



Impermeable recyclable barrier coating  
for the packaging industry

**RETEC F<sub>3</sub> TECHNOLOGIES**

# Fast Film Formation (F<sup>3</sup>)

Application and benefits

[www.RF3.ca](http://www.RF3.ca)

# F<sup>3</sup>: What is it?



- **A new revolutionary generation of water based coating additive that:**
  - Accelerates the drainage of water towards the substrate
  - Enhances film formation and increases the resulting barrier (water, water vapor, fat, oil, release, etc...)
  - Requires very little or in some case no thermal energy
  - Does not “block”
  - Meets FDA sections CFR 176-170 and CFR 176-180
  - Is repulpable, recyclable and compostable

# F<sup>3</sup>: Technical benefits



- **Due to its technical superiority, F<sup>3</sup> allows to:**
  - Significantly reduce the coat weight necessary
    - Typically 40% to 60% less than traditional water-based coatings
  - Drastically reduce the need for thermal energy
  - Broaden the application possibilities
    - Existing equipment on a paper machine, corrugator, flexo printers, spray, etc...
    - Using a more porous substrate
  - Greatly simplifies the application process (i.e. 1 coat instead of 2 coats to reach the desired barrier)
  - Generates significant savings

# F<sup>3</sup>: Other technical benefits



- **Drying**
  - Less thermal energy
  - Some application may require curing to reach full barrier
- **Printability**
  - Coating is printable with regular inks
- **Glueability**
  - It is not necessary to use a special glue.

# Versatility



- **Manufacturing**
  - Key ingredients available worldwide
  - Technologically “simple” and reproducible process
- **Possible to give more than one resistance property to paper/board with a single treatment**
  - Water, oil, grease, water vapor etc...
- **Applications possible on existing equipment**
  - Paper machine: size press, coater (inline or offline)
  - Converters: flexo printer and/or offline coater

# Environmental impact



- **Sustainable technology for the replacement of wax, polyethylene, styrene, and fluor-based surfactants in water, oil and grease barriers.**
  - Almost all ingredients based on natural and renewable sources
  - Low coat weight applied vs. traditional barriers
  - Significant reduction of thermal energy needed
  - Reduced carbon footprint
    - Possible for clients to get Carbon Credits

# F<sup>3</sup>: Its economical benefits



- **F<sup>3</sup> performance generates significant direct cost savings:**
  - Its price is very similar to regular commercial water based coatings
  - Applied dry weight is reduced by up to 60% vs. conventional competitive water based coatings
  - Reduction of energy needed to dry the coating or film
  - Allows to reach a barrier on substrates where it was not possible or not economically viable before



# F<sup>3</sup>: Product portfolio



- **After years of evaluations and trials:**
  - Technology identified and studied
  - Commercial products developed and available
  - Technology tested against market products in lab, pilot machines and full scale industrial applications
    - Found more efficient and more cost effective
  - Customization possible to meet application equipment/process and end user specifications



# F<sup>3</sup>: Sustainability.



## *RF3 is leader in Sustainable Development*

- **Key components/additives are carefully selected for sustainability:**
  - Environmentally friendly
  - Socially responsible
  - Economic (Equitable)
- **Treated paper/board and end products are:**
  - Repulpable
  - Biodegradable
  - Compostable



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# Applications

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# Paperboard



- **Water and/or Grease resistance treatment can be done at the on existing equipment at papermill or at the printer, on request**
  - Pizza boxes
  - Frozen Packaging
  - Waxed boxes “Swiffer”
  - Biskets
  - Cereal boxes
  - Boxes for chicken and fish
  - Boxes for fruits and vegetable

# Folding Carton



- **Water, Oil, Grease and/or release treatments can be done on existing equipment at paper mill or at the printer, on request**
  - Hamburger boxes
  - French fries cup
  - Danish/Pastries boxes



# Multi layer bags



- **The additive F<sup>3</sup> allows versatility and efficiency in the application**
  - Consistency of the barrier obtained by keeping the coating at the surface
  - Coating can be applied without or significantly less thermal energy, depending on the application
  - Technology works with porous substrate
  - Converters will be able to treat perfectly their products for all type of barriers at the flexo printers and/or conventional drying process

# Wrapper and Ream Wrap



- **The coating made with F<sup>3</sup> can be applied in line directly on the paper machine and/or flexo printer**
  - No need for space for a drying system
  - No need for an offline machine
  - Or a flexo multi station



# Release coating



- **Here again, no need for drying system**
  - Coating can be applied in line directly on the paper machine
  - Can also be applied on the flexo
- **Strong release properties at low coat weight**
  - Savings and only 1 coat vs. competition



## Paper packaging for hamburger & sandwich



- **Water & water vapor, Oil, Grease and/or release treatments can be done on existing equipment at paper mill or at the printer, on request**
- **For the same barrier level**
  - Up to 50% less coating (dry basis) is needed vs. conventional water based coatings
  - Significant cost savings are achieved
  - Could be add to starch solution

# The box without wax



- **The main obstacle water-based coating technology was its cost that was double the wax**
  - Treatment with F<sup>3</sup> technology shows that it is now possible to replace wax
  - Possible to apply the coating directly on the corrugator – No “blocking”
  - The F3 technology forms a uniform and cohesive film with much less thermal energy needed.
  - Sustainable products
  - Printable
  - Adjustable slide angle
  - Resistant to the scoring

# Corrugated Medium



- **F<sup>3</sup> has demonstrated its efficiency to get a strong water resistance on single bump application**
  - Economical
  - Easy to use
  - Little thermal energy needed to dry the film

# Cup stock (not based on F<sup>3</sup>)



- **Refib technology uses sustainable components**
- **Refib technology gives:**
  - No preheat necessary
  - Good heat sealability
  - Low coat weight applied
  - Repulpable & recyclable (broke, shavings etc...)
  - Compostable & Biodegradable

# Cereal box



- **Possible to eliminate the bag inside the box and to reduce the size of the box**
  - Easy to apply on existing equipments
  - Economical
  - Repulpable
  - Recyclable
  - Biodegradable

# Summary



- **Retec is a leader in sustainability and barrier technology based on renewable energy**
  - Sustainable key ingredients
  - Significant reduction in thermal energy
- **Efficient barriers at low coat weight**
- **Versatility: multi-barriers, substrate, process and manufacturing**
- **Lower application cost than current technology**
- **Strong, knowledgeable and committed R&D**

Highlights of best performance achieved with F<sup>3</sup> Technologie.



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**Corrugated boxes, 100% recycled liner**

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**Kraft application off line for water resistance,  
100% no drying.**

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**Grease barrier on newsprint, blade coater application**

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**Size press application**





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