minimum working pressure, but not higher than 80 bar. An advantageous difference of Graco sprayers is SmartControl System, which maintains operating parameters (pressure, flow rate etc.) at the constant level during the whole operation period.

The optimal application pressure should be in the range of 40 to 80 bar.

IMPORTANT!!! The pressure should not be set over 80 bar. Otherwise it will lead to a partial or full damage of microsphere in Bronya insulation.

- Use only recommended guns, tips and guards, since they also may affect the product during application. Detailed selection recommendations for the accessories are given below.
- Bronya insulating material consists of many ingredients. That is why over time the material divides into layers of fractions, the lighter microsphere comes to the top and the binder tends to sink to the bottom. Since the material is taken from the bottom of the tank during application with an airless sprayer, **it should be stirred during application AT LEAST once every 5-7 minutes** to ensure homogeneous coating. **It is of particular importance when additional tanks are used for material simultaneously coming from several buckets!!!**

Recommended guns for airless sprayers

GRACO CONTRACTOR II

One of the most light-weight and easy-to-handle airless paint sprayers. Graco engineers achieved a 30% reduction of pressure on a paint sprayer trigger, which significantly decreases fatigability of a painting operator. The paint sprayer is equipped with a special double filter and a rotary joint. It eliminates the necessity of frequent cleanups of the spraying tips and prevents twisting of a high pressure hose.



ATTENTION!!! Remove a gun filter before application of Bronya coating.

GRACO XTR5 and XTR7

New paint sprayers intended for application of high-viscosity materials. Equipped with special high wear-resistant spray heads and tips.

Designed for airless spraying and large-scale works. Used on units with a pneumatic motor.

ATTENTION!!! Remove a gun filter before application of Bronya coating



GRACO FTX

GRACO FTX airless sprayer is designed for final finishing and general painting when high mobility is needed. The most lightweight airless paint sprayer in the Russian market. Supplied with airless paint spraying units of GRACOUltramax series. May be supplied for units of GRACOMARKV series.

2-finger and 4-finger triggers are available.

ATTENTION!!! Remove a gun filter before application of Bronya coating.



GRACO SILVER GUN is not recommended as it hinders Bronya insulation application.


Recommended Graco spraying tips and tip holders:

In order to achieve the best coating results the following factors should be taken into account while selecting a tip:

1. Spray width

A spray width depends on a spray angle at a distance of 30 cm from the surface. The angle is indicated by the first digit on the spraying tip. The correlation between a tip number and a spray angle with a spray width is as follows:

First digit on the tip	Spray angle, °	Spray width, cm
1	10	5
2	20	10
3	30	15
4	40	20
5	50	25
6	60	30
7	70	35
8	80	40
9	90	45

A blue T-shaped spray tip holder with 'LTX 517' and a Graco logo on it. Next to it is a blue spray tip with the number '517' on it, circled in black.

For example, digit 5 in the picture on the right side shows that a spray angle is 60 degrees; in order to determine a spray width the first digit should be multiplied by 5: $5 \times 5 = 25$ cm.

2. Tip size and maximum device capacity:

Tip size determines approximate material consumption. It is shown by the last two digits on the spraying tip.

The example on the right-side picture shows digit 17 meaning that the tip is 0.017 inch or 0.43 mm.



Each device type has the maximum capacity, which should be taken into account while selecting accessories.

A range of tips from x17 up to x23 is recommended for Bronya application.

Tips recommended for Bronya application		
119	121	
219	221	223
319	321	323
419	421	423
519	521	523
619	621	623
	721	723
819	821	

A tip size depends on a type and dimensions of the surface being insulated. Larger sprays and tips may be used for application on large plain areas (building facades, metal tanks, sheds etc.); small shaped surface areas (pipelines, flanges etc.) require less sprays and tip diameters.

3. Wear resistance and purpose of tips



Tips are distinguished not only by size and spray width, but also by wear resistance and intended use. We recommend wear-resistant tips for reasons of service life.

We recommend blue and black RACX and RAC 5 tips.

IMPORTANT!!! Do not use tips with splitters.

Blue and orange tip guards fit RACX and RAC 5 spray tips.

Use of grey XHDRAC spray tips and tip guards is also possible.



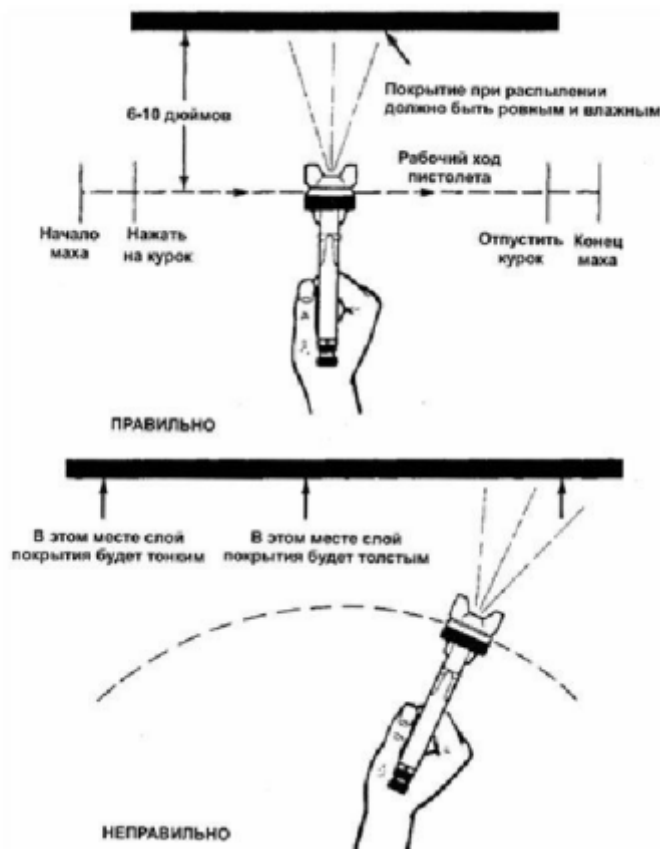
More detailed specifications of spray tips and tip holders may be obtained from the manufacturer and Graco representatives.



Recommendations for application and operation of the spray gun

A spray gun may be technically perfect, but if an operator fails to appropriately observe the spraying procedure, a successful result will not be achieved. Incorrect spraying methods may increase costs significantly. In order to maximize functions and operating performance of the spray gun, the following steps should be taken:

- ensure you are holding the spray-gun perpendicular to the treated surface as shown in the picture. Any swaying of the spray-gun from side to side, advance or withdrawal of the spray-gun to and from the treated item causes a deviation of a large amount of the material from the treated surface and its loss;
- moving the spray-gun at an arch causes an uneven thickness of the film. Remember that the hand should move along the surface while keeping the wrist straight;
- control the speed of the swing to achieve the correct thickness of the film;
- apply the material with an overlap not exceeding 50%. A greater overlap will require a higher transition rate in order to ensure homogeneous spraying of the material.



6-10 дюймов	6-10 inches
Покрытие при распылении должно быть ровным и влажным	Upon application the coating should be even and wet
Начало маха	Swing start
Нажать на курок	Pull the trigger
Рабочий ход пистолета	Work stroke of the spray gun
Отпустить курок	Release the trigger
Конец маха	Swing end
ПРАВИЛЬНО	CORRECT

В этом месте слой покрытия будет тонким	The coating film will be thin in this area
В этом месте слой покрытия будет толстым	The coating film will be thick in this area
НЕПРАВИЛЬНО	INCORRECT

The correct and the incorrect spraying methods are shown in the picture.

A larger flow of the material and, as a consequence, its excess is the material that is lost when missing the treated surface. To minimize the losses, the operator needs to be careful and to press the trigger properly. The trigger should not be pressed when the spray-gun is static. The application of the properly set pressure of the sprayed material prevents the excessive spraying; such mode reduces the loss of the material due to its bumping off the treated item (and preserves the integrity of the coating structure).

The spray-gun should be held far enough from the treated surface, so that the width of the sprayed spot could be increased to achieve the suitable size. The optimal distance is usually from 6 to 10 inches (from 15 to 25 cm) as shown in the picture above.