

January 2, 2002

Amplate Celebrates One Year With Zero Acid Disposal Over 90 % Reduction In Waste From Acid

Dramatically Reduced Environmental Issues From Acid Disposal The Only Replacement Acid Has Been For Drag Out & Evaporation

Amplate, Inc. of Charlotte, NC, a past recipient of *The Governors Award For Excellence In Waste Reduction*, has been a zero disposal shop since 1995. They recycle wastewater using The Thunderbolt, a PASCO Technologies closed loop system. Not until last year did Amplate add the advantages and benefits of eliminating acid disposal to their accomplishments.

An electroplating company, Amplate provides Zinc, Electrolytic Nickels, Electroless Nickel, Black Oxide, Decorative Chrome and the Passivation of Stainless Steels. These operations are performed on all basic metal substrates except for Aluminum and Zinc Die Castings. Seven plating lines total are using 12 to 18 month old acids for pickling, activation and strips and they are performing like new!

How has Amplate achieved zero acid disposal, a 90 + % reduction in acid replacement and greatly reduced their environmental issues associated with acids and the disposal of acids?

PRO • pHx Acid Life Extender NEVER DEAL WITH SPENT ACID SOLUTIONS AGAIN

PRO • pHx Acid Life Extender, a revolutionary new product, is the key to this unprecedented success with acids. **PRO • pHx** is extremely cost effective, convenient to use and it is an environmentally sustainable product. **PRO • pHx** is documented in reducing new makeup acid costs by 89 % and filtered solids by 96 %.

David French, President
Amplate, Inc.

"Using PRO - pHx we have regenerated all acid strips, pickling and activators tanks successfully.

NO acid has been replaced THIS YEAR other than for normal drag out. One of our acid baths life has been extended 26 times normal to date and currently appears to have a potential to extend indefinitely. Another of our acids is more than 24 months old and behaves like new."

"We have seven plating lines and treat all metal substrates except Aluminum and Zinc Die Castings. We have reduced our acid usage and disposal by more than 90% and have saved tens of thousands of dollars acid replacement and disposal cost in year 2001.

Uses 5, 10 & 50 Micron Filters

Realize Immediate Benefits From Using PRO • pHx Acid Life Extender

- PRO • pHx** Extends Acid Life Indefinitely
- PRO • pHx** Eliminates New Makeup Acid Costs
- PRO • pHx** Eliminates Costly Disposal Methods & Costs
- PRO • pHx** Requires No Down Time
- PRO • pHx** Eliminates Organic Buildup
- PRO • pHx** Is A Convenient, Cost Effective In-House Treatment
- PRO • pHx** Eliminates Issues Associated With Acid Disposal
- PRO • pHx** Is Odorless And Has No Unpleasant Treatment Odor

With PRO • pHx you will
RECAPTURE OPERATING COSTS AS PROFIT

ENVIRONMENTALLY FRIENDLY
ENVIRONMENTALLY SUSTAINABLE

INORGANIC ODORLESS
HAS NO OUTGASSING OR FUMES
NON - TOXIC NON - CORROSIVE
NON - ACID NON - FLAMMABLE

For Additional Information Contact Wagner Environmental Technologies' Industry Solutions

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PRO · pHx History of Application and Use at Amplate, Inc.

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PRO - pHx is used in the acid pickling and activating baths for the plating of Zinc, Electrolytic Nickels, Electroless Nickel, Black Oxide, Decorative Chrome and for the Passivation of Stainless Steels. These operations are performed on all basic metal substrates except for Aluminum and Zinc Die Castings. The following is the history of the acids being treated with *PRO · pHx*.

- **Zinc Plating Lines:** (Clear Zinc, Yellow Zinc ASTMB633)
Hydrochloric Acid - (Tank Uses 50 Micron Filters)
December, 2000 - *PRO · pHx* added to spent acid - Restored acid performed as new.
Bath used 80 hours per week - Treated acid performs as new with continuous use.
Treatment has extended Acid Life 24 times as of 12 / 1 / 01
- **Nickel Plating Lines:** (Bright Nickel, QQ-N-290)
Hydrochloric Acid - (Tanks Use 5 Micron Filters)
Sulfuric Acid -
January, 2001 - *PRO · pHx* added to spent acid - Restored acid performed as new.
Baths used 40 + hours per week - Treated acid performs as new with continuous use.
- **Decorative Chrome Plating Lines:** (QQ-C-320)
Hydrochloric Acid - (Tank Uses 5 Micron Filters)
January, 2001 - *PRO · pHx* added to spent acid - Restored acid performed as new.
Baths used 40 + hours per week - Treated acid performs as new with continuous use.
- **Black Oxide Plating Lines:** (MIL-C-14538)
Hydrochloric Acid - (Tank Uses 5 Micron Filters)
January, 2001 - *PRO · pHx* added to spent acid - Restored acid performed as new.
Introduced into acid made up in June, 2000. Acid is now approaching 18 months old.
Bath used 40 + hours per week - Treated acid performs as new with continuous use.
- **Electroless Nickel Plating Line:** (MIL-C-26074)
Hydrochloric Acid - (Tanks Use 5 Micron Filters)
January, 2001 - *PRO · pHx* added to spent acid - Restored acid performed as new.
Nitric Acid - Used to strip nickel from the tank.
March, 2001 - *PRO · pHx* added to spent acid - Restored acid performed as new.
Baths used 40 + hours per week - Treated acids perform as new with continuous use.
- **Passivation Line:** (AMS QQ-P-35, ASTM A 967)
Nitric Acid - (Tanks Use 10 Micron Filters)
January, 2001 - *PRO · pHx* added to spent acid - Restored acid performed as new.
Citric Acid -
April, 2001 - *PRO · pHx* added to spent acid - Restored acid performed as new.
Baths used weekly - Treated Acids perform as new with continuous use.
- **Chrome Strip Line:** (Tank Uses 10 Micron Filters)
Hydrochloric Acid - Hydrochloric acid is the primary ingredient.
August, 2001 - *PRO · pHx* added to spent acid - Restored acid performed as new.
This acid is more than 24 months old - Acid performs as new with continuous use.

The Hydrochloric Acid Tank (normally disposed of each two weeks) with only 1/2 % *PRO · pHx*, ran almost 5 months before needing additional *PRO · pHx* treatment.

Experiments are currently being run with PRO · pHx in the Recycling Rinse Water System to replace carbon filter for organics removal. Appears to be a viable option.

Industry Solutions - For The Electroplating Industry

PRO • pHx

ACID LIFE EXTENDER

PRO • pHx Is Available Through Authorized Distributors

For Additional Information Contact Wagner Environmental Technologies Industry Solutions

Providing Innovational Solutions For The New Millennium

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Based on a 1,000 G Pickling Tank Acid Strength @ 40 % With A 30 Day Acid Life	Untreated Acid	PRO • pHx Treated Acid	Savings From PRO • pHx Treated Acid
<i>Normal Time Between "Spiking" Due To Drag Out & Evaporation = 7 Days</i>			
WEEKLY <i>Normal Amount Of Acid Required To Spike</i> Hydrochloric Acid @ \$.86 Per Gallon	15 G Acid \$ 12. 90 Each Week	10 G Acid <i>Stronger Acid Requires Less</i> \$ 8. 60 Each Week	\$ 4. 30 Savings Each Week
MONTHLY <i>Acid + Water Used & Disposed</i>	1,000 G Total <i>400 G Acid + 600 G Water</i> Each Month	0 G <i>0 G Acid + 0 G Water</i> Each Month	100 % Savings Each Week
MONTHLY <i>Normal Amount of Acid + Water Replaced</i> Hydrochloric Acid @ \$.86 Per Gallon	1,065 G Total <i>465 G Acid + 600 G Water</i> \$ 399. 90 Each Month	43. 3 G Acid \$ 37. 24 Each Month	\$ 362 Savings Each Month
MONTHLY <i>Filtered Solids Created & Requiring Disposal</i> F - 006 Waste @ \$ 295. Per Cubic Yard	1,500 to 3,000 lb. Solids <i>1 to 3 Cubic Yards F - 006</i> \$ 295 - \$ 885 Each Month	20 to 40 lb. Solids Each Month	\$ 295 - \$ 885 Savings Each Month
MONTHLY <i>Caustic Required For pH Adjustment</i> Caustic Soda @ \$ 4. 04 Per Gallon	222 G Caustic \$ 896. 88 Each Month	0 G Caustic \$ 0 Each Month	\$ 896 Savings Each Month
ANNUAL <i>Acid + Water Used & Disposed</i>	12,000 G Total <i>4,800 G Acid + 7,200 G Water</i> Each Year	0 G <i>0 G Acid + 0 G Water</i> Each Year	100 % Savings Each Year
ANNUAL <i>Amount of Replacement Acid + Water</i> Hydrochloric Acid @ \$.86 Per Gallon	12,780 G Total <i>5,580 G Acid + 7,200 G Water</i> \$ 4,798. 80 Each Year	520 G Acid \$ 447. 20 Each Year	\$ 4,351 Savings Each Year
ANNUAL <i>Filtered Solids Created & Requiring Disposal</i> F - 006 Waste @ \$ 295. Per Cubic Yard	18,000 to 36,000 lb. Solids <i>12 to 36 Cubic Yards F - 006</i> \$3,540 - \$10,620 Each Year	240 to 480 lb. Solids <i>Less than 1 Cubic Yard F - 006</i> \$ 295 Each Year	\$ 3,245 - \$ 10,325 Savings Each Year
ANNUAL <i>Caustic Required For pH Adjustment</i> Caustic Soda @ \$ 4. 04 Per Gallon	2,664 G Caustic \$ 10,762. 56 Each Year	0 G Caustic \$ 0 Each Month	\$ 10,762 Savings Each Year
TOTAL ANNUAL SAVINGS From using PRO • pHx Acid Life Extender			\$ 18,358 To \$ 25,438 Savings Each Year

* Total Annual Savings Does Not Include Expenses / Cost For Labor, Waste Handling, Water, Electricity & Gas.

