

GLOBAL LEADER IN PROTECTIVE COATINGS

Lockwell Systems

Manufacturer of Specialized Polymers

As a co-founder and CEO of Lockwell Systems I am proud to be a part of a dynamic team from all over the world that brings strong technical support and field experience to vast array of industries that previously were not well supported or educated sufficiently in thermoset polymers in Asia.

At Lockwell, we grow with all our stakeholders by providing innovative and technologically advanced products based upon our key business priority in customer value creation, environmental and asset protection.

Lockwell will continue its investment in R&D and talent development. This ensures that we provide the most value added products and services to our customers through a technically strong team.

Being well placed geographically for Asia, Lockwell can now offer swift support and short delivery lead times that previously could take several months for customers in Asia.

Under my stewardship, Lockwell will continue to build strong strategic partnerships with affiliates worldwide through strong professionalism and a culture build on trust and sincerity.

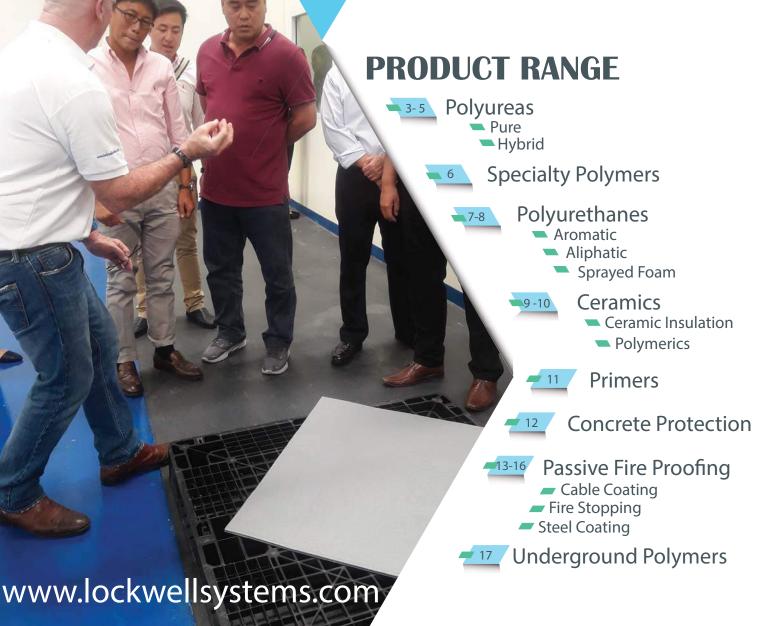
Francis Er Lockwell Systems Co-Founder and CEO





Our Mission is to surpass the expectations of our customers and all stakeholders through R & D and Operational excellence in the production and market development of our product and services. We will achieve these with minimal environmental footprint and maintaining highest health and safety standard.

Tad Bass Technical & Business Development Director



HYBRID PURE POLYUREA

ALL FORMULATED FROM ONE UNIQUE A SIDE

All Lockwell pure polyureas are formulated from one unique A side minimizing crystallization hence saving costs and ensuring moisture free system.

Our Lockwell pure polyureas are designed for a wide range of applications from industrial, commercial, construction, mineral processing and power plants that involves extensive surface coating protection from corrosion, water ingress, chemical attack, UV exposure and constant abrasion and impact stress.

LOCKWELL P505

is specially designed for mineral processing, mining UG and bulk haulage with Industrial high wear fast return to service as a key property of P-505. Due to its unique gel time (Tack free within 5 seconds) it can be applied to vertical surfaces (overhead) with no slump or sag applied at 500 microns per pass to any desired thickness. P-505 performs well in immersion and highly abrasive environments, as well as general primary and secondary containment in many industrial sectors. P-505 features include a hard surface skin reducing carry back in bulk haulage avoiding hang-up.

*Lockwell pure polyureas are tested under international standards for its abrasive resistance, water permeability, elongation, tear strength and other destructive tests all shown on table of performance property.

LOCKWELL P515

is Potable Water approved AS 4020 for tanks, general waterproofing, commercial construction and infrastructure. Lockwell P-515 is formulated for maximum adhesion to most substrates with superior waterproofing benefits. Unlike many sheet or liquid membranes P-515 can withstand long term water ponding and will not deteriorate. Low permeability combats many osmotic problems associated with waterproofing and tank coatings in constant immersion. Due to P-515 rugged performance it is commonly used in exposed environments subject to other trades and facilities abuse during construction, whilst maintaining its durable waterproofing integrity.



Lockwell Pure Polyurea ranges from 5 to 90 seconds gel time suited for all application.

Lockwell Hybrid Polyurea UP100 is a well formulated PU / polyurea designed for waterproofing.

LOCKWELL P530

is specially designed for mid to high gloss and smooth finishing primarily for industrial and commercial flooring. Its delayed gel time (30–45 seconds) gives time for some self-levelling and to assist with filling voids and or cavities on the surface. P-530 slower gel allows maximum adhesion to lower profiled substrates when conditions limit the ability for aggressive blasting. P-530 has an extended window for cross linking of the top coat to achieve superior adhesion.

	TECHNICAL PERFORMANCE DATA
Pro	duct Properties P505 P515 P530 P590 UP100
	Gel Time 2-3 sec 10-15 sec 20-30 sec 90-120 sec 23-25 sec
a de la compañía de l	Tack Free Time 5 sec 30-60 sec 55-60 sec 150-210sec 180-200 sec
kwell P515 at 1.5 mm for pool application	Maximum Recoat Time 2 hrs 12 hrs 8-12 hrs 8-24 hrs 24 hrs
Therman Barris And	Abrasion Resistance 10 mg 15 mg 18 mg 18 mg
	Tensile Strength 16.6-19.5 MPa 15-20 MPa 12-16 MPa 12-16 MPa 5-7 MPa
THE F	Elongation 220-320% 370 - 470% 400 - 500% 450 - 550% 500- 600%
	Tear Strength 78-83 kN/m 75-80 kN/m 70-75 kN/m 30-40 kN/m
well P590 at 1.5 mm imitates s finish with no dry line due elayed gel time property.	Hardness 45-55Shore D 45-52Shore D 38-48Shore D 38-48Shore D 78-85Shore D available for distribution for specification and warranty purposes.

un inch

LOCKWELL P590 is specially designed for

high gloss finishing with little to no orange peel or dry spray typical with fast cure polymers.

It also allows for trowel work to be able to manually force material into bug holes and or flow into cavities. Lockwell P-590 is excellent for long top coat application allowing a long cross link window of up to 24 hours (weather dependent) when used in conjunction with other Lockwell thermoset plastics and polyaspartic systems.

Other applications include injection to sand rings and flanges affected by racing in mining. For poor concrete with cracking, it allows more time to flow into voids and completely fill voids.

LOCKWELL UP100 is a high performance, rapid

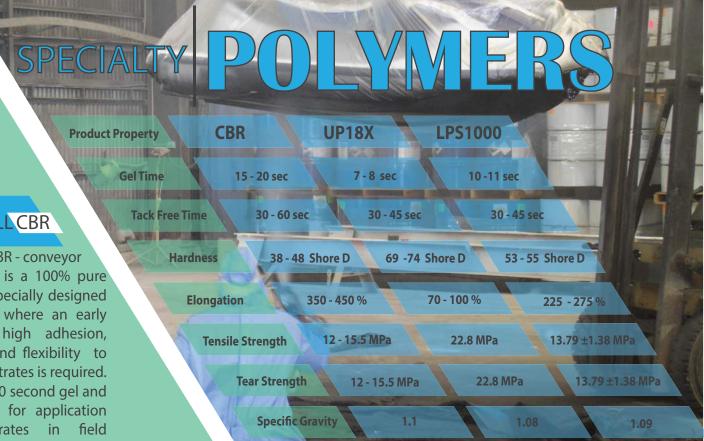
is a high performance, rapid curing, lower cost alternative, modified Polyurethane / Polyurea designed for use in application in most substrates

that do not require the full cure properties of other specially formulated polyureas and epoxies.

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Lockwell UP-100 is extremely durable, fast set thermoset polymer designed for tanking, buried and below grade applications. UP-100 is a general-purpose waterproofing elastomeric and seamless membrane that performs well in anticorrosion, roofing, tanking, steel, and concrete to include geotextile liners and many other substrates.

Lockwell UP100 has been tested with maximum elongation of 600%.



Lockwell Specialty Polymers are advanced and enhanced polyurea and polyurethane formulations developed for conditions beyond normal applications such as high chemical environments, extreme corrosion, complex control joint both steel and concrete and constant immersion exposed to alkali and acids.

LOCKWELL LPS1000

Lockwell LPS-1000 (H) (E) is a fast set low pressure cold applied modified polymer which is designed for repairing the damaged areas on thermoset linings existing or membrane and can be applied on new truck beds, van, SUV interiors. These application techniques can be used for variety of other applications to include expansion/control joints, horse floats, boats (Jet Ski), chassis, outdoor furniture, etc.

LOCKWELL UP18X

Lockwell UP-18X is a fast set, rapid curing and solvent free spray applied hybrid polyurea ideal for concrete or steel or other substrates in acid and base environments. It has high chemical resistance in most applications. Please contact your Lockwell representative for full chemical resistant chart up to date.

Lockwell UP-18X is 100% solids, flexible, two component coating system. It may be applied in single or multiple applications without appreciable sagging and is relatively insensitive to moisture and temperature allowing application in most temperatures.

LOCKWELL CBR

Lockwell CBR - conveyor belt repair is a 100% pure polyurea specially designed conditions where an early hardness, high adhesion, strength, and flexibility to active substrates is required. CBR is 15-20 second gel and formulated for application substrates on operations. CBR has excellent spray-ability and gel time that still allows to penetrate cracks during the initial gel time, yet fast enough to retain early physical properties.

This allows return to service immediately after coating in very harsh conditions.

AROMATIC ALIPHATIC **POLYURETHANES**

Lockwell Systems polyurethane base membrane and aliphatic top coat are new generation coatings with leading edge formulations that provided superior protection with low cost application methods.

Lockwell aromatic and aliphatic polyurethanes are designed composites for UV exposed coatings with excellent waterproofing performance.

LOCKWELL UP110 BM

is a two component flexible base PU membrane coating which on curing forms to an impervious rubberized membrane. UP110 BM is based on an advanced technology of polyurethane elastomeric coatings to offer a cured film which has excellent elongation, toughness, tear strength and superior water resistance. It is a cold cured, liquid applied seamless membrane which has shown remarkable crack bridging properties.

LOCKWELL UP115 SR

is a two component solvent-based aliphatic PU coating having an exceptional weathering properties, which on curing imparts a flexible, UV resistant film. It is normally used as a top coat over Lockwell UP110 BM coated surfaces. UP115 SR is available in various shades that suit to the décor of the building.

Lockwell UP 110 BM is a self priming aromatic PU applied by manual trowel or brush at 1.2 mm minimum DFT.

Lockwell UP 115 SR is a UV stable top coat for PU on polyurea base membrane applied at 150 microns DFT.



Lockwell Spray Polyurethane Foam (SPF) is a range of low to high density foams designed for thermal and acoustic insulation for building walls, roofs, attics, tanks, crawl spaces, vessels and pipes lagging with extremely simple application.

Lockwell have a variety of formulations for opened and closed cell along with fire resistant formulas.

APPLICATIONS

Wall Cavities External Wall Roof Attic Basement Ceiling Crawl Spaces Tank Marine Ballast Vessel and Pipes Ship Holds



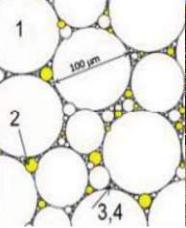
Energy saving and environmental protection are requires more often for new and old buildings. Dwelling with proficient insulation systems promotes reduction of energy consumption which helps home owners save cost.

For industrial applications, SPF 32, 45 and 100 gives a variety of insulation factor with corresponding strength needed for additional support.

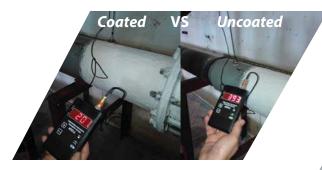
LOCKWELL SPF 32

is a two-component, polyurethane spray foam that is available in densities from 27-40 kg per m³. Low viscosities and 1:1 ratio make it extremely easy to apply using standard, high-pressure, high temperature application equipment.

CERAMICS



Lockwell Ceramic Insulation Coat or C-Coat is a new generation thin film insulation system. C-coat gets its insulation properties from a range of different additives including vacuum filled ceramic microspheres (1), silicon microspheres (2) and pigments/carrier (3,4). The additives act to slow down the transfer of energy (heat) through the coating like a cross between double-glazing and regular insulation.



Application ranges from industrial plants, pipes, tanks, mineral processing, power generation, containers, freezer rooms, refrigerated trucks, cold storage plants, workshops, pharmaceutical facilities and residential roofing. Lockwell C-Coat K-Factor (0.001 - 0.004 W/mK)

LOCKWELL

No corrosion under insulation Reflects heat Reduces enegy loss Excellent thermal efficiency Slows down heat transfer Easy application with brush or roller Compatible with any surface Can be top- coated

Internal and external application
Excellent UV resistance



is an easy to apply ceramic beaded coating designed to insulate the substrate to which it is applied. It is a high-solids, thin-film insulating coating that can be used internally or externally and non-flammable.

The combination of the ceramic beads and the distribution of sizes to fill as much of the volume as possible means that it has exceptional insulation properties. It provides both reflective and insulation performance, in a fraction of the thickness of other common insulation materials.

LOCKWELLFC 909

is a fast curing

ceramic base two component polymer highly recommended for applications including high levels of hydrochloric acid, sulphuric acid, alkalis, mineral spirits, cutting oil, sulphur fumes, seawater, in ambient or elevated temperatures. This product has good bond to rubber, metals as well as concrete and also suitable in cryogenic applications.

Lockwell offers plural component system composed of a proprietary polymeric binder, providing excellent performance in highly corrosive, chemical and abrasive environments, at ambient or elevated temperatures. These products are designed for industrial use at elevated temperatures and will maintain its physical properties under continued exposure at high constant temperature both in exposed as well as immersion conditions.

LOCKWELLTS 919 is a sprayed applied two component polymeric resistant to all petroleum distillates, most solvents, dilute acids, dilute alkalis, sulphur fumes, acid fumes, distilled water, seawater, and waste water in ambient or elevated temperatures.

LOCKWELLTG 929 is a trowel grade polymeric is excellent for lining vessels in direct constant contact with hydrochloric acid at elevated temperature and acid fumes. Due to its trowelling property, TG 929 can be applied to areas that requires surface leveling with immediate return to service performance.



CONCRETE PRIMERS

We offer a low viscosity epoxy-polyamine primer product line with an extensive penetrating property and enhanced adhesion for all kinds of substrates for both internal and external applications.

All primers are developed, qualified and tested to maximum compatibility with every PU and Polyurea systems we cater.



LOCKWELL EP601 is an epoxy polyamine sealing primer classified into two (2) types EP601 HV and EP601 LV for concrete substrates.

EP 601 HV is 100% solids designed for porous concrete surface that has unique formulation that provides finger extension deep into the matrix to ensure maximum adhesion.

EP 601 LV is a low solvent, high solids in thixotropic paste for easy repair of bug holes and cracks.

LOCKWELL EP604 is a two component carbon steel primer suitable for PU and polyurea coating. EP 604 enhances cross linking to give excellent adhesion. EP604 also penetrates surface rust or flash rust and crevices on steel surface thus improving adhesion of any coating to substrate.

LOCKWELL EP605

inter-coat primer is a single component low solids, liquid applied aromatic urethane polymer primer. It is designed as an intercoat adhesion primer for polyurea and PU thermoset systems as well as PA and other top coat systems when over coat windows have been exceeded. It can be also used when repairing blisters and or defective areas ensuring maximum intercoat adhesion.

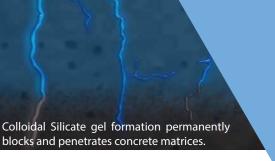








CONCRETE PROTECTION



Treated concrete core resists 31% HCL Acid



BENEFITS & FEATURES

- ZERO VOC content
 - Protects concrete from moisture
 - Protects rebars against corrosion
 - 35m head pressure resistance
 - Colloidal Silicate gel formation
 - Strengthens concrete
 - Protects untreated concrete at any age
 Increase compressive strength
 - One time application. Life time protection.

As a preliminary to all coating systems, a sound substrate free from internal contaminants and damage is a high priority. With Lockwell's composite concrete protection product line, a more stable concrete substrate with enhanced properties against rebar corrosion, efflorescence, freeze-thaw, alkali-aggregate reaction, acid and most of all moisture is achievable with three main products each uniquely designed for specific purpose of concrete advancement.

1. LOCKWELL WPC - Water Proof Concrete

is a spray applied colloidal silicate product that dramatically improves durability of underlying concrete and can reduce or even stop corrosion present on the concrete. Lockwell WPC is a high viscosity designed to permanently waterproof porous concrete.

2. LOCKWELL CP - Contaminant Purge

is a low viscosity contaminant purging colloidal silicate product suitable for concrete with 0.45 and less water cement ratio. Lockwell CP technology penetrates concrete matrix and purge out contaminants as the gel forms.

3. LOCKWELL MWE - Mixed Water Enhancer

is a concrete mix water enhancer that is added to the mix water before batching to increase the hydration of the cement, whilst aiding the workability of the concrete.









Colloidal Silicate Technology

PASSIVE FIREPROOFING CABLE COATING

There are two types of fireproofing in every structure or building. One is active which is mainly the sprinklers systems and alarms that are activated once fire is present. Passive fireproofing on the other hand is a reliable system as it can be functional as soon as applied areas such as cables, switch rooms, substations and all electrical passage on a building with no assistance for an activation mechanism.

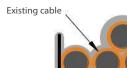
Lockwell Systems have a full range of passive fireproofing products from cable coating, jet fire coatings, firestops and steel coatings all specifically fire rated and approved by FM, UL, IEC and IEEE.

LOCKWELL CharCoat CC

is designed as an Intumescent fire protection coating for electrical cables.

It is a water-based latex coating for interior and exterior applications specially developed to stop fire from spreading on single, grouped or bundled electrical cables.

With Lockwell CharCoat CC, electric cables exposed to cellulosic fire with temperature of 750C is protected for 90 minutes but and also protects assets exposed to hydrocarbon fires at 1100C for 15 minutes fire rating at very low DFT compared to other coatings.





Cable Tray

Bundled Cable and Cable Tray Application

Low DFT of 1.6mm Spread Rate: 3.46kg/m2 (no Wastage) Fire rates High Voltage cables (5000-8000volts) Single component brush or sprayed applied Light weight, flexible, thin film application External and Internal application, UV stable Resistant to oil, various chemicals and petrol spills LEED Approved for Green Building Technology

Advancing Technology for Humanity



COATING

These thin film fire rated products are non-reinforcement / non-mesh, brush or sprayed applied coatings is a leading technology for superior fire protection for steel structures.

LOCKWELL CharCoat SC60/ SC120

is a water based steel intumescent coating for fire protection of structural steelwork with a 60-minute and 120-minute fire rating for cellulosic fire.

Lockwell CharCoat SC60 / SC 120 are BS476 Part 21: 1987 Approved LEED Certified for Green building

Expands up to 800% from original dry film thickness upon onset of fire.

APPLICATIONS AREAS

Lockwell CharCoat Structural steel coatings can be applied to flange beams, columns, hollow sections and other various steel sections.

Airports Stadium Facilities High Rise buildings Power Stations Cinemas Mining Smelters Ship yards









FIRESTOPPING

Cable and Pipe Penetration Seals Lockwell Firestopping products range from 2 to 6 hours of fire rating protection.

LOCKWELL FireStop Intu Sealant

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is a 2 hour fire rated sealant suitable for sealing joints and service penetrations in fire walls, partitions, fire rated door frames and glazing systems. Firestop Intumescent sealant is widely used in combination of mortar and panel system.

LOCKWELL FireStop Mortar

is a specially formulated gypsum based mortar, which is mixed with water to be trowelled or poured around service penetrations with a 6-hour fire rating. Firestop Mortar also provide strutural stability on area applied.

Generally, 75mm thick mortar is1-2 hours fire rated and 100mm thick have 3-6 hours fire rating.

LOCKWELL FireStop Panel

is used to firestop mechanical and electrical services where they pass through fire rated walls. Firestop panels have a 4-hour fire rating.

Lockwell Firestop panels can either be one side or two side coated.

Panel size is 1200m x 600mm x 50mm thick.

LOCKWELL FireStop Pillow

is best suited for areas with regular maintenance of pipes and cables that provides up to 4 hours fire protection.

Pillows sized from 300mm x 50 x 35mm to 300mm x 200 x 35mm.

LOCKWELL FireStop Collars

provides a simple and effective method of fire stopping plastic pipework where it passes through compartment, walls and floor. With 4 hour fire rating, Lockwell FS

Collars can be used for 55-250mm OD pipes and cables.

Collars fixed to both sides of wall to stop spread of flame on both direction.

Lockwell CharCoat FS

Mortar

Block wall

Lockwell FireStop

Collar

All Lockwell FireStop products are BS476, Part 20/22 approved

UNDERGROUND POLYMERS

Lockwell Underground Polymers are excellent performing strata stabilization injection materials specifically formulated for mining, construction, tunnelling and geo thermal applications.

The underground polymer is series of products providing ground stabilization from overly wetted strata to coal seams and fractured rock.

LOCKWELL UHB

Lockwell UHB (Urea Hyrdo Block) is a solvent free, 2-component, high strength polyurethane injection system. It is rapid setting designed as a water stop and also for ground and strata consolidation. The system contains fire retardants and is self-extinguishing.

LOCKWELL USL

Lockwell USL (Urea Structural Liner) is designed specifically for the consolidation of stressed rock structures related with mining to prevent extrication of strata and the accompanying risks presented from falling ground. In addition, Lockwell USL has also fire retardant property which can extensive be utilized to other substrates.

LOCKWELL STARTUM BOND





Lockwell Stratum Bond is a two component (1:1 by volume) fire resistant injection system using a two-component injection pump coupled with a static in-line mixer head; based on urea silicate technology. It is designed to rapidly stabilize strata and coal by giving them structural integrity and flexibility.

LOCKWELL FR BULK FILLER

Lockwell FR Bulk Filler is an economical (low density) cavity filling foam based on polyurea silicate chemistry. Its rapid foaming and flame resistance characteristics make this an ideal product to fill voids in coal seams and fractured strata.

Lockwell FR Bulk Filler can be used in wet environments where it shows good adhesion to wet surfaces and will not absorb water.

DUST SUPPRESION

Lockwell Dustac is a polymer based dust suppresion liquid binding agent that dramatically reduce dust emissions on mine roads typically used for hauling and general access road.

Poor road visibility may cause accidents, increased wear and tear on vehicles yields greater maintenance cost, and ultimately inhilation of excessive dust raises health issues. Dust emissions threatens both health and safety of personnels thus OHS and environmetal regulations requires dust emissions controlled.

Provides medium to long term dust suppression
 Improve visibility and road safety
 Provide a hard, smooth dust free surface
 Reduce road water usage up to 90%
 Enhanced environmental performance

BEFORE

Easy application, no specialised equipment required Environmental friendly, non-toxic, non-hazardous

LOCKWELL DUSTAC

AFTER

Lockwell Dustac is a uniquely formulated lignosulphonate-based binder and gravel preserver suitable for binding both fine and coarse particles.

> Lockwell Dustac is suitable for spray-on applications to the surface of areas requiring medium or long term dust suppression.

> > It works by bonding road base particles together and thereby reduces the need for the use of water and other aggregates.

*Truck speed is maintained constant.

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Lockwell Systems will continue to reduce the environmental and health impact of its operations by :

- reducing waste, emissions and discharges;
- ✓use energy efficiently;
- ensure that all personnel understand their specific responsibilities for health, safety and the environment;
- Maintain necessary knowledge of standards, legalisation, codes of practice and technical and guidance material relating to its activities, and ensure that this information is made available within Lockwell and
- finally to provide employees, distributors and applicators with training in the Lockwell HSE Management System

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