### INGENIA WEATHERABLE WHITE MASTERBATCH

May 2019



### **Durable White MBs for Outdoor Use – Why?**

TiO2 can catalyze degradation of polymer films on exposure to light

• Durable TiO2 are surface treated to protect the polymer

•Films made with durable TiO2 show better retention of properties



### **Performance of Durable White MBs**

- Ingenia IP-1006:
  - 70% premium non-durable TiO2
- Ingenia IP-1008:
  - 70% premium durable TiO2
  - Better performance in presence of UV
  - Retention of physical properties
  - Excellent color and gloss retention
  - Resistance to yellowing, gas fading
  - Low moisture/volatiles
  - Excellent processibility



### **Durable White MB Applications**

Agricultural Films (Mulch, Silage, etc)

Lumber wrap

Building materials (siding, fence, decks, pipe etc)



# **Weathering Tests**

- Film samples are placed in QUV Weathering Instrument or Xenon Arc Chamber
- UV light exposure followed by a condensation cycle
- ASTM G26 or G53
- Tensile strength of films are tested over period of time





**QUV Weathering Instrument** 

# Case Study 1 – Mulch Films

#### **QUV Weathering Study**

- Mulch Films
- Cycle comprised of 8 hrs of UV light exposure at 60C followed by 4 hrs condensation

#### Film Samples

- Control White (Competitor's non-durable TiO2 MB) with UV Stabilizer
- IP 1008 (durable white) with no UV in film
- IP 1008 with ½ UV loading in Control White
- IP 1008 with same UV loading as Control White



Case Study 1 – Mulch Films



**QUV ASTM G53** 



# Case Study 2 – Silage Film

#### **Xenon Arc Degradation Study**

- Silage Films
- ASTM G26

#### **Film Samples**

- Control White 2940 ppm UV HALS, 945 ppm AO
- IP 1008 2000 ppm UV HALS, 945 ppm AO
- IP 1008 1500 ppm UV HALS, 945 ppm AO
- IP 1008 1000 ppm UV HALS, 945 ppm AO



Case Study 2 – Silage Film

**INGENI** 



Xenon Arc Degradation ASTM G26

### Case Study 3 – Mulch Film

#### XENON ARC – ASTM G26 – Two film structures tested

- Two layer silver-white mulch films with HALS
  - UV stabilizer loadings varied
- One layer white mulch film with HALS
  - UV stabilizer loadings varied



### Case Study 3 – Mulch Film



Xenon Arc Degradation ASTM G26



**Opacity of IP1008 – Blown Film** 





### Whiteness of IP1008





### **IP1008: Durable White Masterbatch**

- High durability white masterbatch for agricultural film and construction and roofing films
- Best performance in the presence of UV light
- Excellent colour, gloss and physical properties retention
- •Excellent processibility



### Ingenia IP1008 White MB Conclusions

1) Potential to reduce UV loadings by half by using durable TiO2 and improve performance!

- 2) Enjoy cost savings on UV additives!
- 3) Durable TiO2 is best for applications with high UV exposure!!!
- Contact Ingenia Customer Service to learn more about solutions for UV exposed film and molded parts applications.



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