



TECHSEAL

High Performance PU Membrane

Acrypol Liquid Waterproofing Systems



High Performance Liquid Applied Roofing System

Installation Manual



3) INSTALLATION MANUAL: STANDARD TECH SEAL SYSTEM

3.1) Installation overview

The TECH SEAL high performance liquid applied roofing systems meet most budgets and performance requirements, with a 25 year expected durability (following BBA 21/5903).

Main liquid applied resins in the system are:

Primers/Sealer; are required to seal the substrate and extend product coverage. Specified primers/Sealers vary dependent upon substrate type & condition. Please refer to the Ancillary product section (3.4.1), for a detailed over view on primers available, application rates and product information.

Tech Seal, quick curing; a single component, semi thixotropic cold applied polyurethane resin that cures by chemical reaction with the moisture from the air. UV and outdoor stable, however the colour is not UV stable.

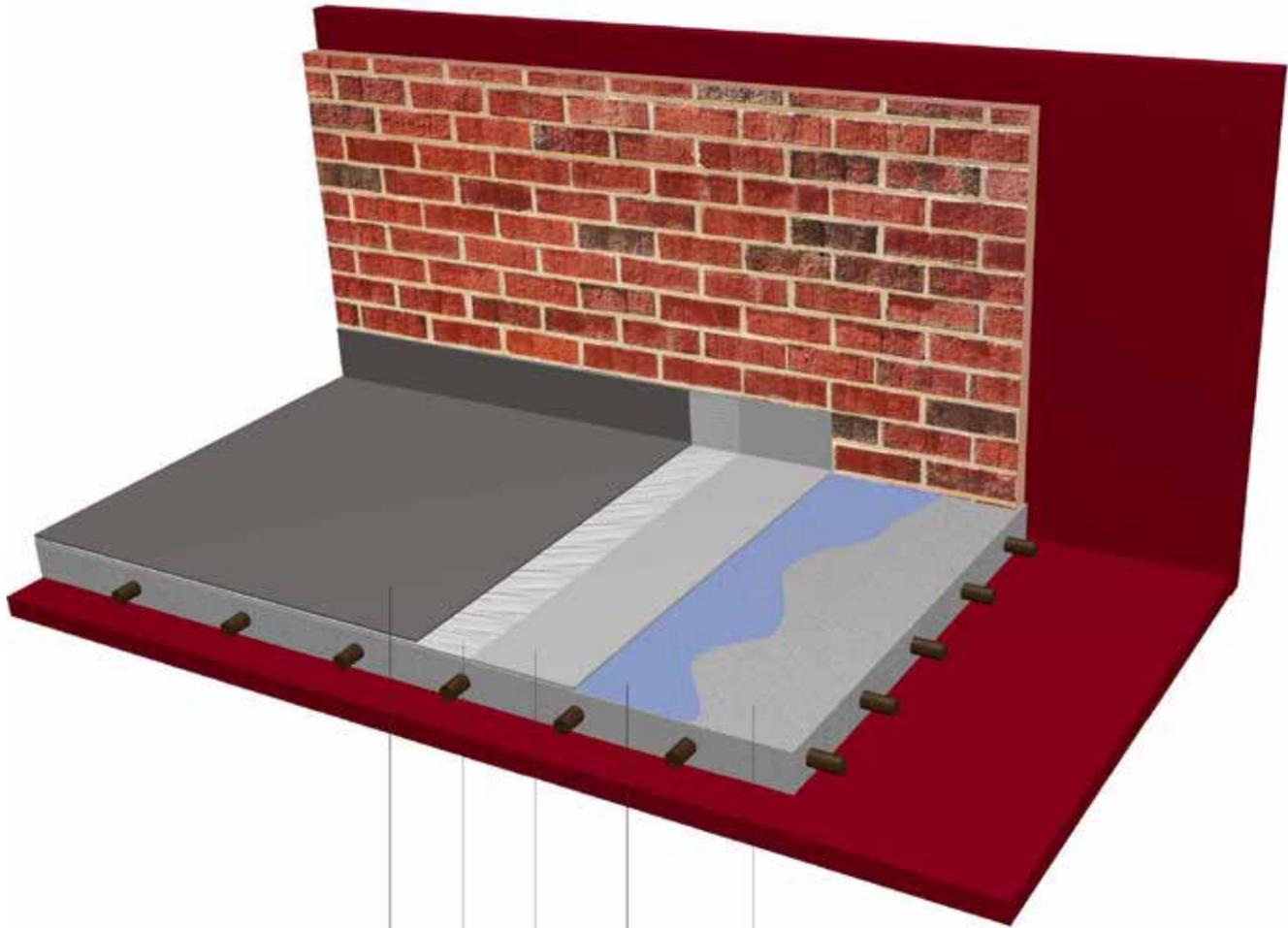
Prior to the Tech Seal installation the roof must be fully prepared, cleaned and primed if required in accordance with Acrypol recommendations.

Tech Seal base coat (Light Grey) is applied at the required coverage rate dependent upon the system. Is reinforced with 225 gsm fibreglass reinforcement that is fully embedded into the wet base coat. Tech Seal (Dark Grey) is then applied over the cured base coat, coverage rates vary upon the system required.

Is recommended to apply the Tech Seal base coat (Light Grey) and then Tech Seal Dark Grey.

Protective over coats are available for walk ways, maintenance routes or when a colour stable finish is required.

Acrypol systems are available as a roof overlay (cold roof), a warm roof or as an inverted roof installation where compliance to current building regulations is required. All installations are cold applied. This eliminates the need for any gas torches or bitumen boilers thus reducing the risk to health and safety.



- SUBSTRATE
- PRIMER
- TECHSEAL LIGHT GREY
- 225 GSM MATTING
- TECHSEAL DARK GREY



Typical Coverage Rate Table (Flat Roof area):

Standard Tech Seal system 25 year expected durability (BBA)		
Main certificates	BBA (21/5903)	
Container Size	25kg / 6kg	
Colours Available	Light grey (similar to 7001), black and dark grey (similar to 7011). Other colours may be supplied; a minimum order size may apply.	
Substrate condition	Smooth	Rough
Primer	Coverage - Surface dependent	
Base Coat		
Tech Seal Light Grey	1 kg/m ² (smooth surface)	1.25 kg/m ² (rough surface)
Reinforcement	225 gsm fibreglass reinforcement	225 gsm fibreglass reinforcement
Second layer		
Tech Seal Dark Grey	1 kg/m ²	1 kg/m ²

All coverage rates stated are quoted as a minimum. Coverage rates adequate to meet product certificates.



3.2) Pre Installation Notes

The specified Acrypol system is only to be laid by a roofing contractor trained or approved by Acrypol Technical department.

Before works commence, the installing roofing contractor should ensure that the surfaces to receive the new roofing system are acceptable and comply with Acrypol recommendations and that the application of the specified coating conforms to the requirements of the specification.

Retained components from the existing structure must be sound and capable of accepting the imposed loading of the new roofing system and associated installation procedures.

Surfaces must be clean and dry, free from any organics, dust and any other loose materials. New concrete must be well-cured. Defects and sharp projections should be removed or made good and the entire surface must be compatible with the proposed coating system.

Works are to be organised to maintain the waterproofing integrity of the roofing system and to ensure that the finished roof areas are adequately protected from damage by subsequent building operations.

Do not undertake work in wet conditions, the temperature has to be 3 degrees higher than the dew point. The installer must assess the temperature on the system application day. Application of the system should not take place when wet conditions prevail, or when condensation is present or will be present on the substrate during application. Unless effective temporary covering is provided, suspend work in severe or continuously wet weather or where wind speeds exceed 7m/s. Temperature should always be above 5 C and rising.

For specific specified materials and installation requirements please refer to the Acrypol Technical Services specification and associated build up drawings and specified detail drawings.

3.3) Main components

3.3.1) Tech Seal for Base Coat (Light Grey)

Tech Seal is a liquid applied high performance; high build polyurethane coating for use on most roof surfaces including asphalt, bituminous felt, concrete, single ply and metal surfaces. This forms the first coat for the STANDARD Tech Seal liquid applied roofing system.

Tech Seal is a viscous, semi.thixotropic, high solids liquid polyurethane that cures with the moisture in the air to form a seamless and durable waterproofing coating. It also contains an accelerant that reduces significantly its curing time against standard single component polyurethane.

Thoroughly mix Tech Seal using a paddle mixer at a low rpm. Ensure the product is completely homogenous and then leave to rest to let excess air disperse before application. This can be checked by waiting until surface bubbles disappear in the drum. This will reduce the likelihood of pinhole formation in the membrane.

Tech Seal should be applied by brush or short pile roller at a typical coverage rate of 1 kg/m² on smooth roof surfaces and rising to 1.25 kg/m² on rough roof surfaces. Coverage must be sufficient to fully embed and saturate the Fibreglass Reinforcement before application of the top coat.



Cure times stated below are approximate. Specific onsite conditions (% relative humidity in the air, direct sun on the roof...) may cause variations with cure times.

Tech Seal (Base Coat, Light Grey)		
Container Size	25 Kg / 6kg	
Coverage rates (typical)	1 kg/m ² (smooth surface)	25 m ² / 25 kg. drum
	1.25 kg/m ² (rough surface)	20 m ² / 25 kg. drum
Allowance should be made for additional coverage rates for embedment of the reinforcement fabric at low temperatures		
Typical Drying Times at 15°C	Touch Dry	3 hours
	Minimum over coating	4 hours
	Full Cure	7 Days



Tech Seal should only be applied to structurally sound areas. Areas that do not meet this requirement must be treated accordingly to leave a substrate suitable for liquid application. Dirt, dust, organics and any other loose materials must be removed by scraping or brushing with a stiff bristle brush and power washing with a biocide wash before application of the first coat and detailing.

Project detailing is to be completed prior to the application of the base coat Tech Seal. Please refer to section 3.7 for an overview of how to accurately dress areas of detailing.

Use a short pile mohair roller to apply and embed the fibreglass matting into the specified coverage of Tech Seal.

Ensure full coverage of the surfaces and monitor by taking wet and dry film thickness readings. The coating must maintain its thickness across all details including penetrations and abutments.

The reinforcement must be applied to follow the contours of the substrate making sure the reinforcement does not tent. If tenting does occur, realign the matting if possible to remove the crease or cut the length of the crease and



allow the matting to fold over itself. Alternatively, use the frame of the roller to break the fibres down allowing them to mesh into themselves. Treat with product as required ensuring full saturation.

Once cured, inspect the membrane for proud or wicked fibres and any pinholes. Wicked and proud fibres should be cut back and lightly abraded to give a smooth finish. Pinholes should be treated with additional product and left to cure before application of the top coat.

Storage

All materials must be stored undercover and storage areas must be kept between 5 C and 25 C. Materials should never be exposed to freezing conditions or excessive temperature changes. Once opened, containers should be used completely. Typical due date for Tech Seal is one year after its manufacturing date.

Rainfall

If it begins to rain at any stage during application or if rainfall is imminent, stop work immediately. Reseal any open containers and store all equipment adequately to keep them dry. Work should not be resumed until it has completely stopped raining and the surface to be coated is completely dry and free from any sitting water. Preferably, works should be discontinued in advance of possible rainfall to allow the product to cure and be rainproof.

A curing membrane subject to rainfall is only aesthetically damaged. Rainfall can cause pits in the membrane but the quality of the membrane is not affected. These pitted areas should be overcoated accordingly to satisfy the aesthetics of the system.

3.3.2) Tech Seal for second layer

Tech Seal is UV stable but not the colour is not UV stable, the degree of change of colour under the UV radiation is different for each colour. Dark colours (dark grey) have fewer changes.

Thoroughly mix Tech Seal using a paddle mixer at a low rpm. Ensure the product is completely homogenous and then leave to rest to let excess air disperse before application. This can be checked by waiting until surface bubbles disappear in the drum. This will reduce the likelihood of pinhole formation in the membrane.

Apply the Tech Seal (second layer) when the base coat has fully cured. Tech Seal (second layer) should be applied by brush or short pile mohair roller at a typical coverage rate of 1 kg/m² dependent upon the system being installed. Ensure that the total roof area and base coat have been over coated with the top coat in accordance with the Acrypol recommendations.

If the base coat has been exposed for more than 14 days, reactivate the surface using PU solvent (after cleaning it) and afterwards apply PU Primer as specified at 100g/m² with a clean rag or equivalent. Ensure the surface is completely clean, dust free with no sitting water before coating. For larger, flat areas, apply PU Primer with a roller at 100g/m².

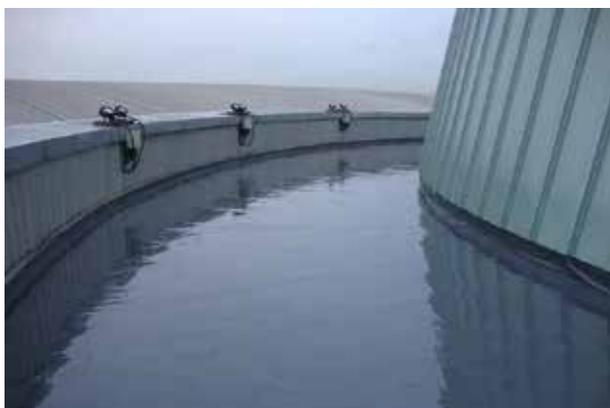
Cure times stated below are approximate. Specific onsite conditions may cause variations with cure times.



Tech Seal (Dark Grey)		
Container Size	25kg / 6kg	
Coverage Rates (typical)	1 kg/m ²	25m ² / 25 kg. drum
Typical Drying Times at 15°C	Touch Dry	3 hours
	Minimum over coating	4 hours
	Full Cure	7 Days

Visually inspect the wet coating checking for defects such as pinholes, discontinuity and exposed matting. Undertake corrective measures as required.

Once cured, inspect the membrane for proud or wicked fibres and any pinholes. Wicked and proud fibres should be cut back and lightly abraded to give a smooth finish. Pinholes should be treated with additional product and left to cure.



Allow the membrane to fully cure before reinstating or installing any plant equipment onto the roof area.

Storage

All materials must be stored undercover and storage areas must be kept between 5 C and 25 C. Materials should never be exposed to freezing conditions or excessive temperature changes. Once opened, containers should be used immediately. Drums of Tech Seal can be used up to 12 months after the date of manufacture..

Rainfall

If it begins to rain at any stage during application or if rainfall is imminent, stop work immediately. Reseal any open containers and store all equipment adequately to keep them dry. Work should not be resumed until it has completely



stopped raining and the surface to be coated is completely dry and free from any sitting water. Preferably, works should be discontinued in advance of possible rainfall to allow the product to cure and be rainproof.

A curing membrane subject to rainfall is only aesthetically damaged. Rainfall can cause pits in the membrane but the quality of the membrane is not affected. These pitted areas should be topped off accordingly to satisfy the aesthetics of the system.



Anti-slip walkway:

For an anti-slip pigmented protection walkway, mark out the desired walkways using appropriate tapes. Apply Quartzdek by brush or short pile roller at a typical coverage of 200g/m². Into the wet Colodur broadcast pigmented quartz 0.7-1.2mm. While the coating is still wet, remove the tapes and then leave the coating to cure. Once fully cured sweep off any loose quartz, abrade the surface (depending the degree of anti-skid finishing required) and apply a further 200g/m² of Colodur and leave to fully cure. A second layer of 200 g/m² of Colodur may be required.

Cure times stated below are approximate. Specific onsite conditions may cause variations with cure times.

Protection Coat and Walkways			
Container Size		4Kg	20Kg
Coverage rates (typical)	300g/m ²	13m ²	66m ²
	Skid Deterrent or Pigmented Colodur system 2 coats each applied at 200g/m ²	10m ²	50m ²
Typical Drying Times at 15°C	Touch Dry	8hours	
	Minimum over coating	10 hours	
	Full Cure	7 days	



Storage

All materials must be stored undercover and storage areas must be kept between 5 C and 25 C. Materials should never be exposed to freezing conditions or excessive temperature changes.



Rainfall

If it begins to rain at any stage during application or if rainfall is imminent, stop work immediately. Reseal any open containers and store all equipment adequately to keep them dry. Work should not be resumed until it has completely stopped raining and the surface to be coated is completely dry and free from any sitting water. Preferably, works should be discontinued in advance of possible rainfall to allow the product to cure and be rainproof.

A curing membrane subject to rainfall is only aesthetically damaged. Rainfall can cause pits in the membrane but the quality of the membrane is not affected. These pitted areas should be overcoated accordingly to satisfy the aesthetics of the whole system.

3.4) Ancillary components

3.4.1) Primers & Treatment of the surface

3.4.1.1) Table of most suitable primers depending on the type of surface

The role of a primer is to seal the porosity of the surface (over a porous surface) and to improve the adhesion mainly over a smooth and non porous surface. Good adhesion of a system is obtained by a combination of both chemical and mechanical adhesion (for example anchorage over a porous surface). Mechanical adhesion over a gloss and smooth surface is always difficult to achieve, however can be improved by abrading that surface.

SCENARIO (TYPE OF SURFACE)	EXAMPLE	RECOMMENDED PRIMER FOR TECH SEAL
Non porous surface. Rough surface	Old torch on membrane	Porosity Sealer
Non porous surface. Smooth surface	Old PVC membrane. Old PU/Polyurea coating. Glass	PU Solvent + PU Primer
Completely dry porous surface.	Concrete	Porosity Sealer

Notes: This table is only for general guidance.

The most appropriate primer for each individual project depends on the type of surface, specifications and requirements of that project.

Adhesion tests are always recommended for each project. Compatibility between the primer and the surface material has to be checked. (For example Humidity Primer cannot be applied over a surface that was previously treated with hydrophobic additives).

Previous treatment of the surface is always recommended to increase the mechanical adhesion of the primer over the surface. Diamond grinding over concrete, abrade non porous surfaces...



3.4.1.2) Porosity Sealer

Porosity Sealer is a single component, solvent based low viscosity primer designed for use as a general purpose primer for most well-dry porous substrates, normally concrete and porous cementitious surfaces. There is also a possibility to coat certain grades of PIR. Please refer to Acrypol Technical Services for more details.

Porosity Sealer is a clear liquid with excellent levels of penetration and adhesion to substrates acting as a sealer/primer before subsequent Tech Seal installation. It should be applied using a brush or short pile roller giving an even coating across the substrate. Take care to avoid excess application or product ponding in certain areas as cure times will be extended.

Porosity Sealer		
Container Size	4kg.	
Compatible substrate	Porous substrates Completely dry concrete	
Coverage rates (typical)	Smooth porous 200 g/m ²	100m ² / 20 kg drum
	Rough porous 300 g/m ²	65 m ² / 20 kg drum
Typical Drying Times at 15°C	Touch Dry	5 hours
	Minimum over coating	6 hours
	Full Cure	7 Days

Substrates must always be clean and dry before application of the Porosity Sealer. Do not apply if it is raining or rain is imminent. Porosity Sealer should not be applied to surfaces when the temperature is below 5°C and below the dew point. The temperature must be 5°C and rising. Application of the primer should not take place when wet conditions prevail, or when condensation is present or will be present on the substrate during application. Typically surfaces should be high pressure washed with a biocide wash, free from contaminants and dry.

Porosity Sealer should be applied on smooth porous substrates such as levelled concrete and smooth cementitious materials etc at minimum 200 g/m². Substrates that are rough or highly porous require 300 g/m². If the coating, when dried does not have a gloss appearance, it means that the porosity of the surface is still not fully sealed and a further layer of resin (150 g/m² is required)

The Tech Seal (base coat) can be applied while the primer is slightly tacky but not wet. The liquid should not lift from the substrate on touch or underfoot.

Porosity Sealer cannot be used to prime non- porous substrates such as glass, metal, single ply, EDPM etc and cannot be used to prime damp/wet porous substrates such as Damp concrete & wet wooden decks etc

Porosity Sealer has a strong odour and can be irritabile to bare skin; therefore the appropriate PPE should be worn. Product should be stored in the original containers at temperatures between 5°C - 30°C. Product shelf life: 1 year, from date of manufacture.



3.4.1.4) PU Primer

PU Primer is a single component, low viscosity primer/activator designed for priming non-porous surfaces such as exposed metal, PVC, old polyurethanes and polyurea coatings, glass, GRP... before proceeding with the standard Tech Seal system.

PU Primer is a clear liquid, applied manually via roller or brush as a wet film to the surface. The solvents evaporate leaving a matrix of molecules activating the surface of the substrate. After the primer appears dry, apply the TECH SEAL base coat.

PU Primer		
Container Size	4kg	
Compatible Substrates	Non-Porous substrates Metal/glass/ PVC/old polyurethane and polyurea coatings/GRP	
Coverage rates (typical)	100 g/m ²	200 m ² / 20 kg drum
Typical Drying Times at 15°C	Touch Dry	15 minutes
	Minimum over coating	30 minutes
	Maximum over coating	4 hours

PU primer should not be applied to surfaces when the temperature is below 5°C and below the dew point. The temperature must be 5°C and rising. Application of the primer should not take place when wet conditions prevail, or when condensation is present or will be present on the substrate during application.

All surfaces must be sufficiently prepared and cleaned prior application of the PU primer as per Acrypol site preparation recommendations. Typically surfaces should be high pressure washed with a biocide wash, ensuring it is free from contaminants. Ensure any oxidation layers are removed before applying the primer. Abrading the surface with a wire brush for example can also help give a mechanical key. Application of Rayston PU Solvent, prior to the PU Primer, will help to activate some non-porous surfaces, and so help to increase the adhesion of the system.

Do not apply PU Primer during rain or when rain is predicted.



3.4.2) Other ancillary components

3.4.2.1) Acrypol Fiber (Fibreglass Reinforcement)

All STANDARD Tech Seal systems are fully reinforced with 225 gsm Fibreglass Matting. This high grade reinforcement matting is embedded into the Tech Seal (base coat) to strengthen any intricate or project specific areas of detail, providing total reinforcement for all types of substrate overlays within the Tech Seal waterproof membrane.

Fibreglass Reinforcement	
Roll dimensions	1,25 m x 100 m
Area	125 m ² approx
Roll specification	150 gsm Chopped Strand



Storage

225gsm Fibreglass Matting must be stored under cover and in the dry. The rolls are supplied in a plastic film and then in a cardboard box. Do not get the fibreglass wet prior to or during installation.



3.6) Snagging of the systems

Insufficient Coverage Rate



Insufficient coverage rate of the embedment coat has resulted in sufficient saturation of the Fibreglass Reinforcement. The coverage of TECH SEAL has not satisfied the specified amount and more material must be applied. This ensures full encapsulation of the reinforcement preventing any loose fibres.

Additional coverage of the specified Tech Seal base coat should be applied prior to the application of any top coats.

Sagging product on upstands



Sagging & pooling of the product at upstands is not desirable, trapped gases can cause a spongy membrane; this is not detrimental to the system provided there is still adequate saturation of the reinforcement on the upstand itself. This can be caused by surplus application of the product prior to laying the fibreglass or post fibreglass installation. Extended cure times in colder temperatures will also allow the product more time to sag.

Apply a tack coat of Tech Seal rather than a thick coat. Tack the fibreglass onto the upstand and the resin will start to saturate the fibreglass. Using a loaded roller, overcoat the fibreglass evenly until full saturation, taking care not to apply excess product which could later sag. Monitor the formation of the details periodically. If any areas appear to be sagging during the curing process, treat by rolling the material back across a larger surface area of the upstand.



Pinholes



Pinholes can be rectified by the application of additional top coat. Ensure the area is clean and dry before application. The formation of pinholes can be minimised by ensuring the material is left to settle after mixing. Installation under rising temperatures can also increase the likelihood of pinholes. If required, pass a spiked roller over affected areas while the coating is still wet, this will help release any trapped air.

Wicked fibres



Wicked fibres occur through over rolling of the reinforcement with the base coat. On application, if these areas seem to appear, break down the fibres with the edge of the roller and overcoat accordingly with suitable product. Continuous overworking will make the area worse.

If an area has cured similar to the above picture, the area must be cut out and repaired with additional material. Individual wicked fibres can just be trimmed back and gently abraded to leave a smooth surface prior to the application of the top coat.



HEALTH & SAFETY

Material Safety Data Sheets are available upon request; please contact Cromar Ltd.

TECHNICAL SUPPORT

Technical advice is available from the Cromar Technical Service at:

Telephone: 01977 663 133

Email: sales@cromar.uk.com

Installation manual is subject to change; please apply to Acrypol UK for the updated version prior to commencement of the project.

Cromar undertakes continual product development and therefore all product data and information is subject to change without notice. Customers are responsible for ensuring and checking that the product is suitable for the proposed application and conditions for use are appropriate and meet the required standards. Please refer to the Cromar Terms and Conditions.