

Liquid Rubber

TECHNICAL MANUAL

LIQUID RUBBER COATINGS

DACLAR™



UV resistance industrial and commercial
roof restoration and preservation.



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SAFETY COMES FIRST

It is the responsibility of every contractor to work safely. Nothing in this manual replaces the contractor's 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 Daclar™ we encourage you to work safely. If you have any questions concerning the safe handling, storage or disposal of Liquid Rubber Daclar™ 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 DACLAR™

Liquid Rubber Daclar™ 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 Daclar™ is a NON-REGULATED product under both T.D.G and WHIMIS regulations, so no special transportation, handling or storage regulations apply.

Liquid Rubber Daclar™ 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 Daclar™ 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 Daclar™ 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.

LIQUID RUBBER DACLAR™ IS A WATER BASED PRODUCT SO YOU MUST ENSURE THAT DRUMS ARE STORED AT TEMPERATURES ABOVE 5°C. SIMILARLY LIQUID RUBBER DACLAR™ 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 Daclar™ and will adversely affect its application and performance.

PERSONAL SAFETY

As we outlined in the section on Product Safety, Liquid Rubber Daclar™ 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.

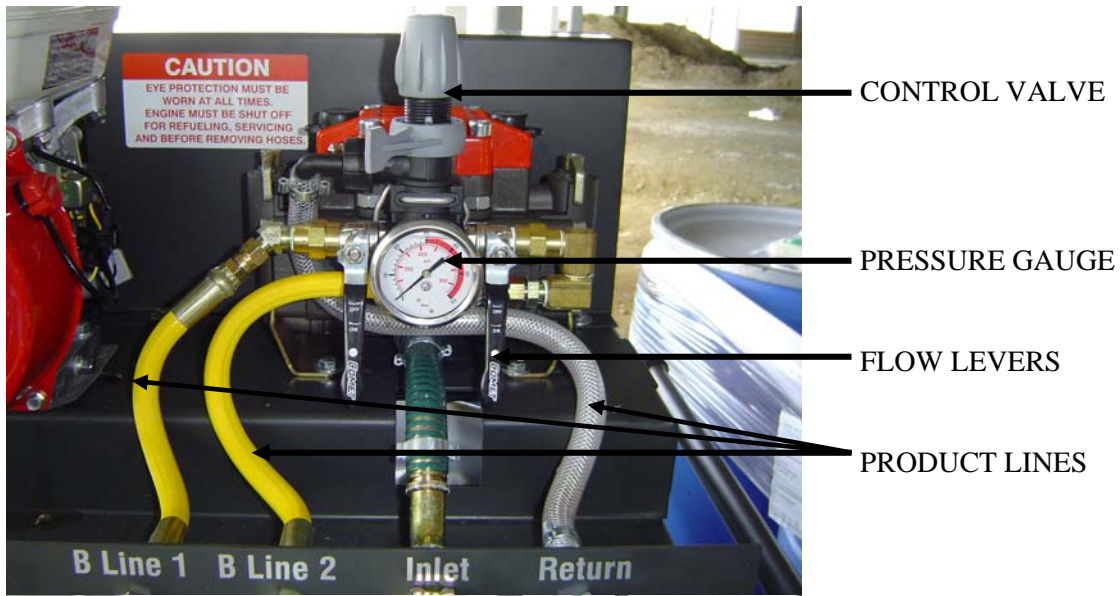
It is required that all applicator(s) follow proper OSHA standards (or equivalent standards in accordance to the regulations of each individual Country, State or Province) for every project.

SAFE OPERATION OF SPRAY EQUIPMENT

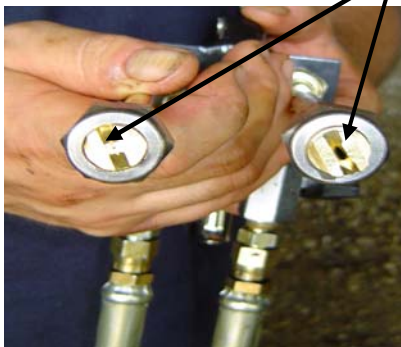
Prior to starting work and spraying either tack coats or Liquid Rubber Daclar™ instant set membrane, an inspection of the equipment will help ensure a problem free day.

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 Daclar™ 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 roof 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 Coatings 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 / 55 gallon 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 / 55 gallon 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 Daclar™, 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

Liquid Rubber Daclar™ is a non-flammable liquid and does not present any storage or transportations 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 Daclar” is packaged in 55 gallon / 205 litre 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 DACLAR™ 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 Coatings representative for advice.

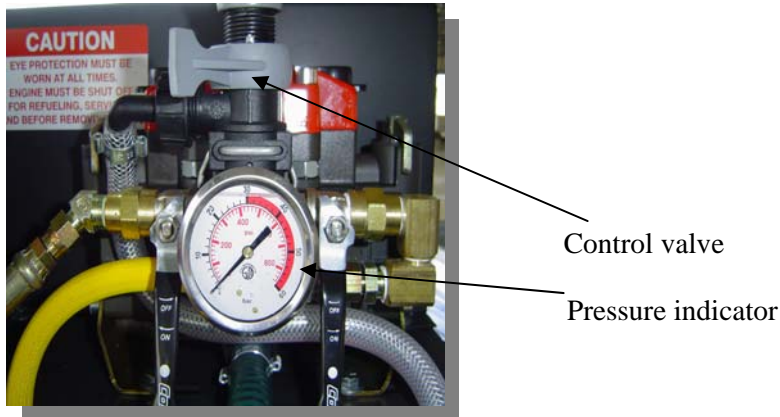
ADJUSTING EMULSION TO ACCELERATOR RATIO

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 200-300 P.S.I. and Part B at 50-100 P.S.I.

Photo of pressure indicator



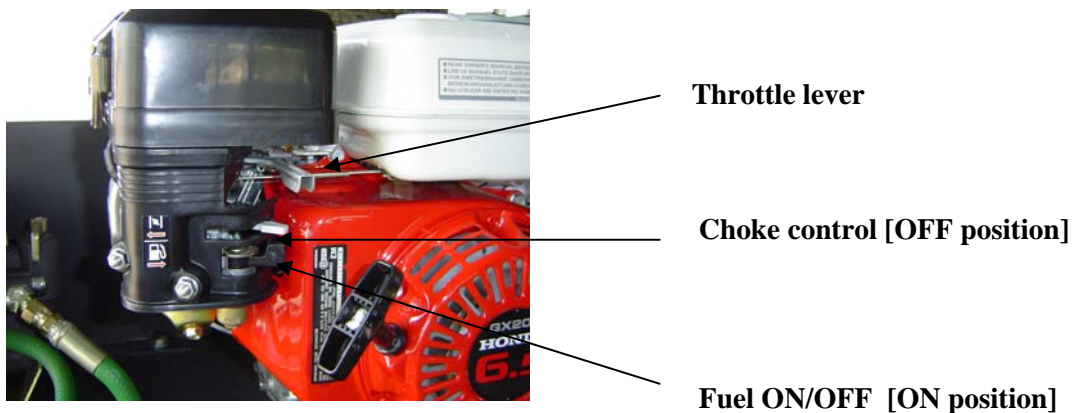
***Periodic calibration should be done after every 100 hrs.

STARTING PROCEDURES -THE PUMP

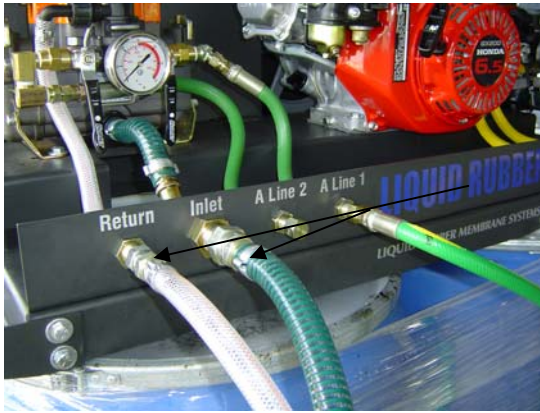
Setting up the H.V.L.P. 2000 pump system is faster and easier than competitive systems.

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).



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

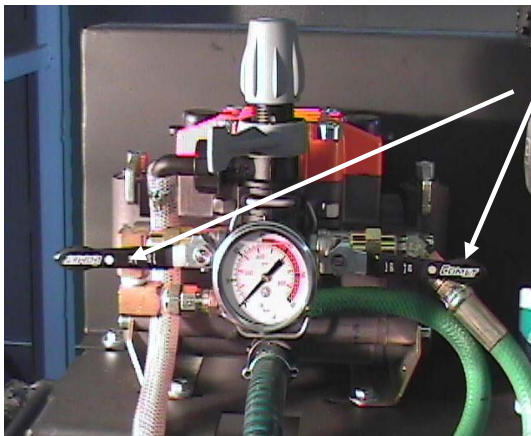


Connector locations

- 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.

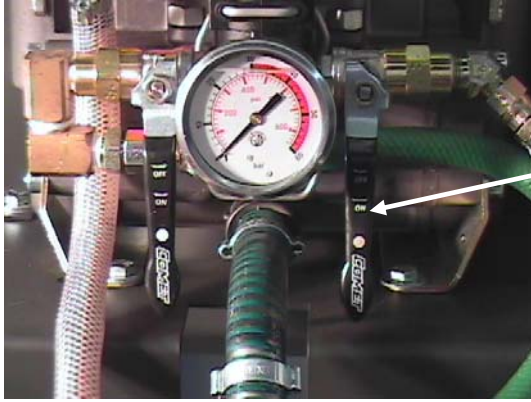


- Prime the Part A side of the system with the lever in the **UP POSITION** and allow circulating for a minimum of two (2) minutes.



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.

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 - 300 p.s.i.	Part B 50 -100 p.s.i.	Part A 200 - 300 p.s.i.	Part B 50 -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

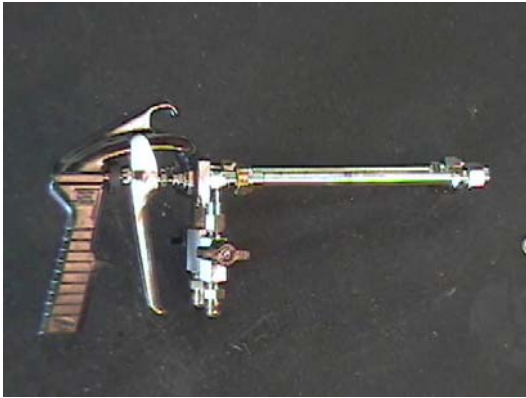
Cleaning the system is a simple process and is *necessary on a day-to-day basis*.

We recommend the following cleaning procedures:

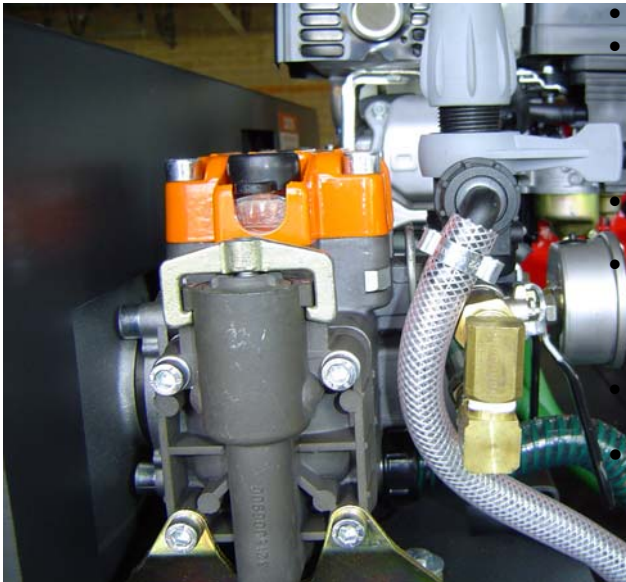
- Remove the feed hose from Part A.
- Remove the tip from Part A and put in the cleaning solution.
- Return “wastage” materials in the pump and lines to the supply tank or a 5-gallon bucket.
- Put the circulation lever into the **UP** position, and prime the pump with cleaning solution.
- Put the circulation 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



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 (*). (*) 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 “LIQUID RUBBER DACLAR™”

The “Liquid Rubber Daclar” 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:

- Metal
- Concrete
- Asphalt-based roofing products
- Spray-applied foam
- Timber

MINIMUM REQUIREMENTS FOR SUBSTRATES

- 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 known as Liquid Rubber Voxlar™ (as specified) prior to spraying.
- All penetrations, right angles and corners should be prepared as needed, with Liquid Rubber Voxlar™ 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 DACLAR™”

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 Daclar™ 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.)

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 patter 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 –joints, flanges, over-hangs, and other 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.



TOO MUCH IS NOT THE ANSWER

As described in the detailing section, excess “Liquid Rubber” is not the answer to solve all problems. In most cases 120 mils / 3 mm is more than adequate to provide a waterproofing membrane, from a job-to-job basis this may differ.

GENERAL GUIDELINES FOR DETAILING WORK

PREPARATIONS FOR ROOFING APPLICATIONS (LIQUID RUBBER DACLAR™)

FALL

Adequate drainage fall should be specified at no less than the industry minimum requirement or at least 1.5% without ponding. Internal box and valley gutters require (at least) the same fall as roofs.

GUTTERING

Box/Valley Gutters can be waterproofed or over-flashed using a continuation of the roof membrane. However, because gutters are such a critical waterproofing area, an additional reinforced layer of membrane is recommended.

Full bonding of the membrane to the gutter is recommended, but slip jointing should be incorporated at movement joints and at substrate junctions. Optimum drainage falls to Code sized outlet pipes should be maintained, and consideration should be given to maintenance and filtration systems to safeguard against build blockages from hailstones, vegetation and other waste accumulation. Overflow drainage should be allowed, and drip lips installed at all potential back tracking locations.

The design of gutters should permit differential thermal movement separation from the deck. A drip edge flashing should be formed and installed to support the membrane turndown, and to permit maintenance of gutters without disturbing the deck membrane.

MEMBRANE ENCAPSULATED OUTLETS

Drain outlets must be special flanged outlets that are specifically designed for membrane systems, and incorporate mechanical sealing against back pressure. Ideally, the outlets should be located at no greater than 7.5 metre / 25 feet centers and be of size/capacity to adequately evacuate the maximum expected water drainage load and to meet Local Government and National Standards. The outlet design shall allow for evacuation of water entrapped by the membrane as well as any requirement to drain the overlaid surface cladding.

FLASHINGS AND CAPPINGS

Cover flashings, masonry capping and damp courses play an equally important role in keeping a building waterproof, and are **PARTS OF THE APPLICATOR'S RESPONSIBILITY**. Consideration should be given to the selection of materials and their placement in the structure. Poor flashing detailing can permit moisture entrapment within the masonry or plaster adjoining the roof membrane. As a general rule, flashings and capping heights should continue at least 150 mm / 6 inches above the highest water table level. All flashings and damp courses must extend to overlap the membrane.

Metal flashings should be fixed and lapped to allow for thermal expansion. Different types of metals may cathodically react and corrode. Similarly, metal may be broken down by some chemicals present in common building materials such as chloride salts, sulphides and alkalis. Careful consideration should be given to the possibility of these reactions when specifying.

PENETRATIONS

With time and exposure, vents, skylights, and other roof fixture penetrations can become loose. This movement may be transmitted directly to the membrane. Separate sleeves or plinths, fixed to the deck, but free of the penetrations are recommended for independence of the membrane. The associated membrane turn-ups should be collar-over-flashed off the penetrating fixture. Commercial Silicone Rubber collars are an acceptable alternative. High point placements are advisable.

TURN-UPS

Turn-ups are some of the most vulnerable points on a roof. They are susceptible to degradation from ultra violet radiation and possible mechanical damage. An additional layer of high performance membrane at these points is a wise precaution. The Membrane should be solidly bonded to vertical surfaces and to the deck. Bridge the actual junction with an angled fillet. Cover flashings should extend to the deck or surface finish level to provide additional protection.

Where adjoining walls are independent of the roof, slip sheeted or formed separation is recommended to allow for movement (for example, movement could be caused by natural settlement or the weight of additional claddings).

ANGLE FILLETS

Perimeter coved or angled fillets (minimum 20 mm / 3/4 inch face) shall be placed to walls and up-stands that are integral with the roof deck (or other substrate). The fillets help to distribute the forces of any concentrated movement and permit a smooth transition of the membrane from deck to wall.

IRMA (Inverted Roofing Membrane Applications)

Insulation boards, if installed, should be of premium quality high density, closed cell foam, to avoid water saturation of the insulant material.

EXPANSION AND CONTROL JOINTS

A design-graded roof should have movement joints planned and sited at the highest points throughout the deck area to be sprayed. Slip-sheets shall be placed both under and over the membrane bridging such joints. The bridging membrane shall be fabric reinforced with elastic material suited and sized to accommodate the distribution of stresses from the expected movement of the joint or moving plane junction, and shall generally extend a minimum of 100 mm / 4 inches either side of the joint or junction. Engineering confirmation should be sought as to the magnitude of expected movement.

It is essential that in-situ movement joints be of their **DESIGN INTENDED SEPARATION DISTANCE THROUGHOUT THEIR SEPARATION** to avoid stresses to the membrane and structure that can cause physical damage. Neglecting this design detail may result in magnified movement(s) being transferred to the next operable joint or change of structural plane. Such magnified and unplanned movement(s) can abrade a sandwiched membrane or place excessive compression and de-lamination stresses at related up-stands. The inspection and acceptance of movement joints should be included as a hold point in the Applicator's Preliminary Inspection and Test Plan.

SLIP SHEETS

Slip sheeting is a laminate of flexible material that should be used where dissimilar movement is anticipated between the substrate and the surface cladding over the membrane. Slip sheeting may be placed between the membrane and the substrate, or the membrane and the overlay (if any). Slip sheeting protects the membrane from frictional and tensile causes of de-lamination, and rending. Slip sheeting is also employed where the membrane is required to bridge movement joints (as above), thus elastically distributing the movement stresses that would otherwise be concentrated on a small section of the membrane.

EXPANSION JOINT CAPS

Membranes should not be subject to movement from high magnitude repetitive thermal cycling or other significant substrate movement. Such joints should be formed with non-flexural, non-contacting, non-corrosive metal or stable plastic profiles to form a fixed two-part wall and cap over the joint. Design should include fixings, allowance for lineal movement, assembly, required sealant to substrate, and protective measures from over-cladding movement damage.

MEMBRANE MAINTENANCE

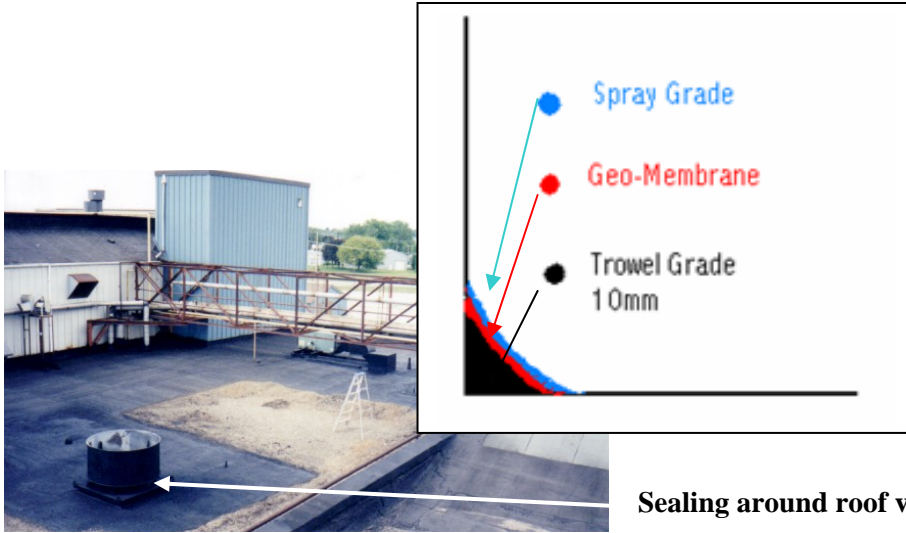
All flat roofs and associated flashings and capping should be inspected at least every two years. Any signs of possible defects (possibly caused by mechanical damage or structural movement) should be immediately repaired.

VENTED MEMBRANES

The use of vented membranes is only required where water vapour emitted from the substrate is likely to cause probable blistering and uplifting of the overlaid membrane. The specified use of a vented membrane will be determined by the intended use of the structure and the Water Vapour Transmission permeability of the substrate.

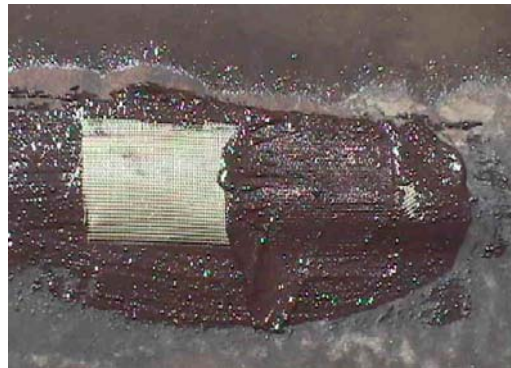
Vented membranes have the disadvantage of permitting water interface of the substrate and membrane, but offer the benefit membrane that permits the unrestricted escape of moisture and tracking at the of a breathing related vapours.

It is important to address all detailing work prior to beginning the spray application, as this will reduce wastage of material and man-hours.



Sealing around roof vents

The most common areas where detailing work will be required will be around penetrations, vertical transition, seams and irregularities in the substrate. Generally, the product used for detailing work will be Liquid Rubber Trowel Grade Voxlar™, and geo-textile. If you have other products in mind, authorization from the manufacturer is required.



Voxlar™ and geo-textile is used to repair tears in the old roof surface prior to spray coating.

When applying the Liquid Rubber Daclar™ membrane at a thickness greater than 3 mm (120 mils) in one application to details, cracking of the product is likely to occur. Therefore, the use of the specified Liquid Rubber Voxlar™ is to be used to bridge these angles. Typically, a 10 mm / .4 inches - 15 mm / .6 inches fillet of Liquid Rubber Voxlar™ is to be used.

Liquid Rubber Voxlar™ may be applied using a trowel, to a clean surface that should be free of dirt and other contaminants. Allow the Liquid Rubber Voxlar™ to dry for a minimum of 12 hours prior to the application of Liquid Rubber Daclar™ membrane.

Create a new surface by using
Geo-textile with Voxlar™ and Liquid Rubber Daclar™
To ensure there are no leaks!



To seal roof penetrations use geo-textile
and Voxlar™

The following is a general specification for the application of a “Liquid Rubber Daclar™” membrane system to detail areas and in particular, where horizontal surfaces meet vertical surfaces that are to be coated with the “Liquid Rubber Daclar™” membrane.

When applying the “Liquid Rubber Daclar™” membrane at a thickness greater than 3mm (120 mils) in one application to details, cracking of the product is likely to occur. Therefore, the use of the specified Trowel Grade Voxlar™ is to be used to bridge these angles. Typically, a 10mm / .4 inches – 15mm / .6 inches fillet of Trowel Grade is to be used.

Voxlar™ may be applied using a trowel, to a clean surface that should be free of dirt and other contaminants. Allow the Trowel Grade to dry for a minimum of 12 hours prior to the application of “Liquid Rubber Daclar™” membrane.

Spraying “Liquid Rubber Coatings” parallel to the detail in an even thickness to a maximum of 3mm in one application. If a thicker system is required (4-6 mm/160-200 mils), a second application may be applied after **24 hours**.

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 Daclar™ Membrane is required as a coating, or a membrane. If a coating, the recommended minimum thickness is 1 mm / 40 mils. The minimum recommended thickness of a membrane is 2 mm / 80 mils.

In either case the application procedures below are the same.

Begin spraying from the lowest point of the roof to the highest point. Spray a thickening of material (twice the system thickness) to all vertical to horizontal intersections, such as wall/roof turn-ups, and to all construction and expansion joints, fillets and details. This thickening should extend 100 mm / 4 inches up the vertical surface and 100 mm / 4 inches onto the horizontal and at the corners. In all cases, continue the Liquid Rubber Daclar™ Membrane beyond existing, underlying membrane and any underlying filling

- Detail Liquid Rubber Daclar™ Membrane into sumps and penetrations, whether or not the existing underlying membrane is detailed into these areas.
- Check Liquid Rubber Daclar™ Membrane for correct mil thickness in a grid pattern that incorporates sections not greater than 50 square metres / 160 square feet
- Application of a coating, if desired, can proceed following a minimum of five (5) days curing.

Minimum clearance of 60 cm / 24 inches is required for the application of product. For areas with less than 60 cm / 24 inch clearance, the product may be applied by hand using Voxlar™. Ambient temperature shall be within the manufacturers' specifications (greater than 45°F / 7°C). All plumbing, electrical, mechanical and structural items to be under or passing through the roofing membrane shall be positively secured in their proper positions and appropriately protected prior to membrane application.

EXAMINATION PRIOR TO APPLICATION

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

FABRIC REINFORCING OF SEAMS AND OVERLAPS:

Tight overlaps and standing seam joints do not need to be reinforced.

Overlaps with gaps greater than 1/16 inch and corroded edges should receive fabric reinforcing. Apply a light coat of Liquid Rubber Daclar™, center the fabric on the overlap and roll it out taking care not to create wrinkles; press fabric down with squeegee or wide spatula; spray apply a full coat of Voxlar™ to seal top surface of fabric and roll back over to ensure coverage.

The Surface Inspection

- Roof surfaces should be clean, dry, structurally sound, stable and well-secured.
- The roof surface should be free of excessive ponding water. Roof surfaces that pond water 48 hours after a rain are considered unacceptable. All water shall be allowed positive drainage from the roof.
- Inspect the condition of flashing details adjacent to protrusions, penetrations, roof-mounted equipment, curbs, walls, parapets, drains and the roof edge to ensure they are acceptable and will maintain a weather-tight installation after being properly reinforced and coated.
- A thermo roof scan is recommended for roof projects over 15,000 sq.ft., the survey will reveal your problem areas



Moisture probe test area insulation is wet



Surface Preparation

- Metal surfaces to be coated should be clean, dry, sound, and free of dirt, grease, oil and any other contaminants that might interfere with the adhesion of the elastomeric coating.
- All mechanical fasteners should be checked for integrity. Retighten or replace them as necessary. "Stripped out" fasteners should be replaced using a fastener with a larger diameter.
- Unsound rust should be wire-brushed, sandblasted or mechanically abraded. Metal panels deteriorated to the point that their structural integrity is compromised should be replaced.
- Remove excessive amounts of asphaltic-based or other deteriorated patching/flashing materials, if present.
- Check all seams to ensure they are tight and flush. Excessive gaps or deflection between panels should be eliminated by installing additional screws or rivets as necessary to restrict deflection to 1/4-inch or less.
- All metal surfaces, new or existing, should be cleaned using a biodegradable cleaning product as specified by the coating manufacturer.
- All existing sound but rusted areas should be primed with Liquid Rubber Zavlar™
- Fill gaps between 1/4-inch and 1/2-inch at panel seams, joints and protrusions with Voxlar™. Fill gaps larger than 1/2-inch, such as at the ridge cap, roof edge and/or interface of dissimilar materials, using approved geo-textile.
- Reinforce all horizontal (end-lap) and vertical (side-lap) seams that have not been factory crimped or pre-sealed; roof terminations and flashings around drains, scuppers and skylights; the base of all vents, conduits, HVAC equipment and other protrusions; and the interface of any metal with a dissimilar material using one or more of the following methods:

1. Apply Liquid Rubber Zavlar™ coating liberally, using a brush or roller, along the area to be detailed. While still wet, embed a strip of reinforcement mesh centered over the seam, joint or interface. Work the mesh into the, Liquid Rubber Zavlar™ applying additional material as necessary to totally encapsulate the reinforcing fabric or apply a light 'flood' coat of Liquid Rubber Daclar™.

2. Cut a length of light non-woven reinforcing tape to the desired length. Center the strip over the detail area and press it firmly into place, removing all wrinkles and bubbles. A wallpaper-seam roller is helpful in securing the tape to the metal deck.

3. Apply Liquid Rubber Daclar™ using the Liquid Rubber approved Spray system HVLP LRSG2000, to a thickness of 60 to 80 dry mils over the detail area. Extend the sealant a minimum of 1 inch on either side of seams, joints and interfaces.

All mechanical fastener heads should be treated using one of the following methods:

1. Apply Zavlar™ or Voxlar™ to completely encapsulate the screw head, and seal the base of the fastener to the metal deck.

2. Apply Zavlar™ or Voxlar™ with a woven geo-textile to form a reinforcing patch and center over the fastener head and pressing it firmly in place to seal the cap flush around the base.

SURFACE PREPARTION (Roof deck)

Provide 60 cm / 24 inches minimum clearance out from surfaces to receive the roofing membrane .
•The application surface shall be prepared for the Applicator in accordance with manufacturer's specifications listed below:

Concrete Roof Decks

Concrete surfaces shall be light broom finish or smooth free of any dirt, debris, and loose material, release agents or curing compounds. Fill all voids more than ¼ inch deep and ¼ inch wide. All penetrations shall be prepared in accordance with manufacturers specifications. Prepare all flashings in accordance to common roofing practice.

Wood surfaces

Wood surfaces shall be clean and free of dust. Plywood decking shall be;

- ½ inch / 5-ply minimum. All plywood edges shall have solid blocking. Wood sheathing and framing must be inspected carefully for any signs of dry rot.
- Replace all dry-rotted wood. Prepare all flashings in accordance to common roofing practice.

Existing Built Up Roofing (BUR)

Expose a smooth application surface by removing all gravel, debris, dirt and loose material from the roof down to the existing cap sheet. Air-blast or vacuum the entire roof just prior to application. If the original roof has gravel imbedded into a tar coat, the existing roof shall be spud, scratched and vacuumed to create a smooth, clean surface. In either case, areas of previous ponding or leaking shall be cored and checked for dry rot. Replace all dry-rotted wood. Prepare all flashings in accordance to common roofing practice.

Metal Roofs

New metal shall be treated to remove any residual factory oils from the surface. Air-blast or vacuum the entire roof just prior to application. Tighten all fasteners as required. All panel joints shall be prepared by pre-coating with Voxlar™ (spray or trowel) as required by inspections.

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 Daclar™ Membrane to determine the installation procedure.

Delineate a test area on site with a minimum dimension of 3 metres x 3 metres / 10 feet by 10 feet Apply Liquid Rubber Daclar™ 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 Daclar™ 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 Daclar™ Membrane.

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

If a second coat is required, remove any standing water from the membrane before proceeding with the second application.

In all area of where recurrent traffic is expected (i.e.: equipment maintenance paths), install foot traffic pads.

Non-horizontal surfaces

Spray on roofs and vertical surfaces, such as parapet walls, 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 8 cm / 3 inches beyond the cut.

Light weight concrete roof decks

Mechanically attach 12.7 kilos / 28 lb fibre-glass base sheet to deck in accordance with local code.

Provide ¾ inch minimum cant of Voxlar™ at all horizontal to vertical transitions and other inside corners of 90-degree or less. Allow to cure a minimum of 24 hours before the application of Liquid Rubber Daclar™ Membrane.

Fibre-glass scrim may be used over the deck area if require. As the spray application begins, set the roll ends by spraying through the scrim. Then roll out the scrim ahead of the sprayer, keeping the scrim tight and wrinkle-free at all times. Overlap seams a minimum of 8 cm / 3 inches. Cut all folds or wrinkles and lay flat so as not to create voids. Attach scrim tight in all corners so as not to create voids.

Remove all standing water before application of Liquid Rubber Daclar™ Membrane. Spray-apply Liquid Rubber Daclar™ Membrane to an 80-mil nominal dry thickness (60 mils minimum) if a second coat is required, remove any standing water from the membrane before proceeding with the second application. In all areas of where recurrent traffic is expected (i.e.: Equipment maintenance paths), install foot traffic pads.

Spray on roofs and vertical surfaces, such as parapet walls, 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.

Mechanically attach 12.7 kilos / 28 lbs fibre-glass base sheet to deck in accordance with local code.

Provide ¾ inch minimum cant of Voxlar at all horizontal to vertical transitions and other inside corners of 90-degree or less. Allow to cure a minimum of 24 hours before the application of Liquid Rubber Daclar™ Membrane.

Roll out fibre-glass scrim over entire deck without folds or wrinkles and staple at 30 cm / 12 inches on center. Overlap seams a minimum of 8 cm / 3 inches. Cut all folds or wrinkles and lay flat so as not to create voids. Attach scrim tight in all corners so as not to create voids.

Remove all standing water before application of Liquid Rubber Daclar™ Membrane. Spray-apply Liquid Rubber Daclar™ Membrane to an 80-mil nominal dry thickness. If a second coat is required, remove any standing water from the membrane before proceeding with the second application.

On loose gravel roofs, spud, scratch and vacuum the surface. If the surface has been spud below the level of the existing cap sheet, mechanically attach 12.7 kilos / 28 lb fibre-glass base sheet to deck in accordance with local code. Air-blast or vacuum the entire roof just prior to application.

On existing smooth cap sheet roofs, remove all gravel and loose material. Air-blast or vacuum the entire roof just prior to application. Provide ¾ inch minimum cant of Voxlar™ at all horizontal to vertical transitions and other inside corners of 90-degree or less. Allow to cure a minimum of 24 hours before the application of Liquid Rubber Daclar™ Membrane.

Roll out fibre-glass scrim over entire deck area without folds or wrinkles and staple at 30 cm / 12 inches on center. Overlap seams a minimum of 8 cm / 3 inches. Cut all folds or wrinkles and lay flat so as not to create voids. Attach scrim tight in all corners so as not to create voids. Remove all standing water before application of Liquid Rubber Daclar™ Membrane.

Spray-apply Liquid Rubber Daclar™ Membrane to an 80-mil nominal dry thickness, if a second coat is required; remove any standing water from the membrane before proceeding with the second application.

Over existing metal roof deck

Provide ¾ inch minimum cant of Voxlar™ at all horizontal to vertical transitions and other inside corners of 90-degree or less. Allow to cure a minimum of 24 hours before the application of Liquid Rubber Daclar™ Membrane.

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

•Spray-apply Liquid Rubber Daclar™ Membrane to an 80-mil nominal thickness. If a second coat is required, remove any standing water from the membrane before proceeding with the second application.

CAUTION: SITUATIONS TO AVOID AND SIGNS OF PROBLEMS

Liquid Rubber Industries cautions against the use of Liquid Rubber Daclar™ as a topcoat over COAL TAR surfaces. The result is that coal tar has a tendency to ‘gas’ and create pin holes and bubbles in the Liquid Rubber Daclar™ surface membrane and will lead to leakage. The following illustrates this problem.



← **Pin hole formation**
Bubbles and blisters from trapped gas

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 Daclar™ 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 Daclar™ 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 Daclar™ 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 ponded water conditions during the drying or coating period, it may soften, lift and debond 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 roofing projects from late fall to early spring in most North American areas.

Maintenance

Liquid Rubber Daclar™ will age or dry out after long-term exposure and may become brittle before eventually cracking and flaking. Liquid Rubber Daclar™ coatings age from the outside in, which means the exposed polymer on top of the film will discolour during the long-term. Exterior discoloration is evidence of aging, but beneath this surface film, the coating will be in substantially good condition.

Liquid Rubber Daclar™ coatings may pick up surface dirt. A polymer may be tacky, especially when first applied, allowing dirt to become embedded in the surface.

After surface cleaning, a thin restoration coating can be applied directly over the existing surface with excellent adhesion. This is not always true with other types of coatings, such as epoxies, urethanes and alkyds. Recoating can be done regularly, such as every five years to seven years, to optimize and extend a roof membrane's service life.

Liquid Rubber Daclar™ coatings, though durable and weather-resistant, are vulnerable to the effects of moisture and cold temperatures during the curing process. They require weather conditions that favour water evaporation to initiate the curing process.

For the best long-term success, you must understand how to prepare a surface before applying a coating and ensure the coating is not exposed to improper curing conditions following coating application.

Long-term serviceability can be achieved by good surface cleaning and application technique, but best results can be achieved by recoating the surface according to a maintenance schedule.

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 Coatings” membrane is to be minimized and disposed of in accordance with the regulations of each individual Country, State, or Province.

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 roofing 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
LRI	Liquid Rubber Industries
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.

Properties of Liquid Rubber Daclar™

Property	Typical results
Specific gravity (liquid) g/cm ³	Approx. 1.0
Odour	None
VOC	Contains no solvents
Colour	Brown to black
% solids (wt)	52-58
Cured membrane (28 day)	
Chemical resistance	Resistant to atmospheric chemical aerosols, or acid rain , <i>limited resistance to gasoline, diesel fuel and other petroleum products</i> (see chemical resistance chart)
Biological resistance ASTM E 154 and ASTM D412	Passing
Impact resistance CSB 37-GP-56	168 in-lb @ 23°C
Tensile strength ASTM D412	>90 psi
Hardness ASTM D2246	50 Type A
Puncture resistance CGSB 37-GP-56	No perforations
Water Vapour transmission ASTM E96	passing
UV resistance ASTM G155 250 hrs Xenon arc	No deterioration in appearance

**'PRE-WORK INSPECTION REPORT FOR PRODUCT PURCHASE
AUTHORIZATION'**

APPROVED APPLICATOR:

I _____, an authorized representative of _____
(your name) (company name)
have inspected, or caused to have inspected, the roof system for the project shown below
and have completed the LIQUID RUBBER DACLAR™ pre-work inspection report as
required by the company.

The pre-work inspection report and project specifications are enclosed.

Project description:

(Name of building owner or general contractor) _____

(Address of work site) _____

The project will begin by approximately: _____
(Date)

The project will be completed by approximately: _____
(Date)

I have paid the daily fees and other expenses of Independent Consultants that have
provided the pre-inspection report if such were hired by myself or my company.

Authorized Signature of the Applicator:

(I am legally authorized to act on behalf of the company)

Authorized Signature of building owner or general contractor:

PRE-WORK INSPECTION REPORT

Description of work to be done: (please provide details based on the owners bid request or project authorization letter)

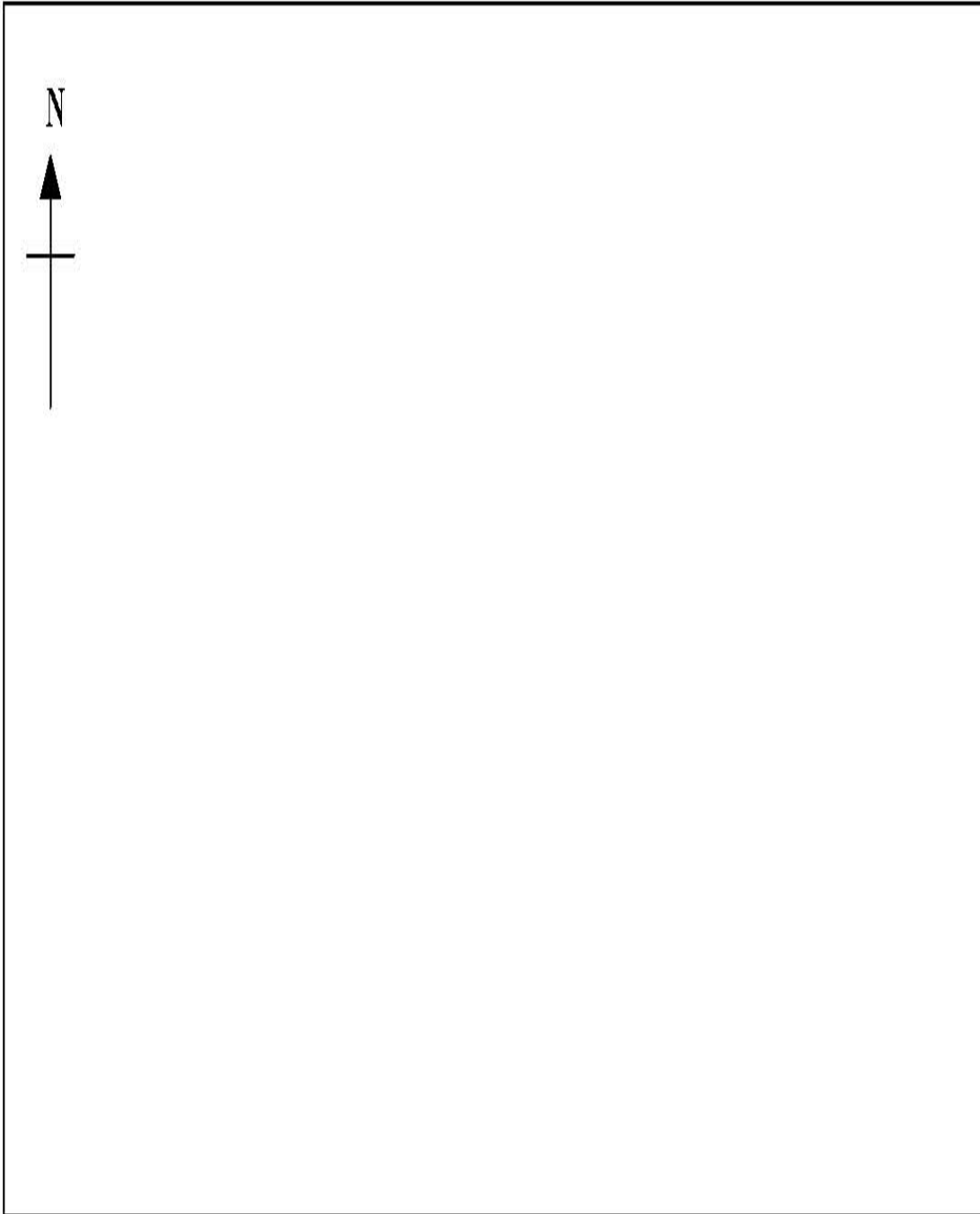
Existing roof type: _____

General condition of the existing roof:

Description	Many	Few
Membrane cuts, tears		
Membrane or coating blisters		
Metal has pitted areas or holes		
Roof surface has visible low spots where water accumulates		
Flashings are loose or missing		
Seals have failed around roof penetrations, vents skylights etc.		
Sections of roof deck are exposed (no waterproofing membrane)		
Roof deck has damaged or rotting sections		
Section where coal tar was used as coating		
Sections where oils and grease have accumulated		
Caulking is cracked or missing		
Roofing ballast has been lost or displaced		
Places where insulation is damaged or missing		
There is visible water ponding		
Spongy foam		
Sections with entrapped water		
Mechanical damage		
Parapet wall damage		
Evidence of pin holes in the membrane		
Loose fasteners on base membrane		
Open seams on existing roof membrane		
Current asphalt BUR shows areas of heavy cracking		

Average thickness of current roof coating: _____ mils

Roof diagram:



On the roof diagram note the location of the above types of damage.

Dimensions of roof: _____ by _____ ft/m.

Inspection results:

The physical inspection is in agreement with the project description provided in the owner documents [request for proposal or other project description provided to the applicator]

Yes

No

If no explain:

Was a thermograph inspection and moisture probe test taken?

Yes

No

If yes please attach to this report.

Does owner agree with the inspection: Yes No

Project location:

Address: _____

Size of project: _____ sq. ft. _____ sq.metres

Was building's owner or representative on-site for the pre-work inspection?

Yes No

Date inspected: _____

Inspected by: _____

Company name: _____

I have reviewed this inspection report provided to me by the aforementioned person and I am in agreement with the contents of the report.

Authorized Signature:

_____ Date: _____
(Name)

Building owner or authorized person acting for the owner

SCOPE OF THE PROJECT

Site preparation:

Please provide a description of what is to be done to prepare the roof.

Work to be done	Yes	No
Remove debris and damaged roofing materials		
Remove ballast granuals		
Power sweep the roof surface		
High pressure wash the roof surface including walls		

Comments on site preparation activity not covered in the above;

Surface repair and re-construction:

Work to be done	Yes	No
Cut out blisters in existing membranes and dry surface		
Remove and discard coal tar coatings		
Seal all loose seams and joints with geo-textile and Zavlar™		
Seal all roof penetrations with geo-textile and Zavlar™ or Voxlar™		
Apply Zavlar™ to seal all corners and edges where roof surface meets a vertical structure [walls etc]		
Repair all damaged areas on existing roof structure		
Repair and replace damaged insulation		
Repair roofing profile to provide positive drainage		
Apply a prime or 'flood' coat of Daclar™ Part A		

Comments on repair and re-construction work details not covered in the above;

COLD SPRAY APPLIED DACLAR™ WATERPROOFING MEMBRANE

APPLICATION REPORT

Was a prime or 'flood coat' applied prior to the Daclar™ seamless spray applied membrane? () yes, () no.

Quantity of Daclar™ used for the application: _____ litres, _____ # of drums

Quantity of 'PART B' used _____ lbs/kg, _____ # of 20 kg bags

Thickness of 'wet' membrane [by mil gauge measurement] _____ mils.

At the end of the day was the applied membrane a uniform colour: () yes () no.

If no please explain:

Was the membrane re-ballasted with roofing granules: () yes, () no

Was Daclar™ the top coat () yes, () no. If no, describe the nature of the coating which was applied on top of Daclar™.

If Daclar™ was not the top coat please explain:

What was the temperature: day prior to application _____C?
during the application _____C

What was the date of the application _____?

What was the time of the application _____?

Please complete the following:

Description / Conditions	Yes	No
Following the prescribed drum mixing was Daclar™, as supplied by Liquid Rubber, free of any manufacturing defects [i.e.: lumps, discoloration, etc]		
Did Daclar™ spray evenly providing uniform coverage		
Was any discoloration observed after coating 'cured' [once the water evaporated the membrane should be a uniform black colour]		
Was more than one coat applied		
Were any pinholes found in the membrane surface after curing		

Please describe the physical appearance of the Daclar™ coating once the membrane set.

Was the building owner or representative present during the application () yes () no.

Did you fully describe the application process steps to the owner prior to the application () yes () no.

Authorized Signature:

(Approved applicator who applied the product)

