Adiabatics, Inc.

We Make More Possible!

Adiacoat

"The Elastic Coating for Your Elastic Needs"

Adiabatics, Inc. has been involved in research and development projects focused on wear-resistant coatings for a wide range of companies and applications. Most have utilized traditional thermal/flame sprayed coatings or thermal bonded ceramic coatings developed in-house. However, in 2004 we embarked on developing polymer coatings for thermal insulation and friction and wear applications. These coatings proved to be more effective and cost efficient than the thermal/flame sprayed coatings and the thermal bonded ceramic coatings.

In river systems, sand and sediment comprise a substantial volume of the water flow. This high solids content results in severe abrasive erosion on pump impellers and casings.

For these applications, we developed a hybrid polyurea elastomeric coating to resist sediment erosion/abrasion and cavitation for water pumps.

Elastomeric coatings have been proven to absorb the energy imparted from fine particles impinging on the pump impeller and casing surface in critical areas. Adiacoat coatings are specifically designed to have a greater ability to absorb the pressure waves generated during cavitation.

Laboratory and field tests show Adiacoat has the potential to protect pump impellers for over 20 months as compared to 8 months for tungsten carbide, the current water pump coating standard.

Adiacoat will function not only on water pumps but also in variety of applications, including water tanks, fiber-reinforced plastic (FRP), slurry pumps, boat propellers, pipes, and concrete chutes.

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Adiacoat Black Ice

Case Study - Double Suction Centrifugal Pump Impeller

Location: The Yellow River in China

Testing: Second Stage Double Suction Pump Impeller

Material: Adiacoat Black Ice

The Yellow River

Impeller Condition as Installed (Before Test):

Impeller Condition After Six Months of Testing:

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Adiacoat Black Ice

Applications:

- Water Pump Impellers
- Water Pump Casings (Inner and Outer)
- Fiber-Reinforced Plastics (FRP)
- Wastewater Applications/Tanks
- Slurry Pumps
- Concrete Chutes
- Pipes (Inner and Outer)
- Boat Propellers

Advantages:

- Hybrid Polyurea Elastomer
- 100% Solids, Meets VOC Regulations
- Flexible, Over 400% Elongation
- Remains Flexible in Cold Temperatures
- Maximum Use Temperature of 65º C
- Cures From -5º C to 55º C
- No Toxic Vapors

Physical Properties:	Typical Value:	Testing Method:
Application Method	Cast or Brush	N/A
Mix Ratio	1:1	N/A
Processing Temperature	50ºC to 70ºC	N/A
Hardness	72 to 78 Shore A	ASTM D2240
Density	1.05 gm/cm^3	N/A
Tensile Strength	44.8 MPa (6500 psi)	ASTM D412
Tear Strength	68 N/mm (388 pli)	ASTM D624
Elongation	550%	ASTM D412
Thermal Conductivity	0.25 W/m-K	N/A
Max Use Temperature	65ºC (150ºF)	N/A
Taber Abrasion	8.0 mg weight loss	ASTM D4060
Solids Content	100%	N/A
Working Life	5 minutes	N/A
Tack Free Time	40 minutes	N/A
Full Cure	>5 days	N/A
Coverage	1.2 Kg/m^2	N/A

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Adiacoat Blue Steel

Case Study - Double Suction Centrifugal Pump Impeller

Location: Japan

Testing: Double Suction Pump Impeller

Material: Adiacoat Blue Steel

Before

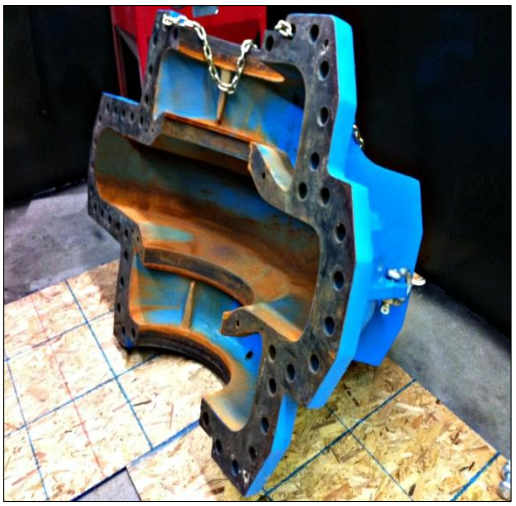
After

Case Study – Outer Casing for Double Suction Pump Impeller

Location: China

Testing: Outer Casing

Material: Adiacoat Blue Steel



Before

After

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Adiacoat Blue Steel

Applications:

- Water Pump Impellers
- Water Pump Casings (Inner and Outer)
- Fiber-Reinforced Plastics (FRP)
- Wastewater Applications/Tanks
- Concrete Chutes
- Pipes (Inner and Outer)
- Boat Propellers
- Slurry Pumps

Advantages:

- Specially Formulated to Resist Humidity
- 100% Solids, Meets VOC Regulations
- Flexible, Over 400% Elongation
- Remains Flexible in Cold Temperatures
- Maximum Use Temperature of 65º C
- Cures From -5º C to 55º C
- No Toxic Vapors

Physical Properties:	Typical Value:	Testing Method:
Application Method	Brush or Spray	N/A
Mix Ratio	1:1	N/A
Processing Temperature	50ºC to 65ºC	N/A
Hardness	72 to 78 Shore A	ASTM D2240
Density	1.05 gm/cm^3	N/A
Tensile Strength	42 MPa (6100 psi)	ASTM D412
Tear Strength	68 N/mm (388 pli)	ASTM D624
Elongation	485%	ASTM D412
Thermal Conductivity	0.22 W/m-K	N/A
Max Use Temperature	65ºC (150ºF)	N/A
Taber Abrasion	8.0 mg weight loss	ASTM D4060
Solids Content	100%	N/A
Working Life	3.5 minutes	N/A
Tack Free Time	30 minutes	N/A
Full Cure	>5 days	N/A
Coverage	1.2 Kg/m^2	N/A

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Adiacoat Quick Cure

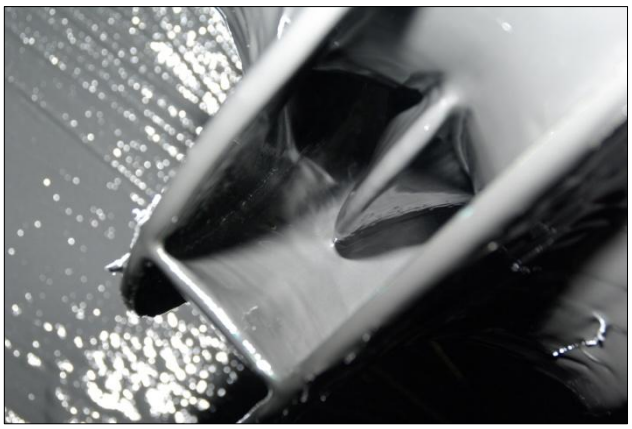
Case Study - Double Suction Centrifugal Pump Impeller

Location: USA

Testing: Double Suction Pump Impeller

Material: Adiacoat Quick Cure

Before



After

Case Study – Extending the Life of a Concrete Chute

Location: USA

Testing: Concrete Chute

Material: Adiacoat Quick Cure

Before

After

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Adiacoat Quick Cure

Applications:

- Water Pump Impellers
- Water Pump Casings (Inner and Outer)
- Fiber-Reinforced Plastics (FRP)
- Wastewater Applications/Tanks
- Concrete Chutes
- Pipes (Inner and Outer)

Advantages:

- Tack Free in One Minute
- Resists Runs on Vertical Objects
- 100% Solids, Meets VOC Regulations
- Flexible, Over 400% Elongation
- Remains Flexible in Cold Temperatures
- Maximum Use Temperature of 90º C
- Cures From -5º C to 55º C
- No Toxic Vapors

Physical Properties:	Typical Value:	Testing Method:
Application Method	Spray	N/A
Mix Ratio	1:1	N/A
Processing Temperature	55ºC to 70ºC	N/A
Hardness	85 to 90 Shore A	ASTM D2240
Density	1.05 gm/cm^3	N/A
Tensile Strength	27 MPa (3900 psi)	ASTM D412
Tear Strength	40 N/mm (228 pli)	ASTM D624
Elongation	350%	ASTM D412
Thermal Conductivity	0.20 W/m-K	N/A
Max Use Temperature	90ºC (194ºF)	N/A
Taber Abrasion	12.2 mg weight loss	ASTM D4060
Solids Content	100%	N/A
Working Life	15 seconds	N/A
Tack Free Time	1.0 minutes	N/A
Full Cure	>1.5 days	N/A
Coverage	1.2 Kg/m^2	N/A

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