



# CHEMSOL



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## About Us:-

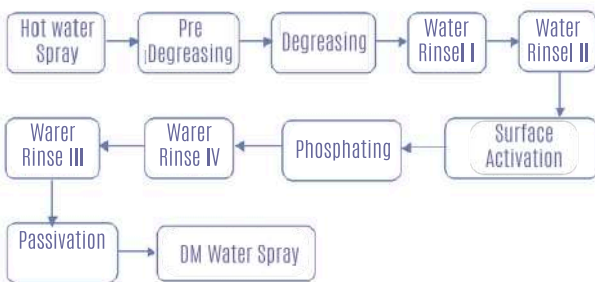
CHEMSOL is into the field of manufacturing surface Pre Treatment and allied chemicals and related services. Our organization is controlled and managed professionally by people who are well qualified and have vast experience in the field of metal pre treatment. CHEMSOL manufactures a wide range of high quality pre treatment chemicals for ferrous, non ferrous and plastic parts.

We have successfully developed self-accelerated Zinc phosphate chemical solution for wire/tube drawing. The coating meets the Indian standard specification ISO:9001-2015.

# PRETREATMENT

## AN OVERVIEW

### PRETREATMENT-AN OVERVIEW



### PRETREATMENT CHEMICAL

#### Important Considerations

- ✦ Low temperature operation for energy conservation
- ✦ Improved corrosion performance
- ✦ Lower sludge generation
- ✦ Control of carryover
- ✦ Easy operation of bath
- ✦ Auto control of bath parameters
- ✦ Longer bath life

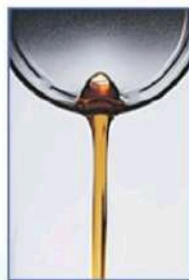
## DEGREASER AND TECHNOLOGIES

- **Chemsol Clean 111** : It is water soluble alkaline clearing powder. It effectively removes heavy to light duty grease, dirt & oil from the surface of the ferrous metals & their alloys at elevated temperature.
- **Chemsol Clean 112** : These formulations are based on alkalis with Non- Caustic properties. They remove grease, oil and dirt from all metals, ferrous & non-ferrous at elevated temperature. Different products are available to meet the crystal structure of phosphate coating needs.
- **Chemsol Clean 112 SC** : This is non-casuistic based alkali cleaning powder. It is effectively used in spray type degreaser.
- **Chemsol Clean 113** : It is non- caustic based mild alkali powder. It removes sebum oil from aluminium dye-casting components effectively.
- **Chemsol Clean 114** : This is acidic base liquid Chemical and removes dirt & oil from Aluminium Sheet Metals at ambient temperature.
- **Chemsol Clean 115** : Mainly used in industrial washing machines as spray cleaner. It is mildly alkaline powder. It removes oil, dirt and forms protective layers of anti- corrosion on the surface of the metal.
- **Chemsol Clean 116** : Liquid based spray cleaner. It is used in industrial washing machines and forms an anti- corrosion layer on metal surface after removing oil & dirt.
- **Chemsol Clean CC** : This in light acidic & non-ionic emulsifier based liquid chemical. It removes oil, dirt and forms a coating of Iron Phosphate on cast Iron & Aluminum, die-casting components. Mainly used for heavy components cleaning before painting.

### Acceptance Criteria of Applied Oil for Incoming BIW

#### Applied Oil:

- Should be compatible with the Degrease chemicals.
- Oil layer not more than 4 gm/m<sup>2</sup> on the sheet metal.
- Should not dry while storing body shell/sheet parts to leave dry oil patches.
- Not Flammable.
- Odourless.



### Failures Due to Wrong Oil: Incoming BIW

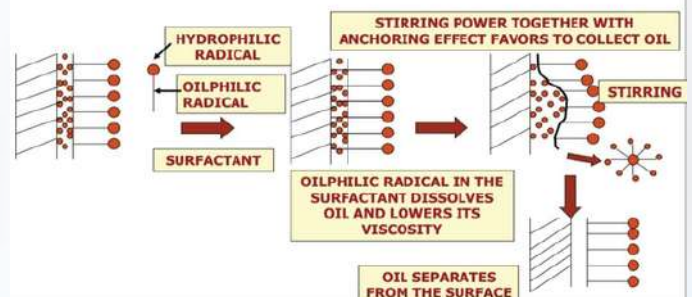
- Cracks the sheet metal during pressing.
- Leaves dry oil patches on the sheet metal.
- Leaves water breaks on the sheet metal (Poor Degreasing).
- Leaves craters or pinholes after CED.
- Leaves flow marks and more sanding after CED.
- Poor long-term corrosion problem on sanding areas.



### Stages of Degreasing (Cleaning)

Steps	Function
<b>Prewash</b>	<ul style="list-style-type: none"> <li>• This is a high volume low pressure stage</li> <li>• To wash internal and external contaminants like dust or weld balls (spatters).</li> </ul>
<b>Spray Degrease</b>	This is a high-pressure stage to clean the body from the outside for removal of oil and dirt.
<b>Dip Degrease</b>	To remove the oil with the help of the mechanical force of circulation from inside the box section as well as the outside of the car body.
<b>Spray Water Rinse</b>	This is a high-pressure stage to remove contamination of the body.
<b>Dip Water Rinse</b>	To remove the cleaner solution by mechanical force of circulation from inside the box section as well as the outside of the car body.

### OIL REMOVAL BY DEGREASING





## DERUSTING AND TECHNOLOGIES

These are phosphoric acid based compounds which removes rust from all metal surfaces.

- **CHEMSOL RS 222:** This rust solvent is based on phosphoric acid & other acid composition with inhibition. It is suitable for dipping processes hot/ cold and can be used for all types of mild steel components.
- **CHEMSOL RS 223:** It is blended with special wetting agent & inhibitor for derusting medium to light duty rust from metal surfaces. Working temp. is 45°- 55°C.
- **CHEMSOL RS 224:** It is based on phosphoric acid with special wetting agent cum inhibitor. It contains oxidizing agent to protect steel against corrosion. Working temp. is 45°- 55°C.
- **CHEMSOL RS 225:** These acidic formulations are strong & blended with inhibitors. They effectively remove heavy rust & scales at room/elevated temperature.
- **CHEMSOL RS 226:** It is phosphoric acid based chemical blended with water soluble solvents with inhibitors. It is used at room temperature and converts the steel surface into iron phosphate after removing light rust, preparing the surface for Phosphating

## CORROSION

The deterioration of a metal on account of its interaction with the environment is called as CORROSION. Metals are Thermodynamically unstable than their metal oxides. The transformation of metal to metal oxide on a particular composition is generally referred as Corrosion. In order to prevent the substrate from corrosion, pretreatment prior to the application of paint is a must. The phosphate coating, which is the most critical and important stage of PT should be done properly

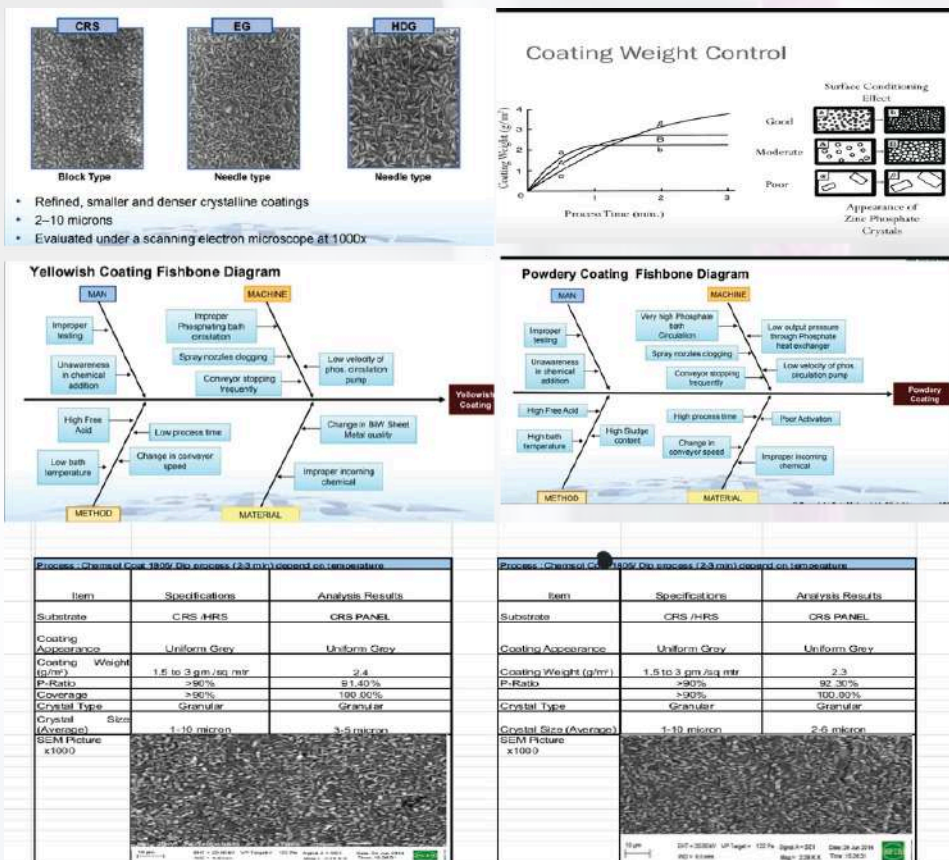


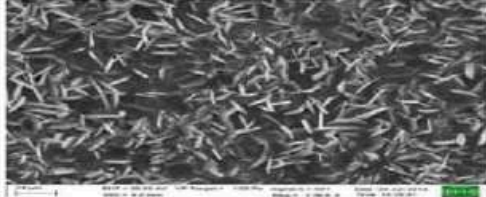
## PHOSPHATING AND TECHNOLOGIES

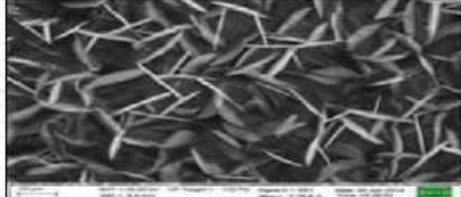
- **Chemsol coat 1805:** Specially deigned for CED process Tri Cationic, Crystal size: 3 - 5 micron, Sludge formation 50% reduced
- **Chemsol coat 2703:** Cold process at Actual Ambient Temperature, Coating weight : 2-3gms/ sq mtr, Energy saver cost effective process.
- **Chemsol coat 333G:** This formulation is based on phosphoric acid, emulsifiers, corrosion inhibitors and Water soluble solvent. Used at room temperature of 30OC- 40OC. It gives a protective layer of iron phosphate on metal surfaces after removing light oil & rust.
- **Chemsol coat 332:** It is used in hot phosphating process and gives a light, smooth & microcrystalline calcium and zinc- phosphate coating at working temperature of 65°C- 75°C.
- **Chemsol coat 334:** This chemical gives a medium to heavy weight zinc- phosphate coating suitable for treatment in immersion system.
- **Chemsol coat 336:** This formulation is di and tri-cationic and gives a light to medium weight coating. It is used in hot phosphating process s \at a working temperature of 60°C.
- **Chemsol coat 348:** This di-cationic phosphating chemical give slight to medium zinc phosphate coating at working temperature of 60°C.
- **Chemsol coat 340:** This is a tri-cationic complex spray phosphating chemical nickel modified. It yields a fine, micro crystalline; compact and zinc-phosphate coating with use of pre-spray rinse surface activator.
- **Chemsol coat 337:** It is a di-coating Calcium modified Phosphating Chemical. It gives a microcrystalline smooth coating at working temperature of 70°C.
- **Chemsol coat 339:** It is tatra-cation complex chemical for hot phosphating process at working temperature of 50°C. With use of pre- spray rinse surface activator, it gives a micro-crystalline zinc-phosphate coating.

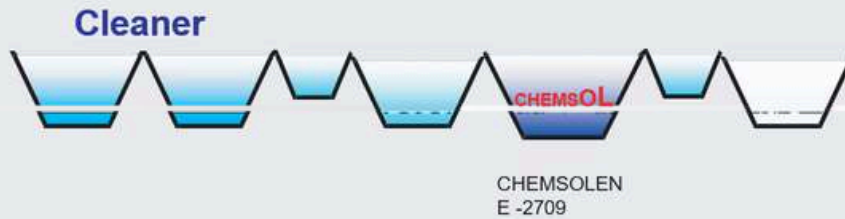
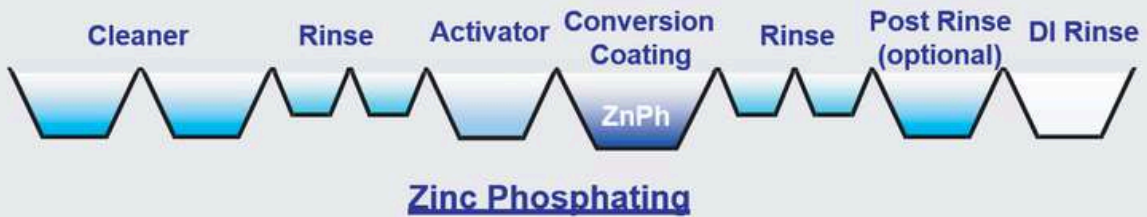
## PHOSPHATING AND TECHNOLOGIES

- **Chemsol coat 332 N:** This tri-cation & nickle modified phosphating chemical gives light and smooth microcrystalline coating and can be used both dip as well as spray processes.
- **Chemsol coat 341:** It is used in spray phosphating for galvanized sheets at low temperature with Pre surface Activation Rinse.
- **Chemsol coat 346:** It is cold zinc galvanising phosphating chemical used at a working temperature of 25-30°C.
- **Chemsol coat 345:** This formulation is used in cold phosphating- dip process giving a light to medium compact & micro- crystalline coatings on ferrous metals.
- **Chemsol Acc:** It is liquid based on alkali- oxidised chemical used in hot as well as cold phosphating process.
- **Chemsol Acc (L):** It is liquid based on alkali- oxidised chemical used in hot as well as cold phosphating process.





Process : Chemsol Coat -2709/ Dip process (3-4 min) depend on temperature		
Item	Specifications	Analysis Results
Substrate	CRS /HRS	CRS PANEL
Coating Appearance	Uniform Grey	Uniform Grey
Coating Weight (g/m <sup>2</sup> )	2 to 5 gm /sq mtr	3.6
Crysta Type	Needle Type	Needle Type
Crystal Size (Average)	5-20 Micron	10-12 Micron
SEM Picture x1000		

Process : Chemsol Coat -2709/ Dip process (3-4 min) depend on temperature		
Item	Specifications	Analysis Results
Substrate	CRS /HRS	CRS PANEL
Coating Appearance	Uniform Grey	Uniform Grey
Coating Weight (g/m <sup>2</sup> )	2 to 5 gm /sq mtr	3.8
Crysta Type	Needle Type	Needle Type
Crystal Size (Average)	5-20 Micron	12-14 Micron
SEM Picture x1000		





**Significant benefits: Operating cost, maintenance, investment, environment**

## THE ESSENCE OF CHANGE

	Conventional Zinc Phosphate	
<b>Bath Make Up</b>	<ul style="list-style-type: none"> <li>7.0 % w/v</li> <li>DM Water is essential. Final Rinse should also be DM.</li> </ul>	<ul style="list-style-type: none"> <li>1.1% w/v</li> <li>DM Water is essential. Pre and Post Rinse should also be DM.</li> </ul>
<b>CONTROL</b> 	<ul style="list-style-type: none"> <li>System needs Passivation – use of Chrome for passivation, which is highly toxic and carcinogenic nature.</li> <li>Needs Activation stage.</li> <li>Needs Sludge Clarifier or sludge removal system.</li> <li>Bath Control – Easy, Care to be taken for contamination / carry over</li> <li>Circulation @ 4 – 6 turnover per hr.</li> <li>Treatment steps are more.</li> <li>Plant maintenance is high.</li> <li>High treatment time 150 - 180 Sec.</li> </ul>	<ul style="list-style-type: none"> <li>Elimination of Chrome from system</li> <li>Simple Cartridge Filter to remove burs and foreign particles.</li> <li>Bath Control – Easy, Care to be taken for contamination / carry over</li> <li>Circulation @ 1 – 2 turnover per hr.</li> <li>Less treatment steps</li> <li>Plant maintenance is minimal.</li> <li>Less treatment time 90 – 150 Sec.</li> </ul>
<b>PERFORMANCE PROPERTIES</b>	<ul style="list-style-type: none"> <li>Multi metal is difficult with High % of Aluminum</li> <li>RoHS compliance is possible with Non Chrome Passivation.</li> <li>Crystalline structure.</li> <li>Throughput time is more.</li> </ul>	<ul style="list-style-type: none"> <li>Ok for Multi metal.</li> <li>RoHS compliance as there is no Cr or Heavy metals in the system.</li> <li>Amorphous structure</li> <li>Throughput time is less hence more productivity.</li> </ul>

# THE ESSENCE OF CHANGE

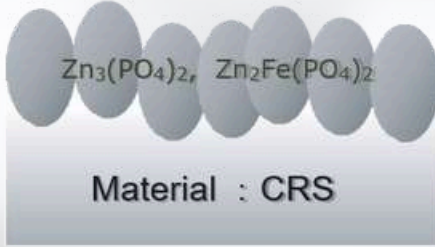
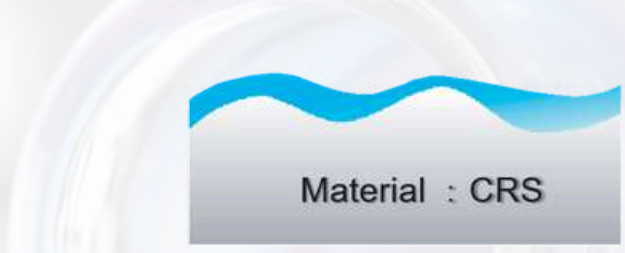
<p><b>ENVIRONMENTAL</b></p> 	<ul style="list-style-type: none"> <li>• Contains Heavy metal in g/lit conc. Disposal is a problem.</li> <li>• Rinse Disposal is also has to be treated</li> </ul>	<ul style="list-style-type: none"> <li>• Contains transition (Zr / Ti) metals in ppm level, <b>No Heavy Metals Present.</b></li> <li>• With effective management there can be <b>zero discharge</b> from Pre <b>CHEMSOLENE</b> onwards.</li> </ul>
	<ul style="list-style-type: none"> <li>• Carcinogenic metals present.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>No Carcinogenic metal</b> contains.</li> </ul>
	<ul style="list-style-type: none"> <li>• Evolution of hazardous fumes like NOx.</li> </ul>	<ul style="list-style-type: none"> <li>• No such reaction or evolution of any hazardous gas.</li> </ul>
<p><b>SAFETY</b></p>	<ul style="list-style-type: none"> <li>• <b>Generation of Hazardous phosphate sludge</b> due to dissolution of metal surface</li> </ul>	<ul style="list-style-type: none"> <li>• <b>No sludge generation.</b> As less or no dissolution of metal surface</li> </ul>
	<ul style="list-style-type: none"> <li>• Careful Handling required for Acids and Oxidizing agents together.</li> </ul>	<ul style="list-style-type: none"> <li>• No oxidizing agent present in the system</li> </ul>
<p><b>EFFLUENTS</b></p>	<ul style="list-style-type: none"> <li>• Hazardous or toxic to water organisms.</li> </ul>	<ul style="list-style-type: none"> <li>• Silane is Non – toxic to water organisms.</li> </ul>

ITEM	Phosphate	CHEMSOLENE
Hazardous Heavy Metals	Ni, Zinc	Free of Nickel, Zinc
Heat Energy	Required to maintain temperature of 55-65 deg C	RT process
Process Time	120-180 Secs	60-120 Secs
Water Consumption	200-500 Litre/body	Lower water consumption
Effluent	High amount of effluent	Significantly lower amount of effluent
Sludge	High sludge, problematic removal	No sludge (less than 0.1 gm/Sq.M).
Multi metal ability	Special conditions for Al	No restrictions on multi metal composition or usage



## ZINC PHOSPHATE COATING

## CHEMSOLID COATING

Coating section Model		
Coating structure	Crystalline $Zn_3 (PO_4)_2 \cdot 4H_2O$ $Zn_2Fe (PO_4)_2 \cdot 4H_2O$	Amorphous thin coating $Zr(OH)_4$
Coating thickness	Micron meter	Nano meter
Acid resistance	Dissolves in acids	Non-dissolves except in HF
Alkaline resistance	Dissolves in alkaline	Non-dissolves

**CHEMSOLID** is mainly made of Zirconium Hydroxide amorphous coating, and while it is only a thin coating, its resistance against acids and alkaline give it an equivalent level of corrosion resistance as in Zinc Phosphate treatment.

## Our Products:-

### Paint Stripper

These chemicals remove liquid/ powdered paints without harming the metal.

- **Chemsol Paint Stripper PS.:** Effectively removes liquid points.
- **Chemsol Paint Stripper per PS.:** Removes powdered paint from ferrous as well as non-ferrous components.
- **Chemsol Paint Stripper SP:** It is a low cost paint stripping chemical, acidic in nature. It effectively removes liquid/ powdered paints.



## Our Products:-

### Chromatizing Chemicals

These Chemicals provide a fine, decorative and protective covering on Aluminium surfaces.

- **Chemsol Alchrome 666:** Provides a yellow to golden chromate coating on Aluminium.
- **Chemsol Alchrome 667:** Provides a green chromium phosphate coating on Die Casting and Sheet components of Aluminium.
- **Chemsol Alchrome 668:** Provides a colourless chromate coating Die casting and Aluminium sheet components.

### Speciality Products Wire drawing

The conversion coatings are available for drawing Mild- steel, Alloy Steel and Carbon steel wire and yields an effective zinc- phosphate coating.

- **Chemsol Coat 349:** Provides a medium to light zinc- phosphate coating at appropriate temperature.
- **Chemsol Coat 350:** Gives a heavy zinc- phosphate coating.
- **Chemsol Coat 351:** Provides a fine zinc-phosphate coating and is self-accelerated.

### ACTIVATION COMPOUND

It is a blend of slightly alkaline titanium/ oxidizing compounds & activates steel surfaces and accelerates formulation of

### Protective Coating Corrosion Resistant Coatings

These products are used for bare corrosion resistance. For sealing purpose suitable rust preventive oil issued on phosphated components.

- **Chemsol Coat 335:** It is used in dip process & provides a heavy manganese-iron phosphate coating at working at working temperature of 80° C.



# Industries Covered By "CHEMSOL"



**CHEMSOL**  
Molecule to Magic

TM



## CONTACT US



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