MAXITHEN® PET

Masterbatch for colouring
Polyethyleneterephthalate
MAXITHEN® PET

HISTORY

Since the introduction of PET (PolyEthyleneTerephthalate) bottles for the beverage industry, this material has become an independent packaging type with enormous growth potential due to its outstanding material properties and the high acceptance from the market and consumers.

OUR VISION

As technology leaders in the field of masterbatch production for bottle closures, it was evident to us that we should also concern ourselves with the development and production of PET masterbatches.

OUR AIM

Our aim was to develop PET masterbatches with maximum dispersibility whilst retaining the colour qualities. The higher the viscosity, the better the properties of the PET regarding gas permeability and resistance to heat and aggressive substances.

THE RESULT

Colour concentrates in pellet form, suitable for use with polyethylene terephthalate (PET), based on inorganic and organic colorants as well as pigment concentrates, dispersed in a PET carrier system. Standard PET masterbatches are highly concentrated and enable economical colouring due to the optimised, high colour intensity.
MAXITHEN® PET

APPLICATIONS

MAXITHEN® PET masterbatches are suitable for most production processes:

✓ Production of injection moulded preforms
✓ Injection stretch moulding
✓ Film extrusion
✓ Sheet extrusion

ADVANTAGES

vs. wax based masterbatches

✓ no plate-out on the screw
✓ no compatibility problems during processing
✓ low dosage rates possible
✓ no feed hopper cooling required
✓ ready to use with natural PET due to post-crystallisation
✓ carrier system does not influence overall migration (OM) values.

vs. liquid colour concentrates

✓ no plate-out on the screw
✓ easy storage
✓ no compatibility problems during processing
✓ excellent dosing precision
✓ easy handling and change-over of colours
✓ wide range of dosage rates possible – depending on customer requirements
✓ carrier system does not influence overall migration (OM) values.

MAXITHEN® PET MASTERBATCHES ARE FOOD APPROVED AND IN CONFORMANCE WITH REGULATIONS AS INDICATED IN OUR LETTERS OF CONFORMITY.
MAXITHEN® PET

PELLET TYPES

MAXITHEN® PET masterbatches can be delivered in three pellet types:

- Standard Pellets
- Micro Pellets
- Speciality Pellets (finer than Micro)

PREDRYING

The PET polymer should be dried according to the recommendations of the polymer supplier. Our PET masterbatches can also be supplied post-crystallised (suffix … CR), enabling them to be blended with the PET polymer and dried together at temperatures up to 190°C. Standard MAXITHEN® PET products (without post-crystallisation) can be dosed directly over the screw during injection moulding and extrusion processing. A post-crystallised MAXITHEN® PET product is not required in these cases. The prerequisite is that the feed unit is positioned directly over the screw, without a stirrer and with an appropriate cooling mechanism.

FOOD AND COSMETICS PACKAGING

Products which are marked as being suitable for use in food and cosmetics packaging have been formulated to comply with the EU guidelines for food and cosmetics packaging which comes into direct contact with the packaging contents.

Please request a declaration of conformity from us for the product concerned.
MAXITHEN® PET

PIGMENT PREPARATION BASED ON PET (POLYETHYLENE TEREPTHALATE)

DOSAGE RATE: according to the opacity required – see tables

HEAT STABILITY: (dwell time 5 minutes) – see tables

LIGHT STABILITY: in accordance with DIN 53388 – see tables
evaluation according to the blue wool scale (DIN 54003).
8 = best value, 1 = worst value

HUMIDITY: surface humidity up to a maximum of 0.5%

PROCESSING: MAXITHEN® PET standard products have been designed to be fed directly into the processing machine via a dosing system.

DRYING: MAXITHEN® PET standard products should be pre-dried together with the polymer for at least 4 hours at a maximum temperature of 65°C if required.

NOTE: The PET polymer should be dried according to the recommendations of the polymer supplier.
Our PET masterbatches can also be supplied post-crystallised (suffix ... CR), enabling them to be blended with the PET polymer and dried together at temperatures up to 190°C.

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 packaging). A combined MAXITHEN® colour/UV/AO masterbatch has been used for colouring and stabilising the packing material in order to protect both the packaging and its contents.

STORAGE CONDITIONS: A storage time of 12 months should not be exceeded. The product should be stored in a cool, dry location and be protected from sunlight. Once opened, bags should be kept tightly closed in order to prevent the absorption of moisture from the air. If necessary, goods should be dried before use.
MAXITHEN® PET

This data is for information only and serves to support and provide advice to our customers. The information has been obtained from laboratory tests under ideal and closely controlled conditions, therefore tests must be carried out based on the customer’s polymer and dosage rates. Additional factors must be taken into consideration in practical tests. Our datasheets can not be used to infer guarantees for end products.

Gumpoldskirchen, September 2008
MAXITHEN® PET

Transparent colours

<table>
<thead>
<tr>
<th>Product MAXITHEN® 8 transparent colours</th>
<th>Dos.</th>
<th>Temp. stab.</th>
<th>Light fastness</th>
<th>Food / cosmetics packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>PETD 2287/03 Yellow</td>
<td>1 %</td>
<td>280</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 37117 Orange</td>
<td>0.5 %</td>
<td>300</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 49117/15 Red</td>
<td>0.5 %</td>
<td>300</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 47397/005 Red</td>
<td>1 %</td>
<td>300</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 58357/01 Blue</td>
<td>0.5 %</td>
<td>300</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 5M6167 Blue</td>
<td>1 %</td>
<td>300</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 625720 Green</td>
<td>1 %</td>
<td>300</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 817037 Brown</td>
<td>1 %</td>
<td>300</td>
<td>7</td>
<td>Yes</td>
</tr>
</tbody>
</table>

DOS.: Dosage – in %

TEMP. STAB.: Temperature stability – in °C

LIGHT FASTNESS: According to the wool scale, 1-8, 8= best value

ALL PRODUCTS ARE:

- suitable for food and cosmetics packaging according to guideline 2002/72/EG (including additions) as well as CE resolution AP(89)1.
- free from pigments based on toxic heavy metals
- free from diarylid pigments

Due to the low pigment concentration, the values for thermal stability and light fastness must be considered as guidelines only and should therefore be tested under practical conditions.
Opaque colours

<table>
<thead>
<tr>
<th>Product MAXITHEN® 8 opaque colours</th>
<th>Dos.</th>
<th>Temp. Stab.</th>
<th>Light fastness</th>
<th>Food / cosmetics packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET 1070/50 White</td>
<td>3 %</td>
<td>300</td>
<td>8</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 218727 Yellow</td>
<td>3 %</td>
<td>300</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 37097 Orange</td>
<td>3 %</td>
<td>300</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 423477 Red</td>
<td>3 %</td>
<td>300</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>PET 528407 Blue</td>
<td>3 %</td>
<td>300</td>
<td>8</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 528867 Blue</td>
<td>3 %</td>
<td>300</td>
<td>8</td>
<td>Yes</td>
</tr>
<tr>
<td>PETD 626567 Green</td>
<td>3 %</td>
<td>300</td>
<td>7</td>
<td>Yes</td>
</tr>
<tr>
<td>PET 817487 Brown</td>
<td>3 %</td>
<td>300</td>
<td>8</td>
<td>Yes</td>
</tr>
</tbody>
</table>

DOS.: Dosage – in %
TEMP. STAB.: Temperature stability – in °C
LIGHT FASTNESS: According to the wool scale, 1-8, 8= best value
ALL PRODUCTS ARE: suitable for food and cosmetics packaging according to guideline 2002/72/EG (including additions) as well as CE resolution AP(89)1.
free from pigments based on toxic heavy metals
free from diarylid pigments

Due to the low pigment concentration, the values for thermal stability and light fastness must be considered as guidelines only and should therefore be tested under practical conditions.
# MAXITHEN® PET

Effect colours - metallic

<table>
<thead>
<tr>
<th>Product MAXITHEN® 6 effect colours - metallic</th>
<th>Dos.</th>
<th>Temp. Stab.</th>
<th>Light fastness</th>
<th>Food / cosmetics packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET D 225037Metallic Yellow 2 % 300 7</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>PET D 4A4877Metallic Red 2 % 300 7</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>PET D 5M6087Metallic Blue 2 % 300 7</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>PET D 6A9337Metallic Green 2 % 300 7</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>PET D 790887/20Metallic Silver 2 % 300 8</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>PET D 7A4047Metallic Gold 2 % 260 7</td>
<td></td>
<td></td>
<td></td>
<td>yes</td>
</tr>
</tbody>
</table>

**DOS.:** Dosage – in %

**TEMP. STAB.:** Temperature stability – in °C

**LIGHT FASTness:** According to wool scale, 1-8, 8= best value

**ALL PRODUCTS ARE:** suitable for food and cosmetics packaging according to guideline 2002/72/EG (including additions) as well as CE resolution AP(89)1. free from pigments based on toxic heavy metals free from diarylid pigments

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Effect colours - pearlescent

<table>
<thead>
<tr>
<th>Product MAXITHEN® 8 effect colours - pearlescent</th>
<th>Dos.</th>
<th>Temp. Stab.</th>
<th>Light fastness</th>
<th>Food / cosmetics packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET 791707/25Perlmutt</td>
<td>White</td>
<td>4 %</td>
<td>300</td>
<td>8</td>
</tr>
<tr>
<td>PETD 222037Perlmutt</td>
<td>Yellow</td>
<td>4 %</td>
<td>300</td>
<td>7-8</td>
</tr>
<tr>
<td>PETD 3A1387Perlmutt</td>
<td>Orange</td>
<td>4 %</td>
<td>300</td>
<td>7-8</td>
</tr>
<tr>
<td>PETD 429207Perlmutt</td>
<td>Red</td>
<td>4 %</td>
<td>300</td>
<td>7-8</td>
</tr>
<tr>
<td>PETD 4A4887Perlmutt</td>
<td>Pink</td>
<td>2 %</td>
<td>300</td>
<td>7</td>
</tr>
<tr>
<td>PETD 5M6077Perlmutt</td>
<td>Blue</td>
<td>2 %</td>
<td>300</td>
<td>7</td>
</tr>
<tr>
<td>PETD 5A7787Perlmutt</td>
<td>Blue</td>
<td>4 %</td>
<td>320</td>
<td>5-6</td>
</tr>
<tr>
<td>PETD 6A3357Perlmutt</td>
<td>Green</td>
<td>4 %</td>
<td>300</td>
<td>5-6</td>
</tr>
</tbody>
</table>

DOS.: Dosage – in %  
TEMP. STAB.: Temperature stability – in °C  
LIGHT FASTNESS: According to wool scale, 1-8, 8= best value  
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ADDITIVES

ANTIBLOCK
PET 794490ABCR
PET 7A2220ABGL
PET 7A2400ABGL
PET 7A3970ABGL
PET 7AA0010ABGL
PET 7AA0020ABGL
PET G795060AB
PET G7A2400ABGL

NUCLEATOR
PET 793780NUCR
PET 794190NUCR
PET 794550NU
PET 7A7410/13NU
PET 7A7410NU
PET 7AA0250NUCR

ANTIMICROBIAL
PET 794460ASPCR
PET 7A8370AS
PET 7A8370ASCR

ANTISTATIC
PET 7AA3170AM
PET 7A8370AS
PET 7A8370ASCR

SLIP AGENTS
PET 794980GL

CRYSTALIZER
PET 7A2337CRMG
PET 795430MOD
PET 795440MOD
PET 7AA3380MOD

FROST
PET 7AA5580FROST

UV-STABILIZER
PET 794140C115UVCR
PET 794140UVCR
PET 7AA11540UV
PET 7A8540UV
PET 7AA1140UVCR

MODIFIER
PET 795430MOD
PET 795440MOD
PET 7AA3380MOD

DOSE:
Dosage – in %

TEMP. STAB.:
Temperature stability – in °C

LIGHT FASTNESS:
According to the wool scale, 1-8, 8= best value

ALL PRODUCTS ARE:
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BUSINESS UNITS OF GABRIEL-CHEMIE GROUP:

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Medical

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