

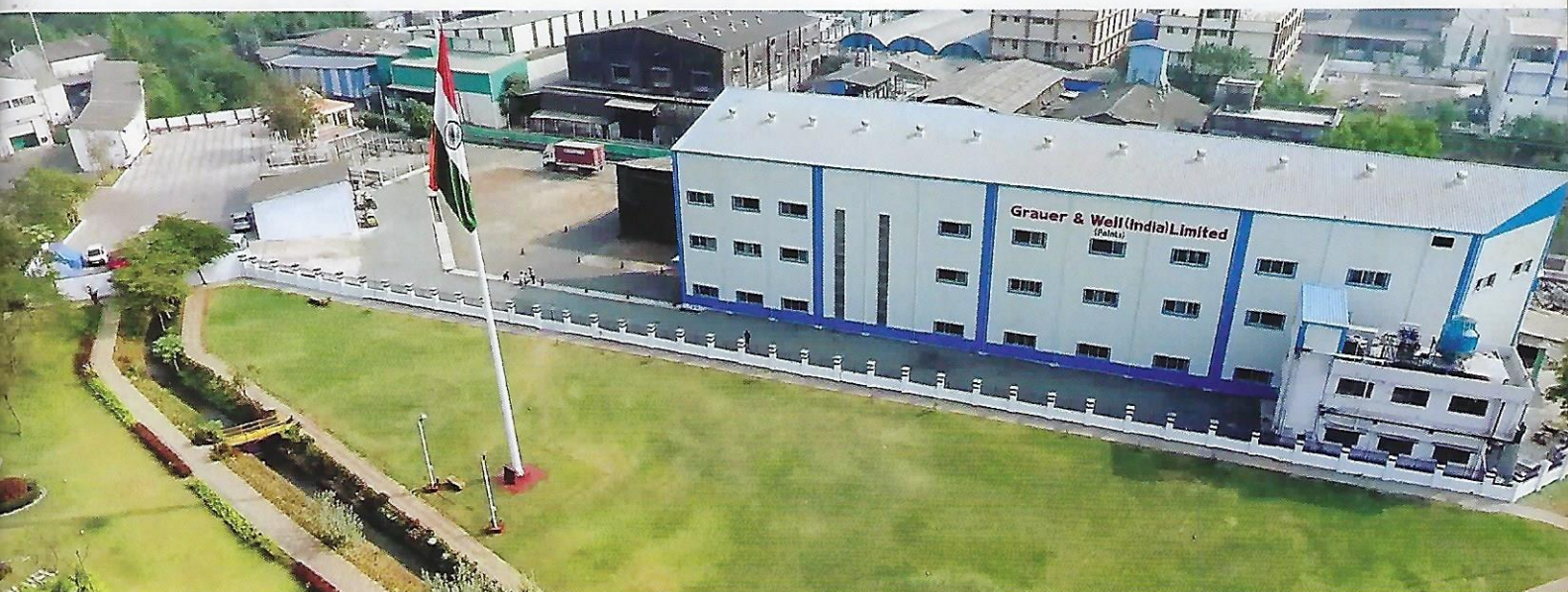


SINCE 1957

TRUST THE LEADER IN SURFACE FINISHING

CONTENTS

Growel Group	2
Surface Conditioning	3
Plating Chemicals	6
Zinc & Zinc Alloys Passivations	12
Plating On Plastics & Aluminium	17
Electroless Nickel Plating	19
Phosphating	21
Anodising	23
Precious Metals & Lacquers	24
PCB & Electronics	26
Aviation Industry	29
Intermediates	30
Protective Post Treatment	32
Miscellaneous Products	33
Zinc Flake Coatings	34
Industrial Lubricants	35
Research & Development And Quality Assurance	36
Plant & Equipment	38
Effluent Treatment & Recovery	39
Paints	40
One Stop Shop	41
Tomorrow's Technology Today	42
Growel Network	44



GROWEL GROUP



Grauer & Weil (India) Limited or Growel has been a trail blazer in the Surface finishing field. With a solid experience of more than 60 years, Growel is the only company in India and one of the few in the world that offers complete corrosion protection solutions on all types of substrates across various industry segments. The manufacturing activities consist of four divisions: (a) Chemical (b) Engineering (c) Paint (d) Lubricant.

We offer a plethora of solutions under one roof, including Electroplating & Specialty Chemicals, Topcoats & Lacquers, Phosphating & Anodizing Chemicals, High Performance Coatings, Zinc Flake Coatings, Industrial Lubricants, Engineering Equipment and Effluent Treatment Plants including Waste Water Recovery Systems. These solutions address the surface finishing & protection needs of various sectors including Automobiles, Hardware, Electronics, White Goods, Jewellery, PSUs, Aeronautics, Railways and Defence.

A countrywide sales network of over 100 dealers and distributors, supported by over 35 branch offices, depots and technical service centres, provide an efficient after sale support to all our valued customers. Our products are exported to over 50 countries.

Our world class Research & Development Centre and six manufacturing facilities form the very backbone of the Company. We have collaborated with global partners having technical prowess. Our commitment to excellence is reflected in our adherence to the most stringent standards for Quality Assurance and International best practices, like continuous product innovation, backward integration and the latest technological up gradation. Growel became the first Indian surface finishing solution company to be AS / EN 9100:2009 certified in 2016.

Every business enterprise carries the solemn responsibility to raise the living standards of mankind. We at Growel collectively remain dedicated to this cause. We relentlessly strive to develop and supply products and services that are eco-friendly and pocket-friendly to all our valued customers.



SURFACE CONDITIONING

Surface conditioning is an essential requisite to obtain fine plating finishes. It comprises of a planned cycle of controlled steps precisely selected for cleaning and subsequent preparation of substrates.

Pre cleaning, either by solvent emulsion degreasers or heavy duty soak cleaners are employed to remove heavy accumulation of soil such as oil, grease, buffing compounds and drawing lubricants by immersion, electrolytic or by spray.

To obtain a 'water break-free' surface, the substrates are often further cleaned by industrial detergents with or without the help of electrolysis.



Alkaline soak / electrolytic & Spray cleaners

Soak / Ultrasonic cleaners

Growclean MSL / Groclean CK 10

Environment friendly, caustic free liquid cleaner based on biodegradable surfactants used for degreasing ferrous / non ferrous components and can replace solvent cleaning. It can also be chosen to clean nonferrous components utilizing an ultrasonic cleaning process at lower concentration.

Steelex Soak cleaner

Soak cleaner comes with exceptional emulsifying, wetting property. It efficiently works at a lower concentration, providing economy and reliability to the users vis-à-vis its contemporaries.

Steelex K 20 / K 40 / K 70

General purpose soak cleaners for ferrous and non-ferrous metals. They can also be used as electrocleaners.

Steelex K 120

Fast acting soak cleaner for continuous plating process.

Ginbond Low Temperature Cleaner

Low temperature soak cleaner with excellent oil emulsifying ability & as a result, eliminates oil floating on top of the operating bath. can also be operated at lower concentration.

Ferrowash 15 / 45

Low temperature, heavy duty alkaline soak / electrolytic cleaner for ferrous components.

Kaolex No. 1

Low temperature soak cleaner for ferrous & non-ferrous components, especially suitable for cleaning of brass components with high emulsifying power.

Ferrowash EMF 50

Soak cleaner with excellent oil emulsifying ability & as a result eliminates oil floating on top of the operating bath, can also be used at a lower concentration.

Ginbond E 24

Fast acting, alkaline etchant and cleaning compound for Aluminium and Aluminium alloys. It produces a fine etch and is more rapid and economical than conventional alkaline cleaners.

Ginbond NS 35

Mildly alkaline caustic soda & silicate free cleaner for Aluminium, does not etch base material. It is good for cleaning other sensitive metals and leaves no siliceous film.

Surclean EC 501 / 504

Alkaline, highly efficient soak cleaner for ferrous and non-ferrous metals. Has superb emulsifying power for removal of oil and grease. It loosens polishing compounds which are subsequently easily removed by powerful spray rinsing systems.

Surclean 104 / 105 (Vibratory & Tumbling)

Twin additive cleaning process, works well for vibratory washing machine & also improves glossiness of basis substrates.

Spray cleaners

Ginbond 67

Powdered alkaline spray cleaner for removal of drawing compounds, oil, dirt and soil; low foaming hence, minimizes loss of spillage due to over flowing.

Ginbond 73 / 75

Low foaming, silicate free economical spray cleaner.

Ginbond NS 150

Non-foaming, silicate free spray cleaner for continuous line.

Ginbond AI 35 / I Fin AI 35

Low foaming, caustic & silicate free spray low foaming cleaner, suitable for Aluminium alloy wheels & also Magnesium alloys.

Electrolytic cleaners

Ginbond Electrocleaner

Electrocleaner which is a synergical blend of builder alkalies along with specially designed surface active agents. The composite has one of the highest degree of cleaning & scale removing abilities.

Steelex K 120

Alkaline with suitable surface active & chelating agent, works efficiently to remove smut and also activates processed components for subsequent plating processes.

Ginbond 808

Heavy duty chelated electrocleaner. It rapidly removes smut, light rust, finger prints and soil from steel. It has high detergent action and also biodegradable.

Ginbond 812

Heavy duty alkaline electrocleaner with chelating action which rapidly removes smut and light surface rust, finger prints and soil from steel. It's superior cleaning characteristics leaves steel surface bright and completely free of contamination.

Ginbond 874

Silicated electrocleaner for steel in continuous plating process.

Ginbond NS 874 / 884

Silicate free electro cleaner for steel in continuous plating process.

Grobond 820

Low temperature electro-cleaner for ferrous components, suitable for cathodic activation of Nickel prior to chrome plating.

Grobond 822

Heavy duty electrocleaner for both ferrous & non ferrous substrate. Excellent descaling property & also activates substrates for subsequent plating process.

Ginbond 814

Chelated electrocleaner for Copper and Copper alloys including Brass. It is very effective for removing soils. A powerful blend of chelating agents provide high tolerance for hard water.

Ginbond 160

High current density chelated electro cleaner rapidly removes smut, light rust and soil from steel. It is designed for use as a periodic reverse current cleaner. Highly recommended for automatic installations; ideal replacement for anodic acid etching prior to plating.

Brasco cleaner 835

Alkaline electro-cleaner specially designed for anodic cleaning of copper and copper alloys; contains special inhibiting agents to prevent attack on base metal. Activates treated surface & hence, adhesion to subsequent plating becomes perfect.

Ginbond Z 72

A general purpose alkaline cleaner, can be used as soak or electrolytic on a variety of metals. It is ideal for buffed Zinc die-castings and Brass parts prior to plating.

Alkaline electrolytic derusting / descaling processes

Alkaline derusting is removal of metallic oxides, primarily from iron alloys. Red rust is removed by immersion, whereas black oxides generally require use of electricity. Electrolytic alkaline derusting is very effective for removal of smuts and residues of acid pickling.

Gindex 114

Electrolytic scale remover, used alone or sometimes in combination with sodium cyanide for effective removal of oxide, rust, scale, smut, from steel at room temperature. Ideal for use as a periodic reverse cleaner. Highly recommended as a final cleaner prior to electroless nickel plating.

Gindex 214

Generally similar to Gindex 114, but contains Sodium Cyanide therefore its a highly efficient, electrolytic scale remover.

Gindex 281

Alkaline Potassium Permanganate based process to remove strong hardened scale from ferrous surface. Effective as soak or electrolytic operation.

Cleaners for Aerospace Industry

Growspace Aqueous Cleaner

Non-caustic, silicate free surfactant based liquid cleaner for ferrous and non-ferrous metals - No base metal etching. Specially designed to clean Aluminium, Magnesium & Titanium substrates.

Growspac EX 28

Caustic free alkali builder along with surfactant & corrosion inhibitor for cleaning of soil, dust from exterior aircraft surface. Does not affect painted substrates.

Growspac INT 11

Caustic free, organic complexant, surfactant & corrosion inhibitor based liquid cleaner, leaves cleaned surface antistatic. It is used for cleaning of all inner body metallic and perspex parts of aircraft; safe to clean lacquer, paints, floors, walls, ceiling, etc.

Growspace Dewax 15

Liquid cleaner containing surfactant & hydrocarbon. It is specially effective to remove hard wax from substrate without etching base metals such as Aluminium, Titanium and Stainless Steel.

Acid pickle aid accelerator / inhibitors

Acid pickling

Acid Pickling is the removal of metallic oxides by immersion. Pickling falls into several categories: heavy-duty to eliminate heat scale, light-duty to remove light rust and moderate oxidation such as spot welding marks and tarnish. It also activates passive films and bright dipping to bring out fresh, clean and lustrous surface.

Gictane 70

Powdered replacement for hydrofluoric acid. It is added to acid pickles for removal of colloidal and siliceous films and ensures brighter and more adherent electrodeposits. It is also an additive to sulphuric acid to promote pickling of Aluminium alloys, Stainless Steel and Titanium.

Gictane 73

Powdered, acidic material used in water for removal of silicate and oxide films from most metals and facilitates excellent adhesion of subsequent electro deposits. It does not attack sensitive metals.

Gictane 85

A dry acid salt when added to water, activates a variety of metals, removes light scales and oxides. Recommended for Nickel plating.

Gictane 86

Specially blended liquid based acid dip for Zinc die cast material, removes light scales & oxides.

Gictane 90

It is designed to be used in the cathodic activation process for ferrous components utilizing 20% sulphuric acid. Does not etch base material. Ideal choice for activating welded areas of automotive components before plating.

Gictane 100

Twin additive system, designed to replace the usage of strong mineral acid such as hydrochloric acid, acts as etch promoter and also as an inhibitor, ensures desired activation & rust removal when used with sulphuric acid in place of more corrosive hydrochloric acid.

Pickle Aid Accelerator

Unique salt used with sulphuric acid, pickles to accelerate removal of hard scales produced during carburizing, case hardening and heat treatment of iron and steel.

Acid inhibitors

Gictane Inhibitor 11

An economical acid inhibitor for both sulphuric or hydrochloric acid, applicable for a variety of steels including high carbon steels. Also prevents deposition of copper on steel by immersion from acid pickles.

Gictane Inhibitor 12

Efficient inhibitor for continuous pickling line.

Gictane Inhibitor 19

Highly efficient inhibitor for sulphuric acid pickling process. Specially, designed to be used in continuous pickling process.

Gictane Inhibitor 21

Highly efficient inhibitor for hydrochloric acid pickling process. Specially, designed to be used in continuous pickling process.

Gictane AAA

Used in sulphuric, phosphoric, hydrofluoric or hydrochloric acid pickles to reduce fuming; increases surface setting to promote better pickling. Also prevents redeposition of oil.



PLATING CHEMICALS

Nickel Plating

Electrolytic Nickel plating, the backbone of plating industry, is extensively used all over the world for decorative & corrosion resistance applications. It is often used as undercoat to provide a bright and levelled surface before plating of precious metals. Improvisation over the years with special additives has made the system highly versatile and job oriented.

Bright Nickel Process

Spectra 77 / 77BL / 177 / 973 / 977 / 977T / 979 / 981 / 991 / 999 / 979M / 986 / 2977 BL Brightener

The spectra range of brighteners is a highly advanced system of Nickel brighteners. They produce brilliant, highly levelled and ductile deposits. Suitable for a very wide range of operation, they perform best in conjunction with Nickel Additive 22 / 220 / 22M / 232. They are suited for rack and barrel operations. Special mention of Spectra 77BL, Spectra 997 BL, Unispec 8, Spectra 177 & Spectra 2977 BL for capability of producing bright lustrous & exceptionally high levelled nickel deposit in barrel plating process

Topbrite 771 Bright Nickel Process

A contemporary top-of-the-line high performance process for rack/barrel plating; excels in every trait of Nickel plating systems. A highly concentrated brightener to be used in conjunction with Topbrite Additive 221 in controlled quantities. Highly recommended where quality is of prime concern.



Superglo Brightener 33 / 93 G Bright Nickel Process

A widely used versatile bright Nickel system which produces very quick bright levelled deposits. Highly tolerant to variations in temperature and bath concentrations. Offers excellent low current density coverage. Suitable for manual vat and barrel installations.

Zenith 95 Bright Nickel

Primarily developed as a techno-commercially economical system. Produces ductile bright and highly levelled deposits, at lower brightener consumption.

Unispec Gi 6 / 16 / 99 / C 110 / 786 Processes

New generation bright Nickel additive system suitable in rack & barrel plating process. Unispec 99 brightener system contain a special type primary brightener, so it can be chosen as a single additive system. Unispec C 110 is highly concentrated secondary bright-nickel brightener system suitable in combination with Nickel Additive 22 / 232 to produce high degree of levelling, considerably reduces consumption of secondary brightener making it economical to the users. Unispec 6, 16 & 18 are the recent addition to this series of Nickel brighteners, specially developed for producing highly levelled bright deposit at lower brightener consumption.

Spectra 190 / 3070 Brightener

A unique ultra high performance Nickel brightener system produces superb glossy levelled fully ductile Nickel deposit plated Nickel Chrome components look eye appealing bluish, thus makes the plated articles attractive to the users.

Nickel Additive 22 / 22M / 222B / 220 / 232 / 262

A universal primary make-up brightener to be used in conjunction with the above mentioned bright Nickel systems. Increases tolerance to impurities and enhances brightness and ductility when added in a regulated manner in bright Nickel processes.

Semi-Bright Nickel

Ductolite Semi-Bright Nickel Process

A highly advanced and latest development to produce ductile, highly levelled, semi-bright sulphur free Nickel deposit. Higher STEP patterns, potential difference between bright & semi-bright layer is achieved even upto 140 mv.

Esbee Semi-Bright Nickel Process

A coumarin free advanced semibright Nickel system. Produces levelled semi-bright sulphur free base coat in multi layer Nickel deposits with excellent mechanical and corrosion resistance properties.

Tri Nickel

Ductolite Tri Nickel Process

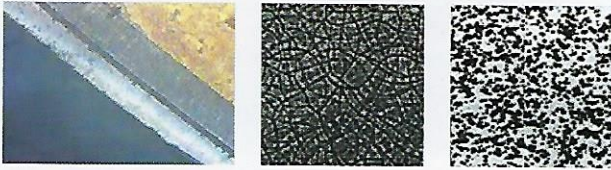
Used as a sandwich layer between semi-bright and bright layer in a triplex Nickel plating system. Has far superior (1.5 times) corrosion resistance properties when compared to duplex Nickel Chrome deposit of identical deposit thickness Builds a sulphur rich Nickel layer below the top surface to inhibit corrosion penetrating top and bottom layers.

Microporous Nickel

Ductolite MPS 170 Nickel Process

Used as a sandwich layer between bright and followed by conventional chrome layer (0.3-0.5 microns) in a (3 &/Or 4 layers) Nickel plating system. This layer induces microporosity in Nickel layer (>10000 pores per sq.cm), across the whole working current density range. Hence, if chrome coating is applied on top this uniform microporous Nickel Chrome coating - easily meets automotive requirements. Has superior (1.5 times) corrosion resistance properties when compared to duplex Nickel Chrome deposit with identical plating thickness. Highly suitable to improve corrosion resistance in CASS test.

Growel's Multilayer Nickel Chrome Surface Topography



Creating a new dimension towards high corrosion resistance with an innovative four layer microdiscontinuous Ni-Cr deposit.

Microcrack Nickel

Ductolite MC 180 Nickel

Used as a sandwich layer between bright and followed by, conventional chrome layer (0.3-0.5 microns) in a multi-layer (3 &/Or 4 layers) Nickel plating system. This layer induces microcracks Nickel layer across the whole working current density range. Hence, if chrome coating is applied on top of this uniform microcracked Nickel layer, it becomes ideal Nickel Chrome coating - easily meets automotive requirements. Has far superior (1.5 times) corrosion resistance properties when compared to duplex Nickel Chrome deposit with identical plating thickness. In a practical field test this process is found to be quite successful to offer better result in the "Russian Mud Test"

Satin Nickel

Pearlsheen Nickel Process

Produces neat, silky, stain free, highly decorative nickel deposit with satin finish. Suitable for rack plated components.

Edenmatt Emulsion Developer/Pearlsheen Additive 1249 / 1449 / 7-K-9

New generation organic additive to produce bright silky grained satin effect.

Black Nickel / Antique Nickel

Groblack Black Nickel Process

Produces decorative black finish of Nickel.

Growel Antique Nickel Process

An excellent cyanide / cyanide free Nickel alloy plating process to be applied as an overlay on bright Nickel to produce eye-appealing glossy bluish black anthracite finish.

Auxiliary Additive

Nickel Leveller 44 / 244 / 246 / UNISPEC Leveller 247 / 248

Special additives compatible with our bright nickel processes to impart additional levelling Ideally suited for poorly polished surfaces.

Nickel Additive 34 / 42 / 52 / 5868S

A purifier for bright Nickel systems to improve tolerance to metallic impurities like dissolved copper and zinc.

Universal Dull Nickel Process

General purpose dull Nickel plating process which is simple to operate, economical and easy to control.

Sulphamate Nickel Process

Nickel Sulphamate process is used where high speed, low stress, heavy Nickel plating is desired. The applications are for electroforming gramophone masters, moulds for plastics, dies, filters, meshes and screens for chemical, food and textile printing, electronic and aircraft components.

Nickel Sequestrant

Eliminates the ill effects due to metallic contamination e.g. iron. It improves receptivity to chrome coverage.

Basic Chemicals of Nickel

Extra pure plating grade Nickel sulphate, Nickel chloride and Nickel carbonate are produced by double crystallization processes. Use of these chemicals eliminate costly down time, high pH treatment and dummyming.

Nickel Purifier

An insoluble filter media for use in filter packs to remove metallic impurities from Nickel plating bath solutions. Regular use of this product will keep plating bath virtually free of metallic impurities, thus assuring maximum brightness of electroplated Nickel and also eliminates costly downtime, high pH treatments and dummyming.

Chrome Plating

Chromium plating in decorative Nickel-Chrome system provides a tarnish resistant, pleasing bluish, brilliant and clear deposit on Nickel surface. The deposit is hard and therefore, resistant to abrasion and wear, thus a very thin coating of 0.25 to 0.8 microns of chrome provides a durable and attractive finish.



Thick hard chrome deposits are useful where good surface hardness, abrasion, wear resistance and anti-seize properties are desired. Hard Chromium is extensively used for gauges, cutting tools, metal forming, dies, machine parts such as piston rings, cylinder liners, crank shafts for marine and aero engines, bearings hydraulic gears, salvage of worn and defective machinery parts, moulds and printing rollers.

Conventional Regulex Chrome Process

A conventional Chrome process suitable for decorative applications. Bath chemistry is simple and easy to operate and maintain.

Mixed Catalysed Grobrite / Durocrack Chrome Process

For decorative plating to produce a pleasing bluish bright chrome deposit which will not readily tarnish or discolour.

Durobrite SRHS Chrome Process

Easy to operate Durobrite SRHS, decorative, self regulating, high speed process gives a pleasing bluish bright chrome deposit at very wide current density range.

Durohard Chrome Process

Mixed catalysed, high efficiency, high speed hard Chrome plating process to produce bright hard Chrome deposit with deposit hardness upto 950-1000 Vickers. Cathode efficiency is as high as 22% and can be operated at 50 to 60 A/dm² current density.

High Efficiency Non Etching HENE Hard Chrome Process

High efficiency, non-etching, high speed chrome plating process easy to operate, produces pleasing bright hard chrome deposit at very wide current density range without buffing. HENE L 600 induces excellent micro-crack scattering (50-100 cracks per linear mm) in deposit leading to the increase in corrosion resistance.

HENE 2009 Chrome Plating Process

Synergically blended Chrome plating salt with organic catalyst to provide faster deposition without any cathode etching.

HENE L 1200

Specially designed chemical process backed with desired plant engineering to offer fast plating speed to the user. This process is suitable to provide 5 micron deposit in 1 minute at 2000 Amp/sq. ft.

Trivalent Chrome Plating Durobrite TC 3000 / Triplus Chrome 300

A major step forward to eliminate usage of hexavalent Chrome in case of decorative Chromium plating process. It is an innovative Chromium plating process using only trivalent chromium compounds, produces excellent finish on bright Nickel plated components.

Triplus TC 301

Trivalent Chrome based black Chrome plating process free from complete hexavalent Chrome free process, thus fulfills OSHA compliance.

Black Chrome Duroblack 2001

This is a new generation Black Chromium plating process to provide excellent jet black finish which does not deteriorate at elevated temperature. Black Chrome deposit can be used for functional and decorative applications. Post treatment with an oil, wax, clear lacquer increases surface finish & wear resistance.

Duroseal 2001

This hard organic coating is recommended for application over black Chrome, black Zinc and oxidized metals to impart lustre & to improve corrosion resistance.

Auxiliary Additive Regulex HT Additive

An auxiliary additive to be used in chrome plating process to enhance the covering in low current density shadowed areas.

Mist Free M / Mist Free L / Mist Free LCR / Mistfree LGL

An effective powder / liquid compound which acts as a stable fume suppressant for decorative Chrome plating baths to eliminate spray of chromic acid mist, keeping plating shop atmosphere healthy and also minimizes chromic acid consumption.

Micromist MSL

PFOS free fume suppressing agent for Chrome plating process.

Chrome Kill

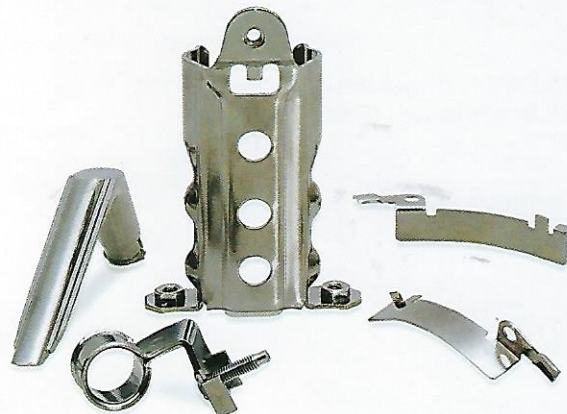
Hexavalent Chromium neutralizer, used after plating to remove chrome stains from chromium plated components. Neutralizes chromic acid on plating racks & hence, it reduces the chances of contamination of the subsequent baths. Further, due to this online reduction of chromic acid the load towards waste treatment gets reduced.

Chrome Neutralizer

Alkaline Chrome reducer also removes residual acidic substances from the tubular recesses, in turn enhances corrosion resistance of plated components.

Durobrite Chrome 231 / 235 / 237 HR Additive

Special auxiliaries for Chrome plating process to improve efficiency of operating process. It also improves throwing power and 'bluishness' of the plated deposit.



Copper Plating

Copper electro-deposition has variety of applications in metal finishing, primarily:

- An undercoat for surface finishes such as Nickel Chromium on steel, aluminium, zinc base diecastings and plating grade plastics (ABS & ABS PC).
- As a base for oxidized or coloured finishes.
- In electronics for production of printed circuit boards and printing cylinders.
- Electroforming of precision components and moulds.
- Thick deposits applied on steel as a stop-off coating in case of hardening processes such as carburizing and nitriding.
- Copper can be plated from a variety of solutions cyanide, acid sulphate and more recently fluoborate based.

Cyanide Copper

Cyno / Cyco Dull Copper Process

General purpose baths for Copper strike as well as heavy deposits of cyanide Copper whenever desired. Suitable for rack as well as barrel operation, the system provides a fine grain layer of Copper.

Rochelle Copper / Cuprabond Process

This process is recommended for high rate of fine grained deposition. The deposit obtained is specially recommended for Zinc based diecastings and Aluminium.

Cuproglo Copper Process

Cuproglo cyanide copper process produces extremely fine grained ductile and semi-bright deposits at high cathode efficiency, deposits 1 micron / min.

Cuproglo Composite Brightener 35

An auxiliary additive to be used in cyanide Copper plating process to improve brightness, also helps in reducing 'fuming' during process.

Fume Reducer 84

Can be added to cyanide Copper bath to produce a foam blanket to avoid fuming during process.

Non-Cyanide Alkaline Copper

Cuprobrite NC Plating Process

Alkaline Copper plating process to eliminate usage of cyanides in the process, could be chosen to provide strike deposits on ferrous or non ferrous e.g. Zinc based die-castings, Aluminum, Magnesium etc. This process is now used as strike coating prior to hard Chrome plating on printing cylinders / Tin / Silver plating on Aluminum bus bars.



Pyroglo Copper Plating Process

Cyanide free pyrophosphate based Copper plating process with excellent throwing power. Hence, it could be chosen variety of applications - decorative plating of faucets, thru-hole plating of PCB's etc. Product line contains all desired product categories, dull / semi - bright & glossy deposits resembling that of acid copper. Suitable "to be used for difficult to plate substrates" e.g. Zinc based die-casting with deep low current density areas etc.

Acid Copper

Cuprobrite Bright Copper Process

A sulphate based acid Copper bath to produce highly levelled brilliant smooth and ductile deposits. Covering and throwing power of this bath are substantially high due to special additives. Especially recommended as an undercoat to Nickel Chrome systems for plating on ABS plastics and zinc based diecastings.

Cuprobrack 2005

Bright acid Copper plating process which produces highly levelled, brilliant, smooth and ductile deposits. This process is designed to produce uniform brightness at wide current density levels. It is specially formulated for decorative plating on metals and plastic parts.

Cuprobrite 1502, 1503 & 1504 Process

This is a unique aqueous dye based acid Copper plating process. It produces brilliant, highly levelled Copper deposits which are a perfect match to micro crystalline structure of bright Nickel deposit. It achieves uniform leveling on all current density areas, allowing to plate complicated articles. The process is compatible for broad range of Nickel brightener systems and is most suitable for Nickel free jewellery plating which needs exceptionally levelled Copper deposits.

Cuprobrite 1512, 1513 & 1514

Acid Copper brightener system with good levelling & brightness most suitable for plating on plastics.

Cuprobrite 702 & 703 / 1702 & 1703

Twin additive, highly concentrated, fully aqueous bright acid copper plating process. It imparts brightness even at lower current densities.

Cuprobrite 3006 / 3008 / 4006 / 310 / 3010 Process

Innovative Copper brightener system suitable for excellent glossiness. This process can also be chosen for Copper-Nickel-Chrome combination irrespective of thickness of coatings.

Cuprobrite DF 412, 413 & 414 Copper Plating Process

Fully aqueous dye free plating process to offer glossy pit free Copper deposits. This process is specially designed for plating of ABS plastics.

High Build Copper

Cuprabuild HS 900 / Cupraback IP

Specially designed acid Copper plating process for high thickness build-ups for applications such as printing cylinders, copper bottom vessels etc. It builds higher thickness without any internal stresses. Fine grained micro structure imparts moderate hardness values upto 120 VHN. The deposit is semi-bright & extremely smooth.

Tin / Tin Alloys Plating

Tin has a pleasing white colour; resists corrosion and staining. Being non-toxic, easily solderable and soft, it is used for food industry, electronic components and bearing surfaces.

Alkaline Tin Satin Tin Process

Satin alkaline Tin process is operated at elevated temperature of 70°C to produce smooth, non-porous matte finish and is mainly used for food vessels and electrical components.

Acid Tin Stannolume Bright Acid Tin Process

Stannolume bright acid Tin process employs a unique combination of carrier additive and brightener to produce mirror bright, silvery white deposit having good solderability, ductility and meets stringent specifications prescribed for electronic and the electrical industry.

Tinbrite Acid Tin Process

Tinbrite acid Tin process produces deposits, with low porosity, good solderability, non-tarnishing and corrosion resistant.

Tinnolume Tin Process

A unique water-based bright Tin plating process with good low current density brightness, also facilitates high temperature operation.

High Speed Tin Stannobrite SN

Stannobrite SN is a high speed (10mic. per mint @25 amp / sq dm). Tin plating process based on methane sulfonate electrolytes. It is best used for continuous wire and strip plating. This is also suitable for plating on electronic and electrical parts. Propensity to whisker formation is very low. With the same system it is also possible to have matte finish tin Bismuth alloy deposition.

Tinnomatte Acid Tin

Tinnomatte is a sulphate based acid Tin plating Process to produce pleasant matte crystalline and silvery white finish.

Tin Alloy Tin-Lead

This is a bright Tin Lead (90/10) alloy process mainly for electronic components to avoid whisker growth.

Sopal-64 Process (Tin Lead)

Designed especially for PCB applications to produce Satin finishes of Tin lead alloys, plating around eutectic ratio of 63% Tin to 37% lead. The deposit exhibits excellent solderability and shelf life. The alloy deposits can be reflowed to bright alloy by hot oil.

Tin-Cobalt Alloy Process

Tin-Cobalt alloy processes have been developed to produce bluish-bright overlay on Nickel plated components which resemble appearance of Nickel-Chrome deposits. A major step forward to replace the usage of carcinogenic hexavalent chrome based process. The process is suitable in barrel plating too.

Sulphobrite TC

Newly developed sulphate based, pyrophosphate free system with excellent covering power. This process is also free from any hazards pertaining to treatment of its effluent.

Styrobrite

Pyrophosphate based system in barrel / vat can be chosen to replace chromium plating.

Growel Ebony Process

Provides eye-appealing decorative black deposit - very much suitable to replace application of black nickel deposit for finishing of buttons, zippers in garment industry.



Brass Plating

Brass, an alloy of Copper and Zinc is plated on plated mild steel, aluminium and zinc based diecastings for decorative applications. Brass is plated on mild steel to obtain good bonding of steel to rubber.

Zinco Brass Process

General purpose economical brass salt for use in both vat and barrel which yields rich golden yellow deposit at recommended operating conditions. Colour of deposit may be varied as required, by altering operating conditions.

Cosy brass Process

Designed to produce pinkish yellow deposit.

Zeeco Brass Process

Especially designed for rich golden yellow deposit.

Antique Finishes

Demands are growing plated / processed zip, buttons buckles & snap fastener to be used in textile industries. Productine provides whole range of antique finishes to meet the client's variety of requirements.

Gibonol C

An alkaline process to produce black oxide durable, corrosion resistant and jet-black coatings on Copper and Copper alloys.

Gibonol C 115 / 116 / 118

Produces decorative oxide finish on Copper and Copper alloys, at room temperature, with wide range of attractive colours ranging from light brown to black to bronze, also ideal for barrel operations.

Cupra 55

A room temperature oxidising product for black oxide coating on Copper and Copper alloys, suited for hardware, electrical fittings and decorative wares.

Antique Brass Process

This is an immersion oxide Copper & Copper alloy process to provide antique finish on Brass components.

Antique Black Brass Process

This is an immersion blackening process to provide jet black finish on Brass components.

Antique TIN / TIN 211 Processes

An immersion blackening process for providing antique Tin finish on immersion Tin.

Ginplate SN 531 / 1531

Bright immersion Tin process on Brass components.

Ginplate Cu 506 / Cu 534

Immersion Copper process on Brass components.

Ginplate MB 438 A&B / IF 439 A&B

An alkaline process for producing durable, corrosion resistant and jet-black antique dark brown to black finish on Copper and its alloys.

Cadmium Plating

Cadmium has found good application in electrical and aircraft industries because of its low cathode potential in relation to Aluminum. It has excellent corrosion resistance. The metal however is toxic.

Cadal Cadmium Process

Cadal Cadmium cyanide based cadmium plating process has excellent throwing power and produces matte white deposit.

Cadmium Brilliant Process

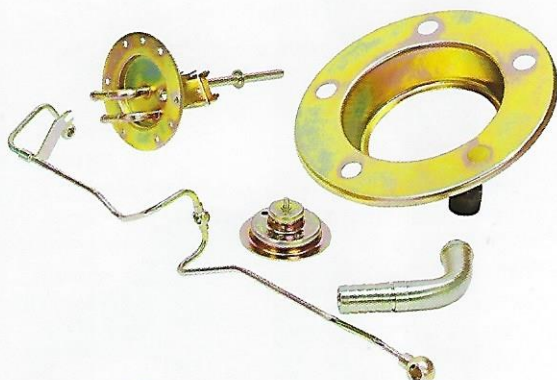
This cyanide bath produces silvery bright, non-porous Cadmium deposits, straight from the bath and can be passivated to have excellent corrosion resistance. It can be used for both vat and barrel operations.



ZINC & ZINC ALLOYS PASSIVATIONS

Zinc Plating

Use of Zinc plating is rapidly increasing for rust protection and decorative applications, It is primarily due to rise in cost of Nickel metals & also, increasing restrictions towards using toxic Cadmium in desired applications. It can also provide more uniform thickness, does not tend to fill up holes or obliterate threads and conserves heating energy to a very great extent. Zinc is an ideal replacement for hot dip galvanizing where high precision is desired. Latest developments of Zinc alloy plating in conjugation of certain passivations provides extremely high corrosion resistance to the deposited coating which even surpass the service life of traditional Nickel Chrome deposits.



Cyanide Zinc

This is a widely used plating process but is facing a declining trend due to pressure on metal finishing industry to eliminate cyanide from all phases of production because of its toxicity and high cost of neutralization.

Zincbrite 16 / 20 / 20M / 20 New Brightener

Products can be used in high cyanide, medium cyanide and low cyanide baths to produce brilliant Zinc deposits. It has an extraordinary wide bright plating range permitting its use in both low current density barrel and also high current density rack plating. The brightener is quite stable for operation even at elevated temperature of 45-50°C and has excellent tolerance to bath impurities.

Zincbrite CZ Ultra Brightener

High performance brightener system, with superb bright plating range, almost matching that of acid Zinc.

Zincbrite 45 / 49 / 470 / 490 / 500 Brightener

A unique brightener system which can be used over a wide range of cyanide and zinc concentration. It is stable even at high temperature. The product is recommended for barrel application and has excellent passivation accepting ability.

Zincbrite 160 C / 610 / 610 CM / 680 C Brightener

A highly concentrated brightener system designed to give excellent brightness at low as also high current densities. Suitable for vat and barrel applications and has very low consumption.

Zincbrite 25 / 350 C Brightener

A highly concentrated brightener system among its contemporaries. Offers extensive technocommercial benefits to the users as it provides excellent brightness at a lower concentration & also suitable in usage at low cyanide concentrations.

Zincbrite LCZ 925 / 62 Brightener

Zincbrite LCZ 925 / 62 Brightener system could be chosen to operate the bath with lower cyanide, concentration. This process produces brilliant deposits in both barrel and rack plating systems.

Monicol Purifier

Additive to remove metallic contaminations in cyanide Zinc baths.

Non-Cyanide Zinc

Non-cyanide Zinc plating systems are employed for rack plated items due to more uniform thickness compared to conventional cyanide or chloride Zinc process avoiding treatment of cyanide waste. Disadvantages of non-cyanide systems are limited high current density range and low cathode and anode efficiency.



Uniglo / Grovision

This is cyanide free, alkaline Zinc process for rack and barrel plating which produces bright uniform coatings comparable to cyanide Zinc process in brightness and throwing power and has exceptional tolerance to metallic impurities. The specialty of these processes is excellent thickness distribution & also deposits are free from 'delayed blistering'.

Acid Chloride Zinc

Chloride zinc process is very versatile and is another preferred option in fast replacing cyanide Zinc primarily due to relative ease of operation, higher plating speed, lower power consumption, instant visible brightness response, no cyanide neutralisation costs.

Zinthobrite CLZ 937 / 942 / 978 Process

Very versatile chloride Zinc process. Produces extremely bright and levelled Zinc deposits both in rack and barrel plating systems. Highly tolerant to impurities like iron. Remarkable levelling and ductility properties. Zinthobrite 937 / 942 / 978 processes offer very good receptivity to all chromate conversion processes.

Zinthobrite CLZ 937 S

This is an additional brightening agent especially recommended for high temperature operation.

Zincabrite ZN 21 Process

Product especially designed & developed for continuous high speed plating of wire and strips in automatic as also manual processes.

Zincalite CLZ 59 / 590 / 61 / 65 / 650 Process

Two component Zinc plating process, suitable for barrel and vat application, gives excellent brightness even at higher temperature. It imparts good adhesion to all chromate conversion coatings.

Zincalite CLZ 67 / 69 / 76 / 78 / 81 / 83 / 85 / 780 Process

New generation cost effective system with very high solution 'cloud point', additive system provides deposit with more receptivity towards subsequent chromating processes.

Aquazinc WS 91 / 102 / 107 / 109 / 910

Announcing the introduction of Aquazinc WS brightener systems made up from completely water-based solubilisers. It offers advantages of: 1) free from issue of oil separation, 2) economical, 3) eco-friendly, 4) better tolerance to high temperature, 5) improved receptivity to subsequent chromate films.

Zincalite CLZ 71 / 710 / 170 Process

Very versatile boric free ammonium chloride & / or mixed ammonium & potassium chloride based Zinc plating process, easy to maintain. It produces extremely bright and leveled zinc deposits, applicable both in rack and barrel plating systems. Process offers excellent receptivity to all chromate conversion processes.

Zincalite CLZ 985 / 9850

Acid zinc brightener system with superb brightening ability. It permits operation even at higher temperature up-to 50°C. This product is specially formulated to offer low brightener consumption to the users & also, could be operated in all types of Electrolytes - only potassium chloride, mixed potassium & ammonium chloride & also, only ammonium chloride types.

Zincalite CLZ 810 Process

'AOX', Ammonium Chloride & Boric Acid free bright acid Zinc plating process to conform newer technologies.

Antifoaming Agent

Specially developed to avoid 'excessive foaming' in chloride zinc operating bath.

Acid Sulphate Zinc

High-speed Zinc plating process especially developed for continuous strip / tube plating applications.

Zinca HS No.1 & No.2 Process

Production proven brightener system permits higher current density and produces semi-bright ductile deposit.

Zinca HS 1760 & 1761 Process

Produces fully ductile thick deposits. Permits application of very high current densities - 800 - 1000 amp/ sq. ft.

Zinc Alloys

To be more competitive, the automobile industry has started demanding more corrosion resistance for Zinc plated components for more 'warranty life' to the finished goods. The functional properties of plated components are improved by adopting suitable Zinc alloy plating process with suitable chromate conversion coating. Alloying material incorporated in Zinc matrix enhances corrosion resistance without affecting any other features of Zinc deposit. Techno-commercially viable alloy processes are Zinc-Cobalt, Zinc-Iron, Zinc-Nickel and Tin-Zinc.

Zinc Cobalt

Zincalume COZ

Zincalume COZ is high corrosion resistant zinc cobalt alloy plating process which utilizes acid chloride based electrolytes. It produces bright and uniform decorative / functional coating containing 0.2 - 1.0% cobalt. Deposits are fine grained and ductile. Physical properties such as internal stress, weldability and lubricity are similar to conventional Zinc coatings. Exhibits higher hardness value and wear resistance. Suitable for rack and barrel applications. Needs special chromate conversions, especially for black deposit.



Zincabrite ZN 21 Process

Product especially designed & developed for continuous high speed plating of wire and strips in automatic as also manual processes.

Zincalite CLZ 59 / 590 / 61 / 65 / 650 Process

Two component Zinc plating process, suitable for barrel and vat application, gives excellent brightness even at higher temperature. It imparts good adhesion to all chromate conversion coatings.

Zincalite CLZ 67 / 69 / 76 / 78 / 81 / 83 / 85 / 780 Process

New generation cost effective system with very high solution 'cloud point', additive system provides deposit with more receptivity towards subsequent chromating processes.

Aquazinc WS 91 / 102 / 107 / 109 / 910

Announcing the introduction of Aquazinc WS brightener systems made up from completely water-based solubilisers. It offers advantages of: 1) free from issue of oil separation, 2) economical, 3) eco-friendly, 4) better tolerance to high temperature, 5) improved receptivity to subsequent chromate films.

Zincalite CLZ 71 / 710 / 170 Process

Very versatile boric free ammonium chloride & / or mixed ammonium & potassium chloride based Zinc plating process, easy to maintain. It produces extremely bright and leveled zinc deposits, applicable both in rack and barrel plating systems. Process offers excellent receptivity to all chromate conversion processes.

Zincalite CLZ 985 / 9850

Acid zinc brightener system with superb brightening ability. It permits operation even at higher temperature up-to 50°C. This product is specially formulated to offer low brightener consumption to the users & also, could be operated in all types of Electrolytes - only potassium chloride, mixed potassium & ammonium chloride & also, only ammonium chloride types.

Zincalite CLZ 810 Process

'AOX', Ammonium Chloride & Boric Acid free bright acid Zinc plating process to conform newer technologies.

Antifoaming Agent

Specially developed to avoid 'excessive foaming' in chloride zinc operating bath.

Acid Sulphate Zinc

High-speed Zinc plating process especially developed for continuous strip / tube plating applications.

Zinca HS No.1 & No.2 Process

Production proven brightener system permits higher current density and produces semi-bright ductile deposit.

Zinca HS 1760 & 1761 Process

Produces fully ductile thick deposits. Permits application of very high current densities - 800 - 1000 amp/ sq. ft.

Zinc Alloys

To be more competitive, the automobile industry has started demanding more corrosion resistance for Zinc plated components for more 'warranty life' to the finished goods. The functional properties of plated components are improved by adopting suitable Zinc alloy plating process with suitable chromate conversion coating. Alloying material incorporated in Zinc matrix enhances corrosion resistance without affecting any other features of Zinc deposit. Techno-commercially viable alloy processes are Zinc-Cobalt, Zinc-Iron, Zinc-Nickel and Tin-Zinc.

Zinc Cobalt

Zincalume COZ

Zincalume COZ is high corrosion resistant zinc cobalt alloy plating process which utilizes acid chloride based electrolytes. It produces bright and uniform decorative / functional coating containing 0.2 - 1.0% cobalt. Deposits are fine grained and ductile. Physical properties such as internal stress, weldability and lubricity are similar to conventional Zinc coatings. Exhibits higher hardness value and wear resistance. Suitable for rack and barrel applications. Needs special chromate conversions, especially for black deposit.



Zincalume ZCO

Zinc-cobalt plating process from alkaline non cyanide sodium zincate baths to offer better thickness distribution along with excellent chromatability.

Zinc Iron

Zincalume FEZ

Alkaline Zinc Iron plating system offers bright, uniform alloy deposit with 0.2 to 0.5% Iron, quite adherent to subsequent chromating process. Duly passivated processed components with this process offers excellent corrosion protection, up to 480 hrs protection prior to red rust after exposure to neutral salt spray (as per ASTM B 117) with deposit thickness 8-12 microns.

Zinc Iron Cobalt

Zincalume FEZCO

Tri alloy plating process, mainly suitable to reinforce subsequent black chromating.

Zinc Nickel

Zincalume NIZ 551 / 651

Alkaline Zinc Nickel plating process with 12-18% Nickel. Higher corrosion protection, up to 1000 hrs salt spray resistance to red rust on black passivated Zincalume NiZ deposit thickness 8-12 micron. Imparts heat resistance upto 180°C & easy to handle thereby, meets stringent automotive requirements.

Zincalume NIZ 851

Alkaline Zinc Nickel plating process with 6-12% nickel in the deposit, specially designed to offer deposit with low Nickel for better crimping ability to meet new automotive requirements.

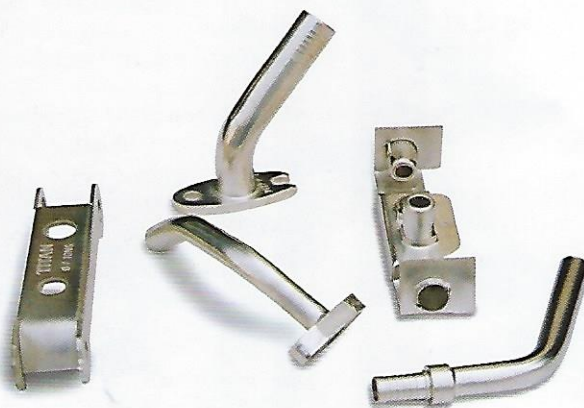
Zincalume ZNI

New innovative bright acid Zinc Nickel plating process with good low current density coverage. This process is suitable to offer faster rate of deposition and also can be used for plating on 'unplatables' e.g. cast iron parts.

Tin Zinc

Zincalume SNZN

Cyanide free neutral Tin Zinc plating process to provide 70% Tin and 30% Zinc deposit. Provides superb 'contact corrosion resistance' to mild steel components along with Aluminum bases. Suitable to be used for components which are required to be electrically conductive and also, for building rods.



Post Plating Passivation / Conversion Coating For Zinc & Its Alloys & Cadmium

Chromate conversion coatings are applied to the metal surface to enhance corrosion resistance and paint adhesion. Additionally chromating process brightens zinc and cadmium plated surface & hence, improves the aesthetics of the substrates. Conversion coatings are normally applied by immersion or by spray.

Hexavalent Chromate Conversion Coating

Blue / Clear

Ginthox Q 558 / 560

Produces a clear bluish coat. Brightens Zinc plated surfaces and provides corrosion resistance to the processed components.

Ginthox Q 550

Chromate coating with brilliant blue finish and good anti-corrosive property.

Ginthox QL 500

Liquid based product to produce blue passivation film on Zinc plated parts.

Ginthox CAD 983

Clear chromate, brightens cadmium plated components and provides 48 to 72 hours salt spray resistance.

Ginthox AL 990 / 1400

Chromating system, specially designed to be applied directly on Aluminium to achieve iridescent to yellow finish. Best base coat for paint & powder coating.

Finpass 93 L

Liquid transparent chromating system, specially designed to be applied directly on Zinc based die castings to achieve blue finish.

Ginthox COZ Blue

Corrosion resistant blue chromating for Zinc-Cobalt alloy deposit. When applied ideally on 8 micron plated deposit thickness provides excellent corrosion resistance - > 200 hrs for white rust.

Yellow

Ginthox 982 L / 989 L / FINPASS 182 L

Specially recommended for iridescent conversion coating on Zinc or Cadmium, while using low concentration.

Ginthox 995

Produces bright, iridescent yellow coating on chloride Zinc plated parts without use of nitric acid; high corrosion resistance and excellent base for paint / organic finishes. Specially designed to be applied on-line barrel plating installations.

Ginthox NIZ Yellow

Excellent yellow chromating system for Zinc - Nickel deposit Passivated components with deposit thickness 6-8 microns provides very good salt spray resistance > 350 hrs for white rust, > 900 hrs for red rust.

Olive Green
Zincafex Olive 952

Single liquid concentrate which produces a glossy olive green coating, suitable for Zinc deposits from all types of zinc plating processes.

Zincafex Olive 953

Chromate conversion solution to produce adherent, olive green coating on Zinc deposits. Specially recommended for continuous line.

Zincafex Olive 958

Olive drab conversion coating for Zinc, developed to produce glossy olive green coating with excellent uniformity and consistency even over long periods of usage.

Cadfix Olive 955

Olive drab conversion coating for Cadmium, designed for electronic connectors. Suitable for rack, barrel as also continuous plating systems.

Black

Ginthox ZB 992 / Ravenox ZB 993

Jet-black chromate coating on Zinc plated parts.

Ginthox ZB 167

An economical two-component black chromating process for Zinc.

Ginthox NS 999 / COZ Black

Non-silver based black chromating process for Zinc-Iron alloy plated components. The passivated components upon further post-passivation fixing in Ginthox NS 999 Post Dip provides excellent corrosion resistance (> 480 hrs of white rust as per ASTM B 117).

Ginthox NiZ Black

Non-Silver black passivating process for Zinc-Nickel deposit. Salt spray resistance on 8-10 mic. deposit thickness would be > 250 hrs for white rust & red rust > 750 hrs.

Auxiliary Additives

Ginthox Neel Stone

An innovative product developed for post passivation process. It can be used after blue passivation to produce a very pleasing blue finish, depth of tinge being adjusted to suit specific requirements.

Ginthox Emerald Stone

A decorative top-coat on blue passivated Zinc plated components to obtain greenish finish.

Ginthox Amber Stone

A decorative top-coat on Trichrome 1000 passivated Zinc plated components for yellowish finish.

Ginthox Gul Stone

A decorative top-coat on blue passivated Zinc plated components to achieve pinkish finish.



Trivalent Chromate Conversion Coating

Blue / Clear

Trichrome 1000 / Trichrome 1000 Yellow

Trivalent chrome process especially developed to suit effluent standards for clear and yellow passivation to Zinc & Zinc alloys.

Trichrome HB 2000 / 2000M

Trivalent chrome passivation to produce a pleasing thick blue finish and provide corrosion resistance in excess of 100 hrs of salt spray.

Trichrome HB 1700 / 1701 / 1706 / 1710 / 1712 / 1720 / 1728

Trivalent chrome passivation produces pleasing thick blue finish.

Trichrome HB 1705

In combination with Trichrome ZD pre-dip the liquid transparent chromating system is specially designed for application on Zinc based die castings to achieve excellent blue finish.

Trichrome HB 1701 CF

Cobalt free blue chromating process, conforms recent European directives.

Trichrome AL 2800

Trivalent chromate based system, especially designed to be applied directly on Aluminium to achieve colourless to slight iridescent finish. It can be used as base or final coat for paint & powder coating.

Ginthox NCR 50

An innovative chrome free silvery white finish chromating process for zinc deposit, major step forward towards pollution free technology.

Trichrome NiZ Blue

Provides uniform blue & clear passivation on zinc nickel deposits.

Iridescent / Silver

Trichrome HB 157

A new generation eco-friendly blue chromating process based on trivalent chrome which provides high corrosion resistance over 150 hrs salt spray test, for the Zinc deposits from acid chloride Zinc electrolyte.

Trichrome HB 1802 / 1901

Fluoride free passivation process to obtain 'Silver /light bluish' thick film chromate conversion coating to offer very high corrosion resistance.

Trichrome HB 2200

A unique trivalent chrome based zinc chromating process to produce thick bright iridescent finish to conform ELV norms. This type of passivation process can replace usage of yellowish passivation process based on hexavalent chromium compounds.

Olive Green

Zincaflox Olive 952

Single liquid concentrate which produces a glossy olive green coating, suitable for Zinc deposits from all types of zinc plating processes.

Zincaflox Olive 953

Chromate conversion solution to produce adherent, olive green coating on Zinc deposits. Specially recommended for continuous line.

Zincaflox Olive 958

Olive drab conversion coating for Zinc, developed to produce glossy olive green coating with excellent uniformity and consistency even over long periods of usage.

Cadfix Olive 955

Olive drab conversion coating for Cadmium, designed for electronic connectors. Suitable for rack, barrel as also continuous plating systems.

Black

Ginthox ZB 992 / Ravenox ZB 993

Jet-black chromate coating on Zinc plated parts.

Ginthox ZB 167

An economical two-component black chromating process for Zinc.

Ginthox NS 999 / COZ Black

Non-silver based black chromating process for Zinc-Iron alloy plated components. The passivated components upon further post-passivation fixing in Ginthox NS 999 Post Dip provides excellent corrosion resistance (> 480 hrs of white rust as per ASTM B 117).

Ginthox NiZ Black

Non-Silver black passivating process for Zinc-Nickel deposit. Salt spray resistance on 8-10 mic. deposit thickness would be > 250 hrs for white rust & red rust > 750 hrs.

Auxiliary Additives

Ginthox Neel Stone

An innovative product developed for post passivation process. It can be used after blue passivation to produce a very pleasing blue finish, depth of tinge being adjusted to suit specific requirements.

Ginthox Emerald Stone

A decorative top-coat on blue passivated Zinc plated components to obtain greenish finish.

Ginthox Amber Stone

A decorative top-coat on Trichrome 1000 passivated Zinc plated components for yellowish finish.

Ginthox Gul Stone

A decorative top-coat on blue passivated Zinc plated components to achieve pinkish finish.



Trivalent Chromate Conversion Coating

Blue / Clear

Trichrome 1000 / Trichrome 1000 Yellow

Trivalent chrome process especially developed to suit effluent standards for clear and yellow passivation to Zinc & Zinc alloys.

Trichrome HB 2000 / 2000M

Trivalent chrome passivation to produce a pleasing thick blue finish and provide corrosion resistance in excess of 100 hrs of salt spray.

Trichrome HB 1700 / 1701 / 1706 / 1710 / 1712 / 1720 / 1728

Trivalent chrome passivation produces pleasing thick blue finish.

Trichrome HB 1705

In combination with Trichrome ZD pre-dip the liquid transparent chromating system is specially designed for application on Zinc based die castings to achieve excellent blue finish.

Trichrome HB 1701 CF

Cobalt free blue chromating process, conforms recent European directives.

Trichrome AL 2800

Trivalent chromate based system, especially designed to be applied directly on Aluminium to achieve colourless to slight iridescent finish. It can be used as base or final coat for paint & powder coating.

Ginthox NCR 50

An innovative chrome free silvery white finish chromating process for zinc deposit, major step forward towards pollution free technology.

Trichrome Niz Blue

Provides uniform blue & clear passivation on zinc nickel deposits.

Iridescent / Silver

Trichrome HB 157

A new generation eco-friendly blue chromating process based on trivalent chrome which provides high corrosion resistance over 150 hrs salt spray test, for the Zinc deposits from acid chloride Zinc electrolyte.

Trichrome HB 1802 / 1901

Fluoride free passivation process to obtain 'Silver /light bluish' thick film chromate conversion coating to offer very high corrosion resistance.

Trichrome HB 2200

A unique trivalent chrome based zinc chromating process to produce thick bright iridescent finish to conform ELV norms. This type of passivation process can replace usage of yellowish passivation process based on hexavalent chromium compounds.

Trichrome HB 2203 C / 2203 LC

A unique trivalent chrome based zinc chromating process to produce thick iridescent finish. Conforms to all automotive OEM requirements.

Trichrome HB 2203 CF

Cobalt free iridescent chromating process, conforms to recent European directives.

Trichrome HB 2203 HC

Chromating process with higher Cobalt content to provide extended corrosion resistance.

Trichrome HB 2205 / 2303

Trivalent yellow chromating process, designed to be operated at room temperature (25-35°C) to offer 'completely haze free' deposit, even on flat big components.

Trichrome HB 322

Specially designed to produce corrosion resistant yellow colored passivation film for Zinc & Zinc alloys. This Passivation process has very high tolerance towards impurities in working bath such as zinc, iron etc. Passivated Zinc plated components provides high corrosion resistance, even after heat treatment & thereby, in-line hydrogen de-embrittlement is easily feasible in one-go.

Trichrome NiZ Yellow

Provide Yellow / iridescent chromate film on zinc nickel deposits.



Black

Trichrome Zn Black / Black Plus / 790

It provides a uniform black conversion coating on Zinc deposits from alkaline zinc plating system. Can be used for both rack & barrel applications.

Trichrome Zn Black 3039

It provides a uniform black conversion coating on Zinc deposits from both acid & alkaline zinc plating systems. Can be used for both rack & barrel applications.

Trichrome NiZ Black

It provides a uniform black conversion coating on Zinc Nickel deposits. It can be used in both rack & barrel applications.

Auxiliary Additive

Trichrome HB 2203 CY

An auxiliary dye free additive to reinforce colour of yellow chromate to resemble traditional hexavalent chromates.



Trichrome HB 2208 YL

An auxiliary dye based additive to reinforce colour of blue and yellow chromate to resemble traditional hexavalent chromates.



PLATING ON PLASTICS & ALUMINIUM

Plating on Plastics

With increasing industrial usage of parts made of plastics, application for plating on plastics is limitless. As manufacturers increasingly look to plastic as answer to lighter, more corrosion resistant, less expensive products. Future of plated plastics is promising. Ideal plastic material for plating purpose is ABS (acrylonitrile butadiene styrene).

Ginplate PC 452

Non-silicate mild alkaline soak degreaser system, efficiently removes soils and grease even at lower concentration.

Ginplate CC-50 ABS

This is a mild alkaline liquid product for effective cleaning of plastic materials to remove soils and finger marks, also a unique conditioner with anti-static properties. It may be used either as immersion or in spray mode. It is also recommended as pretreatment step for painting on plastics.

Ginplate CC-30 ABS

This is a mild alkaline liquid product specially formulated for effective cleaning as also conditioning of plastic materials prior to painting. As a cleaner, it removes soils and finger marks. It eliminates static charge on the plastic surfaces and aids in quick drying, making it amenable for painting in subsequent steps.

Ginplate Conditioner 474

Strong chromic acid based micro chemical etching system for good adhesion on plastics. Avoids mechanical roughening.

Ginplate Enviroetch

Environment friendly, chrome-free, OSHA compliant room temperature etchant for plastics. It creates a hydrophilic and micro-roughened surface that is necessary for good adherence of subsequently plated metal layers.

Ginplate Reducer CR

Reducing agent after etching, improves bath life of activator; based on organic additives, does not affect surface condition of chemically etched plastic substrates.

Ginplate Reducer CR (AF)

Ammonia free reducing agent after etching, improves bath life of activator.

Ginplate Activator 442 / 444

High effective single-step easy to handle Palladium-Tin colloid with smaller particle size, specially designed to metallise plastic prior to electro-deposition.

Ginsol Activator Ultra

Highly efficient Palladium - Tin colloid process for ABS / ABS-PC parts with very good tolerance towards other incoming contaminants e.g, Chromium etc, Built-in with high Palladium content coupled with smaller particle size provides good compact pore free coverage deposit. Specially designed to be used in automatic processing lines. Operating baths are quite stable, hence lower reduces over all consumption of chemicals.

Ginsol Accelerator

Reduces Palladium to its metallic stage, promotes subsequent initial nucleation of electroless Nickel or Copper.

Ginplate GK 12 / 120

Sulfuric, hydrochloric acid free product to reduce Palladium to its metallic stage & facilitates subsequent fine nucleation of electroless Nickel or Copper.

Ginplate CU 803

Highly stable electroless Copper plating process, with faster rate of deposition with broad working window, stable even up to 90°C.

Ginplate NI 414 / 414 (ABS)

Electroless Nickel process to impart uniform conductive 'pit-free' semi-bright electroless Nickel base coat on activated plastic surface. Ammonia consumption in this system is lower than its contemporary products.

Ginsol NI 601

Room temperature electroless Nickel process with enhanced bath life, suitable for manual / automatic plating installations; imparting uniform conductive pit-free semi-bright electroless Nickel base coat on activated plastic surface.

Ginsol Conductor HD

This is an alkaline Copper containing solution, which is applied in place of traditional accelerator & electroless Nickel / Copper plating after Ginsol / Ginplate Activator to offer to the users option of direct plating. It shortens line length and also eliminates plating rejections pertaining to that of electroless depositions.

Ginsol Precodip

This is a specialised surface preparation process after electroless Nickel prior to acid Copper plating eliminating need of strike Nickel deposit. It improves conductivity of combined electroless Nickel deposit eliminating chances of high current burning & dissolution of deposited immersion coating and thereby, plating rejections of void spots, ideal choice for plating of multipurpose mix components.



Cuprobrite / Cuprobrac Acid Copper

Acid Copper plating process having wide brightening range with excellent levelling; suitable for higher deposit thickness, allows its usage even at higher temperature.

Spectra / Unispec Bright Nickel

Broad range of products with superb brightness and levelling, meeting customer's needs - both technical and commercial. Ductolite Multilayer Nickel process provides very high corrosion resistance.

Durobrite SRHS / Durocrack Chrome Salt

Mixed catalysed Chrome plating process, provides desired 'bluish' look. Room temperature operation option is also feasible with some variant.

Plating on Aluminium & its Alloys

Growel offers complete technology to plate Aluminium & its alloys to provide excellent corrosion & wear resistant coatings to meet more stringent OEM standards. Suitable pretreatment processes which include soak degreasing, etching, desmutting & zincating are key factors for better adhesion of deposit on to the base materials.

Sprean AL 35

Non-caustic, low foaming, highly efficient at lower concentration, non-silicate spray degreasing system are advantages of this process.

Ginbond NS 35 / 142

Non-caustic & non-silicate soak degreasing system, does not etch surface of Aluminium substrate.

Ginbond E 24

Caustic based alkaline etchant facilitates mild etching and provides smooth finish.

Gictane 70

De-oxidiser & conditioning agent enhances desmutting effect, especially suitable for plating on Si-rich A 356 Aluminium alloys wheels.

Gictane 120

De-oxidiser & conditioning agent enhances desmutting effect, especially suitable for plating on silicon and Copper - rich Aluminium alloys.

Alzincate D

An alloy zincate process, free from cyanide, for multipurpose usages.

Alzincate M

Multi cation catalyzed system containing low percentage of cyanide; improves adhesion to Aluminium.

Alzincate MV

New generation multi cation, smooth, fine grained, compact zincating process - Ensures desired adhesion to subsequent electro deposits, ideal choice for silicon rich cast Aluminium wheels.

Alzincate EN

Non-cyanide, easy to operate zincate bath, specially designed for subsequent electroless Nickel plating process.

Alzincate AL

Non-cyanide system with grain refining additive; produces fine grained thinner immersion Zinc deposit and improves deposit adhesion of subsequent top-coats.

Ginplate AL 100

Low phosphorous, alkaline electroless Nickel process, provides thin deposits at low temperatures, aids in plating Aluminium & promotes adhesion to the basis metal. Excellent choice for electronic applications including ceramics, good solderability & conductivity.

Superspec AL 202

An auxiliary additive to provide pit-free ductile strike Nickel deposit on zincated Aluminium.

Superspec AL 212

A sulphur free auxiliary additive produces fully ductile pit-free strike Nickel deposit on zincated Aluminium.



ELECTROLESS NICKEL PLATING

Electroless Nickel plating is a process of plating Nickel phosphorous alloy by chemical reduction on catalytic metal surface without electricity. These deposits have properties which generally are functional. Deposits from electroless Nickel processes are highly corrosion resistant and have low porosity, feasible to achieve excellent hardness close to that of hard Chromium after heat treatment, outstanding wear and abrasion resistance and uniformity of thickness.

High Phosphorous Ginplate NI 422 / 425

High phosphorous, stable, medium speed electroless Nickel deposits that have excellent corrosion resistance, elongation and low stress, good for heavy deposit build-ups.

Medium Phosphorous Ginplate NI 418 / 431

Medium phosphorous electroless Nickel deposits are extremely stable, high speed, bright to very bright; economical to operate.

Ginplate NI 4180

Medium phosphorous electroless Nickel plating with excellent brightness.

Ginplate NI 432

Medium phosphorous electroless Nickel process - for faster deposition.

Ginplate NI SEP 9304

Specially designed for production of SMT PCB's, provides flat topography, excellent solderability & bond ability. Compatible with wide range of solder masks.

Ginplate NI 618

Revolutionary electroless Nickel plating process offers higher rate of deposition with whiter tone, generates low build-up of unwanted break down products extending bath life of operating solution. This process also permits more 'metal turn-over' to the operating solution making it economical in usage.

Low Phosphorous Ginplate Ni 426

Unique low phosphorous (1 - 3%) electroless Nickel plating process.

ROHS Compliant High Phosphorous Ginplate NI 522

High phosphorous semi bright electroless Nickel for ROHS compliance.

ROHS Compliant Medium Phosphorous Ginplate NI 435 / 535

Medium phosphorous semi bright to bright electroless Nickel process-Complies ROHS directives.

Electroless Ni Nano Composite

Electroless Ni-P coatings with nano materials like Boron carbide, Boron nitride, PTFE, Silicon Carbide, Tungsten, diamonds, etc provide further tuning of surface properties like hardness, wear resistance, friction, etc.

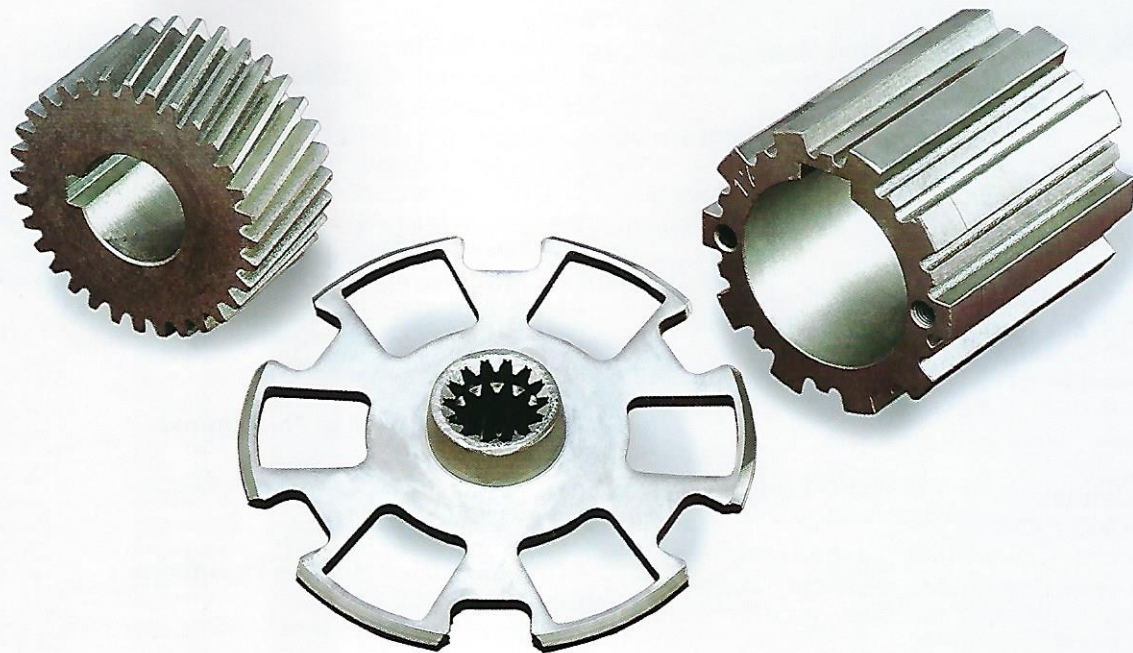
Ginplate NI 380

Stable, high PTFE composite electroless Nickel process with excellent bath stability, applicable to wide range of substrates. Deposits uniform PTFE at 20-35% by volume.

Ginplate NI 411

Electroless Nickel composite plating process which incorporates PTFE at 7-12% by volume as occluded particle in the plated deposit.





ELECTROLESS NICKEL PROCESS:

PROPERTIES	426	418	4180	432	435	535	422	425	522
Type	Low Phos.	Mid Phos.	Mid Phos.	Mid Phos. compl.	Mid Phos. ROHS compl.	Mid Phos. ROHS compl.	High Phos.	High Phos.	High Phos. ROHS compl.
Appearance	Semi-bright	Bright	Very-bright	Very-bright	Bright	Very-bright	Semi-bright	Semi-bright	Semi-bright
Phosphorous Content %	1.0-3.0	6-8	6-8	5-8	6-8	6-8	9-11	10.5-11	10.5-11
Plating Rates Microns/hr	15.0-20.0	10-15	15-20	18-22	18-22	15-20	11-13	11-13	11-13
Bath Loading dm²/tr	0.6-2.45	0.61-2.45	0.61-2.45	0.61-2.45	0.61-2.45	0.61-2.45	1.25-2.5	0.6-2.45	0.6-2.45
Metal Turnover	8.0-12.0	6-8	8-10	6-8	6-8	6-8	4-6	4-6	4-6
Working Bath Temp °C	60-85	82-91	82-91	82-91	82-91	82-91	86-90	82-88	82-88
pH	6.1-6.4	4.6-5.5	4.7-5.2	4.7-5.2	4.7-5.2	4.7-5.2	4.8-5.0	4.8-5.2	4.8-5.2
Hardness (Vickers) as Plated	650-700	440-460	450-480	450-480	450-480	450-480	440-460	460-480	460-480
After Heat Treatment	950-1050	860-900	860-900	860-900	860-900	860-900	860-900	800-900	800-900
Magnetic Properties	Slightly Magnetic	Slightly Magnetic	Slightly Magnetic	Slightly Slightly	Slightly Magnetic	Slightly Magnetic	Non-Magnetic	Non-Magnetic	Non-Magnetic
Corrosion Resistance Salt Spray hrs.	96	96	96	96	96	96	1000	1000	1000

PHOSPHATING

Phosphate coatings are predominantly applied to ferrous metals. However, it is also used on Zinc and Aluminium for some specific applications. These coatings on its own are insufficiently protective for treated metal surfaces but excellent as pretreatment before painting, powder coating, impregnation with enamels, lacquers, oils and waxes. The coating is thin and adherent to the substrate metal whilst being porous and insulating. Consequently, the coating permits "keying" or mechanical interlocking of applied paint film whilst the electrical inertness of coating localize corrosion beneath adjacent unbroken painted areas of the base metal surface. Phosphate coatings may be produced by immersion, brush or spray, since surface conversion depends only on contact between substrate and phosphating solution. These coatings are also used in cold forming operations such as drawing, stamping and cold extraction operations.

Degreasing

Surklin 101 / 102 / 103

Surklin series cleaners are medium duty caustic free alkaline cleaners used for spray / dip cleaning of ferrous and galvanised articles. They contain biodegradable surfactants with better emulsification / saponification and operate at lower concentration, time and temperature, thus have longer bath life.

Derusting

Surpickle 501 / 502

Non-flammable phosphoric acid based pickling media to remove rust, scale, oil and grease. Pickle aid accelerator are added to accelerate effective removal of hardened scales.

Surpickle BR/ Surfix MPT 1 / 2 / 3

Removes moderate amount of oil, rust and provides an iron-phosphate film by brush or wipe on. It is economical since single product is used to remove rust, oil and provide iron phosphate film on the surface, therefore mainly recommended as an under-coat prior to painting.

Surfix Fe 691 / 695

Surfix Fe system is an iron phosphating chemical process for spray or immersion application. Mild Steel, Galvanised Steel and Aluminium can be processed in this chemical. Surfix Fe treatment converts metal surface to a amorphous iron phosphate coating, for corrosion resistance and increases adhesion and durability of paint finishes. These products can also be used in combination with Surklin 112, being a pack of bio-degradable surfactant, combination acting as a cleaner coater system.

Nano - Ceramic Phosphate Free Coating

Surfix ECO 100

Surfix ECO 100 is new generation nano ceramic coating substitute for Iron Phosphating, being free from phosphate, COD or BOD. The process operates at ambient temperature and does not generate sludge during reaction with substrate. It is suitable for multi-metal application such as treatment of Mild Steel, Galvanised steel and Aluminium surface. The process operates at ambient temperature and provides an ideal base for subsequent powder coating / painting.

Surface Conditioners

Surcon 301 Z / 302 Z / SURCON Mn 321

These surface conditioning chemicals are for metal phosphating with better bath stability. These promote formation of uniform, dense and finely crystalline phosphate coatings which are preferred base for paint and have superior corrosion resistance. These products are used for both - Zinc & Manganese phosphating.

Calcium Modified Zinc Phosphating

Surfix ZN 601 / 613 / 635

These products produce smooth, microcrystalline fine grained uniform Zinc-Calcium-Phosphate coatings ensure excellent bond between paint and base metal. Calcium modified Zinc phosphate also provides ideal base for rubber to metal bonding; coating Wt. 200-400 mg/sq.ft., meeting IS specification 3618/1966 CLASS A/B

Tri-Cationic Zinc Phosphating

Surfix ZN 605 / 615 / 610

These are tri-cationic Zinc phosphating products formulated for dip / spray mode of applications. These chemicals are suitable for processing Mild Steel, Galvanised Steel surface and Aluminium, latter by using specific additives. This treatment converts metal surface to a nonmetallic, fine-crystal, Zinc phosphate coating, which inhibits corrosion and increases adhesion and durability of CED primer and other paint finishes.

Ambient Temperature Operating Phosphating

SURFIX ZN 604 / 604 M

These are Zinc & Nickel based di-cationic phosphating products formulated on immersion application. Mild Steel, Galvanised Steel can be processed in the chemicals at ambient temperature.

Heavy Zinc Phosphating

Surfix Zn 602 / 603 / 617 / 620 / 625

These products impart heavy Zinc phosphate coatings, ideal for metal forming application such as tube drawing, wire drawing, cold heading and also recommended for corrosion protection of fasteners with rust preventive oil. Coating Wt. 750-2000 mg/sq.ft. meeting IS specification 3618/1966 CLASS A.

Soap Lubrication

Bondlube BC

Used over heavy zinc phosphate coating to influence the lubrication property. Hence, this is quite successful in post phosphating applications like wire & tube drawing.

Manganese Phosphating

Surfix MN 641 / 643

This product impart a non-metallic, oil absorptive, crystalline, black/dark-grey Manganese-Iron phosphate coating on steel and iron surfaces to reduce wear and prevent galling of moving parts, such as bearing surfaces like pistons, piston rings, shafts, gears, cylinders and all types of machine parts wherever wear is a constant factor to be considered. Coating Wt. 750-3000 mg/sq.ft, meets IS specification 3618 / 1966 CLASS A.

Passivations For Phosphating

Surseal 701 / 706 / Ginthox NCR 60

These chrome / non-chrome products are added to final rinse after phosphating to improve corrosion resistance of the phosphate coat and adhesion with subsequent coat of paint.

Stainless Steel Polishing Process - Barrel

Brightening of stainless steel fastener, threaded bars, nuts etc. can be done with this process, involving cleaning, removal of scales, surface conditioning and brightening; finish can be retained by providing coat of wax on surface.

Degreasing Chemical

Steelex K 20 MVP / Gindox 281 MVP

This is a heavy duty alkaline cleaner designed for cleaning of different grades of Stainless Steel. It rapidly wets metal surfaces and displaces oils/greases/shop soils leaving work clean and ready for further processing.

Surface Conditioner (For 304 & 316 SS grade)

SURPICKEL 506 MVP / SURKLIN 112 A

These mixed products are acid base chemicals specially designed for treating stainless steel components before polishing, combination effectively removes mild oxide layer which is present on surface to obtain uniform itching.



Surface Conditioner (For 202 SS grade)

Surklin 120 LMV With Surklin122 LMV

These mixed products are acid base chemicals specially designed to activate 202 grade stainless steel components further enhancing the pickling effect, this combination effectively remove oxide layer which is present on the surface to obtain uniform itching.

Polishing

Surklin 112 B

This product is a blend of different surfactants helps in brightening / polishing of different grades of stainless steel, giving brightness promoting protective layer over the surface.

Passivation

Gictane PASS 3013 / Surseal SS 717

This is a sulfur & halogen free passivating agent for martensitic stainless steel and a critical step in maximizing inherent corrosion resistance of stainless steel. It is neither a scale removal treatment nor a coat of paint. Gictane PASS 3013 can remove surface contamination from work piece & maximize corrosion resistance of stainless steel.

Surseal 718(BAR)

Passivator for stainless steel, specially designed to improve the acid resistance & hence, very successful for the components within the vicinity of battery acid.

Surseal SS 715

Organic acid based passivator for stainless steel

Electropolishing For Stainless Steel

Gictane EP SS 3015

Electro-polishing of stainless steel, with selected additives, produces excellent mirror bright finish.

Vibratory & Tumbling Cleaners

Surklin 104 & 105 / Surklin 120 LMV & 122 LMV

Two part chemical, operates at ambient temperature. These are designed to enhance efficiency of vibratory & tumbling methods with respect to de-burrs, polishing in combination with selected media in water.

Surklin 140 / 126

Suitable vibratory & tumbling cleaner & brightening process for aluminium & its alloys.

Strippers For Paint & Powder Coat

Paintstrip 801 / 804 / 806

Paintstrip process is an acidic liquid solvent stripper suitable for Mild Steel and Aluminium & is specially formulated to remove different types of paints like epoxies, polyurethane, acrylics. Treatment time depends on type & thickness of paint film.



ANODISING

Cleaners

I-Fin AL SC 53

Non-caustic, non-silicate based high efficiency non-etching type cleaner for Aluminium.

Etchant Pretreatment Additives

I-Fin AL ETCH 724

Caustic based cleaner for chemical etching.

I-Fin AL ETCH 170

Etchant to attain satin finish.

Acidic Etchant

I-Fin AL E 10 / 11

Acidic Etchant to obtain micro-roughening prior to Anodizing.

Etchant Additives

I-Fin AL Antiprecipitation Additive

It prevents precipitation in alkaline/acidic etchant.

I-Fin AL Smoothing Agent

This alkaline etchant provides smooth & uniform surface.

I-Fin AL ETCH Fume Suppressant

It creates a compact foam layer during etching to avoid fuming.

Brightening Additive

I-Fin AL Chemical Brightener

Used as electrochemical polishing process to improve basic gloss of substrate.

Anodising Additive

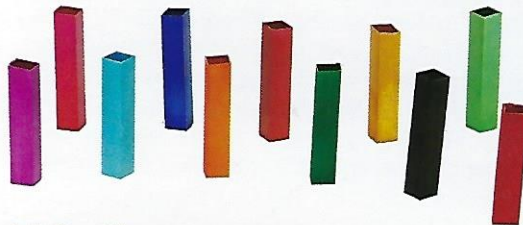
I-Fin AL Fume Suppressant

Used in Anodising bath to create a foam layer on top surface during Anodising of Aluminium parts.

Electrocolouring Process

I-Fin AL Bronze Sn / I-Fin AL Bronze Sn Salt / I-Fin AL Bronze Colour Salt G / Gold / Blue / Red / Silver

This product provides uniform dispersion along with very high penetration ability of dyes to Anodised articles. It contains combination of antioxidising and complexing substances with excellent penetrating effect. It provides a coloured coat varying from i) light Bronze to dark Bronze, finally jet-black ii) Gold or light Brass iii) blue iv) light red to black v) Silver.



Cold Sealing Process

I-Fin AL Cold Sealing Salt / 35 / 38 / 39 / 39 B / ES

I-Fin AL Cold sealing process contains reactive substances, which seals the coat and produces a protective film having low reactivity to weathering. Cold sealing products are not being decolorized than most of the immersion colourants.

Hot Sealing Process

I-Fin AL Hot Sealing Liquid 36 / 37 / Aluseal

Hot sealing liquid additives are developed for Anodised Aluminium parts with no loss on coloured surface. It offers high anti smutting effect without sacrificing seal quality.

Chromating Process

Hexavalent

Ginthox AL 990 / I-Fin AL Chromating / Phosphochrome

The liquid product is for yellow and green conversion chromating process, used on Aluminium and its alloys for producing a wide range of finish on surface; also serving as final finish for resistance against corrosion / decorative purposes.

Trivalent

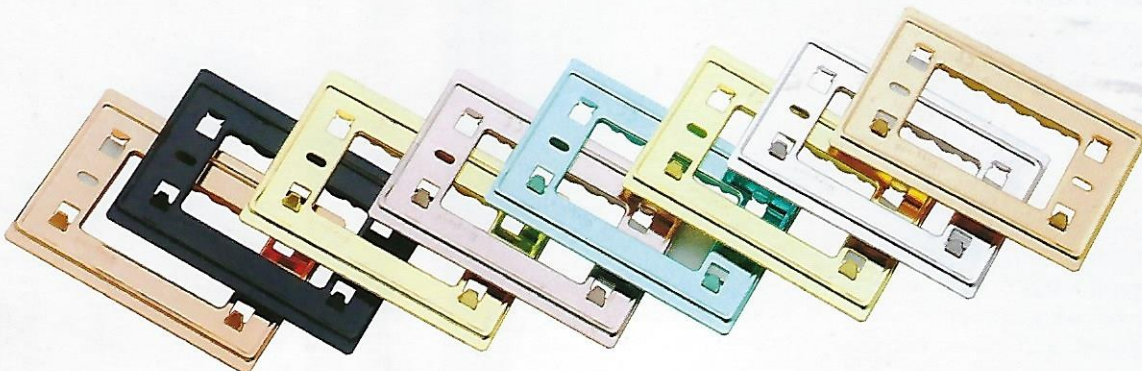
I-Fin AL TC 2801

This liquid product is for trivalent chromating for Aluminium & its alloys, produces iridescent, faintly blue to tan of finish on surface.

Dip Colouring Process

I-Fin AL Yellow / Green / Pink / Brown / Magenta / Blue / Red / Black

Wide Range of dip colouring dyes which pass over 8-9 cycle of UV or Sunlight.



PRECIOUS METALS & LACQUERS

Precious Metals

Precious metal plating, a high profile industry, in advanced countries, is fast gaining cognizance in developing world. It primarily covers Silver, Gold, Palladium, Rhodium, Ruthenium and Platinum with or without alloys. Though major application is for decorative purposes, precious metal plays extremely important role in electronics industry as well.

Noble metals deposits resistant to tarnish and corrosion with high conductive properties, also offering a spectrum of colours, very pleasing to the eye. Grauer & Weil (India) Limited offers very wide range of precious metal plating chemicals both decorative and industrial. A separate catalogue enlisting the complete range of such products is available. Prime products for Gold and Silver plating are as follows:

Silvernix Bright Silver Process

This is suitable for both vat and barrel plating normally used at room temperature. Deposits obtained are bright, hard, pore-free and ductile, specially recommended for electrical and electronic applications.

Argolome Bright Silver Process

This bright Silver process produces mirror bright, pure Silver deposit with pleasing colour. Process is based on fully organic addition agents and meets requirements of switchgear industry for passage of current recommended for applications of giftware and also for cutlery.

Growsil Bright Silver Process

Mirror bright, bluish white pure Silver plating process especially suited for anklets (payal), jewellery, cutlery, decorative items and such.

Argobrite Silver Process

Produces excellent whitish bright deposit, specially designed for coating of pure Silver on existing Silver. Organic based system, does not affect electrical resistance, also ideal choice for application on switch gear components.

Ecosilver

Ecosilver is an alkaline, room temperature, cyanide-free Silver plating process that produces semi-bright to bright Silver deposits. It is suitable for both rack and barrel plating. The process is primarily recommended for application in cutlery, electronics and electrical components.

Protectosil

Protectosil is an electrolytic hexavalent Chrome free passivation bath to impart anti-tarnish properties to Silver coatings. It imparts a thin transparent inorganic film that gives valuable and effective protection against sulphides and other corrosive materials in

atmosphere. It has insignificant effect on solderability and electrical conductivity thus recommended for electronics and electrical components.

Argocoat - 13

A chemisorption anti-tarnish process for silver.

Silvanguard 16

An excellent anti-tarnish process for silver and copper.

Gold Strikes

Growflash 100

Gold flash deposit of 24K pure gold colour on Growgold 2N 18 R & 3N processes.

Growgold TN

Gold strike minimises drag-in of contaminants into Gold plating bath and minimises effect of pores in base metal. It is recommended over Nickel, Copper & Copper Alloys.

GROWBOND TCL

A unique process that eliminates need of wood Nickel strike. It "de-chromes" and activates stainless steel surface and thereby imparts exceptional adhesion to base metal.

High Karat Golds

Growgold

Growgold high-karat Golds offer maximum purity of 22-24 karat. This process offers wide choice of colours. Deposits from the Growgold processes do not tarnish or discolour and offer excellent resistance to corrosion. Each process is easy to control both for rack and barrel operations and plate up to 5 microns without colour change or surface texture. Growgold processes are suitable for all decorative applications & are ideal for fine jewellery applications.

Flash/Colour Golds

Growgold STP 100 colour Gold offers wide spectrum of colours, from 14k pink to green to 24k Old English. Many colour finishes can be achieved from eight basic processes including subtle variations often difficult to capture & maintain. These alkaline baths are extremely stable, also offering excellent resistance to corrosion and tarnish.

GROWEL ADDITIVE P & C / GROWEL D SALT

An economical 24 K flash Gold process.

White Metal Technology

Palladium 100

This process produces white Palladium electrodeposit which approaches whiteness of bright Rhodium and thus an economical alternative to Rhodium. This process can also be used to create a barrier layer for Nickel-free applications.

Palinix 79

Palinix 79 produces Palladium nickel alloy deposits which are very brilliant and exceptionally hard (550 MHV₂₀), ideal for watch cases, connectors etc.

Pallico 20

Produces bright white palladium cobalt alloy deposit for decorative applications.

Growbronze

Growbronze is an excellent process for deposition of white Bronze on Copper, as top-coat in many decorative applications.

Nickel Free Technology

Growbronze Wt Make Up BL / Growel YL Make up / Bronzeglo WT Make Up / Palladium 100

Growbronze WT Make Up BL, Growel YL Make up Bronzeglo WT Make Up and Palladium 100 each coupled with Cuprobrite bright acid Copper processes provide alternate to Nickel undercoats for precious metal plating.

Electro Phoretic Lacquers

Growclear LB 40

Growclear LB 40 is an acrylic lacquer to be used as top-coat on electroplated or mechanically finished Gold, Silver, Nickel, Copper, Aluminium, satin Nickel, solid Brass, Brass plate and plated dye cast products. It has 3H-5H pencil hardness with excellent film clarity. Major applications are in imitation jewellery, hardware, pen and fitting components.

Growclear MB 60

Acrylic lacquer with high dissolved solids, provides excellent bright transparent coating, synergically improves brightness.

Growclear CB 105 / LC 125

Low temperature curing (at 125°C) electrophoretic lacquer with very good non-yellowing property therefore Ideal choice for transparent top-coats on white metals like Aluminum, Silver etc.

Growclear HAR 60 Y

Electrophoretic lacquer with high resistance to acetone rub test.

Growclear HBC / Growclear 6055 / 6022 / 6038

Growclear HBC is an advanced water based electrophoretic polyurethane lacquer. It is specifically designed for high build deposit requirements upto 25 microns having wide application in bathroom fittings, hardware, Gold plated jewellery, pen parts and variety of fitting items.

Growclear Stripper

Excellent stripper for all types of electrophoretic deposits.

Growclear Colour Dye

Growclear Colour Dye is one of the most wide applications of Growclear / Growclear LB 40 in golden and other colour dyes, particularly in imitation jewellery. Grauer & Weil offers wide range of colour dyes use in Growclear / Growclear LB 40 process to obtain variety of attractive eye-catching colour shades.

Top-Coat	Application	Features / Benefits
Low Build	Clear & coloured acrylic top-coat for decorative rack applied over Gold, Silver, Copper and Copper Alloys. Uses: Imitation Jewellery, Spectacle Frames, Gift Articles, Chandeliers, Photo-frames.	<ul style="list-style-type: none">• Uniform coverage• Thickness upto 8 microns achievable• Improves wear, even at low gold deposit• Excellent film clarity• Variety / possibility of pleasant shades including Gold
High Build	Clear and colour acrylic urethane polymer top-coats applied over Gold, Silver, Copper and Copper Alloys. Uses: Door Hardware, Bathroom Fittings, Spectacle Frames and other articles requiring high coating thicknesses.	<ul style="list-style-type: none">• Uniform coverage• Thickness up to 25 microns achievable• Excellent film clarity• Upto 90% reduction of VOC's• Excellent wear resistance• Limited shades & finishes



PCB & ELECTRONICS

Chemicals For Printed Circuit Boards

The Ginplate range of process chemicals are designed for manufacture of single sided, double sided and multilayer thru-hole plated PCB boards to provide unique advantages such as superior end-product quality, process reliability, ease of operational control and economy.

Chemicals For Multilayer PCBs

Ginplate MLB 495

Ginplate MLB 495 predisposes dielectric to exhibit a clean micro-roughened, micro-porous thru-hole topography of multilayer PCB. It is used prior to permanganate base etch back process, to achieve perfect three pin connection.

Ginplate MLB 497

Ginplate MLB 497 is based on permanganate chemistry, providing controlled attack on organic substrate. This removes presensitized dielectric materials from inner layer and hole wall surfaces creating 3-point connection sites for inner layers. It also provides microporous resin topography ideally suited for excellent adhesion of subsequent Copper plating.

Ginplate MLB 498

Effectively reduces all Manganese compound residues on board surfaces and hole walls to a soluble state and the surface is left ultra-clean. Unwanted Copper oxides are also removed from surface to promote optimum Copper to Copper bonding. Glass etching additive can also be incorporated if desired.

Cleaners / Cleaner Conditioners

Ginplate MB 438

This is a unique, versatile black Copper oxide system; has a unique initiator that ensures uniform colour of the oxide. It also improves bond strength of inner layer in fabrication on MLB, to resist thermal degradation during reflow, hot air levelling or wave soldering. It increases the bond strength of solder masks used in SMOBC process.

Ginplate CC 5725

New generation cleaner / conditioner for PCB through hole plating, allowing 100% optical coverage of electroless Copper plating, virtually allowing pin-hole-free electroless Copper coverage when observed at 80% magnification.

Ginplate CC 50

A mildly alkaline liquid cleaner especially formulated for effective soak cleaning of printed circuit boards to remove tarnish, soils, finger prints and drilling debris from the holes. It conditions the hole wall to facilitate uniform activation, thus promotes a uniform fine grained adherent deposit from subsequent Ginplate electroless Copper bath.

Ginplate PC 453

An alkaline cleaner which removes oil, soils, finger prints and drilling debris. This is a general purpose cleaner for PCBs, used for surface preparation before black oxide; solder mask applications and such PCB pretreatment processes.

Ginplate AD 482

An acidic cleaner used to clean, condition and activate Copper surfaces prior to pattern plating. It removes binder residues of broad range dry film photo resist after developing and prior to pattern plating operations.

Ginplate PC 455

An ideal acidic liquid cleaner designed to remove photo resist binder residues from Copper surfaces of printed circuit boards.

Plated Thru-Hole Pretreatment

Ginplate AD 481

Provides clean, uniformly etched Copper surface without affecting dielectric, using persulphate based material, resulting in controlled etching action and long solution life.

Ginplate E 2743

Economical hydrogen peroxide sulphuric acid etchant replaces costly persulphate baths, controls etch rate and inhibits decomposition of hydrogen peroxide. Closed loop regeneration system to reduce waste treatment costs.

Ginplate PC 236

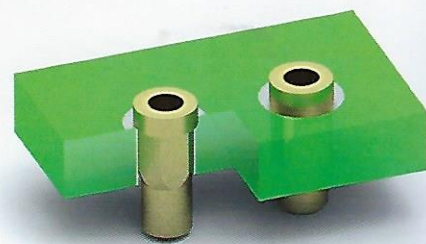
A powdered product mixed with hydrochloric acid to prepare a pre-dip solution prior to activation. Ginplate Activator 444 solution; has controlled acidity thereby ideally suitable for thru-hole plating of multilayer boards.

Ginplate Activator 444

An advanced single step, highly concentrated Tantalum Palladium colloidal solution to promote superior electroless Copper coverage and better adhesion in holes as well as on Copper surface of printed Circuit Boards. Due to its peculiar property of small colloidal size, it can be operated at lower acidity facilitating the process of multilayer PCBs to avoid pink ring phenomenon.

Ginplate PA 493

Improves initial deposition rate of subsequent electroless Copper, promoting dense, fine grained deposits, ensures uniform, strong bonding of electroless Copper deposits to Copper laminate and consistently good coverage of electroless Copper plated thru-holes.



Electroless Copper (Panel Plating)

Ginplate Cu 406

Highly stable, room temperature low build, electroless Copper plating bath designed for processing of printed circuit boards to impart bright, dense, fine grained deposits rosy pink in colour and facilitates easy inspection of thruholes after plating.

Ginplate Cu 703

Stable, high build, electroless Copper plating process, operating at 40-42°C, produces fine grained, ductile, electroless Copper deposit on conditioned / catalysed thruhole wall of PCBs, also facilitates higher rate of production.

Ginplate Cu 701

Highly stable, room temperature, medium build, electroless Copper plating bath for PCBs, highly economical process having easy operation control.

Electrolytic Plating (Pattern Plating)

Cuprobrite HT Process

High throw ductile stable, easy to operate and economical, bright acid Copper plating process, specially designed for through-hole plating in printed circuit industry, employs single additive.

Ginplate CU 945 / 944

A contemporary single additive acid Copper plating system for PCB fabrication especially designed to be used in manufacture of Printed Circuit Boards with high density circuits and high aspect ratios. Copper deposit is highly ductile and uniform having thickness ratio of 1:1 on surface to hole wall, capable of withstanding multiple thermal shock cycles conforming to international standards.

Stannolume Acid Tin Process

The Stannolume bright Tin process employs unique combination of carrier additive and brightener to produce mirror bright, silvery white deposits having excellent solderability and ductility characteristics and meeting stringent specifications demanded by electronic and electrical industries.

Sopal-64 Process

Designed specially for PCB applications to produce satin finishes of Tin Lead alloys, plating around eutectic ratio of 63% Tin-37% lead, exhibiting excellent solderability and shelf life. The alloy deposits can be reflowed to bright alloy by hot oil.

SMT / Electronics Applications

Immersion Gold For PCB (Aurowel)

Self limiting Gold process specially designed for SMT PCB's (HASL free option); plates from 0.03 to 0.10 micron of Gold over freshly deposited electroless Nickel. Provides extremely flat topography, having excellent solderability & bondability.

Gintek SN

Gintek SN immersion Tin plating process specially designed for SMT PCB's (HASL free option), plates from 0.65 to 1.3 micron of Tin over Copper providing extremely flat topography having excellent solderability & bond ability.

Ginplate AG

An innovative immersion Silver plating process.

Gintek Plus

Organic surface preservative mainly designed for surface mount technology printed circuit boards to protect Copper circuitry over a long period and offers flat coatings that are compatible with various fluxes for surface mounting of electronic components.

Stripper For Tin / Tin-Lead In SMOBC For PCB

Metstrip TL 142

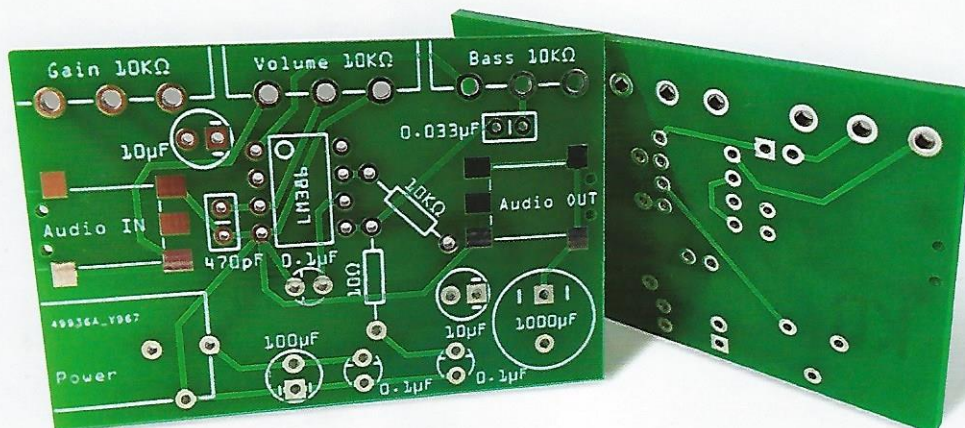
Specially stabilised formulation used with hydrogen peroxide for rapid single step stripping of Solder and other Tin alloys from Copper clad printed circuit boards. This is a hydrogen peroxide based stripper having minimum attack on base Copper and can hold more Tin or Lead content without affecting performance.

Growstrip TL 1000

A fluoride free non-exothermic stripper for Tin / Tin Lead alloy from Copper without sludge formation and fumes, can be used as spray or dip application.

Growstrip TL 3000 SP

Mild exothermic Tin, Tin-Lead stripper for PCB, by spray application, providing short dwell time over long bath life span, allowing negligible Copper etching.



Electroless Copper (Panel Plating)

Ginplate Cu 406

Highly stable, room temperature low build, electroless Copper plating bath designed for processing of printed circuit boards to impart bright, dense, fine grained deposits rosy pink in colour and facilitates easy inspection of thruholes after plating.

Ginplate Cu 703

Stable, high build, electroless Copper plating process, operating at 40-42°C, produces fine grained, ductile, electroless Copper deposit on conditioned / catalysed thruhole wall of PCBs, also facilitates higher rate of production.

Ginplate Cu 701

Highly stable, room temperature, medium build, electroless Copper plating bath for PCBs, highly economical process having easy operation control.

Electrolytic Plating (Pattern Plating)

Cuprobrite HT Process

High throw ductile stable, easy to operate and economical, bright acid Copper plating process, specially designed for through-hole plating in printed circuit industry, employs single additive.

Ginplate CU 945 / 944

A contemporary single additive acid Copper plating system for PCB fabrication especially designed to be used in manufacture of Printed Circuit Boards with high density circuits and high aspect ratios. Copper deposit is highly ductile and uniform having thickness ratio of 1:1 on surface to hole wall, capable of withstanding multiple thermal shock cycles conforming to international standards.

Stannolume Acid Tin Process

The Stannolume bright Tin process employs unique combination of carrier additive and brightener to produce mirror bright, silvery white deposits having excellent solderability and ductility characteristics and meeting stringent specifications demanded by electronic and electrical industries.

Sopal-64 Process

Designed specially for PCB applications to produce satin finishes of Tin Lead alloys, plating around eutectic ratio of 63% Tin-37% lead, exhibiting excellent solderability and shelf life. The alloy deposits can be reflowed to bright alloy by hot oil.

SMT / Electronics Applications

Immersion Gold For PCB (Aurowel)

Self limiting Gold process specially designed for SMT PCB's (HASL free option); plates from 0.03 to 0.10 micron of Gold over freshly deposited electroless Nickel. Provides extremely flat topography, having excellent solderability & bondability.

Gintek SN

Gintek SN immersion Tin plating process specially designed for SMT PCB's (HASL free option), plates from 0.65 to 1.3 micron of Tin over Copper providing extremely flat topography having excellent solderability & bond ability.

Ginplate AG

An innovative immersion Silver plating process.

Gintek Plus

Organic surface preservative mainly designed for surface mount technology printed circuit boards to protect Copper circuitary over a long period and offers flat coatings that are compatible with various fluxes for surface mounting of electronic components.

Stripper For Tin / Tin-Lead In SMOBC For PCB

Metstrip TL 142

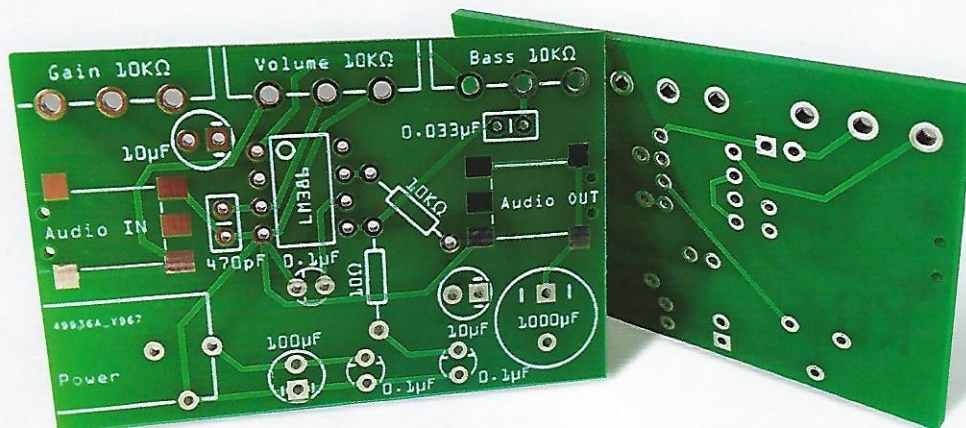
Specially stabilised formulation used with hydrogen peroxide for rapid single step stripping of Solder and other Tin alloys from Copper clad printed circuit boards. This is a hydrogen peroxide based stripper having minimum attack on base Copper and can hold more Tin or Lead content without affecting performance.

Growstrip TL 1000

A fluoride free non-exothermic stripper for Tin / Tin Lead alloy from Copper without sludge formation and fumes, can be used as spray or dip application.

Growstrip TL 3000 SP

Mild exothermic Tin, Tin-Lead stripper for PCB, by spray application, providing short dwell time over long bath life span, allowing negligible Copper etching.



Strippers

These processes strip plated coatings from polished metal surfaces without affecting base metal these are used electrolytically or by simple immersion in cold or hot conditions. Small parts can also be stripped in tumbling barrels.

Alkaline Cyanide Metstrip S 60

Powdered cyanide based product dissolved in water to strip Nickel, Copper, Cadmium, Zinc and Silver from Steel, Iron alloys and Magnesium room temperature to 50°C without current, also available without pre-mixed sodium cyanide as Metstrips 165 S & hence it can also be used in combination with sodium cyanide while actual usage.

Alkaline Non-Cyanide Metstrip EN 79

A non-cyanide alkaline stripper that dissolves high phosphorous electroless Nickel deposits from Steel by immersion as also to strip electroplated Nickel from Steel, Copper, Copper alloys.

Metstrip S 180 / 186

High performance non-cyanide alkaline immersion stripper for removal of sulphamate electroless bright & dull Nickel from Steel, also for stripping deposited Nickel & Copper coating from ABS substrate.

Metstrip T

Alkaline non-cyanide immersion stripper for Tin and Tin alloys, does not attack Steel, Stainless Steel, Copper, Brass or Magnesium.

Growstrip AU 197

Newly developed dip process for stripping Gold from Nickel, Stainless Steel, Brass and Copper. Gold can be recovered from the solution by using Metorec Au 97.

Copstrip 28

Alkaline non-cyanide immersion stripper designed to remove copper from steel especially, plated stopoff copper on heat treated steel.

Acidic

Metstrip 165 S

A compound added to acids for rapid stripping of Nickel, Tin, Lead, Zinc and Cadmium from Copper base alloys.

Metstrip E 113 / Metstrip E 114

Acid based powdered compound used along with this liquid additive to electrolytically strip duplex Nickel, semi-bright Nickel, electroless Nickel and other metals like Zinc, Tin, Copper from mild steel base.

Metstrip Rack Stripper

Unique electrolytic stripper efficiently removes Copper, Nickel & Chrome deposits from contact points of used racks, not etching the rack contact points and thereby, firm contact to the basis substrates are maintained even after repeated usage.

Metstrip S 280

Efficiently removes Chrome & Nickel plating from Copper, Nickel & Chrome plated zinc based die-castings. Stripping process is stopped soon the copper layer gets exposed & hence, does not attack the base materials. Copper surface could be mechanically polished & could be taken for subsequent replating.

Paintstrip 801

Paintstrip 801 is an acidic liquid solvent paint stripper. It is specially formulated to remove different types of paints like epoxies, polyurethane, acrylics etc. on ferrous substrate.

Paintstrip 804

Paintstrip 804 is a neutral liquid solvent paint stripper. It is specially formulated to remove different types of paints like epoxies, polyurethane, acrylic etc. on Aluminium & its alloy.

Growel D'chrome

D'chrome is newly developed product utilising 20% sulfuric acid for removing chrome without attacking the surface of copper specially for Roto gravure cylinder.



AVIATION INDUSTRY

Aerospace industry demands tailor made products of extremely high standards and consistent quality. We are **AS / EN 9100:2009** certified & also, registered suppliers & offer large range of surface treatment and coating processes for aerospace and defence industries, supported by deep technical expertise and also state of the art laboratory facility utilising both destructive and non-destructive techniques.

We supply the following technologies to process parts for aviation industries:

Cadmium	Cadal Cadmium / Cadmium Brilliant
Zinc Plating	Zincbrite Ultra / Zinthobrite 978 / Uniglo
Zinc Alloy Plating	Zincalume series
Trivalent Chromates	Trichrome series
Nickel Plating	Ductolite Multilayer Nickel Plating process / Nickel Sulphamate
Chrome Plating	Durocrack Chrome / HENE L 600
Specialized Plating	Sopal LTC
Tin & Tin Alloy	Stannolume / Tinnomatte Acid Tin / Stannobrite SN / Sopal 64
Phosphating	Surfix Series / Surfix Eco 100
Electroless Nickel	Ginplate series
Blackening Process	Gibonol S 34 / Gibonol Instablack 33 / Gibonol S 35
Oils & Lubricants	Grodal Cutsol series / Multi Cut SS 40 / Grodal RPWB 500 / GPS 40
Anodising	i-Fin Al series
Plating on Aluminium & Magnesium	Ginbond, Alzincate etc
Paints & Coatings	Cockpit Enamel Grey / Primer AK070 / Primer BL020 / Enamel AS 1115 Matt / RADOM Grey



INTERMEDIATES

At the heart of modern plating technologies lies a complex chain of organic chemistry. These intermediates form the backbone of today's additive systems. They help to provide exotic finishes with exceptional properties to various substrates. Grauer & Weil (India) Limited is one of the very few producers of such a range of specialised chemical intermediates. Sustained efforts of the company has often unravelled the sheer prowess of plating sciences.

NICKEL PLATING ADDITIVES

Product Name	Chemical Name
Solar SAS 144	Sodium Allyl Sulphonate
Solar BEO 252	2-Butyne-1, 4-Diol Ethoxylate
Solar PS	Sodium Propyne Sulphonate
Solar BBIS	Bis-Benzene Sulphonylimide
Solar BMP 176	2-Butyne-1, 4-Diol Propoxylate
Solar PPS -OH 8000	1-(2 Hydroxy-3- Sulphopropyl Pyridinium Hydroxide, Inner Salt
Solar DEP 151	N, N-Diethyl -2-Propyne-1-Amine
Solar DEP 50	N, N'-Diethyl-2-Propyne-Ammonium Sulphate
Solar FE DEP	N, N'-Diethyl-2-Propyne-Ammonium Formate
Solar DMP	1-Dimethylamino-2-Propyne
Solar PME 900	Propargyl Alcohol Ethoxylate
Solar TM	Thiomalic Acid
Solar ATPN	Carboxyethyl Isothiuronium Betaine
Solar BoZ	1, 4, Butyne - Diol
Solar FBS	Formaldehyde reaction product
Solar STPS	Para toluene Sulphinic Acid, Sodium Salt
Solar Ni 1010	Sodium Benzene Sulphinic

ZINC PLATING ADDITIVES

Product Name	Chemical Name
Solar BA 77	3-Butene-2-one-4-phenyl, (Benzylidene Acetone)
Solar SCS 40	Sodium-4-(1-Methyl Ethyl) Benzene Sulphonate
Solar SES	Sodium-2-Ethyl-Hexyl-sulphate
Solar BPC	Benzyl-Pyridinium-3 Carboxylate
Solar TU	2-Thiouracil
Additive 4073	Polyalcohol Ether
Additive 8906	Formaldehyde Condensate Naphthalene Sulphonic Acid, Sodium Salt
Additive N 100	Niacin
Additive N 200	Anisaldehyde
Additive GA 78	Ortho Chloro Benzaldehyde Chloride
Solar SC 2812	Polymer
Solar IME	Imidazole - Epichlorohydrin
Solar EHP	Poly Ethylene Imine modified
Solar DE	Cationic Amine Polymer
Solar OP 10	Long chain Phenol Ethoxylate
Solar OPES	Phenol Ether Sulphate
Solar GES	Ethoxylated Glycerin



COPPER PLATING ADDITIVES

Product Name

Chemical Name

Solar ZPS	1-Propane Sulphonic Acid, 3 - (2-Benzothiazolylthio) - Sodium Salt
Solar SPDS	Bis-(Sodium Sulphopropyl) - disulphide
Solar UTPS	Propane Sulphonic Acid, 3 - (Aminoimino-Methyl) - thiol
Solar EPS	1-Propane Sulphonic Acid 3 - [(Ethoxy-Thioxomethyl)-thiol] - Potassium Salt
Solar DMPS	N,N'-Dimethyl-Dithio Carbamyl Propyl Sulphonic Acid, Sodium Salt
Solar TH	2 - Thiohydantoin
Solar MBIS	1 - Propane Sulphonic Acid, 3 - (2-Mercaptobenzimidazolyl) Salt
Solar BYD	Dye Stuff - Yellow
Grolite R 304 L	Dye Stuff - Red
Grolite R 305 L	Dye Stuff - Mauve
Grolite R 307	Dye Stuff - Blue

MISCELLANEOUS ADDITIVES

Product Name

Chemical Name

GOLD

Solar 3-PSA	3-Pyridine Sulphonic Acid
-------------	---------------------------

NICKEL STRIPPER

Solar SMBS 96	Sodium Meta Nitro Benzene Sulphonate
---------------	--------------------------------------

CHROMIUM

Solar MDS	Sodium & Potassium salt of Methane Disulphonic Acid
Solar GWL	Wetting Agent to be used as Fume suppressant for chrome baths

SILVER

Solar Ag1000	Mixture of sulphurous organic compound
--------------	--



PROTECTIVE POST TREATMENT

These products are applied after conversion coating to protect against tarnishing, staining and corrosion.

Zincaseal / Zincoseal S

A protective reactive sealant to be applied on passivated Zinc plated deposits to seal pores or cracks, enhance corrosion protection up to 100 hrs. as per ASTM B117 having leaching effect on applied passivation; not suitable for olive & black passivated components.

Zincaseal SB 201 / 202

An innovative solvent based organic top-coat, specially designed to be applied on all types of dried passivated components to improve corrosion resistance of deposits.

Zincoseal W

A wax-emulsion based protective top-coat, especially designed to improve corrosion resistance on threaded portions of fastener components and reduce coefficient friction.

Zincoseal 605 / 605 L

A silicium based protective top-coat, especially designed to improve corrosion resistance on threaded portions of fastener components, self lubricated version to influence frictional property.

Zincoseal 490 / 490 L

A mix organo-mineral protective top-coat, especially designed to improve corrosion resistance.

Zincoseal 444 S

This is unique composition of organic polymer and nano particles of silicium dioxide, free from Chromium and solvent used for applying transparent anticorrosion coatings on metallic surfaces. It can be applied to Zinc plated Steel (both passivated and non-passivated), galvanized Steel, Nickel, Aluminum and non - ferrous metals.

Aquaguard 605 / 606

An ideal emulsion co-polymer is developed to be applied on passivated Zinc plated components to achieve highest degree of corrosion resistance.

Coroguard 3029 / 3039

An innovative trivalent chrome - based post passivation fixing process. It is specially designed to be applied on all types of black passivated zinc plated components to form 2nd layer of chromate improve overall corrosion resistance of the deposit.

Aquaguard 302 / 500

Chrome free water-based lacquer system multifold corrosion protection ability of Zinc plated components.

Aquaguard 305

This is an improved water-based lacquer which enhances corrosion resistance of Zinc plated parts to a great extent. Components processed with this lacquer withstand three or four times more in salt spray than normal plated components.

Aquaguard 400

A unique high corrosion resistant aqueous organic coating, specially recommended for protection of plated surfaces. On chromate passivated zinc deposits it improves service life of plated component to remarkable extent.

Aquaguard 401

Chrome free, water-based resin polymer, provides excellent corrosion resistance while applied on Zinc plated components.

Aquaguard 401 / 402 B / 405 B

Black pigmented water-based resin polymer, provides excellent corrosion resistance while applied on black chromated Zinc plated components.

Zincroblack Post Dip / M / 101 Post Dip

Chrome free black pigmented water-based resin polymer, provides excellent corrosion resistance while applied on the black chromate Zinc plated components.



MISCELLANEOUS PRODUCTS

Blackening

Gibonol S 34

Produces beautiful black oxide coatings on a wide range of Iron and Steel alloys.

Gibonol S 35

Process gives uniform black oxide coatings on a wide range of stainless steel alloys (304 / 316 / 317 / 400).

Gibonol Auto Black

Produces beautiful black oxide coatings on a wide range of Iron and Steel alloys at room temperature.

Surflix Smart Black

It is thermal blackening process producing beautiful black polymer coating on iron and Steel alloys.

Gibonol Instablack 33

Gibonol Instablack 33 is room temperature operating blackening chemical for cold & hot rolled carbon steels, alloy steels, tool steels, cast iron, forged steels and powdered metals. A rich jet black finish is developed on surface on application of rust preventive oil. This compound can also be used alongwith surface conditioner Surcon 351 depending on type of material in process. This is an energy saving cost effective blackening process.

Specialised Process

Nickel Sulphamate

This is a purified concentrate which is specially treated to remove organic and inorganic impurities. Nickel deposit obtained from this product is stress free, fine grained and ductile; very useful product for electroforming Nickel screen moulds & dies.

Basic Chemicals

Several basic salts e.g. Nickel Sulphate, Nickel Chloride, Nickel Carbonate, Stannous Sulphate, Zinc Oxide, Ammonium Chloride, Tin pyrophosphate, Chromic acid etc. are manufactured and supplied, to form basic electrolytes.



MISCELLANEOUS PRODUCTS

Blackening

Gibonol S 34

Produces beautiful black oxide coatings on a wide range of Iron and Steel alloys.

Gibonol S 35

Process gives uniform black oxide coatings on a wide range of stainless steel alloys (304 / 316 / 317 / 400).

Gibonol Auto Black

Produces beautiful black oxide coatings on a wide range of Iron and Steel alloys at room temperature.

Surflix Smart Black

It is thermal blackening process producing beautiful black polymer coating on iron and Steel alloys.

Gibonol Instablack 33

Gibonol Instablack 33 is room temperature operating blackening chemical for cold & hot rolled carbon steels, alloy steels, tool steels, cast iron, forged steels and powdered metals. A rich jet black finish is developed on surface on application of rust preventive oil. This compound can also be used alongwith surface conditioner Surcon 351 depending on type of material in process. This is an energy saving cost effective blackening process.

Specialised Process

Nickel Sulphamate

This is a purified concentrate which is specially treated to remove organic and inorganic impurities. Nickel deposit obtained from this product is stress free, fine grained and ductile; very useful product for electroforming Nickel screen moulds & dies.

Basic Chemicals

Several basic salts e.g. Nickel Sulphate, Nickel Chloride, Nickel Carbonate, Stannous Sulphate, Zinc Oxide, Ammonium Chloride, Tin pyrophosphate, Chromic acid etc. are manufactured and supplied, to form basic electrolytes.



ZINC FLAKE COATINGS

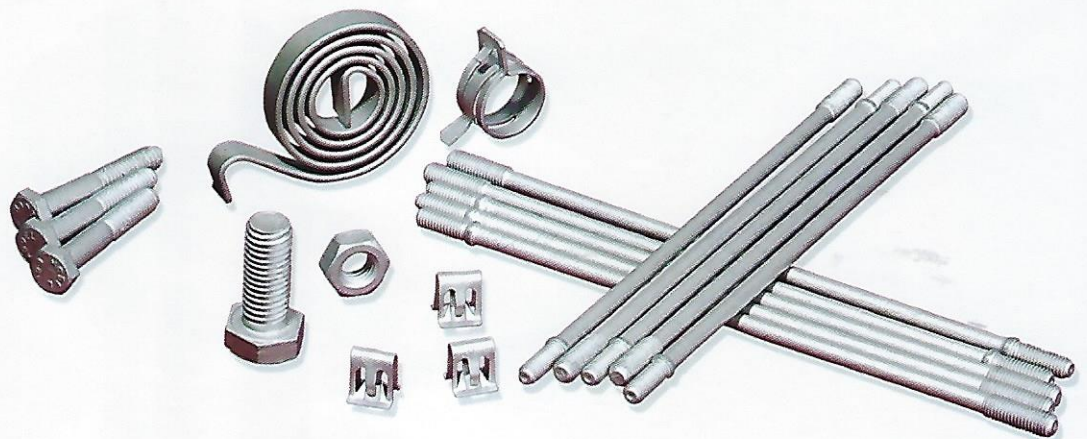


Zinc Aluminium Flake Coating - Dacromet® / Geomet® Process :

Grauer & Weil (India) Limited has joined hands with M/s NOF Metal Coating's Asia Pacific Co. Ltd. of Japan introduce world famous 'Dacrotizing / Geomet' processes in India, which provide outstanding protection metallic surfaces against corrosion at a very low film thickness of 6-8 microns. Both Dacromet® & Geomet® Processes comprise of uniform deposition of overlapping Zinc, Aluminium Flakes on inorganic binder. Dacromet process contains hexavalent Chrome whereas. Geomet process is totally chrome free (hence, OSH compliant).

Dacromet® / Geomet® process can be used for protection of various items like fasteners, springs, break disc etc. The process involves two coats / two bake to get the desired results. Coefficient of friction for fasteners can be modified using additional coat of top coat. The application of top coat also improves protection against corrosion. Growel can supply chemicals and equipment required for Dacromet® / Geomet® process.

Name of Product	Properties	Application/Industry
BASECOAT	Zinc aluminium flakes with different binders in silver colour.	
Dacromet 310 / 320	Hexavalent chrome based zinc aluminium fake coating.	Fasteners, nuts, springs, hose clamps etc.
Dacromet 500	Hexavalent chrome based zinc aluminium fake coating self lubricated.	Automobile, construction, wind mill.
Geomet 720	Silicate based zinc aluminium flake coating completely free from chromium.	Fasteners, nuts, springs, hose clamps, automobile, construction.
Geomet 321	Silicate based zinc aluminium flake coating completely free from chromium.	Fasteners, nuts, springs, hose clamps, automobile, construction.
Geomet 500	Silicate based zinc aluminium flake coating completely free from chromium. Self lubricated.	Automobile, construction, wind mill etc.
Geomet 320 / 360	Silicate based zinc aluminium flake coating completely free from chromium. High in aluminium, better heat resistance.	Specifically for brake disc & automobile



INDUSTRIAL LUBRICANTS

Growel offers a wide range of specialized lubricants and oils for varied industrial applications. With the use of the latest and state of the art technologies, the products are designed to give high performance and provide cost effective solutions.

They are blended from premium quality refined / hydro treated base oils fortified with synergistic combinations of additive system and premium quality synthetic components. While formulating the products, due considerations are given to environment friendly and safety measures at the workplace.

The products conform to stringent international standards and assure optimum benefit to end users. They are designed for a variety of end-use applications in the steel, engineering, automobile, machine tool, fastener and other metal processing / machining industries. Our products are long lasting and better performing as compared to other conventional products.

Rust Preventives

High quality, dewatering rust preventives with excellent corrosion inhibition solvent based, oil based and water based.

Cutting Oils

Specially designed for all machining operations cutting oils for ferrous and non ferrous metal in the form of neat oil, soluble oil, semi synthetic & synthetic cutting oil.

Hydraulic Oils

Anti-wear, anti-rust and anti-oxidant zinc based hydraulic oils with high viscosity index improvers.

Heat Treatment Fluids

High performance quenching oil and PAG based polymer quenchents.

Copper Wire Extendible, Drawing Fluid

Synthetic ester based wire drawing lubricant for rod, intermediate and fine copper wire.

Aluminium Wire Drawing Oil

Excellent lubrication, high cooling power and better detachment property for Aluminium drawing.

Glass Grinding Fluid

Synthetic grinding fluids for glass and eco friendly product.

Fine Blanking

Chlorinated additives with high EP gives superior performance to tool life.

Industrial Gear Oils

It is based on anti-wear, anti-rust and anti-oxidant additives.

Copper Tube Drawing Oils

Free from mineral base oil and specially designed for drawing of copper pipes.

EDM OIL

High flash low viscosity electric discharge machine oil.

Chain Oil

Synthetic high flash & good wetting property chain oil.

Vanishing & Deep Draw Oils

No residue vanishing oil for stamping application. High EP property viscous drawing oils for ferrous & non ferrous.



RESEARCH & DEVELOPMENT AND QUALITY ASSURANCE

Fundamental and applied research forms backbone of Growel's wide range of quality products. The prestigious Indian Council of Science and Technology has recognised Growel's R&D division for chemicals and paints. Engineering division comprises of a strong team of engineers who work relentlessly to consolidate the latest technologies and offer innovatively tailor made product ranges to our valued customers.

Led by highly trained and qualified technocrats, R&D center at Growel propels the process of maintaining its technological leadership in corrosion protection industry by quickly adopting current market trends while retaining benchmark international standards.

Our strong belief that advancement must be harnessed by encouraging indigenous creativity continuously helps us innovate and better our past achievements.

Our highly qualified and experienced team of motivated researchers, who are ably aided with modern instrumentation at laboratory, have brought many industry firsts to our credit.

The R&D center is equipped with sophisticated analytical facilities and is supported by a full scale Pilot Plant.

Growel's well-equipped, state-of-the-art laboratories offer comprehensive testing services. Our instrumental laboratory has full range of testing capabilities to characterize materials of all classes for purity, properties, and more. Our microscopy and mechanical analysis instrumentation can provide information on mechanical properties and/or material morphology. Finally, we have facilities to conduct desired stability or shelf-life study, as well as corresponding analytical testing to evaluate the effects of storage conditions.





Our specialised instrumentation facilities are as listed:

- AAS (ATOMIC ABSORPTION SPECTROPHOTOMETER)
- CONDUCTIVITY METER
- COULOSCOPE
- CUT OFF MACHINE
- DFT METER / MIL GAUGE
- DUALSCOPE MPOR FP USB
- ENVIRONMENTAL CHAMBER
- FTIR
- FOAM BATH
- FISCHERSCOPE X-RAY XDV-SDD
- GRAPHIC STEP
- GAS CHROMATOGRAPH
- GLOSS-O-METER
- HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC)
- HUMIDITY CHAMBER
- ION CHROMATOGRAPHY
- INTRON
- IVF SMART QUENCH
- INVERTED MICROSCOPE
- MICROHARDNESS TESTER
- pH METER
- POLISHING MACHINE
- QUV APPARATUS
- REFRACTOMETER
- STEREO MICROSCOPE
- SALT SPRAY TESTER
- SALT SPRAY CHAMBER
- SPECTROPHOTOMETER
- SURFACE ROUGHNESS TESTER
- SCHATZ ANALYZER EQUIPMENT
- TOTAL ORGANIC CARBON ANALYZER
- UV VISIBLE SPECTROPHOTOMETER
- VISCOSITY BATH
- VAPOUR DEGREASER

PLANT & EQUIPMENT

Manual to fully automatic p.l.c. controlled plating systems

Manufacturing of plating plants involves virtually all the branches of engineering, from fabrication of steel / steel alloys, polymers, glass films and other non-ferrous materials like titanium, etc., to hydraulics, pneumatics and electronics. In recent years, with the availability of new materials and construction techniques, polypropylene, PVC and other variants of thermo polymers have become the most preferred medium of construction in the designs of plating plants. They are highly resistant to corrosion, inherent to plating environments, and therefore offer a significant advantage over the use of conventional materials i.e., steel / stainless steel etc. However, the fabrication of industrial polymers requires high levels of skills and special techniques.

Plating Plants can be configured in various shapes based on space available.

Plant Layout is selected depending on:

- Type of components to be processed
- Throughput desired
- Flexibility of operation

Typical Layouts could be as under:

- Straight Line
- Two or multiple lines
- L-shaped

In case of high volume production of repetitive nature with fixed process cycles, return type of plants with minimal cycle time of three to five minutes are suited. They offer ease of online jigging where the lot sizes are relatively small. The plants involve heavy structural design and are very robust.

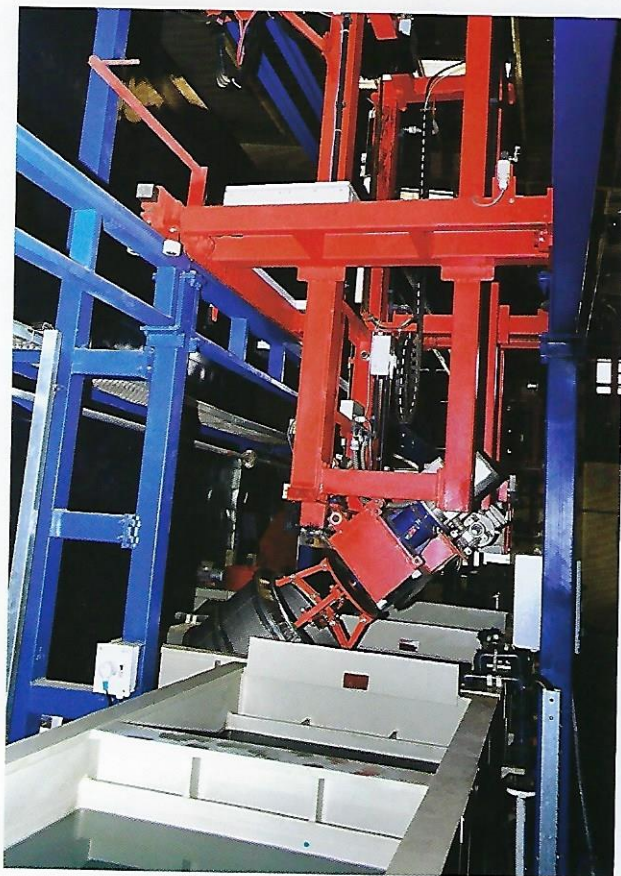
Transporters

There are numerous variants of motorised transport system. Different types of transport wagons are available to suit specific requirements. Transport wagons facilitate hoist and traverse movements of Racks and Barrels and can have special functions like dunking, tilting, barrel rotation and drip trays for reduced solution carry overs.

The transport wagons can be guided in:

- Ceiling suspended tracks
- Floor mounted portal structures - TYPE D
- In a laterally arranged track system (guidance above tank) - TYPE Skid
- In a laterally arranged track system (guidance below tank) - TYPE BU.

Transport Wagons can be precisely stopped at desired position by using proximities, laser or linear positioning systems. Growel has designed wide range of transport wagons capable of operating with traverse speeds of upto 50m/min and pay loads of upto 8 Tons.



Effluent Treatment Plants

Our systems for the treatment of Effluents in surface finishing industry are based on the latest international technique for waste minimisation at source. This highly evolved technique incorporates an effective 'Rinse Technique' with an integrated 'in-line' water re-circulation system.

Our range of supplies include:

- PLC controlled, fully automatic in-line water re-circulation system, based on ION Exchange principle. The system can treat water, suitable for any metal finishing application.
- Fully automatic or semi-automatic effluent treatment plants for chrome, cyanide, nitrite, phosphate, heavy metals, acids and alkalis. The plants invariably consist of rugged filter press for effective de-watering of sludge.
- Recovery systems for chromium, heavy metal, precious metals, acids, etc.
- Sophisticated system like Ultra-filtration for treatment of emulsions and Reverse Osmosis (RO) for removal of Total Dissolved Solids (TDS).
- Vacuum Evaporators.



EFFLUENT TREATMENT & RECOVERY

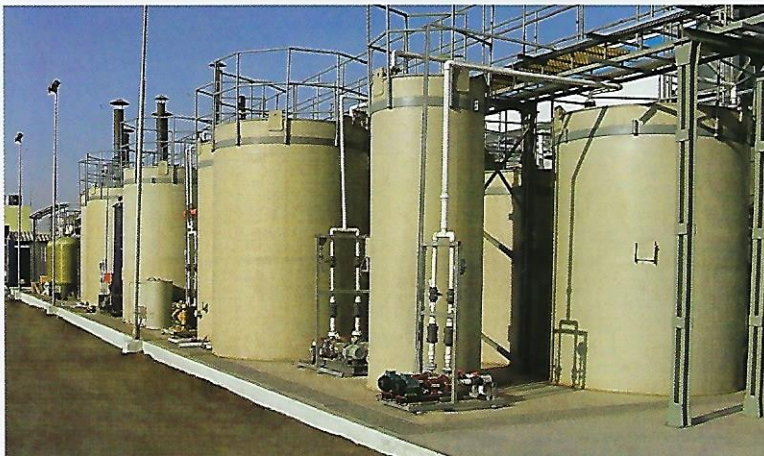
We have a solemn responsibility towards our natural habitat from which we draw our resources and to which we return our waste products. At Growel, we always strive for an ecological balance. Pollution regulations worldwide coupled with depleting resources necessitate recovery and reuse of resources and proper treatment and disposal of residual waste products. Our systems for the treatment of Effluents in surface finishing industry are based on the latest international technique for waste minimisation at source. This highly evolved technique incorporates an effective 'Rinse Technique' with an integrated 'in-line' water re-circulation system.

We offer solutions for:

- Surface Treatment Industry
- Food and Beverage Industry
- Textile Industry
- Aluminium Processing
- Printed Circuit Board Industry
- Power Stations
- Semiconductor and Solar

Our range of supplies include:

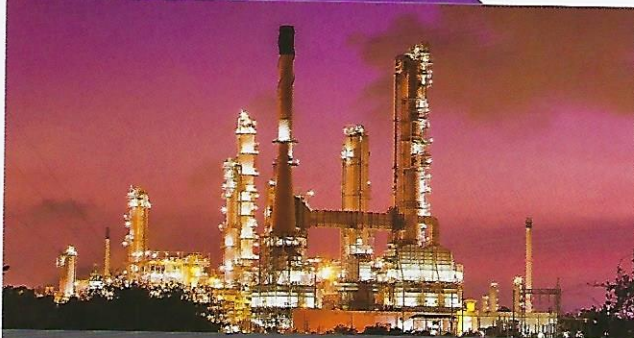
- PLC controlled, fully automatic in-line water re-circulation system, based on ION Exchange principle. The system can treat water, suitable for any metal finishing application.
- Fully automatic or semi-automatic effluent treatment plants for chrome, cyanide, nitrite, phosphate, heavy metals, acids and alkalis. The plants invariably consist of rugged filter press for effective de-watering of sludge.
- Recovery systems for chromium, heavy metal, precious metals, acids, etc.
- Sophisticated system like Ultra-filtration for treatment of emulsions and Reverse Osmosis (RO) for removal of Total Dissolved Solids (TDS).
- Vacuum Evaporators.



PAINTS

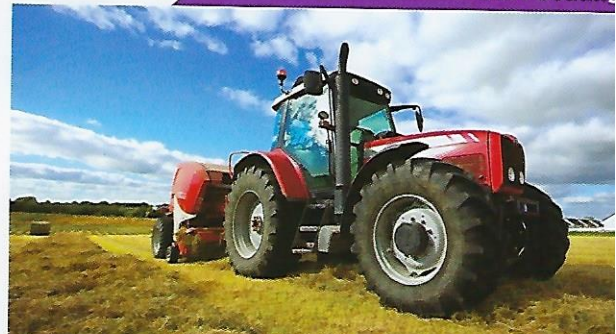
The Paints Division (erstwhile Bombay Paints Ltd) of Growel, is a leading supplier of High Build Low VOC Surface Tolerant & High Chemical Resistant Coating systems to the High Corrosive Industrial, Original Equipment Manufacturers, Marine and Architectural sector. For over 6 decades, our products have been extensively used in the Petroleum Refineries, Fertilizer, Chemical & Nuclear Power Plants, Automotive & White goods manufacturing sector, Airports, Pipeline (Gas / Irrigation / Potable Water Transport) Manufacture Aerospace Industry, Defence, Shipbuilding Yards, Offshore Platforms & Oil / Gas Exploration Rig to name a few. The products are manufactured in ISO 9001 & 14001 accredited plants and are designed to conform to international quality standards in performance and work efficiently whilst remaining economical.

High Performance Industrial Coatings



- Zinc Silicate Primers • Epoxy Primers & Finishes
- Hi-Gloss Polyurethane Finishes • Bitumenous Coatings
- Gas Flow Coatings • Polysiloxane Coatings
- Food Grade Epoxy Linings • Vinyl Ester Coatings
- Chlorinated Rubber • Alkyd • Vinyl Co-Polymer Based Paints

OEM Coatings



- Quick Drying Primer & Top Coats, Low Bake & Stoving Systems
- Thermosetting Acrylics • Hi Gloss Polyester Top Coats
- Low Bake Polyurethanes
- Casting Sealers & Unicoat Epoxy Chasis Black

Marine Coatings



- Marine Enamels & Epoxy Coatings
- Prefabrication Primers
- Under Water Coatings
- Antifouling Coatings

Architectural Coatings



- Exterior & Interior Acrylic Finishes
- Super Gloss Enamels
- Primers
- Sealants

ONE STOP SHOP



TOMORROW'S TECHNOLOGY TODAY

The company has a strong manufacturing network in India. The R&D Center of the company is housed within the headquarters of Growel, located in the northwestern suburb of Mumbai, India.

Manufacturing activities consist of four divisions, (a) Chemicals (b) Engineering (c) Paints (d) Lube. Production activities are spread over six units:

1. Dadra Works: 200 km from Mumbai; manufactures plating chemicals & salts.
2. Dadra Works: 200 km from Mumbai; manufactures industrial paints & coatings.
3. Vapi Works: 200 km from Mumbai; manufactures specialty chemicals, intermediaries, paints & lube.
4. Barotiwala Works: In Himachal Pradesh. Manufactures plating chemicals & lube.
5. Jammu Works: Manufactures plating chemicals and salts.
6. Alandi Works: Delivers total turnkey engineering solutions in electroplating and related areas.

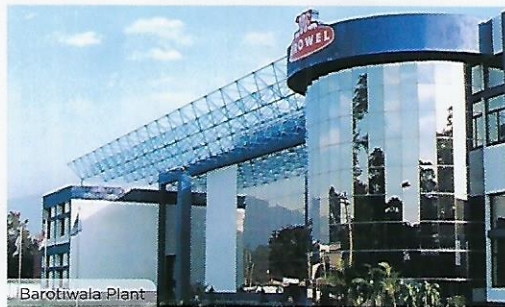
With an inherent commitment to sustainable development we have initialized use of environment friendly technologies. All these manufacturing units are created keeping in mind the ever-changing industrial and technological capabilities.



Dadra Plant



Jammu Plant



Barotiwala Plant



Vapi Plant



Chembur R&D Centre



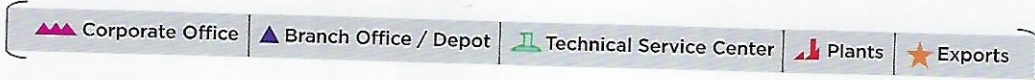
Pune Plant



Dadra Plant (Paints)



GROWEI NETWORK



★ INTERNATIONAL NETWORK

ARGENTINA
AUSTRALIA
BANGLADESH ▲
BRAZIL
CHINA
EGYPT
ETHIOPIA
FRANCE
GERMANY
GREECE
HONG KONG
INDONESIA

IRAN
ITALY
JAPAN
KENYA
KOREA
MALAYSIA
MEXICO
MIDDLE EAST
NEPAL
NIGERIA
PAKISTAN

RUSSIA
SINGAPORE
SOUTH AFRICA
SPAIN
SRI LANKA
TAIWAN
TANZANIA
THAILAND ▲
TURKEY
U.S.A.
VIETNAM



Grauer & Weil (India) Limited

Chemicals | Engineering | Paints | Lube | Real Estate

Corporate Office: Growel Corporate, Akurli Road, Kandivli (East), Mumbai 400 101, India
T: 91 22 6699 3000 **F:** 91 22 6699 3010 **E:** info@growel.com **W:** growel.com

Plants

DADRA

Plot No.10, Survey No.215/1,
Dadra 396 193, (D & NH - UT)
T: 0260 2669985 / 87
F: 0260 2668151
E: dadra@growel.com

DADRA (Paints)

Plot No. 7, Survey No. 216/3 & Survey No. 216/4,
Dadra Industrial Estate, Dadra 396 193 (D & NH - UT)
T: 0260 2669985 / 87
F: 0260 2668151
E: dadra.paints@growel.com

BAROTIWALA

Plot No. 31 & 32, Industrial Area,
Barotiwala (H. P.) 174 103
T: 7807890701 / 704
F: 01792 - 305841
E: btgrowel@growel.com

JAMMU

Phase II,
SIDCO Industrial Complex,
Samba (J & K) 184 121
M: 09906084307 / 09622220410
E: jammu@growel.com

PUNE

At Gat No.66/A, Village - Dhanore,
Tal. - Khed (Alandi), Dist.- Pune 412 105
T: 02135 671000
F: 02135 671045
E: pune@growel.com

VAPI

Plot No. 407, Phase II, G.I.D.C.,
Vapi 396 195
T: 0260 2401389 / 6542838
F: 0260 2451852
E: vapi@growel.com

Branches

AMDAVAD	: 310, P B, Parekh Tower, Opp. Vanijya Bhavan, Kankaria, Amdavad 380 022. T: 079 - 25471953 E: ahmedabad@growel.com
AURANGABAD	: X-349, Chhabda Complex, Near Truck Terminal, MIDC, Waluj, Aurangabad 431 136. T: 0240 - 2564418 E: aurangabad@growel.com
BENGALURU	: Growel House, 4/14-1&2, Crescent Road, High Ground, Bengaluru 560 001. T: 080 - 22260232, 22202262 F: 080 - 22264119 E: bangalore@growel.com
CHENNAI	: S-2, 2nd Floor, Nelson Plaza, Old No.149, New No.90, Nelson Manickam Road, Choolaimedu, Chennai 600 094. T: 044 - 23741276 E: chennai@growel.com
COIMBATORE	: 112-2, Venkatasamy Road, Opposite Ayappa Seva Sangham, Siddhapudur, Coimbatore 641 044. T: 0422 - 2520031 E: coimbatore@growel.com
INDORE	: 704-Rajani Building, 7th Floor, M. G. Road, Indore 452 001. T: 0731 - 4257080 E: indore@growel.com
KOCHI	: Shop No.4, 3rd Floor, Sanaiya Plaza, Near K.S.R.T.C., Kochi 682 035. T: 0484 - 2355009 E: cochin@growel.com
KOLKATA	: "Commercial Point", 79, Lenin Sarani, Room No. 311, Kolkata 700 001. E: kolkata@growel.com
LUDHIANA	: Growel House, G. T. Road, Opp. Hero Cycles Ltd., Ludhiana (Punjab) 141 003. T: 0161 - 5001362, 2671951, 5003481 F: 0161 - 5015167 E: ludhiana@growel.com
NASHIK	: H.No. 9, MHB Colony, Opp. Gunjal Park, Trimbak Road, Satpur, Nashik 422 007. T: 91 - 253 - 23553772 E: nashik@growel.com
NOIDA	: Growel House, B-6, Sector 7, Noida, Dist.: Gautam Budh Nagar (U.P.) 201 301. T: 0120 - 2423023, 2423677 F: 0120 - 2423251 E: delhi@growel.com
PUNE	: Kundan Bhavan, Survey No. 396/1+2, CTS No. 2284 Kundan Nagar, Opp. Alfa Lavel Co. Ltd. Mumbai Pune Road, Dapodi 411 012. T: 020 - 30213139 / 33, 30213000 F: 020 - 30213030 E: punechem@growel.com
RAJKOT	: 205 Century Centre, Kanta Stri Vikas Griha Road, Rajkot 360 002. M: 09898240810 E: rajkot@growel.com
SECUNDERABAD	: Room No.1, 5th Flr., Srinath Commercial Complex, Sarojini Devi Rd, Secunderabad 500 003. T: 40 - 27848138 F: 40 - 7848138 E: secunderabad@growel.com
THAILAND	: 140/12 Moo 12 Soi Kingkeaw 9/1, T. Rachathewa, A. Bangphlee, Samutprakarn 10540, Thailand T: +662 051-2088 F: +662 051-2094 E: gwthailand@growel.com
BANGLADESH	: 6th floor of Suleman Plaza, Room No. 6 (Six), 3/3-B, Purana Paltan, Dhaka 1000, Bangladesh

Technical Service Centres

AGRA	: 09837179164	NAGPUR	: 09765700227
ALIGARH	: 09045458123	KANPUR	: 09839096654
CHANDIGARH	: 09815603775	LUCKNOW	: 09839096654
DELHI	: 011-25126430 / 09818555948	MADURAI	: 09786626236
FARIDABAD	: 09891921007	MATHURA	: 07060872024
GHAZIABAD	: 09582427913	MEERUT	: 09897066604
GURGAON	: 09899773300	MORADABAD	: 09837066065
HARIDWAR	: 8937968097	NASIK	: 0253- 2353772 / 09767958336
JAIPUR	: 09829180378	NOIDA	: 09871994748
JAMNAGAR	: 09898240810	ROHTAK	: 09355614800
JALANDHAR	: 09417408646	SALEM	: 0427-2217229 / 07708687010
RAIPUR	: 09584708585	SURAT	: 09825412710
RUDRAPUR	: 09927018902	TRICHY	: 09786626236

Grauer & Weil (India) Limited

Growel Corporate, Akurli Road, Kandivli (E), Mumbai 400101, India
T 91 22 66993000 F 91 22 66993010 E info@growel.com

www.growel.com

Chemicals | Engineering | Paints | Lubes | Real Estate



SINCE 1957

DISCLAIMER: Our recommendations are made in good faith and are based on our skills. However, since the conditions of use of these products are beyond our control and may vary significantly in different situations, this information is given on the express condition and agreement that Grauer & Weil (India) Limited, will not be liable to any person by reason thereof. Nothing herein shall be deemed to be a recommendation to use any product in violation of any existing patent rights.