Rust-Oleum

Presents…

Coatings Economics 101

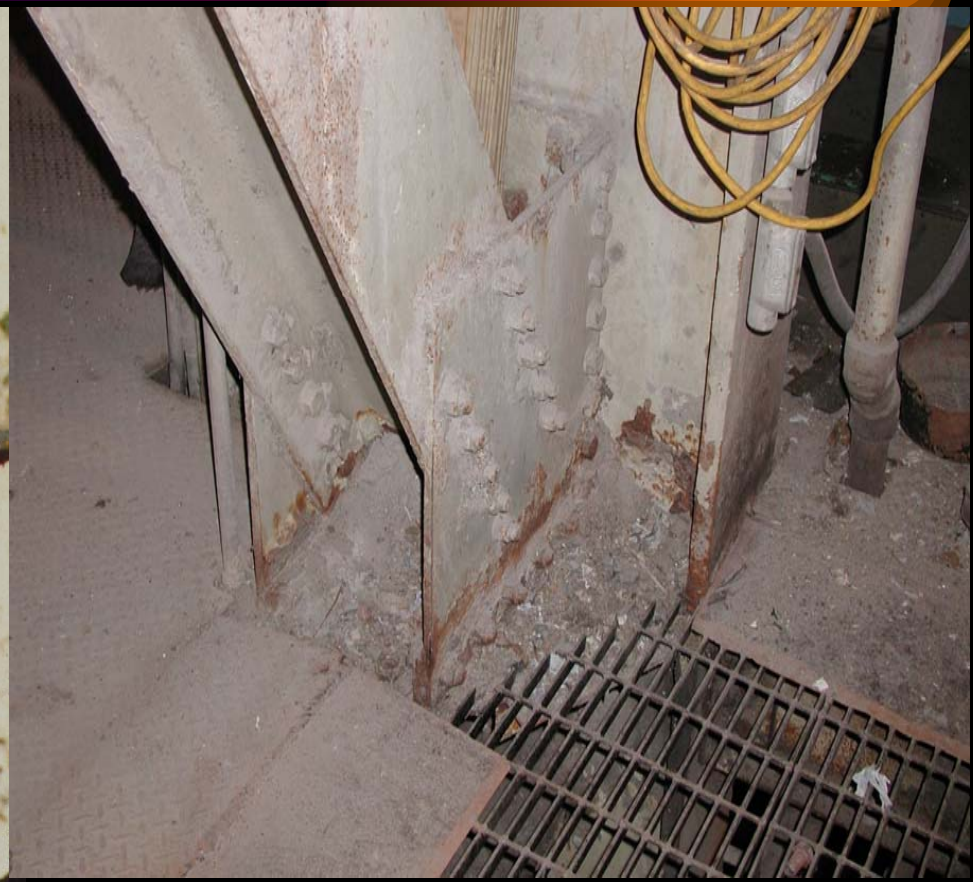
Schaedler yesco

EPS

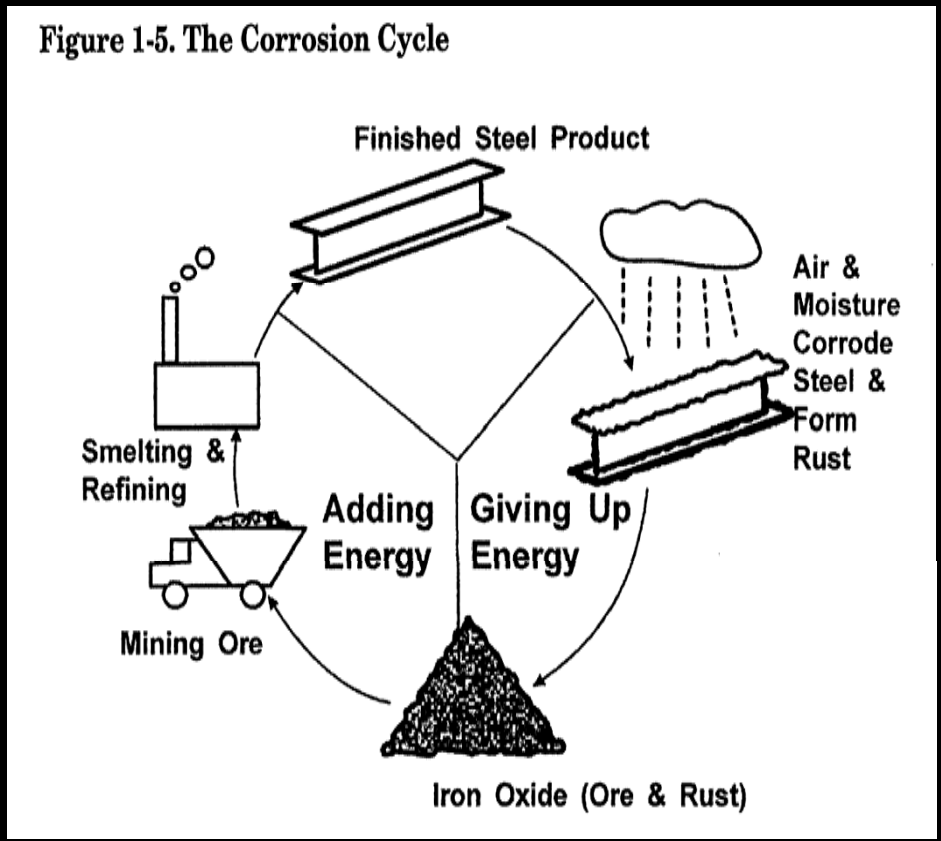
Celebrating 25 Years of Industrial Problem Solving

It is estimated that Rust and Corrosion account for 9.5 Billion dollars in damage annually.

Coatings Protect our Investment



Rust…What is it ???



- Rust or Corrosion is the electrochemical reaction between a metal and its environment.
- Corrosion results in the loss of material and its properties.

Coatings Protect 1 of 3 ways:

- Barrier Coat Protection

  Seal out the air and/or moisture

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- Cathodic Protection

  Sacrificial material such as zinc.

Coatings 101

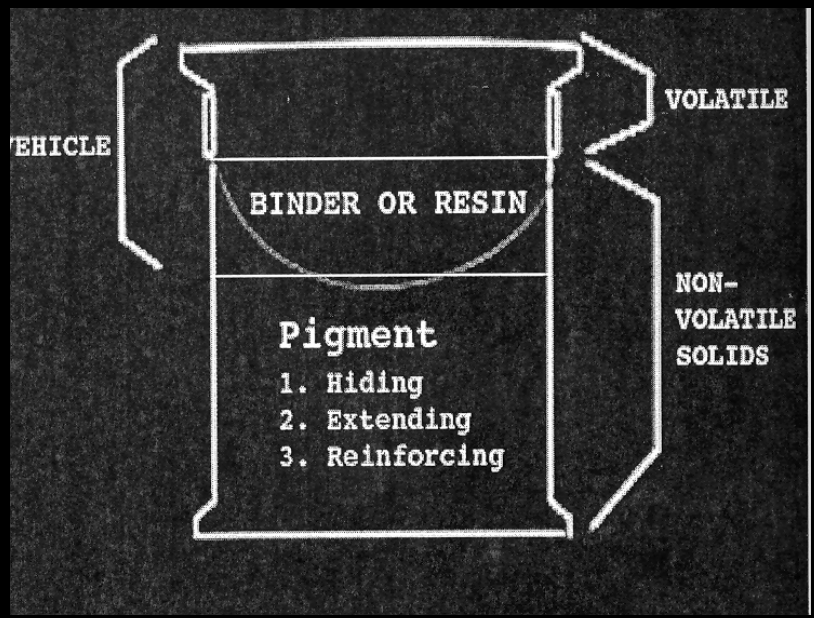
- Paint = Lipstick
- Makes things pretty
- Change colors often

- Coatings = Chapstick
- Protective in nature
- Chemical resistant
- Moisture resistant
- Abrasion resistant
- Provide 1 or more methods of corrosion protection.

Coatings Ingredients

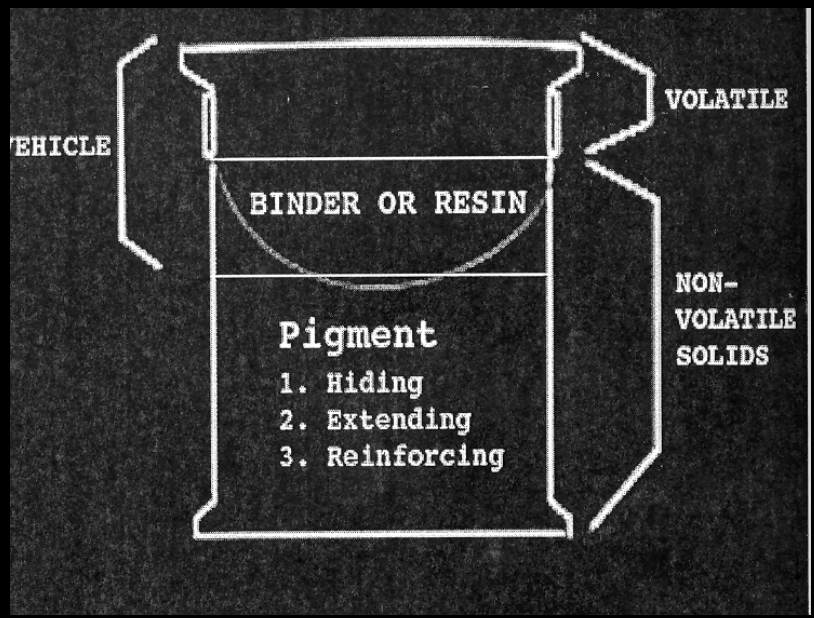
Made of 3 components:

- Binder or Resin
- Pigment
- Solvent



Percentage of Solids

- Resin and Pigments dry to form a protective coating.
- Solvents make a coating liquid in state.
- As the solvents evaporate, the coating dries and hardens.



VOC's & the Law

- VOC = Volatile Organic Compounds (solvent)
- OTC = Ozone Transport Commission
- New VOC standards effective 1/1/05 in PA
- 2.83 pounds per gallon limit on VOC's
- Even tighter limits on VOC's are coming

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HOW DOES THIS EFFECT US?

VOC's - How does it effect us?

Non-Compliant

- 40% solids – 60% thinner

Compliant

- 60% solids – 40% thinner

VOC's - How does it effect us?

Non-Compliant

- 40% solids – 60% thinner
- Cost prox. $25 - $40

Compliant

- 60% solids – 40% thinner
- Cost prox. $29 - $46

  15% more per gallon

VOC's - How does it effect us?

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- 400 sq. ft. per gallon

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  15% more per gallon
- 600 sq. ft. per gallon
  50% more coverage

VOC's - How does it effect us?

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- 40% solids – 60% thinner
- Cost prox. $25 - $40
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- Cost $.08 per sq. ft.

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- 60% solids – 40% thinner
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  15% more per gallon
- 600 sq. ft. per gallon
  50% more coverage
- Cost $.07 per sq. ft.

VOC's - How does it effect us?

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Compliant

- 60% solids – 40% thinner
- Cost prox. $29 - $46
  15% more per gallon
- 600 sq. ft. per gallon
  50% more coverage
- Cost $.07 per sq. ft.
- Longer dry time

Types of Coatings:

Acrylic ???

Enamel ???

Urethane ???

Alkyd ???

Epoxy ???

Water Based ???

Types of Coatings - Alkyds:

Alkyds or enamels:

- Use on steel & wood surfaces.
- Good gloss & color retention.
- Forgiving of less than ideal surface preparation.
- Low to moderate odors.
- Usually can be applied down to 35 - 40º F.
- Cleanup requires paint thinner, mineral spirits, or Acetone.
- NOT FOR USE ON GALVANIZED SURFACES.

Types of Coatings - Acrylics:

Water Reducible Acrylics – NOT LATEX!!

- Use on steel, wood, masonry, aluminum, and galvanized surfaces.
- Very good gloss & color retention.
- Surfaces MUST be free of oil & grease.
- Faster dry than alkyds. High humidity slows dry.
- Most acrylics require application temperature of >50F.
- Low odors.
- No cost to purchase or dispose of solvents.

Types of Coatings - Epoxies:

2 Component Epoxy

- Use on steel, wood, masonry, aluminum, and galvanized
- Poor gloss & color retention when used outside.
- Excellent chemical, moisture & submersion resistance.
- Excellent abrasion resistance Ideal floor coating.
- Requires mixing 2 parts together. Pot life once mixed.
- Solvent based epoxies have odors.
- Generally require temperatures of >50F.
- Require Xylene, MEK, or other strong solvent for cleanup.

Types of Coatings - Urethanes:

2 Component Polyurethanes or Urethanes :

- Use on steel, aluminum, and most masonry surfaces.
- The BEST gloss & color retention. Urethanes have a “wet” look.
- The BEST chemical & moisture resistance.
- Can usually be applied down to 40º F.
- Require mixing 2 parts together. Pot life once mixed.
- Nasty odors! Wear a respirator in enclosed areas.
- Most require MEK for cleanup

Types of Coatings - ZERO VOC:

1 or 2 Component materials:

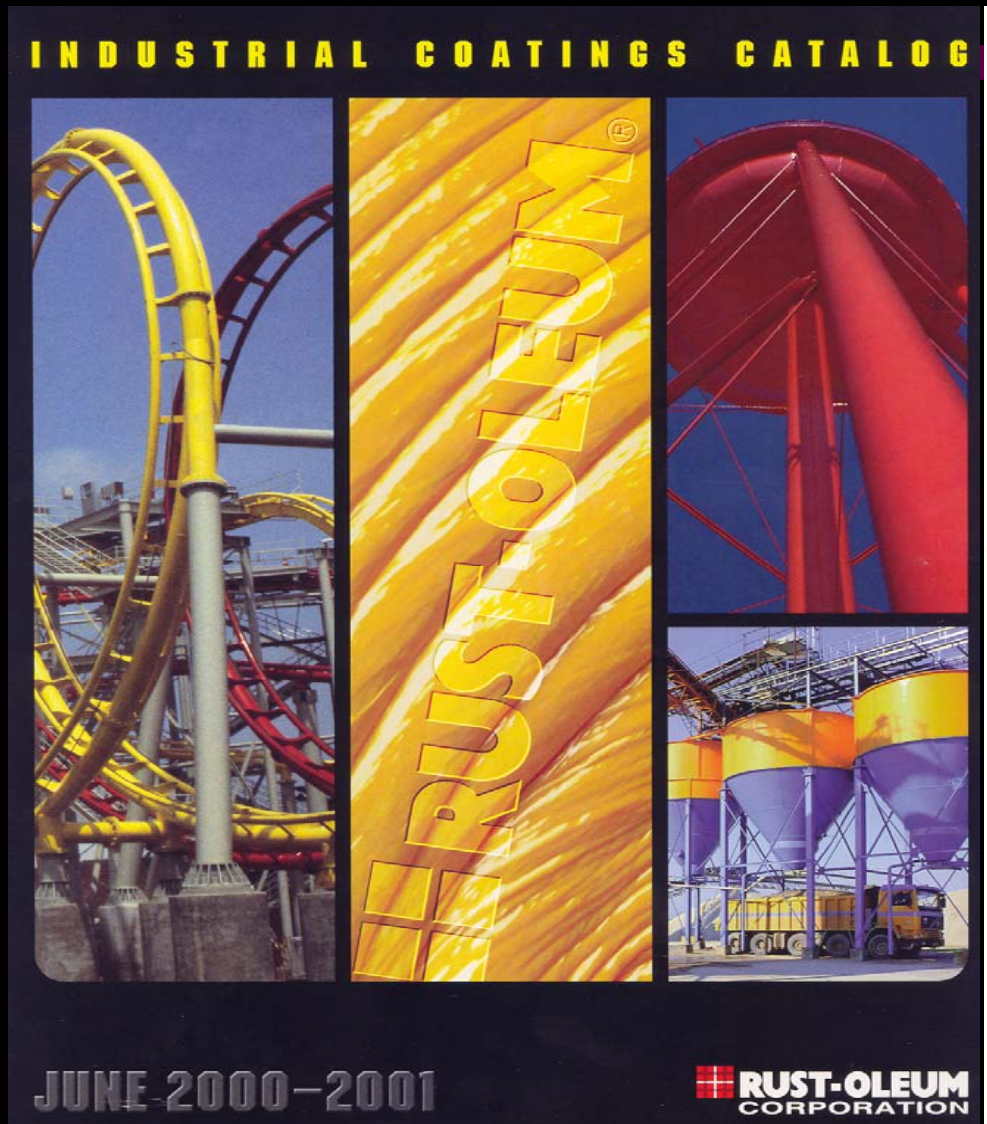
- Use on wood, steel, galvanized, aluminum, and masonry.
- Good gloss & color retention.
- Can be applied down to 40º F.
- Virtually Odorless!!!
- No Hazardous Air Pollutants.
- Ideal for painting occupied buildings.
- Green Seal
- Use soap & water for cleanup.

How do I chose the right coating for the job??

Consider:

- Substrate to be coated (steel, concrete, etc)
- Expected service life (years of service)
- Service Environment (mild, moderate, severe)
- Surface Preparation (to what degree can I perform)
- Application issues and limitations (odors)

Catalog/ Technical Data Sheets



INDUSTRIAL COATINGS SELECTION GUIDE

HOW TO USE

To select the coating system that best meets your needs:

1. Select the surface type.
2. Determine the exposure from the conditions chart. Recommended primers and surface prep are listed.
3. Choose the best coating system based on system features.

For more detailed system information, refer to product pages or the Technical Data Chart on pages 26 and 27. For surface preparation definitions refer to pages 28 and 29.

CONDITIONS

- MILD ENVIRONMENT — Aerosols are not represented, see pages 4-7. Outdoor weathering, mild industrial fumes, normal humidity, and mildew conditions.
- MODERATE ENVIRONMENT — Frequent fumes and spills of mild chemicals, occasional product spills, occasional chemical cleaning. Intermittent high humidity and moisture, mold and mildew conditions.
- SEVERE ENVIRONMENT — Frequent fumes and spills of strong chemicals (acids, alkalis, and solvents), high humidity and moisture conditions. Frequent product spills and frequent chemical cleaning.

CATEGORIES

STOPS RUST® Industrial Enamels | RUST-O-CRYLIC® Water-Based Acrylic Enamels | RUST-O-POXY™ Epoxy Coatings | RUST-O-THANE® Polyurethane Coatings | Special Use Industrial Coatings | Concrete Saver® Floor Coatings | Industrial Roof Coatings

STEEL

	FINISH	PAGE #	PRIMER	SURFACE PREPARATION	FEATURES
MILD–MODERATE	Industrial Enamels	9	769*, moderate: 1069 or 1060*	SP1 and SP2 or SP3 moderate: SP1 and SP6	Multiple coat application. Apply to tightly adhered rusted surfaces with only minimal surface preparation.
MILD–MODERATE	Low VOC Industrial Enamels	10	3469 or 7669	SP1 and SP2 or SP3	Apply to tightly adhered rust, excellent for high humidity, coastal environments.
MILD–MODERATE	8494 Dairy White Industrial Enamels	9	8469 or 8492	SP1 & SP2, SP3 or SP6 moderate: SP1 and SP2 or SP3	Mold and mildew resistant. Apply at temperatures as low as 18°F (-8°C).
MILD–MODERATE	5200 High Performance Acrylic	11	5269* or 5700	SP1 and SP2 or SP3 moderate: SP1 & SP2, SP3 or SP6	Good gloss retention indoors and out, low odor, water thinning and cleanup, non-flammable.
MILD–MODERATE	5700 Elastomeric Mastic Acrylic	11	self-priming	SP1, SP2 or SP3	One-coat application. Seals seams, joints and cracks.
MILD–MODERATE	3100 Speedy Dry Acrylic	12	self-priming or 3181 or 3169	SP1 and SP2 or SP3 moderate: SP1 & SP2, SP3 or SP6	Fast drying, good color and gloss retention. Low odor, water thinning, non-flammable.
MILD–MODERATE	3700 HI-LO DTM™ Acrylic Enamel	12	self-priming or 3769 or 3781	SP1 & SP2, SP3 or SP6	Apply from 35°F (2°C) to 100°F (38°C) with 95% humidity.
MILD–MODERATE	9100 High Performance Epoxy*	14	self-priming	SP1 and SP2 or SP3	One-coat application to tightly adhered rust with minimal surface prep. Moisture and chemical resistance.
MILD–MODERATE	9800 DTM Urethane Mastic	17	2068, 2082 moderate: 5369, 5381*, 9360, 9370, or 9380 or 5700	SP1 and SP2 or SP3 moderate: SP1 and SP2 or SP3 or SP7	Outstanding color/gloss retention. High build, ideal for direct to tightly adhered rust.
MILD–MODERATE	9700 High Solids Acrylic Urethane	17	9100 epoxy severe: 9360, 9370, or 9380	SP1 and SP2 or SP3 moderate: SP1 and SP2 or SP3 or SP7	Better gloss retention than alkyds in outdoor weathering. Resists acids, alkalis, and solvents.
SEVERE	5300 Water-Based Epoxy	13	5369 or 5381 severe: 5369 and 5381	SP1 & SP2, SP3 or SP6 severe: SP1& SP7	Solvent epoxy performs with low odor, water thinning and cleanup.
SEVERE	9100 High Performance Epoxy	14	self-priming	SP1 and SP2 or SP3	Minimal surface prep, moisture and chemical resistance.
SEVERE	9800 DTM Urethane Mastic	17	9100 epoxy, 9360, 9370, or 9380, or 5700	SP1 and SP2 or SP3	Outstanding color/gloss retention. High build, ideal for direct to tightly adhered rust.

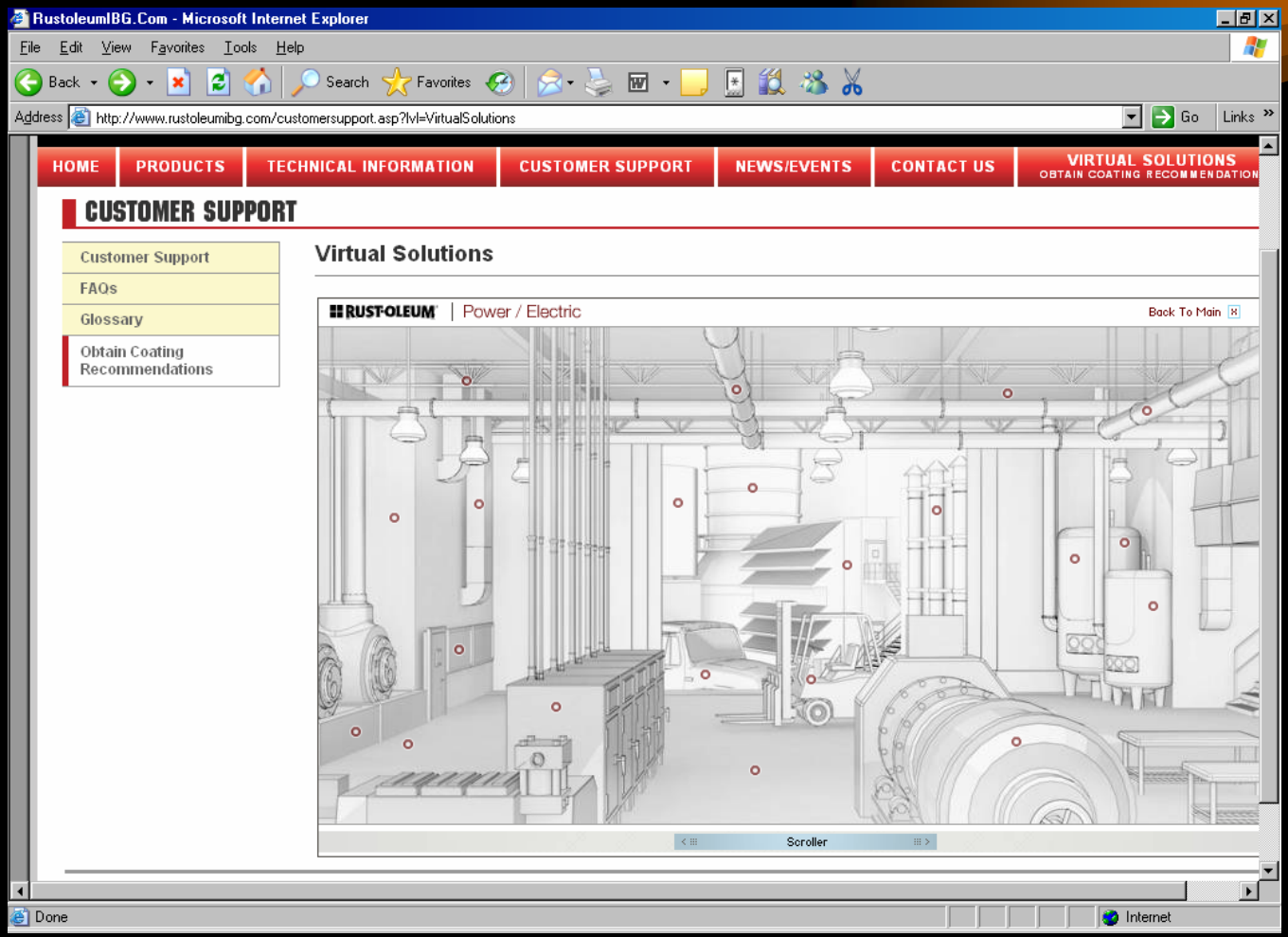
GALVANIZED/ALUMINUM

MILD–MODERATE	Industrial Enamels/7600/3400	8	3202	SP1	For use on clean galvanized or aluminum.
MILD–MODERATE	5200 High Performance Acrylic	11	5269 or 5281*	SP1 and SP2 or SP3	Compatible with previous tightly adhered coatings. Low odor, water thinning and cleanup.
MILD–MODERATE	5700 Elastomeric Mastic Acrylic	11	self-priming	SP1 and SP2 or SP3	Topcoat with 3115 or 5215 to keep metallic look.
MILD–MODERATE	3100 Speedy Dry Acrylic	12	3181*	SP1 and SP2 or SP3 moderate: SP1 and SP2, SP3 or SP6	Fast drying. Good color and gloss retention. Low odor, water thinning.
MILD–MODERATE	3700 HI-LO DTM™ Enamel	12	3769 or 3781	SP1 & SP2, SP3 or SP6	Apply from 35°F (2°C) to 100°F (38°C) up to 95% humidity.
SEVERE	5300 Water-Based Epoxy	13	5369 or 5381*	SP1 and SP2, SP3 or SP6	Low odor, water thinning and cleanup.
SEVERE	9700 Aliphatic Polyurethane	17	HS9369 or HS9381 or 9360, 9370 or 9380	SP1 and SP6	Outstanding chemical resistance and outdoor gloss retention.
SEVERE	9800 DTM Urethane Mastic	17	9100, 5369, 5381*, 9360, 9370, or 9380	SP1 & SP3 or abrasive blast severe: SP1, SP6, or SP10	Outstanding color/gloss retention. High build. Ideal for direct to tightly adhered rust.

CONCRETE/MASONRY

MILD–MODERATE	5200 High Performance Acrylic	11	self-priming or 5700	chemical clean and hand tool clean or power tool clean	Good gloss retention. Low odor, water thinning, and cleanup. Remove all loose, unsound concrete or masonry.
MILD–MODERATE	5700 Elastomeric Mastic Acrylic	11	self-priming**	chemical clean and hand tool clean or power tool clean	Low odor, impermeable to water. Apply between 46°F (8°C) to 130°F (55°C).
MILD–MODERATE	3100 Speedy Dry Acrylic	12	self-priming	chemical clean and hand tool clean or power tool clean	Fast drying, low odor, water thinning and cleanup. Remove all loose, unsound concrete or masonry.
MILD–MODERATE	3700 HI-LO DTM™ Enamel	12	self-priming	chemical clean	Apply from 35°F (2°C) to 100°F (38°C) with 95% humidity. Remove all loose, unsound concrete or masonry.
MILD–MODERATE	5300 Water-Based Epoxy	13	self-priming	chemical clean	Can apply to damp surfaces. Low odor, water thinning and cleanup. Remove all loose, unsound concrete or masonry.
MILD–MODERATE	9100 High Performance Epoxy	14	self-priming	chemical clean	Excellent moisture, chemical, and abrasion resistance. Remove all loose, unsound concrete or masonry.
MILD–MODERATE	9800 DTM Urethane Mastic	17	9100 or 5700	chemical clean or abrasive blast	Outstanding color and gloss retention. Remove all loose, unsound concrete or masonry.

Virtual Solutions



Surface Preparation

In the coatings world we have 2 scenarios:

SIS

And

SIDS

Surface Preparation

SOMETIMES IT STICKS

Surface Preparation

SOMETIMES IT STICKS

SOMETIMES IT DON’T STICK

Surface Preparation

The secret to SIS is:

Good Surface Preparation

95% of all premature coating failures are due to poor surface preparation.

Surface Preparation:

Cleanliness Is Next To Godliness

Wash the surfaces to be coated to remove dust, dirt, oil, greases, etc.

Options include:

- High Pressure Washing
- Solvent Wiping
- Citrus Cleaners
- Wash with soap & water
- Steam Cleaning
- Alkaline Cleaners (TSP)

Surface Preparation:

If nothing sticks to Teflon, how do they get

teflon to stick to the pan?

Provide a “tooth” if painting an existing glossy coating.

Options:

- Slightly scuff sand
- Use of a chemical deglosser

Surface Preparation:

Paint Ain’t Glue.

Remove loose rust, loose mill scale, and deteriorated existing coatings.

Options include:

- Scraping & Wirebrushing
- Power tool cleaning
- Abrasive blasting

Preparation Costs

Method of Preparation	**Cost per Square foot**
Solvent Wiping	$ .15 - $ .20
Pressure Cleaning	$ .12 - $ .16
Steam Cleaning	$ .12 - $ .16
Hand Tool Cleaning	$ .42 - $ .52
Power Tool Cleaning	$ .25 - $ .38
Commercial Blasting	$ .65 - $ .95
Brush off Blasting	$ .35 - $ .50
Near White Blasting	$ .95 - $ 1.50

Application Costs

Method of Application	**Cost per Square Foot**
Brush	$ .23 - $ .30
Roller	$ .15 - $ .30
Airless Spray	$ .12 - $ .16
Air Atomized Spray	$ .14 - $ .18

Coating Cost

Type of Coating	**Cost per Square Foot**
Alkyd Enamel	$ .067
Water Based Acrylic	$ .138
2 Component Epoxy	$ .305
2 Component Urethane	$ .495

Coating Economics

System / Surface Preparation	Prox Cost per gallon	Years of Service Life	Surface Preparation	Application	Coating Material	Total Cost	Cost per Sq. Ft. Per Year
2 Coat Enamel / Hand Tool Clean	$ 40	2	$ 0.61	$ 0.45	$ 0.14	$1.20	$ 0.60

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2 Coat Enamel / Hand Tool Clean	$ 40	2	$ 0.61	$ 0.45	$ 0.14	$1.20	$ 0.60
3 Coat Enamel / Hand Tool Clean	$ 40	4	$ 0.61	$ 0.68	$ 0.21	$ 1.50	$ 0.38

Coating Economics

System / Surface Preparation	Prox Cost per gallon	Years of Service Life	Surface Preparation	Application	Coating Material	Total Cost	Cost per Sq. Ft. Per Year
2 Coat Enamel / Hand Tool Clean	$ 40	2	$ 0.61	$ 0.45	$ 0.14	$1.20	$ 0.60
3 Coat Enamel / Hand Tool Clean	$ 40	4	$ 0.61	$ 0.68	$ 0.21	$ 1.50	$ 0.38
3 Coat Enamel / Commercial Blast	$ 40	7	$ 0.94	$ 0.68	$ 0.21	$ 1.83	$ 0.26

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3 Coat Enamel / Commercial Blast	$ 40	7	$ 0.94	$ 0.68	$ 0.21	$ 1.83	$ 0.26
1 Coat Epoxy / Hand Tool Clean	$ 60	5	$ 0.61	$ 0.23	$ 0.31	$ 1.15	$ 0.23

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3 Coat Enamel / Commercial Blast	$ 40	7	$ 0.94	$ 0.68	$ 0.21	$ 1.83	$ 0.26
1 Coat Epoxy / Hand Tool Clean	$ 60	5	$ 0.61	$ 0.23	$ 0.31	$ 1.15	$ 0.23
3 Coat Epoxy Urethane / Near White Blast	$109	12	$ 1.36	$ 0.68	$ 1.12	$ 3.16	$ 0.26

Rules of Thumb:

- Complete the best surface preparation possible

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- Complete the best surface preparation possible
- Select the proper coating for the environmental conditions.
- Use the best quality of coating possible as the coating will be the least expensive portion of the job.
- Application of an additional coat will double the life of the job.


Thanks for your time!
Questions?