



Basically, the iron phosphate coating process is a four stage operation:
 Stage 1 — Clean and phosphate simultaneously
 Stage 2 — Overflowing water rinse
 Stage 3 — Chromic-phosphoric acidified rinse or non-chromate type for pollution reduction
 Stage 4 — Dry off (Not shown on chart)

IRON PHOSPHATE (Spray application)

(Time: 1 minute, 40 seconds to 3 minutes)

NOTE: The recommended equipment is carbon steel. High temperature plastics are also suitable.

STAGE	TANK SIZE (Gallons)					
	250	500	1000	2000	5000	
60 to 120 second clean and iron phosphate treat. ½ to 2 oz. / gal. Water: 60° to 160°F. pH 3.5 to 5.0	Coarse depth type cartridge or cleanable sleeve filter chamber					COALESCER
	MODEL CL60	MODEL CL120	MODEL CL240	MODEL CL480	MODEL CL600x2	
	Automatic gravity fabric filter system					
	MODEL DFS-1.5-S	MODEL DFS-1.5-S	MODEL DFS-4-S	MODEL DFS-8-S	MODEL DFS-11-S	
2						
20 to 30 second rinse. Recirculating water, overflowed, 90° F.	Depth type cartridge or cleanable sleeve filter chamber					
	MODEL PL30	MODEL PL60	MODEL PL90	MODEL PL240	MODEL PL360	
	NOTE: Continuous filtering of this rinse prevents contaminant carryover to next tank.					
3						
20 to 30 second acidified rinse. 4 to 12 oz. / 100 gal. Water: 90° to 160°F. pH 3.5 to 5.0	Depth type cartridge or cleanable sleeve filter chamber					COALESCER
	MODEL CL30	MODEL CL60	MODEL CL90	MODEL CL240	MODEL CL360	

IRON PHOSPHATE (Dip application)

(Time: 3 minutes, 40 seconds to 6 minutes)

NOTE: The recommended equipment is carbon steel. High temperature plastics are also suitable.

STAGE	TANK SIZE (Gallons)					
	250	500	1000	2000	5000	
3 to 5 minute clean and iron phosphate treat. 5% by volume Water: 125° to 160°F. pH 3.5 to 4.5	Coarse depth type cartridge or cleanable sleeve filter chamber					COALESCER
	MODEL CL60	MODEL CL120	MODEL CL240	MODEL CL480	MODEL CL600x2	
	Automatic gravity fabric filter system					
	MODEL DFS-1.5-S	MODEL DFS-4-S	MODEL DFS-8-S	MODEL DFS-11-S	MODEL 2x DFS-11-S	
2						
20 to 30 second rinse. Water overflowing 90° F.	Depth type cartridge or cleanable sleeve filter chamber					
	MODEL PL30	MODEL PL60	MODEL PL90	MODEL PL240	MODEL PL360	
	NOTE: Continuous filtering of this rinse prevents contaminant carryover to next tank.					
3						
20 to 30 second acidified rinse. 4 to 12 oz. / 100 gal. Water: 90° to 160°F. pH 3.5 to 5.0	Depth type cartridge or cleanable sleeve filter chamber					COALESCER
	MODEL CL30	MODEL CL60	MODEL CL90	MODEL CL240	MODEL CL360	



Ideally, the zinc phosphate coating process is a seven stage operation:

- Stage 1 — Clean to remove soil
- Stage 2 — Overflowing water rinse
- Stage 3 — Optional sensitizing rinse
- Stage 4 — Zinc phosphate
- Stage 5 — Overflowing water rinse
- Stage 6 — Chromic phosphoric acidified rinse or non-chromate type
- Stage 7 — Dry off (Not shown on chart)

HEAVY ZINC PHOSPHATE (Spray application)

(Time: 3 minutes, 40 seconds)

NOTE: The recommended equipment must be all corrosion resistant materials — high temperature plastic or 316 SS.

STAGE	TANK SIZE (Gallons)					
	250	500	1000	2000	5000	
1 60 second preclean. ½ to 2 oz. / gal. Water: 100° to 160°F.	Coarse depth type cartridge or cleanable sleeve filter chamber					COALESCER
	MODEL CL60	MODEL CL120	MODEL CL240	MODEL CL480	MODEL CL600x2	
	Automatic gravity fabric filter system					
	MODEL DF-1.5-SS	MODEL DF-4-SS	MODEL DF-8-SS	MODEL DF-11-SS	MODEL DF-24-SS	
	TITAN permanent filter media system					
	—	—	MODEL CCN50	MODEL CCN100	MODEL CCN100	
2	Depth type cartridge or cleanable sleeve filter chamber					
30 second rinse. Recirculating water, 90° F.	MODEL PL30	MODEL PL60	MODEL PL90	MODEL PL240	MODEL PL360	
	NOTE: Continuous filtering of this rinse prevents contaminant carryover to next tank.					
3	Depth type cartridge or cleanable sleeve filter chamber					
30 second rinse. Water (plus optional titanium activator add @ 1 lb. / 1000 gal. is sufficient for most installations); 90°F.	MODEL PL30	MODEL PL60	MODEL PL90	MODEL PL240	MODEL PL360	COALESCER
4	Coarse depth type cartridge or cleanable sleeve filter chamber					COALESCER
60 zinc phosphate treatment. 2½% by volume Water: 100° to 140°F. Total to free acid ratio: 13:1 to 20:1	MODEL CL60	MODEL CL120	MODEL CL240	MODEL CL480	MODEL CL600x2	
	Automatic gravity fabric filter system					
	MODEL DF-1.5-SS	MODEL DF-4-SS	MODEL DF-8-SS	MODEL DF-11-SS	MODEL DF-24-SS	
5	Depth type cartridge or cleanable sleeve filter chamber					
20 second rinse. Recirculating water, overflowed. 90° F.	MODEL PL30	MODEL PL60	MODEL PL90	MODEL PL240	MODEL PL360	
6	Depth type cartridge or cleanable sleeve filter chamber					
20 second acidified rinse. 4 to 12 oz. / 100 gal. Water: 100° to 165°F. pH 3.5 to 5.0.	MODEL CL30	MODEL CL60	MODEL CL90	MODEL CL240	MODEL CL360	



Ideally, the zinc phosphate coating process is a seven stage operation:

- Stage 1 — Clean to remove soil
- Stage 2 — Overflowing water rinse
- Stage 3 — Optional sensitizing rinse
- Stage 4 — Zinc phosphate
- Stage 5 — Overflowing water rinse
- Stage 6 — Chromic phosphoric acidified rinse or non-chromate type
- Stage 7 — Dry off (Not shown on chart)

HEAVY ZINC PHOSPHATE Dip application)

(Time: 7 minutes, 20 seconds to 12 minutes)

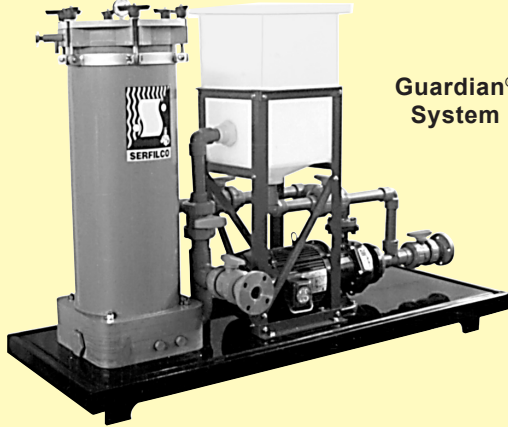
NOTE: The recommended equipment must be all corrosion resistant materials — high temperature plastic or 316 SS.

STAGE	TANK SIZE (Gallons)					
	250	500	1000	2000	5000	
1 3 to 5 minutes preclean. Alkaline solution, 6 oz. / gal. Water: 140° to 200°F.	Coarse depth type cartridge or cleanable sleeve filter chamber; double seal pump					COALESCER
	MODEL CL60	MODEL CL120	MODEL CL240	MODEL CL480	MODEL CL600x2	
	Automatic gravity fabric filter system with special high temperature seals					
	MODEL DF-1.5-SS	MODEL DF-4-SS	MODEL DF-8-SS	MODEL DF-11-SS	MODEL DF-24-SS	
	TITAN permanent filter media system (Maximum 190°F)					
	—	—	MODEL CCN50	MODEL CCN100	MODEL CCN100	
2	Depth type cartridge or cleanable sleeve or bag filter chamber					
30 second rinse. Water overflowing, 90° F.	MODEL PL30	MODEL PL60	MODEL PL90	MODEL PL240	MODEL PL360	
	NOTE: Continuous filtering of this rinse prevents contaminant carryover to next tank.					
3	Depth type cartridge or cleanable sleeve filter chamber					
20 to 30 second rinse. Water (plus op- tional titanium activa- tor add @ 1 lb. / 1000 gal. is sufficient for most installations); 90°F.	MODEL PL30	MODEL PL60	MODEL PL90	MODEL PL240	MODEL PL360	COALESCER
4	Depth type cartridge or cleanable sleeve filter chamber					
3 to 5 minute zinc phosphate treatment. 4% by volume Water: 140° to 180°F. Total to free acid ratio: 6:1 to 12:1	MODEL CL60	MODEL CL120	MODEL CL240	MODEL CL480	MODEL CL600x2	COALESCER
	Automatic gravity fabric filter system with special high temperature seals					
	MODEL DF-1.5-SS	MODEL DF-4-SS	MODEL DF-8-SS	MODEL DF-11-SS	MODEL DF-24-SS	
5	Depth type cartridge or cleanable sleeve filter chamber					
20 to 30 second rinse. Water, over- flowing. 90° F.	MODEL PL30	MODEL PL60	MODEL PL90	MODEL PL240	MODEL PL360	
6	Depth type cartridge or cleanable sleeve filter chamber					
20 to 30 second acidified rinse. 4 to 12 oz. / 100 gal. Water: 100° to 165°F. pH 3.5 to 5.0.	MODEL CL30	MODEL CL60	MODEL CL90	MODEL CL240	MODEL CL360	



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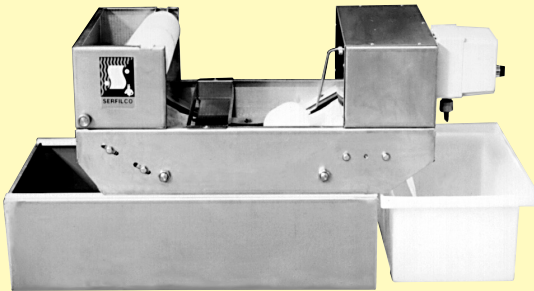


**Guardian®
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**Space-Saver®
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**Automatic Gravity
Filter System**



**TITAN
System**

**Coalescing
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