



HEATLOK HFO Pro

PRODUCT APPLICATION GUIDE

In order to properly process Heatlok HFO Pro and to maximize yield, please adhere to the following guidelines.

In case of questions contact support@icynene-lapolla.eu

APPEARANCE

Heatlok HFO Pro is green in colour. The Resin (B-side) is blue in colour and the HBS Isocyanate (Component "A", ISO) is dark brown in colour.

STORAGE

1. Once received, Heatlok HFO Pro drums should be stored at 15 °C to 25 °C.
2. The Heatlok HFO Pro B side resin should not exceed these recommended storage temperatures.
3. Do not store material on rigs other than what is required for current application needs, as materials left inside of rigs can easily exceed these recommended storage temperatures.
4. Heatlok HFO Pro B-side resin has a 6-months shelf life if stored as stated.
5. Follow FIFO (First-In-First-Out) stock rotation.

CHANGEOVER

- Before spraying Heatlok HFO Pro you should remove any previous material from your system by slowly pumping it into the correct resin (B-side) and MDI (A-side) drum. It is important not to mix one Component B (resin) in to the other. The resins are chemically different and should not be mixed together.
- Turn off/disconnect air to Resin transfer pump.
- Remove the drum pumps from the Resin and ISO drums and wipe pump/dip tube clean. Also, make sure the drum pump housing is emptied of any resin.
- Allow some air into the drum pump or dip tube.
- Place the drum pumps/dip tubes in to the Heatlok HFO Pro drums.
- Remove the gun from the manifold or side blocks.
- Re-connect or turn on the air to the drum pumps or diaphragm pumps.
- Use the drum pumps or diaphragm pumps to pump the current resin and ISO materials back to their corresponding drums or into containers for re-use. Watch for a colour change from the current resin to the new resin (blue) or until you reach the air pocket in the line. Count the strokes and use this for purging the ISO (MDI) as there is no colour difference to note the change.

NOTE: If you currently have another HBS product in your system, you do not have to changeover the HBS Isocyanates (Component 'A', ISO) as it is the same for all HBS products.

- Once the Heatlok HFO Pro has pushed the previous material out of the spray hose, you will now see blue coloured liquid.
- Remember to also remove the old material from the re-circulation/pressure-relief hoses to avoid contaminating the new drum with the previous material that was left in these lines when you re-circulate for heating or relieve pressure.
- Spray out into a bag or onto card / polyethene to ensure material is not contaminated with previous product.

Always check and clean the A and B side Y-strainer screens prior to commencing the spray application.

NOTE: Hose must be warm during flushing as blowing agents can imbed in the hose cell wall when hot and will stay trapped when hose cools – only to come out again when hose re-heats.

NOTE: If the first foam sprayed shows curling at the edges or shrinkage, there may still be some combined material in the spray hose and more material will need to be cleared from the hose prior to spraying.

You are now able to spray Heatlok HFO Pro.

Follow the same procedure if you are switching back to another HBS product.

HEATING

The ideal drum temperature for processing Heatlok HFO Pro (B-side Resin and A-side ISO) is 15-25 °C.

- Heatlok HFO Pro B side resin should not be heated by drum heaters or recirculated.

NOTE: Never re-circulate Heatlok HFO Pro

PROCESSING TEMPERATURE AND PRESSURE

Drum Processing Temperature (before and during application):

- During processing, both HBS Isocyanate (Component "A", ISO) and Heatlok HFO Pro is Resin (Component B) temperatures need to be in the range of 15 °C to 25 °C.

NOTE: Be careful not to exceed 25 °C as the Component B (resin) shelf life will be affected above this temperature. If the resin (Component B) has been subjected to cold temperatures below 5 °C you must make sure the temperature of the drum is increased by storing it in a warm room temperature environment before processing. Do not use drum heaters or re-circulate.

Equipment Processing Temperature (A + B + Hose – while spraying):

- The primary A and B heaters as well as the hose heat for Heatlok HFO Pro should be set between 41 °C and 46 °C for optimum foam quality.
- The temperature settings will mostly depend on the time of year and current ambient conditions as well as substrate temperature. All three heater temperatures are usually set to the same temperature.
- In standard ambient conditions of 15 °C to 30 °C HBS recommends the following for processing Heatlok HFO Pro:

HBS RECOMMENDATIONS FOR STANDARD AMBIENT CONDITIONS OF 15 °C TO 30 °C	
Drum Temperatures	15-25 °C
A and B Primary Heaters	41-46 °C
Hose Heat	41-46 °C
Mix Chamber	AR5252 (02 round)
Pressure (dynamic)	1200-1400 psi / 85-95 bar
Spray Distance	45-60 cm

- Ideally the foam should stop rising in about 3 to 4 seconds.
- To maximize yield HBS recommends using an AR5252 (02 round) at 1200-1400 psi / 85-95 bar dynamic pressure.

If it is necessary to use another sized chamber, use the following guidelines:

OTHER SIZED CHAMBERS				
Mix Chamber Size	00 (2929)	01 (4242)	02 (5252)	03 (6060)
Pressure (dynamic)	700-900 psi (48-62 bar)	900-1200 psi (62-85 bar)	1200-1400 psi (85-95 bar)	1400-2000 psi (95-137 bar)

Please be aware that altering recommended settings may cause poor foam quality and a substantial reduction in yield.

MATERIAL TROUBLESHOOTING

The most common reasons for substandard material are mix related. This is the ratio of the material that is coming out of the end of the spray gun. If the ratio is not a 1:1 ratio of the "A" and "B" components you will have material that looks and reacts differently.

Visually these problems will look like the following

- Resin Rich – Material that has more Resin "B" than ISO "A"
- Very green/blue in colour
- Rubbery surface feel
- Skin thicker – shiny
- Adhesion poor – air pockets

ISO Rich – Material that has more ISO "A" than Resin "B"

- Darker in colour
- Crusty – coarse cell structure
- Friable – brittle and powdery to touch
- Rough skin
- Shrinkage

Most of these off-ratio issues are attributed to these common problems at the gun:

- Plugged screens, build up in the chamber, build up around or inside seals.
- Not as common but will cause the same problems are running out of material, having plugged y-strainers, pinched supply hose or a faulty transfer pump.
- These issues cause a pressure imbalance which allows one material to flow better than the other. The pressure imbalance can be seen on the pressure gauges for each spray line on the proportioner. Use these gauges to help you identify and correct the problem.
- You can also have material problems if the Resin gets "Cooked". This is when during storage, the material exceeds the recommended temperature for any length of time or if you have allowed material in the drum on the rig to be heated past 25°C for an extended period of time. This will also happen in the equipment if set to spray temperatures and have left it alone without spraying for more than a half hour. This chemical breakdown of the Resin will produce the following problems:
 1. Change of material odour
 2. "Snap, crackle and pop" type sound after application
 3. Shrinkage and shriveling after application
 4. More rigid type of foam, increase in density
 5. Slower to cure

SURFACES FOR APPLICATION

The product is for use as a thermal insulation and air barrier in: roofs, wall cavities, floor assemblies, ceiling assemblies, attics (vented and unvented), basements (vented and unvented). Can be sprayed onto: concrete, masonry, wood, gypsum board, particle board, OSB board, metal, diffusion foil, asphalt, modified bitumen membrane.

- **Minimum temperature of the surface* during application: - 5°C**
*No humidity on the surface of the substrate
- **Minimum temperature of the ambient during application: - 5°C**

NOTE: Do not apply to a dirty surface (it is necessary to remove: sand, dust, remains of concrete, wood shavings, it is necessary to clean greasy surfaces).
All timber surfaces should have a moisture content no greater than 19%

SPRAY TECHNIQUE

- Maintain the proper distance as recommended above.
- Always spray with the spray gun at a 90 degree angle to the substrate.
- For wall cavities the best technique is to "picture frame" the studs and then to vertically fill in the middle in 45 cm to 61 cm sections while overlapping by 60 -80 percent.
- For flat concrete or metal substrates maintain a gun angle of 90 degrees and a spray distance of around 60 cm to 80 cm (depending on chamber size and psi) with an overlap of around 60-80 percent.
- Build thickness by spraying on to the expanding material known as the "cream" or "wet line"
- Cold substrates may require "flashing" to assist in warming and insulating them.
- Spray a minimum of 1.5 cm per pass so as to not affect the foam's adhesion.
- For thickness greater than 5 cm, more than one pass will be required.
- During the application of the product continuously ventilate the room in which the work is done. Full weathering premises can be considered fulfilled after 24 hours and 40 ACH
- For multiple passes HBS recommends waiting at least 30 minutes or until the surface temperature of the foam is below 38 c before applying the next pass.
- This will allow the previous pass to completely cool in order to avoid scorching, residual odour, and fire due to excessive heat buildup within the foam.
- The smoother the surface of the foam the better the yield. For example, when you measure across corrugated metal and keep the measuring tape flat you get one figure, but if you measure following the curve of the corrugation, you'll find that it is a bigger surface, the same goes for the foam surface.
- Foam application temperatures and pressures can vary widely depending on temperature, humidity, elevation, substrate, equipment, and other factors. While processing, the applicator must continuously observe the characteristics of the sprayed foam and adjust processing temperatures and pressures to maintain proper cell structure, adhesion, cohesion and general foam quality. It is the sole responsibility of the applicator to process and apply Heatlok HFO Pro within specification.
- Material too Cold – Slow to cure, runs and drips more, denser, loss of yield.
- Material too Hot – Rapid cure, shiny surface, can shrink and crack during cooling.

YIELD

In the respect of all conditions listed above and in regular application, yield of this product is 11 m³ per set.

HEALTH AND SAFETY

First aid kit and Water station should be available in the truck. In case of spills refer to MSDS.

Homeowners:

Need to know: HBS spray foam insulation products have an excellent health and safety record spanning. Nonetheless, safe handling practices during and immediately following installation are required to eliminate the possibility of health effects from exposure to isocyanates. Asthma, other lung problems, and irritation of the nose and throat can result from inhalation of isocyanates. Direct contact with the skin and eye can result in irritation. Different individuals will react differently to the same exposures; some will be more sensitive than others. Everyone (other than HBS-certified spray technicians) must vacate the job site, remaining completely out of the building or keep a distance of at least 15 meters from the area where the foam is applied for at least 24h after spraying is completed. It is necessary to allow active ventilation of the job site and to ensure the foam chemicals are completely cured. No exceptions.

Certified sprayer:

Need to know: Direct contact with the skin and eyes can result in irritation. Different individuals will react differently to the same exposures; some will be more sensitive than others. Severe asthma attacks have been reported in some sensitized workers exposed repeatedly to isocyanates while not wearing proper protective equipment. Some reports indicate a reaction and sensitization can occur following a single, sustained occupational exposure to isocyanates without proper protective equipment above the permissible exposure limit. But sensitization might not occur immediately in some individuals. Consistent use of personal proper protective equipment to prevent exposure during spraying and within the 24 hours – period after spraying is completed is critical to eliminating the health hazard. Once sensitization has occurred, a worker might not be able work safely with spray foam insulation again. Sprayers helpers, and anyone else present during spraying or within 24 hours after spraying is complete: You must ventilate at 40ACH and must wear proper Personal Protective Equipment (PPE) at all times during spray, including full-body-coverage, chemical-protective clothing and a certified respirator with fresh air supply. While spraying and for 24 hours after spraying is completed, no one must be allowed within 15 meters of the application area without wearing this type of PPE at all times.

The certified sprayer is obliged to use the ventilation device when applied in closed areas!

For ventilation, you must use a fan with sufficient power. The minimum required change in room air volume is 30 times in 1 hour.

HBS Technical Services

Before spraying Heatlok HFO Pro, as with all HBS products, please do not hesitate to contact support@icynene-lapolla.eu