LUCOBIT
THERMOPLASTIC POLYOLEFINS

FLEXIBLE POLYMERS

EXTRUSION COATING & EXTRUSION LAMINATION

... we improve your polymer

COATING AN LAMINATION APPLICATIONS

GENERAL

In extrusion coating melted polymer is extruded onto existing sheets or films prior to passing through the calander. The starting sheet or film material can be regarded as a carrier and may be another polymer, cardboard, (non-)woven fabrics, metallic foils/ sheets, or paper.

Multiple layers may be formed by extrusion coating on both sides of the primary film or carrier. Alternatively, a multilayer structure can be created by introducing several extrusion coated layers. Coextrusion can only be used for polymers with similar processing conditions. Deviating processing conditions particularly in case of substrates that are incompatible with other materials such as metals or paper, extrusion coating is the only choice.

The following table shows LUCOBIT AG products with their main properties suitable for use in extrusion coating applications:

PRODUCT	MATERIAL	COLOR	SHORE A	MFR[1] 190°C / 2.16 KG	ESCR[4]
Lucofin® 1400HN	EBA (16 % BA)	natural	90	1.4	112 h
Lucofin® 1400MN	EBA (17 % BA)	natural	88	7	2 h
Lucofin® 1492M HG	MAh grafted EBA (17 % BA)	natural	92	5[5]	7 h
Lucofin® 1400PN	EBA (17 % BA)	natural	90	15	
Lucopren® EP 1500M-90[2]	PP | EPM	natural	30[3]	8	

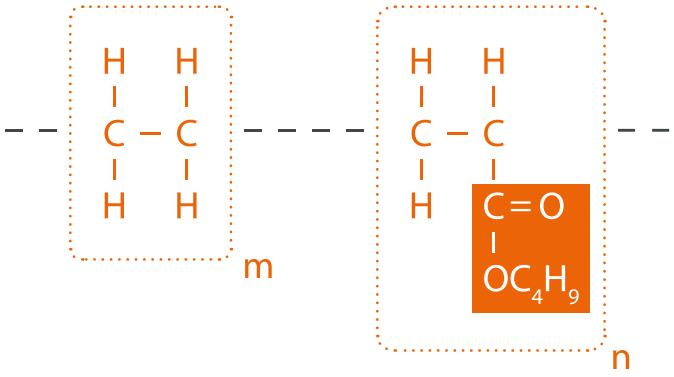
[1] average [2] MFR 230 °C / 2.16 kg [3] SHORE D [4] according to ISO 16770 Typ F, sample injection moulding 110x10x4 mm, indentation depth 0,8 mm, all-around (50%), water temperature 50°C, 2% Igepal CO630, 2MPA stress [5] example value

LUCOBIT PRODUCTS

Cardboard, aluminum foils, textiles, plastic films, sheets… No matter what substrate you want to get extrusion coated. LUCOBIT AG products are suitable the right choice ensuring:

- Extrusion melt temperature up to 300 °C yielding increased production output
- Excellent adhesion to a variety of different substrates
- Effective vapour barrier
- Satisfactory stress crack resistance (ESCR)

The majority of LUCOBIT AG products are based on EBA = Ethylenebutylacrylate. The repeat unit of this copolymer is shown in the Figure to your right. This structure explains many of its unique properties as explained on the next page.



CASE STUDY

CUSTOMER

Leading international paper and packaging group.

PREVIOUS SITUATION

Cardboard coated with LDPE / EVA.

SOLUTION NOW

Cardboard coated with Lucofin® 1400MN.

BENEFITS TO THE CUSTOMER

- Productivity increase due to the higher extrusion melt temperatures resulting in higher output
- 15% reduced machinery setting time due to an excellent adhesion on cardboard
- Improved hot tack
- Less water absorption in the long term

PRODUCTS –
THAT MAKE YOU SUCCESSFUL

ADVANTAGES OF LUCOBIT PRODUCTS

LUCOBIT AG markets specialty plastics based on flexible polyolefin copolymers under the trade name Lucofin®. For many years, these proved to be again and again as high quality products our customers learned to appreciate and value.

Over time, we added grafted and non-grafted and specialty grades to our product portfolio. Many of our customers tested them and showed their exemplary cost-effectiveness retaining expected characteristics in most applications compared to other alternatives fulfilling required technical specifications. Especially the comparison to other plastomers), Lucofin® EBA's proved to be the superior solution.

The following figure illustrates and exemplifies key properties and the resulting advantages of Lucofin® 1400HN, 1400MN, 1400PN and their grafted equivalents. Taking these factors into account, cost effectiveness of Lucofin® EBA's becomes apparent and consequently constitutes the best solution.

USE OF LUCOFIN® 1400MN, 1400PN AND LUCOFIN® 1492M HG – EXTRUSION COATING & EXTRUSION LAMINATION APPLICATIONS

Extrusion coating and extrusion lamination have found widespread industrial and commercial applications. They are used for decorating, protecting goods,… and add different functionalities to their substrates enhancing the overall product features.

LDPE is the most commonly used polymer in extrusion coating and extrusion lamination. However, the use of polar copolymers is increasing significantly. Among the polar copolymers ethylenebutylacrylate (EBA) and ethylenevinylacetate (EVA) are most often used here.

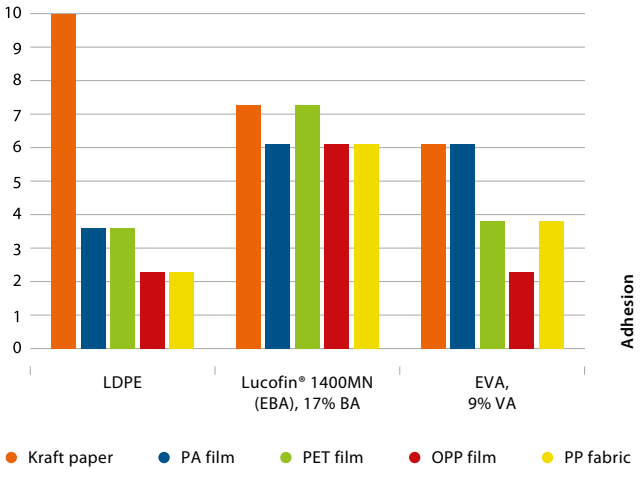
In comparison to LDPE and EVA, EBA exhibits a lower heat sealing temperature, improved hot tack and seal through contamination.

In addition, EBA shows better adhesion to a wider range of substrates especially more polar ones such as polyesters or polyamides. The right-hand Figure shows exemplary the adhesion of LDPE, Lucofin® 1400 MN (EBA) and EVA on various substrates. LDPE exhibits good adhesion only towards kraft paper, and only weak adhesion towards all other substrates. In contrast, Lucofin® 1400MN (EBA) shows excellent adhesion to all respective substrates outperforming LDPE as well as EVA.

In extrusion coating and extrusion lamination, a limiting factor is the maximum processing temperature determining the production output: The higher this temperature, but also the adhesion improves. Since EBAs withstand temperatures up to 300 °C, they also outperform EVAs on this metric as well since EVAs are only suitable without decomposition into corrosive degradation products up to 200 °C. EBAs adhesive characteristics improve even more when polar substrates are to be used especially PA, PET, EVOH, PC and aluminum. In certain high polar specialty applications, our Lucofin® 1492M HG may be the product of choice.

Lucofin® 1492M HG is a maleic anhydride (MAh) grafted version of Lucofin® 1400 MN. The MAh grafting is accomplished through an reactive extrusion process that incorporates MAh into EBA rendering the final product even more polar that the EBA starting material. Consequently, blending Lucofin® 1492M HG with other polar products – even in low to moderate concentrations – may significantly improve adhesion properties.

Adhesion of various polyethylenes towards different substrates



LUCOBIT
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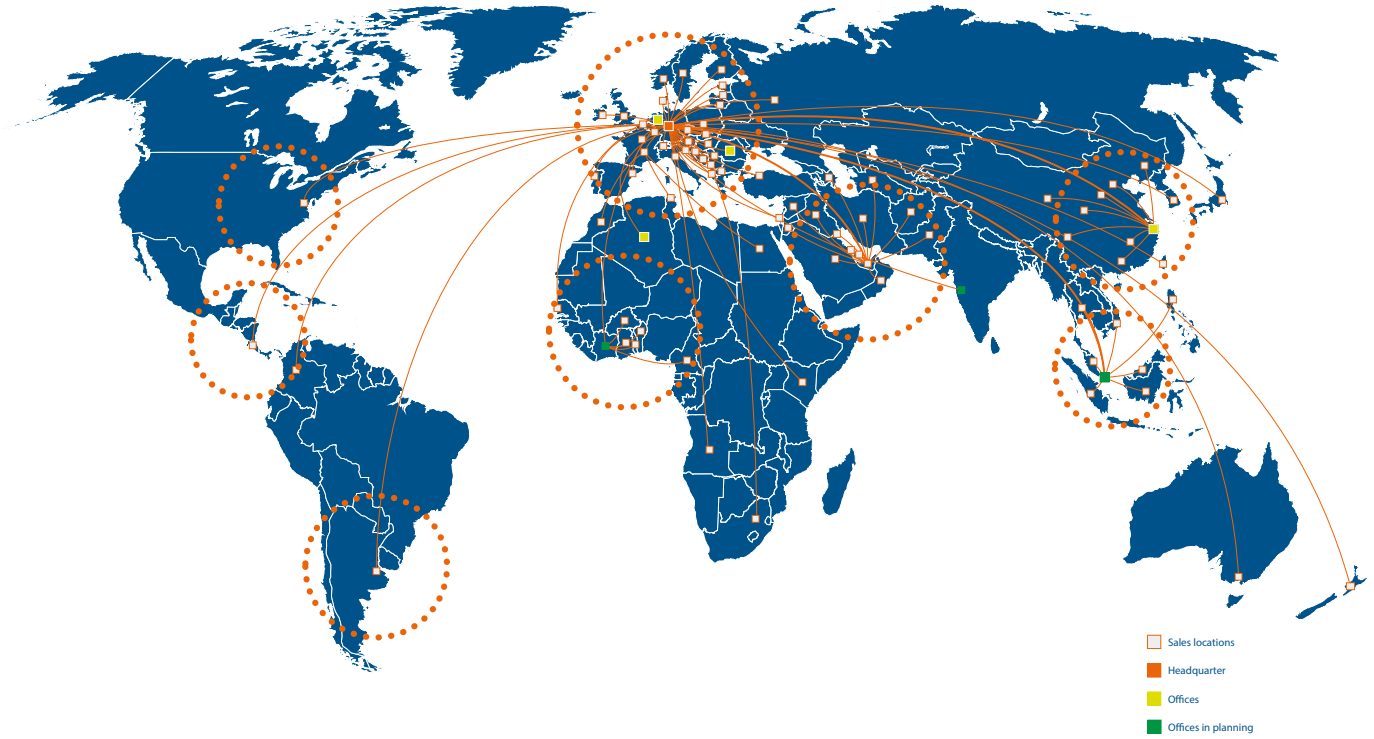
LOCATIONS



LUCOBIT Aktiengesellschaft
Basell Polyolefine GmbH / Brühler Str. 60 • B100
D-50389 Wesseling
Phone +49 2236 / 37859-0
Fax +49 2236 / 37859-99
info@lucobit.de
www.lucobit.com

LAG_EX_1016