

Liquid Rubber

**TECHNICAL
MANUAL**

LIQUID RUBBER COATINGS

LIQUID RUBBER DRYLAR™



Concrete and foundation waterproofing



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SAFETY COMES FIRST

It is the responsibility of every contractor to work safely. Nothing in this manual replaces the contractors experience and safe operating practices. Liquid Rubber is not responsible for your safety – you are!

We recommend as part of the pre-work inspection with the owner of the building, that you take the time to evaluate any safety concerns and have a plan to eliminate them prior to commencing your work. This manual cannot anticipate what you will encounter on the job site, but as your supplier of Liquid Rubber Drylar™ we encourage you to work safely. If you have any questions concerning the safe handling, storage or disposal of Liquid Rubber Drylar™ we encourage you to contact one of our technical service personnel at 1-866-979-0300 or local 416-929-4884

SAFE HANDLING OF LIQUID RUBBER DRYLAR™

Liquid Rubber Drylar™ is an elastomer modified asphalt emulsion, meaning that the product is a water suspension of petroleum derived hydrocarbons including synthetic polymers and inert fillers –see MSDS sheets. Liquid Rubber Drylar™ is a NON-REGULATED product under both T.D.G and WHIMIS regulations, so no special transportation, handling or storage regulations apply.

Liquid Rubber Drylar™ is a non-combustible liquid and will not burn, but may splatter if the liquid is heated above its boiling point. Avoid heating above 200°C / 392°F. At elevated temperatures hazardous vapours can be released, including carbon monoxide, hydrogen chloride, organic acids and aldehydes.

Liquid Rubber Drylar™ can react with aluminium and magnesium resulting in the generation of explosive hydrogen gas. For this reason avoid storing in containers comprised of or containing these metals, or applying the product to surfaces comprised or containing these metals.

Liquid Rubber Drylar™ is an alkaline product, meaning that it will irritate skin and eyes. If splashed, flush affected area with plenty of fresh water –see MSDS for details.

AS LIQUID RUBBER DRYLAR™ IS WATER BASED PRODUCT SO YOU MUST ENSURE THAT DRUMS ARE STORED AT TEMPERATURES ABOVE 5°C. SIMILARLY LIQUID RUBBER DRYLAR™ MUST NOT BE APPLIED WHEN AMBIENT OR SURFACE TEMPERATURES ARE BELOW 5°C.

NOTE: If product is subjected to temperatures below this limit ‘shot’ will form, which indicates a separation of the components of Liquid Rubber Drylar™ and will adversely, affect its application and performance.

PERSONAL SAFETY

As we outlined in the section on Product Safety, Liquid Rubber Drylar™ is a safe to handle and safe to use product, but good safety practices by the application contractor must be observed. We encourage all our applicators to have an employee safety-training program in place and reviewed regularly with all employees working on the job site. At a minimum the following personnel safety equipment should be used.

- Safety glasses with side shields should be worn at all times.
- Safety boots and hard hats should be worn at all times.
- Protective gloves and overalls should be worn.
- Disposable dust masks are to be worn while spraying, especially in confined area.
- Site to be maintained in a clean order at all times.
- All site staff will follow site safety procedures as set out by the builder or owner.

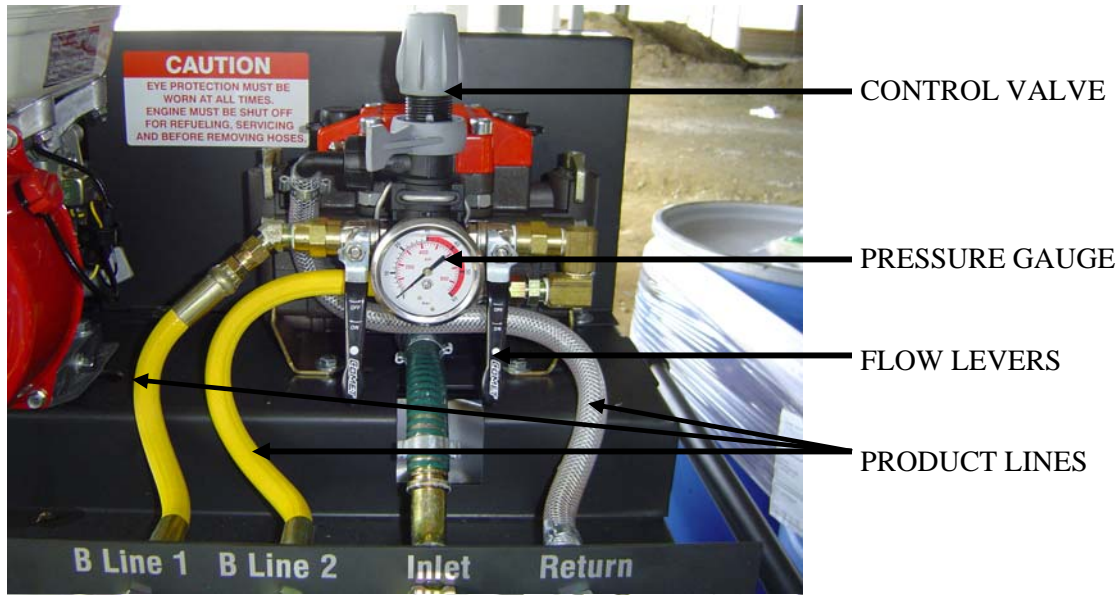
It is required that all applicator(s) follow proper OSHA standards (or equivalent standards in accordance to the regulations of each individual Country, State or Province) for every project.

SAFE OPERATION OF SPRAY EQUIPMENT

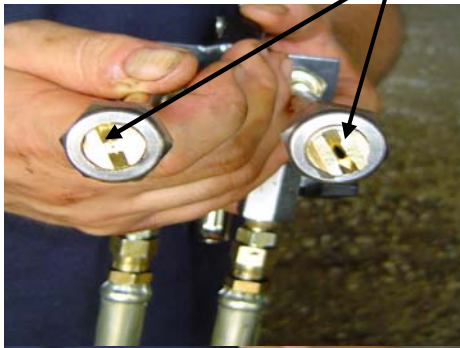
Prior to starting work and spraying either tack coats or Liquid Rubber Drylar™ instant set membrane, an inspection of the equipment will help ensure a problem free day.

Pre work checklist

Equipment check	Description
Check all hoses and hose connections	Make sure there are no cracks, cuts, or other damage that can lead to product leakage
Check control valve levers	Ensure that all control valve levers move easily and do not stick
Pressure indicator	Ensure that it is not damaged and the gauge is clearly visible
Product lines	Check to ensure all product lines are clean and in good repair
Strainer	Check that the strainer is in place and there are no holes, rips or other faults
Control valve	Ensure that the valve is free moving
Fuel tank	Ensure there are no cracks or leaks
Oil level	Ensure that there is sufficient oil in the oil reservoir
Motor starter pull cord	Ensure this is not frayed and the handle is in good repair
Spray gun	Check all fitting to ensure there is no cross threading, triggers should move freely
Nozzle tips	Ensure the orifices are clean and no product is adhering to any part of the surface



SPRAY NOZZLES



TRIGGER AND GUN ASSEMBLY



H.V.L.P. (High Volume Low Pressure) pumps are being used for “Liquid Rubber” applications. The pump, hose and gun are designed for safety and ergonomics. The equipment should be checked for damage, leaks, in the hoses and fittings (i.e. corrosion/deterioration). Damaged equipment should be repaired/replaced immediately.

The R-08 guns, hoses, feed hoses, strainers and check valves should be properly cleaned and tested prior to application. A small section of the surface to be coated should be used.

PRODUCT FAMILIARIZATION

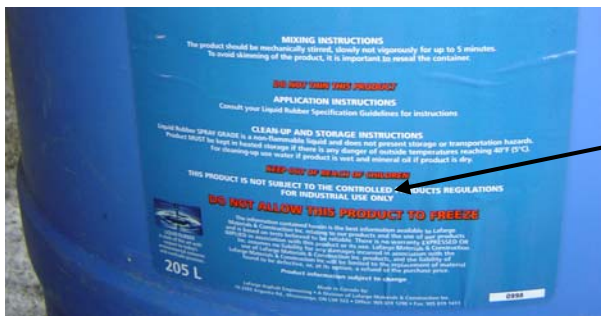
PART A – THE EMULSION

The Liquid Rubber Drylar™ instant set membrane system is a two (2) part system consisting of the elastomer modified asphalt emulsion, called PART A, and the instant set accelerator, called PART B. When applied in combination in the proper ratio using the specially design pump and spray gun system, these two products interact to produce a rapid setting seamless membrane coating which provides a water tight coating.

The following describes the handling procedures for both PART A and PART B.

IDENTIFYING PART A

The Part A side of the Liquid Rubber Membrane System is easily recognized, as it is the DARKER COLOURED FLUID of the two components. It is also generally going to be in the LARGER CONTAINERS. Clear markings and colour-coded stickers will easily identify all products.



205 litre drum label and handling instructions

MIXING OF PART A

The mixing of PART A is required before each application and periodically throughout the day. This is because polymers in the asphalt emulsions tend to partially separate due to the effects of gravity and need agitation to ensure a good homogeneous mix. Failure to do so will result in a poor quality membrane.

There are two methods of agitating the PART A product:

- Using an air agitator with a shroud around the blades at low R.P.M. The product should be mechanically stirred – slowly not vigorously.
- Using the circulation return line incorporated in the pump system.

***Both methods will need to be available at all times.

MIXING PRIOR TO APPLICATION

Each 205 litre drum requires agitation for a *minimum of 5 minutes*, using a mechanically mounted agitator at *low* R.P.M.

MIXING DURING APPLICATION

The pump system has a by-pass system that circulates the product during normal spray operation. This will provide a sufficient amount of mixing during application, as long as the 5 minute minimum agitation period is carried out prior to spraying.

IMPORTANCE OF WELL-MIXING PRODUCT

As mentioned, *it is importance that the product is well mixed*. Failure to do so will result in a uniformed product that will be detrimental to the characteristics of the product, resulting in a possible application failure.

An unmixed product is easily identifiable by a *white* substance at the bottom of the drum, or any variations of colour will mean the product has not been sufficiently mixed.

ENSURING AIRTIGHT CONTAINERS AND SEALS

Due to the nature of Liquid Rubber Drylar™, there is a tendency for the material to skim on the surface of the containers. This skimming effect may cause trouble during application, and result in downtime caused by blockages.

To avoid skimming, it is important to provide airtight seals to all containers. This can be achieved by using Teflon tape around all threads and securing all caps and lids thoroughly.

Threads on the toes and cap must be cleaned and dried to maximize the adhesive of the Teflon tape and to ensure air tightness of each container. This will also minimize product build-up.

If breather holes are detected, ensure that they are sealed with the Teflon tape.

FILTRATION OF PART A



Filtration of the PART A of the instant set system is important to good operating performance. The pump system comes complete with an *inline supply filter* that will reduce blockages.

SKIMMING OF PRODUCT

Surface skimming of PART A may occur causing blockages that result in down time if the proper measures are not taken to ensure product integrity. *We strongly advise that every precaution be taken to prevent skimming.*

IDENTIFYING PRODUCT CONTAMINATION

Upon receiving the product, it is advised that the applicator(s) perform a simple test to ensure that the product is not contaminated.

Testing For Contamination:

- From each drum obtain a small amount of Part A in a cup and mix the Part B. The Part A is a uniform homogeneous dark brown to black liquid free of lumps. Uncontaminated product when mixed will rapidly combine forming a solid rubbery mass leaving the water behind.

However, contaminated products can be recognized in this simple test if you observe any of the following:

- A drastic change in colour appearance.
- Large lumps in product before mixing.
- An oil appearance.
- No change in the product once the two components are mixed

PRODUCT MAINTENANCE AND GENERAL CLEANING OF PART A

The Liquid Rubber Drylar™ is a non-flammable liquid and does not present any storage or transportation hazards, nor does it directly present any hazardous health concerns to the applicator(s).

However, when handling Part A, it is advisable to wear safety glasses, gloves, and coveralls to reduce personal cleaning and minimize clothing disposal. It is also advised to cover totes and work areas with plastic drop sheets to minimize overall cleaning and to maintain a presentable and professional work area.

Should spillage occur, the best clean-up procedure is to pour an equivalent amount of Part B onto the spillage and scrape up the combined-set product. For general clean-ups, mineral spirits is recommended. For personal clean up of your hands/face, baby oil is recommended.

2.11 PACKAGING

The “Liquid Rubber” membrane comes in 55 gallon drums.

PART B – THE “ACCELERATOR” FOR PART A

IDENTIFYING PART B

The Part B side of the system has a cloudy, watery type appearance. When mixed, it will produce liquid with the appearance of “soapy bubbles”.

Part B will be shipped in plastic containers or dry mix in a two-part system.

MIXING PART B (WET SOLUTION)

The Part B side of the system requires a five (5) minute agitation period prior to application. The pump will circulate the product during application. The initial mixing may be done using the pump bypass.



MIXING PART B (DRY SOLUTION)

When starting with Part in the form of a dry flake or powder it will need to be mixed with water. All shipments will have full instruction on properly mixing the product.

- Put 40 gallons / 151 litres of water into a 55-gallon / 205 litre drum.
- Slowly add into the vortex 20 kg. (44 lbs.) of powdered Part “B” to each drum.
- Mix well with a mechanical mixer.
- Let stand for fifteen (15) minutes (i.e. until the foam settles).
- After the foam settles, add water to fill the drum
- Mix again for five (5) minutes.
- **Note:** Do not be concerned when the mixture foams.
- After foams settles you may begin to spray

Larger batches are mixed according to the same ratio of “Liquid Rubber” “B” to water.

FILTRATION OF PART B

Although the filtration of Part B is not as crucial as Part A, it is necessary to filtrate Part B to ensure proper operation. This is achieved with the built-in in-line filter.

The material supply hose has a small mesh basket filter at the end to help eliminate any blockages at the tip.

HANDLING OF PART B

When mixing the Part B dry solution, it is advised to wear safety glasses, rubber gloves and masks as a precaution to avoid irritation of skin due to its corrosive nature.

The Part B is of a corrosive nature especially to metals. Spillage should be washed down with water immediately.

Flushing the Part B pump, fittings, and tools with fresh water on a regular basis are required to reduce corrosion.



Equipment purchased as part of the Applicator License Fee

GETTING READY TO SPRAY THE LIQUID RUBBER DRYLAR™ RAPID SETTING MEMBRANE

The majority of this section was described in the **hands-on training** session of the Applicator Training and Certification program. The following is a summary of the key issues covered. If uncertain of any aspect of the following please do not hesitate to contact your Liquid Rubber representative for advice.

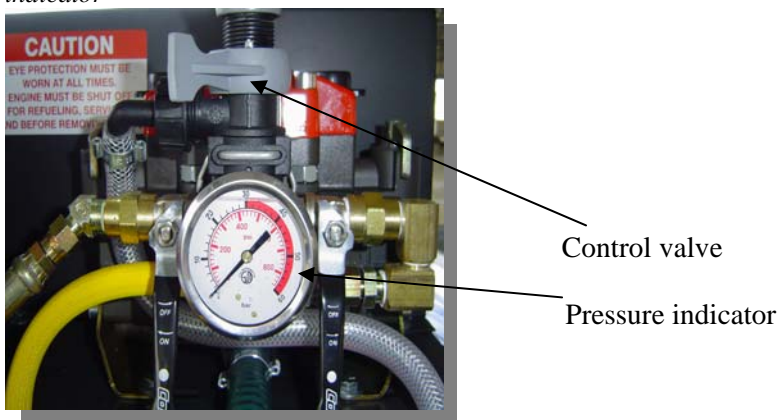
ADJUSTING EMULSION TO ACCELERATOR RATIO

Pressures and tip sizing to obtain the Correct Ratio:

Ratio of 12:1 is achieved in two (2) ways:

- At the spray tips, Emulsion Part A at 1.5 gallons per min. and catalyst .01
- Pump pressure is Emulsion Part A at 200 P.S.I. and B at 100 P.S.I., 2:1 Ratio at pumps.

Photo of pressure indicator



***Periodic calibration should be done after every 100 hrs.

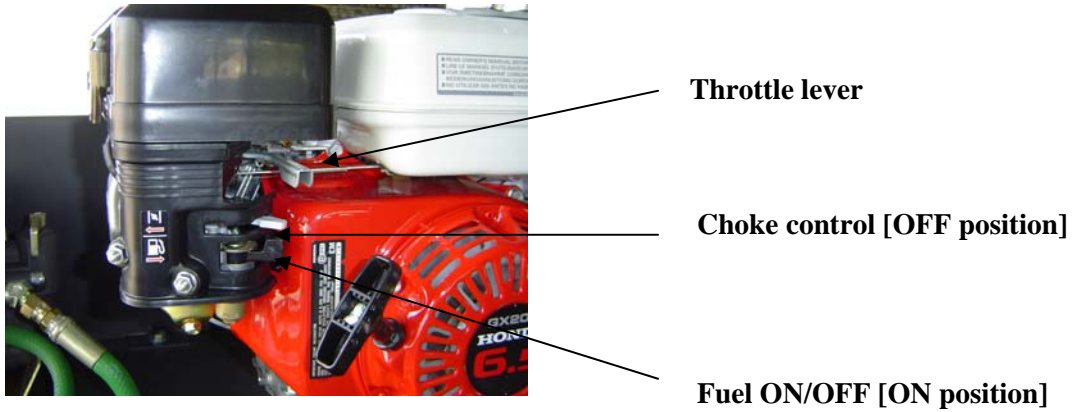
STARTING PROCEDURES -THE PUMP

Setting up the H.V.L.P. 2000 pump system is faster and easier than competitive systems.

The recommended procedure is as follows:

- Check the oil levels in the motor and pumps are adequate. If not, increase the oil level as necessary. (There is a guideline to help you judge the correct level of oil).

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- Connect both A & B feed and return hoses to its designated outlets.
- Connect both A& B supply hoses to the pump.

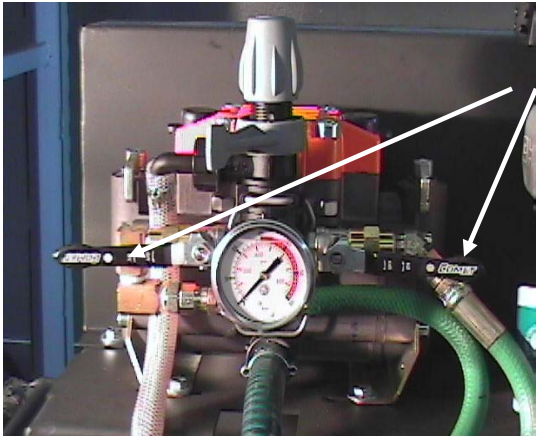


- Connect both A & B supply hoses to the gun. Double check to ensure that both A & B hoses are in the correct position at both the pump and the gun sockets.
- Connect the appropriate tip size to the gun.



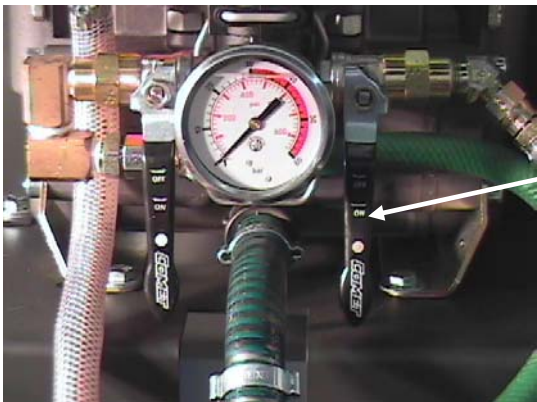
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- Prime the Part A side of the system with the lever in the **UP POSITION** and allow circulating for a minimum of two (2) minutes.



Lever
in the UP position

- Prime the PART B side using the above procedure.
- When Parts A and B are primed, pull back the plastic **LEVER** in the **DOWN POSITION** and the **GATE VALVE** into the **OPEN** position for the PART B side.



Lever in the down position

- Squeeze the trigger until the full fan pattern is evenly discharged through the tip.
- Repeat the above procedure for the PART A side.
- Set the pressure in accordance with their pressure tip calibration table and spray the contents into a waste bucket until the product is setting up as demonstrated in Practical Training.

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The H.V.L.P. 2000 pump system must be calibrated in accordance with the chart for specific pressures and tip sizes for each specific project. Refer to the Calibration chart with pump.

	LARGE	AREAS	DETAIL	AREAS
PUMP PRESSURE	Part A – 200 p.s.i.	Part B – 100 p.s.i.	Part A – 200 p.s.i.	Part B – 100 p.s.i.
TIP SIZE	4015	4001	4008	4001

After the pump has been calibrated, it must be purged of all cleaning fluids/contaminants. The lines can then be filled with the Liquid Rubber membrane components A & B.

Spray until the proper fluids are coming out of the tips and the proper atomization is taking place. (As explained in the Practical Training Program).

Once this is done all gauges should be rechecked for settings and tips checked for size.

PUMP MAINTENANCE DURING OPERATION



Regular checks of the pump should be made during application to ensure the following:

- Sufficient material is in supply tanks for both Parts A & B.
- Pressures are consistent.
- Filter system is not blocked up.
- Sufficient gas is in the motor.

When not in use, return the pump to the circulation position.

CLEANING OF PUMPS, HOSES AND GUNS

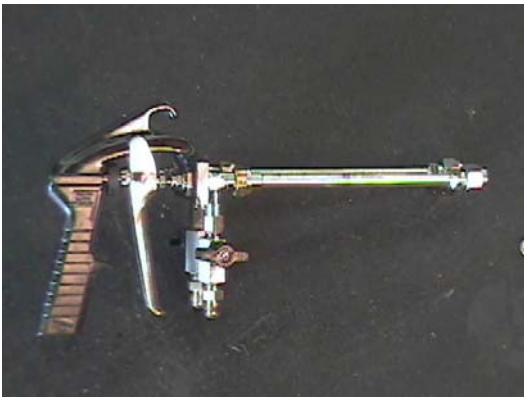
Cleaning the system is a simple process and is *necessary on a day-to-day basis*.

We recommend the following cleaning procedures:

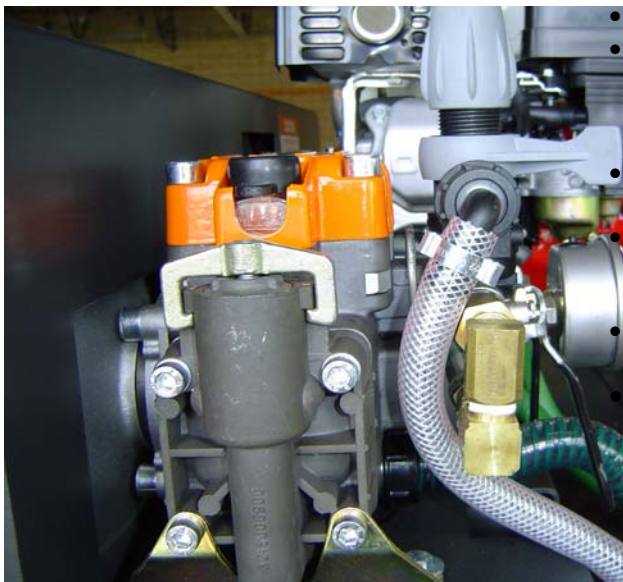
- Remove the feed hose from Part A.
- Remove the tip from Part A and put in the cleaning solution.
- Return “wastage” materials in the pump and lines to the supply tank or a 5-gallon bucket.
- Put the circulation lever into the **UP** position, and prime the pump with cleaning solution.
- Put the circulation lever in the **DOWN** position and open the gate valve.
- Squeeze the trigger and allow the cleaning solution to flow through the pump, hoses and gun.
- When the whole system is filled, allow the cleaning solution to sit for a minimum of two (2) minutes in the system.
- Circulate for one (1) minute, empty the lines, gun and pump.
- Dismantle the hoses from the pump and secure all openings.
- Clean down the pump, hoses, gun and all fittings. Remove and clean check valves, ports and O-rings.



O ring sets



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SYMPTOM	CAUSE	REMEDY
The pump does not charge.	Air inlet.	Control inlet device.
	Regulation valve closed (control group not at zero pressure).	Position the lever correctly.
The pump does not reach the desired pressure.	Valve and/or site of inlet valve and delivery worn or dirty.	Replace or clean (*)
	Worn valve and/or site of regulation valve.	Replace or clean (*).
	Valve and/or site of inlet valve and delivery worn or dirty.	Replace or clean (*).
Pressure irregular or with pulse.	Insufficient number of turns.	Bring the number of correct turns to 350 – 550 turns/min.
	Valve and/or site of inlet valve and delivery worn or dirty.	Replace or clean (*).
Excessive diaphragm vibrations.	Air inlet.	Control inlet devices.
	Pressure accumulator discharge or with incorrect air pressure.	Bring air to correct pressure (*).
Noise when oil level is lowered.	Blocked inlet.	Control inlet devices.
Water present in oil.	Broken diaphragms.	Replace.
		If replacement is not immediate, empty water from pump, introduce oil without water (even used) or naphtha to stop internal parts from rusting (*).
		(*) ONLY SPECIALIZED TECHNICIAN

DO'S

- Maintain regular checks of all equipment.
- Keep wastage of all components, including the cleaning solution to a minimum. The solution will be revisited in the “Environmental Concerns” section and “Practical Training” session.
- Maintain the equipment and containers in a neat and tidy manner.
- Maintain a presentable personal appearance at all times.

DON'TS

- Contaminate Part A material with Part B or cleaning solution.
- Leave hoses in cleaning solution for long periods or dispose of wastage in an irresponsible manner.

GENERAL GUIDELINES FOR PREPARATION

IDENTIFYING SUBSTRATES SUITABLE FOR THE “LIQUID RUBBER” MEMBRANE SYSTEM

The “Liquid Rubber” membrane system can be applied to a variety of substrates and can be used as a protective coating or a waterproofing membrane.

The most common of these substrates are as follows:

- Concrete block
- Formed concrete
- Pre-cast concrete
- Concrete slabs

MINIMUM REQUIREMENTS FOR CONCRETE SURFACES

- Surface must be dry and free of any dirt, debris and loose material.
- Surface must be free of voids and irregularities. Voids larger than 1/8th of an inch must be addressed with Trowel Grade (as specified) prior to spraying.
- All penetrations, right angles and corners should be prepared as needed, with Trowel Grade as specified.
- Substrate is to be examined for moisture content.
- Any substrate with a question of doubt should be spray-tested and examined after curing.

APPLICATION OF “LIQUID RUBBER”

The following is a summary of the materials you learned in the Applicator training course and will help remind you of the various aspects and techniques of applying the Liquid Rubber Drylar™ rapid setting seamless membrane.

TIP SIZES

There are various size tips, which can be used for different applications, the most important consideration, is to make sure that the tip sizes for both Part A and Part B are calibrated in accordance with the correct ratio of the system.

Ratios are shown in the Calibration Chart. The first two numbers represent the angle of the fan pattern and the second two represent the gallons per minute (G.P.M.)

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When spraying large areas tips up to a 40 degree angle may be used, on the other side of the scale when spraying details and hard to access areas a fan patten of 15 degree angle is recommended. Tip sizes in between these angles may be used in accordance with each particular project.

Continuous practice spraying will help the applicator(s) determine more easily which tip size should be used.

SPRAYING –structural details

After preparation of all detailed works, it is best to spray a 60 mils coating to all details and allow a few hours curing time prior to spraying the entire project, at the specified thickness. Often this is not the case because of time restrictions, but when time permits, it is recommended.

Detailed work is of critical importance to the out-come of the project and as in most cases, this is where failure generally occurs in waterproofing.

When applying “Liquid Rubber” to detailing work it is important to know and understand the product. The solution to detailing works is definitely not to apply excess product to these areas as this will only result in excess shrinking of the product and small cracks will appear that may cause leaking and extra time on site.

If preparation work is done correctly and according to the specification, the thickness should be consistent throughout.



SPRAYING TECHNIQUES

Spraying techniques will be demonstrated and understood a lot clearer in the Physical Training section of the “Liquid Rubber” Certification Training Program. Some important factors must be clearly understood and remembered.

- “Liquid Rubber” membrane can only be applied with the spray pattern perpendicular to the substrate requiring the membrane.
- It is not advised to spray excess material into internal/external corners of angles. The same applies to detailing work (excess material to these areas may result in excessive stress to the membrane while curing).
- When spraying “Liquid Rubber”, always begin from the lowest point working your way up to the highest point. This is required due to the curing nature of the product.

When spraying in high winds, the Part B side of the system needs to be facing into the wind. Extra precaution must be taken as in any spray application to avoid over-spray.



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As described in the detailing section, excess “Liquid Rubber” is not the answer to solve all problems. In most cases 120 mils is more than adequate to provide a waterproofing membrane, from a job-to-job basis this may differ.

PREPARATIONS FOR WATERPROOFING APPLICATIONS (LIQUID RUBBER DRYLAR™)

IMPORTANT FACTORS TO CONSIDER:

- Excess product (4-6 mm/160-200 mils) is not going to perform any different to a 3 mm system, as long as the membrane is free of voids.
- A thorough cleaning of the detail area is essential.
- Spraying at correct angles will reduce cracking.



GENERAL APPLICATION

Determine whether the Liquid Rubber Drylar™ Membrane is required as a **coating**, or a **membrane**. If the application is a coating, the recommended minimum thickness is 1 mm. The minimum recommended thickness of a membrane is 2 mm.

In either case the application procedures below are the same.

Begin spraying from the lowest point of the roof to the highest point. Spray twice the system thickness to all vertical to horizontal intersections. This thickening should extend 100 mm up the vertical surface and 100 mm onto the horizontal and at the corners. In all cases, continue the Liquid Rubber Drylar™ Membrane beyond existing, underlying membrane and any underlying filling

- Detail Liquid Rubber Drylar™ Membrane into sumps and penetrations, whether or not the existing underlying membrane is detailed into these areas.
- Check Liquid Rubber Drylar™ Membrane for correct mil thickness in a grid pattern that incorporates sections not greater than 50 sq. m.

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- Application of a coating, if desired, can proceed following a minimum of Five (5) days curing.

Minimum clearance of 24 inches is required for the application of product. For areas with less than 24-inch clearance, the product may be applied by hand using Voxlar™. Ambient temperature shall be within manufacturers specifications (greater than 45 Deg F/7 Degree C).

All plumbing, electrical, mechanical and structural items to be under or passing through the membrane shall be positively secured in their proper positions and appropriately protected prior to membrane application.

EXAMINATION PRIOR TO APPLICATION

- All surfaces to be waterproofed shall be inspected and approved by the Applicator at least one day prior to commencing work.

Prior to application a through inspection should be carried out to evaluate the following;

- All mortar joints are flush to the surface
- All voids are filled with a sand/cement mix
- All surfaces are completely exposed so the membrane can be applied to the entire surface
- Dual penetrations are at least 50 mm apart
- Penetrations are at least 50 mm above the floor surface
- All penetrations are grouted to the surface and free of voids
- There is at least 600 mm of clearance from the wall to work

It is good practice to brush the Voxlar™ into the fasteners after spray application to ensure complete coverage. This procedure will still be less time consuming than caulking. Allow at least 24 hours for all concrete work to cure, including concrete filled block walls.

APPLICATION

Concrete systems

Due to the numerous variables affecting concrete (i.e.: water content, mix specifications, cement source, "free-line" percentage, calcium content, pumped vs. poured, environmental conditions at the time of concrete placement, admixtures, acidity, type of finish, curing conditions, etc.)

Every job will require pre-testing of Liquid Rubber Drylar™ Membrane to determine the installation procedure.

Delineate a test area on site with a minimum dimension of 10 feet by 10 feet (3m by 3m). Apply Liquid Rubber Drylar™ Membrane to a thickness of 80 mills and let it cure for 24 hours.

Observe for blisters. If minor or no blistering occurs, proceed to the next step. If blistering does occur, apply a thin (10-mil) tack coat of Liquid Rubber Drylar™ Membrane without catalyst to the concrete surface and allow to cure before proceeding (see information regarding blister repair below).

Remove all standing water before application of Liquid Rubber Drylar™ Membrane.

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Spray apply Liquid Rubber Drylar™ membrane at 80 mil nominal dry thickness.

Install 20mm by 20 mm fillets to all 90 deg angles.

Remember that all non-selected back fill requires an A34 geo-fabric or protection board to be applied over the membrane. This ensures that sharp rock and brick will not penetrate the membrane.

Liquid Rubber Drylar™ provides an added degree of safety. If the membrane is perforated, water can not get behind the membrane as it is fully adhered to the surface. As such while hydrostatic pressure will be applied to the damaged area any potential of water penetration is greatly reduced.

Non-horizontal surfaces

Spray on vertical surfaces, should begin at the low point (typically at the drains) and work towards the high point. This method allows the product to adhere to the surface before hitting catalyst run-off.

Note: It is normal for some blistering to occur. A small number of blister heads should be sampled and checked for proper membrane thickness. If the samples have the required membrane thickness (80 mils nominal/60 mils minimum), then the remaining blisters should not be punctured or cut. If the samples have less than the minimum 60 mils, then the area can either be re-sprayed to obtain the proper thickness, or the blisters can be cut out and the area re-sprayed or patched with Voxlar™, to a minimum thickness of 80 dry mils over the cut-out area extending a minimum of three inches (3") beyond the cut.

Concrete slabs

The following is typical of the specification for Liquid Rubber Drylar™ applied as a waterproofing membrane to concrete slabs. Each application will be slightly different depending on the configuration and service. We suggest reviewing this with the engineer or general contractor prior to beginning work.

Prior to application inspect the surface to ensure that;

- ❑ All voids and irregularities are sealed
- ❑ There is sufficient safe working area
- ❑ All penetrations are grouted and cured
- ❑ Surface is clean and free of oils and water

Application can start after the surface has been prepared. Once prepared, begin detailing work first per the site engineer's directions. Mask all areas that require protection from overspray. For perimeter terminations, cut out lengths of geo-textile to be used where the slab meets a concrete or vertical form. Spray a coat of Part A into the right angle, embed the geo-textile and spray another coat of Part A. Alternatively geo-textile and Zavlar may be used in these areas, then over-coated with the instant set membrane.

Begin spraying the slab from the lowest point to the highest if there is an incline. Where the perimeter termination meets the slab apply a second coat of the instant set membrane.

Apply a second instant setting membrane coat to all expansion joints, right angles and construction joints.

CURING AND WEATHER CONDITIONS

The greatest challenge with these coatings is installation during changing weather conditions. Virtually all parts of North America have some application limitations as a result of cold weather, daily rainstorms, high humidity and/or fog, or reduced daylight hours during winter. Problems will occur when a coating is specified on a construction project without regard to the time of year the coating is to be installed.

When Liquid Rubber Drylar™ coating is applied, two physical changes must occur: Water must evaporate from the applied coating film for initial drying and the polymers must fuse together for final cure.

The goal of the first change is simple but can be complicated by a variety of factors. The second change takes place during a 72 hour period and must occur for the coating to develop its full strength; adhesion; and beneficial properties, such as moisture resistance and toughness.

Drying of the coating

As the Liquid Rubber Drylar™ coating is applied—by spray, water droplets form on the surface and begin to evaporate from the applied coating. The release of water is an integral part of the Liquid Rubber Drylar™ product. Warm temperatures, wind and sunlight increase the freshly applied coating's evaporation. The water closest to the top of the applied coating film will evaporate first. Water in the coating film closest to the substrate has to diffuse through the coating and takes longer to leave the coating.

As water dries from a coating, the coating will skin over and become dry to the touch within one hour to four hours. Allow this time before a second application coat and only after the first coat is dry to the touch.

When a coating is dry to the touch, it is far from fully cured. In fact, small amounts of water still are present within the recently applied coating film, and water slowly will diffuse through the coating film during the next few weeks. A coating may appear to be well-adhered and able to withstand severe weathering during the first few days, but it is not. If a coating is exposed to water conditions during the drying or coating period, it may soften, lift and de-bond from the surface. This would require a contractor to clean the surface and reapply the coating.

Final cure

During the first 3 days after application, the polymer begins to bond to itself and form a continuous network within the coating film. This fusion is essential to the coating's long-term performance. Wet weather and cooler temperatures inhibit final cure and may prevent the polymer from properly fusing. This is why coating applications should not be attempted on projects from late fall to early spring in most North American areas.

OVER SPRAY:

If over spray lands on cars, it can be easily removed with Mineral Spirits and soap and water within 24 hours. Thereafter, stronger solvents such as Xylene will be effective in removing the elastomer but may damage some finishes. One foot square, white test panels should be placed in various parts of the parking area as evidence of over spray in the event later claims are made.

ENVIRONMENTAL CONSIDERATIONS

Environmental concerns should not be overlooked in importance to the system as a whole.

The applicator(s) must be cognizant and observant in ensuring minimal wastage of both the product and cleaning agents.

The **applicator(s) must adhere** to the proper disposal of wastage in accordance to the local bylaws.

MINIMUM WASTAGE

Excess accumulated product, which is not contaminated and contains no debris, can then be stored in the drum. Ensure the drum is adequately sealed after being opened to prevent skimming and product deterioration.

Minimizing wastage will result in lower contributions to landfills.

CLEANING

When cleaning the pumps and lines, it is not necessary to use new Mineral Spirits during each cleaning.

The best method of re-using Mineral Spirits is to clean the pumps and allow the contaminated elements to settle at the bottom of a 5-gallon pail. Pour the contents into another pail, leaving any sedimentation.

This process can be repeated several times, accumulating the sediment and disposing in the correct manner.

The contaminated Mineral Spirits can be recycled and reused as an alternative to using new Mineral Spirits.

4.3 WASTAGE DISPOSAL

All wastage of the “Liquid Rubber” membrane is to be minimized and disposed of in accordance with the regulations of each individual Country, State, or Province.

APPENDIX

Glossary of Terms

accelerator	Inorganic liquid chemical used to break an asphalt emulsion
adhesion	The physical attraction or joining of two substances, especially the macroscopically observable attraction of dissimilar substances.
alligator cracking	a pattern of surface cracks resembling the skin of an alligator
Coating	a thin layer of substance usually 1 mm in thickness
curing	to prepare, preserve, or finish (a substance) by a chemical or physical process
craze	A network of fine cracks in the surface
elastomer	Any of various polymers having the elastic properties of natural rubber.
Elasticity	The property of returning to an initial form or state following deformation
emulsion	a suspension of small globules of one liquid in a second liquid with which the first will not mix:
ferrous	Iron
fillets	A thin moulding used as separation between vertical and horizontal details
flammable	Easily ignited and capable of burning rapidly; inflammable
geo-textile	a non-woven fabric used for strength when filling cracks or holes in surface members
granules	a small grain or pellet; a particle
Inorganic	relating to compounds not containing hydrocarbon groups
LEC	Liquid Rubber
membrane	thin sheet of natural or synthetic material usually 2mm or more in thickness
mil	a thousandth of an inch
mm	millimetre or 1/1000 of a meter, there are 2.54 mm in one inch
oxidize	Surface reaction in which oxygen in the air combines with the surface of a coating or membrane changing its properties
parapets	A low protective wall or railing along the edge of a raised structure such as a roof
slip sheets	a laminated flexible material
Solvent	Liquid used to promote solids dissolving to become a liquid –usually a hydrocarbon
substrate	The material or substance
UV	Ultra violet light
VOC	Volatile organic content, usually refers to the amount of hydrocarbon that is released into the atmosphere

Pump trouble shooting

SYMPTOM	CAUSE	REMEDY
The pump does not charge.	Air inlet. Regulation valve closed (control group not at zero pressure). Valve and/or site of inlet valve and delivery worn or dirty.	Control inlet device. Position the lever correctly. Replace or clean (*)
The pump does not reach the desired pressure.	Worn valve and/or site of regulation valve. Valve and/or site of inlet valve and delivery worn or dirty. Insufficient number of turns.	Replace or clean (*). Replace or clean (*). Bring the number of correct turns to 350 – 550 turns/min.
Pressure irregular or with pulse.	Valve and/or site of inlet valve and delivery worn or dirty. Air inlet.	Replace or clean (*). Control inlet devices.
Excessive diaphragm vibrations.	Pressure accumulator discharge or with incorrect air pressure.	Bring air to correct pressure (*).
Noise when oil level is lowered.	Blocked inlet.	Control inlet devices.
Water present in oil.	Broken diaphragms.	Replace. If replacement is not immediate, empty water from pump, introduce oil without water (even used) or naphtha to stop internal parts from rusting.