



Glycolube[®] AFA-1 Anti-fog



Anti-fog for Food Packaging Films

- Potential cost savings of up to \$0.03/lb of film due to reduced additive loadings
 - Up to 3x lower use levels compared to nonylphenol ethoxylates (NPEs)
- Better performance with less additive
 - Improved film clarity, static decay times <0.5 seconds
 - Improved food presentation in the package
 - Imparts anti-static properties, potentially eliminating the expense of separate anti-stats
- This product does not contain NPEs. NPEs are prohibited in several countries due to environmental concerns.
- Kosher-certified and FDA-approved for food contact
- Recommended use levels: 1-3% (1.5% typical)
- Low odor, low color

Technical Data

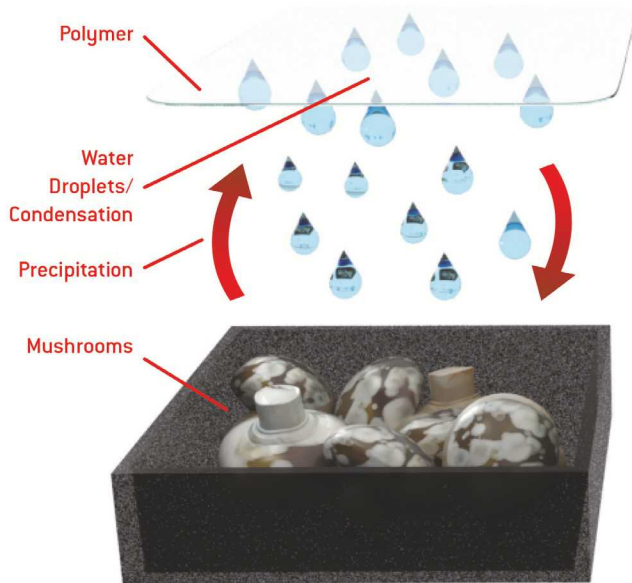
| Flexible PVC Base Formulation | |
|-------------------------------|---------------|
| Ingredient | Loading (phr) |
| PVC Resin, K-68 | 100 |
| DOA Plasticizer | 35 |
| Epoxidized Soybean Oil | 10 |
| Ca/Zn Stabilizer | 1 |
| Organophosphite Chelator | 1 |
| Anti-fog Additives | As in Tables |

| Anti-fog Agent | Anti-fog Testing @ Room Temperature | | | Anti-fog Testing @ 2-5° C | | | |
|---------------------------|-------------------------------------|----------------|-------------------|---------------------------|------------------|-------------------|-------------------|
| | Loading (phr) | Fog Clear Time | Result @ 30 min | Loading (phr) | Fog Clear Time | Result @ 30 min | Result @ 120 min |
| None | 0 | Did Not Clear | Foggy/Light Drops | 0 | Did Not Clear | Foggy/Light Drops | Foggy/Heavy Drops |
| Glycolube®AFA-1 Lubricant | 2.5 | 0 sec | Clear | 2.5 | 0 sec | Clear | Clear |
| Nonylphenol Ethoxylate | 3.0 | Did Not Clear | Foggy/Heavy Film | 3.0 | 20 min – 2 hours | Light Fog | Clear/Light Drops |

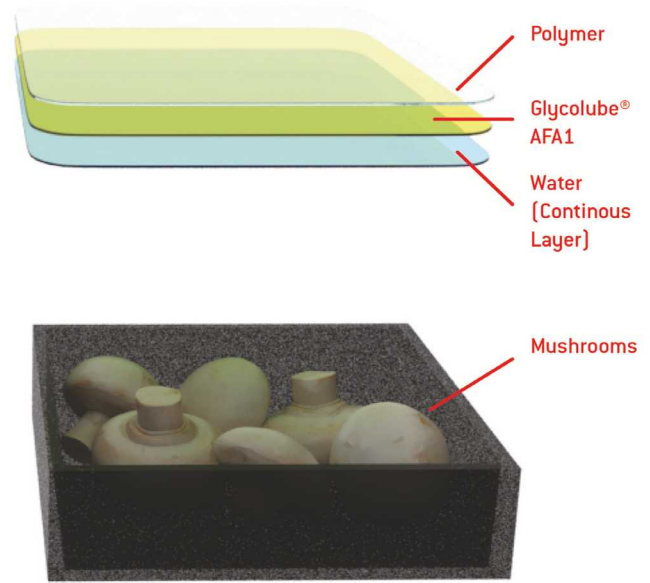
| Static Decay Measurements | | | |
|---------------------------|---------------|------------------------|------------------------|
| Anti-fog Agent | Loading (phr) | Decay Time (sec) +5 kV | Decay Time (sec) -5 kV |
| None | 0 | 29.1 | 34.7 |
| Glycolube®AFA-1 Lubricant | 2.5 | <0.5 | <0.5 |
| Nonylphenol Ethoxylate | 3.0 | 3.3 | 3.8 |

| Mushroom Test (Color and Consistency of Mushrooms in Container) | | | |
|---|---------------------|--------------------|--------------------|
| Anti-fog Agent | Results @ 1.5 Hours | Results @ 18 Hours | Results @ 24 Hours |
| None | White | White | White & Dried |
| Glycolube® AFA-1 Lubricant | White | White | White |

Food Wrapping Regular Polymer



Food Wrapping Polymer Treated w/ Glycolube AFA1



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Using Glycolube® AFA-1 prevents the micro-climate effect on the packaging maintaining immediate film clarity and allowing for improved food presentation.

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