

WESTERN POLYMER CORP.



Lake States

Knocking Down Barriers

March 27, 2007



AN ISO 9001:2000 CERTIFIED COMPANY

WESTERN POLYMER CORP.



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AN ISO 9001:2000 CERTIFIED COMPANY

Desired Binder Properties

Barrier Coatings

- Flexible film
- Polar polymer
- Continuous film former
- Non reactive
- Strength
- Easy to prepare
- Wide range of viscosities

Modified Potato Starch

Base Material

- Potato starch backbone
- High substitution
- Viscosity modification

Modified Potato Starch

A Size Press & Coating Additive

- Water holding of CMC & alginates
- Rheology of viscosity modifiers
- Strength of synthetic binders
- Holdout of surface sizing agents
- Stiffness of starch

Modified Potato Starch

A Size Press & Coating Additive

- Dispersability of dispersants
- Flexibility of film formers
- OB carrying similar to PVOH
- Easy to prepare
- Available in range of viscosity

Modified Potato Starch

Water Holding

- Replaced CMC
- Replaced hydroxyethylated starch
- Replaced thickeners

Modified Potato Starch

Binder

- Replaced hydroxyethylated starch
- Replaced grafted starch
- Replaced PVOH
- Replaced SBR latex

Modified Potato Starch

Easy Hydration Atmospheric Cooks

- Reached gel point in 10 seconds
- Gel point of 118 F
- 12.5% solids with unmodified product
- 42% solids with highly modified product

Modified Potato Starch

Viscosity Stability

- Set back extremely low
- Pourable after 6 months at room temperature
- 12.5% solids @ 122°F #3 spindle & 20 rpm was 1500 cps (Brookfield) for high molecular weight

Modified Potato Starch

- C1S & C2S
- 46# to 82# basis weight
- Solvent holdout
- On machine coater
- Off machine coater

Modified Potato Starch

- Coating per side--#4 lb
- Density (porosity)
 - Test minimum = 180,000 seconds
 - Max achieved = 693,000 seconds
- Blister
 - Test minimum = 190 C
 - Max achieved = 220 C
- Proprietary solvent hold out test

Modified Potato Starch

A Case Study

- Fluorochemical replacement
- Pet food bags
- Pass the hot Ralston oil test
- Size press
- Coater

Modified Potato Starch

A Case Study

- Grease hold out
- Paper plates
- Size press

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