

CASE STUDY

ANBIQ™ FM1818 DELIVERS ENHANCED PERFORMANCE IN MULCH FILMS



THE BACKGROUND

Parth Poly Woven Pvt. Ltd, Junagadh, India

Parth Poly Woven is a leading manufacturer of multi layered PE Films based in Junagadh, Gujarat, specialising in agricultural mulch films, crop cover, grow bags and liquid packaging films. Borouge India has a strong collaboration with the Parth Poly Woven team in developing differentiated solutions based on emerging market needs.

Advantages of mulch films

- Weed control and insect repellency – hence reducing the use of conventional pesticides
- Moisture conservation and reduction of irrigation frequency
- Soil solarisation to control soil borne diseases
- Early germination by raising soil temperature
- Facilitates fertiliser placement and reduces the loss of plant nutrients through leaching

MEETING CHALLENGING GOALS

Mulch films often present challenges in areas such as:

Service life of the mulch film

For niche segments, improved mechanical properties are needed to ensure longer service life.

Damage posed by mulch films during tractor laying

Enhanced tear performance is needed for less tearing during laying process.

After service

Once the service life is over, proper removal of mulch film is important. Poor mechanical properties of PE films lead to accumulation of plastics residue in the soil, which results in soil pollution and environmental damage.

Light reflection at the outer surface of the mulch film

Improved film gloss is needed for better light reflection that increases photosynthesis at lower plant canopy.

Thus, the objective was to develop a mulch film with improved mechanical properties for better service life, zero damage during tractor laying and conducive towards proper removal of plastic film residues after service.

Key requirements by customer:

- Good tear resistance
- Good puncture resistance
- Higher dart impact
- Higher gloss

The customer was also looking for good processability of resin and good bubble stability while producing blown film of lower thickness on their machine. As such, we supported the customer in understanding the significance of improved mechanical properties for better automatic laying process.

THE SOLUTION

The three-layer, 30 micron mulch film based on 70% Anbiq™ FM1818 usage in the formulation produced desired results as per end user requirements and helped the customer to successfully resolve tearing issues which they were facing during the automatic laying process.

Along with excellent mechanical properties, Anbiq™ FM1818 also delivered the following benefits when compared to the customer's existing solution with other LLDPE on their blown film line:

- Excellent bubble stability
- Reduced melt pressure (8%) and melt temperature (almost 10°C lower)
- Reduced motor load (5%)

THE BENEFITS

Anbiq™ FM1818 based formulation offered excellent tear and puncture resistance, as well as improved shelf life of the film. Improved mechanical properties also enabled improvements in the automatic laying process.

The Anbiq™ FM1818 based solution also performed much better in terms of gloss when compared to existing ones based on other LLDPEs.

CUSTOMER SATISFACTION

Having experienced satisfaction in excellent tear and puncture properties, excellent gloss, competitive value pricing and excellent processability, the customer has switched to Borouge's Anbiq™ FM1818 based formulation for their mulch film applications moving forward.

SUMMARY

Customer	Parth Poly Woven Pvt. Ltd.
Application/Product	Agricultural mulch film
Process	Blown film
Grade used	Anbiq™ FM1818
Functional requirements	<ul style="list-style-type: none"> ▪ Good tear resistance ▪ Good puncture resistance ▪ Higher dart impact ▪ Good gloss
Benefits	<ul style="list-style-type: none"> ▪ Excellent processability ▪ Excellent tear and puncture resistance ▪ Zero damage during tractor laying ▪ Improved mechanical properties for improved shelf life and easy removal of mulch film after end of service life, hence minimising plastics debris accumulation and soil pollution ▪ Improved gloss enables improved light reflection for better photosynthesis at lower plant canopy ▪ Higher light reflection helps to repel certain insects

About Borouge A joint venture between ADNOC and Borealis, Borouge is a leading petrochemicals company that provides innovative plastics solutions for the energy, infrastructure, mobility, packaging, healthcare and agriculture industries. With 4.5 million tonnes of annual capacity, Borouge has the world's largest integrated polyolefin complex, with the ambition to double its current capacity by 2030.

Disclaimer The information contained herein is to our knowledge accurate and reliable as of the date of publication. Borealis and Borouge extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the consequences of its use or for any printing errors. It is the customer's responsibility to inspect and test our products in order to satisfy himself as to the suitability of the products for the customer's particular purpose. The customer is also responsible for the appropriate, safe and legal use, processing and handling of our products. Nothing herein shall constitute any warranty (express or implied, of merchantability, fitness for a particular purpose, compliance with performance indicators, conformity to samples or models, non-infringement or otherwise), nor is protection from any law or patent to be inferred. Insofar as products supplied by Borealis and Borouge are used in conjunction with third-party materials, it is the responsibility of the customer to obtain all necessary information relating to the third-party materials and ensure that Borealis and Borouge products, when used together with these materials, are suitable for the customer's particular purpose. No liability can be accepted in respect of the use of Borealis and Borouge products in conjunction with other materials. The information contained herein relates exclusively to our products when not used in conjunction with any third-party materials.

Borouge Pte Ltd

One George Street #18-01 Singapore 049145
Tel: +65 6275 4100 Fax: +65 6377 1233 Email: info@borouge.com