Antifog Masterbatch

For PP-Film
MAXITHEN® PP 75770 AFAB

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PRODUCT DESCRIPTION

- Good Cold Fog and Hot Fog properties
- No deterioration of transparency at PP-films
- Contains additional synthetic Antiblock
- Food approved up to max. 8% dosage at PP-films according to BfR, Germany

Note:
Use of slip additives based upon erucamide or oleamide will deteriorate the Cold and Hot Fog effect properties! Polymers under use must not contain these additives.
MAXITHEN® PP 75770 AFAB

PRELIMINARY PRODUCT INFORMATION

MAXITHEN® PP 75770 AFAB
Antifogging/Antiblocking Combination Masterbatch
for Polypropylene Film at Direct Food Contact Applications

FORM OF SUPPLY: Masterbatch in pellet form, packed in UV stabilised 20/25 kg PE bags, on pallets, covered with a UV stabilised hood (standard packing).
For colouring and stabilising the packing material, a combined MAXITHEN® colour / stabiliser masterbatch has been used to protect both, the packing material as well as the content.

COLOUR: Whitish

ACTIVE AGENT: Combination of a surface-active additive with synthetic silica

CARRIER MATERIAL: Polypropylene

APPLICATION: MAXITHEN® PP 75770 AFAB is primarily used for packaging films in Cold-Fog and Hot-Fog applications to prevent the condensation of steam in form of small droplets and to support the formation of a thin, translucent film of water. Additionally, the blocking of the film is reduced.

DOSAGE RATE: The typical dosage rate is between 5% and 10%. According to Recommendations BfR/Germany a maximum dosage of 8% must not be exceeded.

INFLUENCES: The effectiveness and durability of the effect is considerably influenced by the choice of polymers, the film thickness, temperature and the usage conditions and should therefore be tested under practical conditions.

NOTE: With higher addition amounts and temperatures about approx. 220°C an increasing evaporability is to be expected on account of the product construction. Therefore, appropriate preliminary tests are advised. Interactions between this product and other additives, e.g. antistatic or anti-blocking agents, lubricants and light stabilisers are possible. An influence on pre-treatment, printability, weldability or similar treatments during the production process cannot be excluded. Appropriate tests are suggested.
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PRELIMINARY PRODUCT INFORMATION

MAXITHEN® PP 75770 AFAB
Antifogging/Antiblocking Combination Masterbatch
for Polypropylene Film at Direct Food Contact Applications

STORAGE CONDITIONS:
Storage time of 6 months should not be exceeded. Particular attention should also be paid to a cool and dry storage and protection from sunlight. In order to prevent moisture absorption from the air, opened bags should be kept tightly closed. If necessary, goods should be dried before use.

All information in this product information sheet has been obtained from laboratory tests under ideal and closely controlled conditions. The information should act as a guide only and should not be construed as guaranteeing specific properties or suitability for a particular application. Therefore, trials by customers using their polymers and their conditions are highly recommended.

Gumpoldskirchen, January 2003
MAXITHEN® PP 75770 AFAB

“Cold Fog” – Test

MAXITHEN® PP 75770 AFAB in PP-Films

“Cold Fog” – Test
Film measured after conditioning of 3 days

<table>
<thead>
<tr>
<th>time</th>
<th>evaluation</th>
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<tbody>
<tr>
<td>10 min</td>
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<td>4 d</td>
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- **natural film**
- **7% PP75770AFAB**
MAXITHEN® PP 75770 AFAB

“Hot Fog” – Test

MAXITHEN® PP 75770 AFAB in PP-Films

“Hot Fog” – Test
Film measured after conditioning of 3 days

![Graph showing evaluation over time for natural film and 7% PP75770AFAB.](image-url)
Description of the Test Method

“Antifog evaluation tests for agricultural and food-packaging film”

INTRODUCTION
Antifog agents are used in polymeric films for both food-wrapping and agricultural applications to ensure that any condensation of water vapour occurs as a uniform, invisible, layer of water rather than as a series of individual droplets that are not only aesthetically undesirable but also can produce damaging effects.

In food-wrapping films the main objectives are:
• to ensure that the film retains its transparency so that the packaged contents are clearly visible
• to protect the packaged food from degradation that may be caused by the droplets of water

In agricultural films they are:
• to ensure maximum light transmission into the enclosure
• to prevent large drops falling onto young plants, increasing damage and disease
• to prevent plant “burning” caused by the lens action of large drops

Gabriel-Chemie provides with this information commonly used visual test methods to test the effectiveness of antifog films for either in agricultural or food-wrapping applications.

EVALUATION-TEST PROCEDURES
In these tests the appearance of the test specimens are judged according to the visual ratings given in table 1.
TESTS FOR FOOD-PACKAGING FILMS

The „Cold Fog“ test
Put tap water, 200ml, in a 250ml beaker and cover the top of the beaker with a sample of the test film. Place the beaker in a temperature-controlled cabinet at 4 °C (figure 1).

![Figure 1: The „Cold-fog“ test](image)

Observe the appearance of the film, according to the ratings A to E described in table 1, for a total period of 1 week. Observations should be made at the time intervals shown in figure 2.

![Figure 2: Performance recording intervals for the „Cold-fog“ test](image)
THE „HOT-FOG“ TEST
Put tap water, 50ml, in a 250ml beaker and cover the top of the beaker with a sample of the test film. Place the beaker in a bath, containing water at 60 °C (figure 3).

Using an accurate time, record any changes in the appearance of the film (using ratings A to E, described in table 1) for a period of 3 hours. Observations should be made at the time intervals shown in figure 4.

Table 1: The appearance ratings of films tested for antifog performance

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>very poor opaque layer of small fog droplets</td>
<td>zero visibility, poor light transmission</td>
</tr>
<tr>
<td>B</td>
<td>poor opaque or transparent layer of large droplets</td>
<td>zero visibility, poor light transmission</td>
</tr>
<tr>
<td>C</td>
<td>poor complete layer of large transparent drops</td>
<td>poor visibility, lens effect, dripping</td>
</tr>
<tr>
<td>D</td>
<td>good randomly scattered or large transparent drops</td>
<td>discontinuous film of water</td>
</tr>
<tr>
<td>E</td>
<td>excellent transparent film displaying no visible water</td>
<td>completely transparent</td>
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BUSINESS UNITS OF GABRIEL-CHEMIE GROUP:

- Building & Agriculture
- Home & Lifestyle
- Packaging for Industrial & Consumer Goods
- Cosmetics Packaging
- Food & Beverage Packaging
- Medical

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