

TECHNICAL DATA SHEET

POLYBATCH[®] U 8848 E

Reducing the density of polymers by the creation of a cellular structure gives articles with greater stiffness for a given weight of polymer.

POLYBATCH[®] U 8848 E is a polyethylene masterbatch containing nitrogen releasing agents and specially selected processing aids.

POLYBATCH[®] U 8848 E is much less sensitive to residence time and temperature influences than conventional nitrogen releasing blowing agents. Its use therefore enables the production of expanded polyolefin films on most conventional film lines without major machinery changes. Moreover, because the cellular structure of the new material reduces 'blocking', the film can be made at outputs slightly greater than with conventional film.

APPLICATIONS

Expanded polyolefin films have some of the attributes of paper, e.g. stiffness, appearance, handle and some grease retention, coupled with the advantages of a plastic material, i.e. processability, wet strength and heat sealability. In addition its cellular nature gives the film insulating and cushioning properties.

POLYBATCH[®] U 8848 E can be added to Polyethylene, Polypropylene and Polystyrene.

PROCESSING CONDITIONS

Most experience in the production of expanded polyethylene film has been obtained with a special grade LDPE for heavy duty bags, its nominal melt index is 0.2 g/10 minutes and the nominal density is 0.922 g/cm³.

PRINCIPLE OF THE PROCESS

Blowing agents are substances which decompose at elevated temperatures and liberate nitrogen. The rate at which the compound decomposes depends on temperature and thus the amount which is decomposed after a certain interval will depend on the integrated thermal history of the sample.

Experience shows that the use of a formulated masterbatch containing processing aids gives a more even and controllable decomposition over a wide range of extrusion conditions than can be obtained using powdered blowing agent. No secondary nucleaters need to be added and the products of decomposition which can otherwise build up on the screw and die are considerably reduced.

When the melt leaves the high-pressure zone in the die the gas diffuses to discontinuities in the melt and bubbles form. In expanding the melt, the gas has to stretch the polymer in order to create a cell. Clearly the melt temperature, which greatly affects melt strength, must be carefully measured and controlled at this point.

Users should undertake sufficient verification and testing to determine the suitability for their own purpose of any information or products referred to herein.

Reported values pertain only to natural resins : pigmenting may vary properties.

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RECOMMENDED PROCEDURE

Extruder : 90 mm

Screw Profile : feed zone 2D, Compression 13D, metering 5D.
The compression ratio (depth ratio) is 3.55, the feed depth is 2.5 mm and metering depth is 0.9 mm.

The preferred die is one with a spiral mandrel with bottom feed, although with care even a die with six spider legs will give acceptable results.

The barrel temperature profile should increase from feed to die

Z1 °C	Z2 °C	Z3 °C	Flange °C	Die °C	Die gap mm
150	170	180	205	225	0.6

FILM QUALITY

A prime consideration in extruding cellular materials is control of density. Provided full decomposition is obtained, a density of 0.6 g/cm³ is given by 2.5% addition of **POLYBATCH®U 8848 E**. Less masterbatch will give higher densities proportional to the amount used. More masterbatch will not be fully utilised and densities below 0.5 g/cm³ are difficult to obtain.

Thickness is mainly controlled by drawdown and blow-up ratio. Increasing does not increase the density appreciably.

FOOD APPROVAL

POLYBATCH®U 8848 E cannot be used for food packaging.

PACKAGING & STORAGE

POLYBATCH®U 8848 E is packed in 25 kg Polyethylene bags on shrink-wrapped pallets. **POLYBATCH®U 8848 E** can be stored up to maximum 12 months at 25°C for optimum performance. Higher temperatures might reduce storage time considerably.

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