

Dow Recycling Boosters as sustainability enablers for PET

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PROTECT THE CLIMATE

By 2030, Dow will PROTECT THE CLIMATE by reducing its net annual carbon emissions by **5 million metric tons** compared to its 2020 baseline (15% reduction). By 2050, Dow intends to be **carbon neutral**.



TRANSFORM THE WASTE

By 2030, plastic waste and other forms of alternative feedstock to commercialize **3 million metric tons** of circular and renewable solutions annually.



CLOSE THE LOOP

By 2035, Dow will CLOSE THE LOOP by enabling **100% of Dow products** sold into packaging applications to be reusable or recyclable.



CIRCULARITY

NET ZERO

Dow's Plastic Sustainability Pillars



Plastic Sustainability

**Design For
Recyclability
(D4R)**
commercial
reality

**Mechanical
Recycling**
transforming the
value chain

**Advanced
Recycling**
picking up the
pace

Bio-based
diversifying and
expanding

Carbon
the key future
driver

Extensive Innovation Portfolio



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WHO?

WHAT?

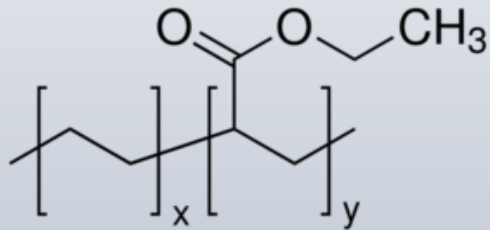
HOW?



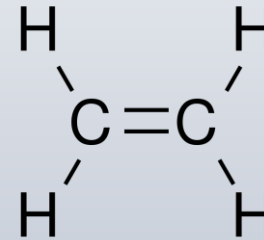
Dow PET recycling boosters

WHO?

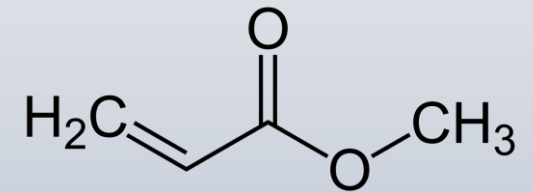
Ethylene Acrylate Copolymers are the PET Compatibility Enablers, a key differentiation with PE.



Ethylene – Methyl Acrylate Copolymer



Ethylene



Methyl Acrylate

Apolar

Polar

Dow PET recycling boosters

Elvaloy AC
acrylate copolymers by 

Bynel
adhesive resins by 

Entira
polymer modifiers by 

Elvaloy
copolymers for alloys by 

Appeel
peelable resins by 

Makes it
compatible
with **PE**!

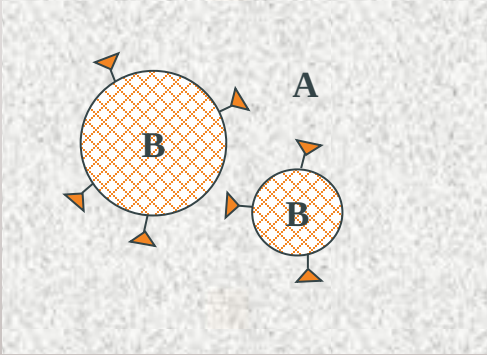
Makes it
compatible
with **PET**!



Dow PET recycling boosters Effect

Toughener/ Impact Modifier

Improve impact properties of glassy, rigid plastics.

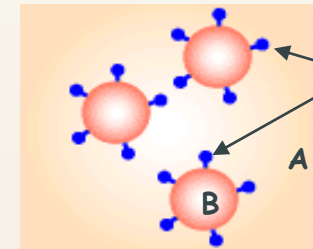


A= Matrix
B= Impact
Toughener

HOW?

Compatibilizer

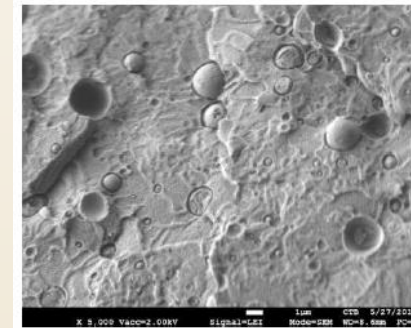
Provide compatibility of two incompatible polymer.



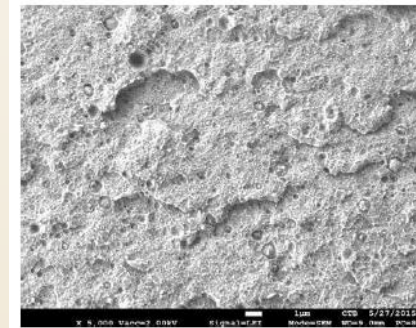
Compatibilizer

A = Incompatible Component 1
B= Incompatible Component 2

HDPE/PET 75:25



Without Compatibilizer



With Compatibilizer

Rheology Modifier

Improves product appearance, properties, and productivity.

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Dow PET
recycling boosters

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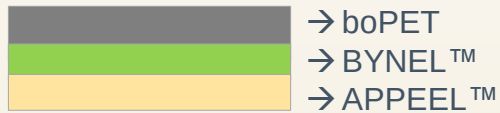
- ✓ Compatibilization
- ✓ Impact modification
- ✓ Rheology modification



Trays and Lidding Films

Enabling Recycling

PET-PE lid / PET-PE tray

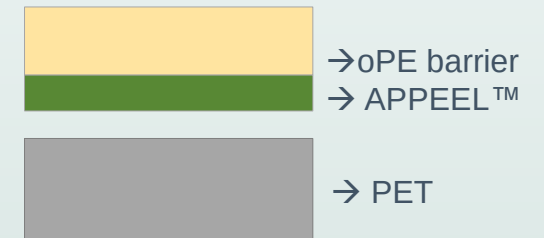


Dow PET recycling boosters enable **PET/PE compatibilization** and **impact modification**

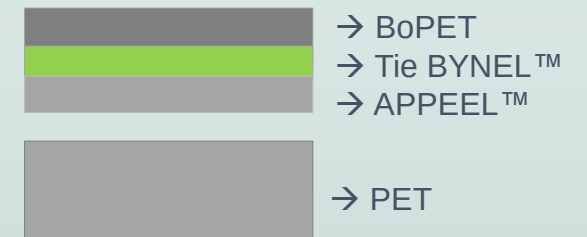


Enabling Eco-Design

PE lid / PET tray



PET lid / PET tray



Dow copolymers enable **sustainable mono-material design** and **boost PET recycling**

PET Tray Modification

Crystallized PET (CPET) Trays

- Crystalline → **Opaque**
- Max. Use Temp. determined by $T_m = 255^{\circ}\text{C}$
- Example: Dual ovenable trays.



Toughener and **Nucleating** agent for the impact at low temperature (-40°C freezer) and higher temperature resistance.

Amorphous PET (APET) Trays

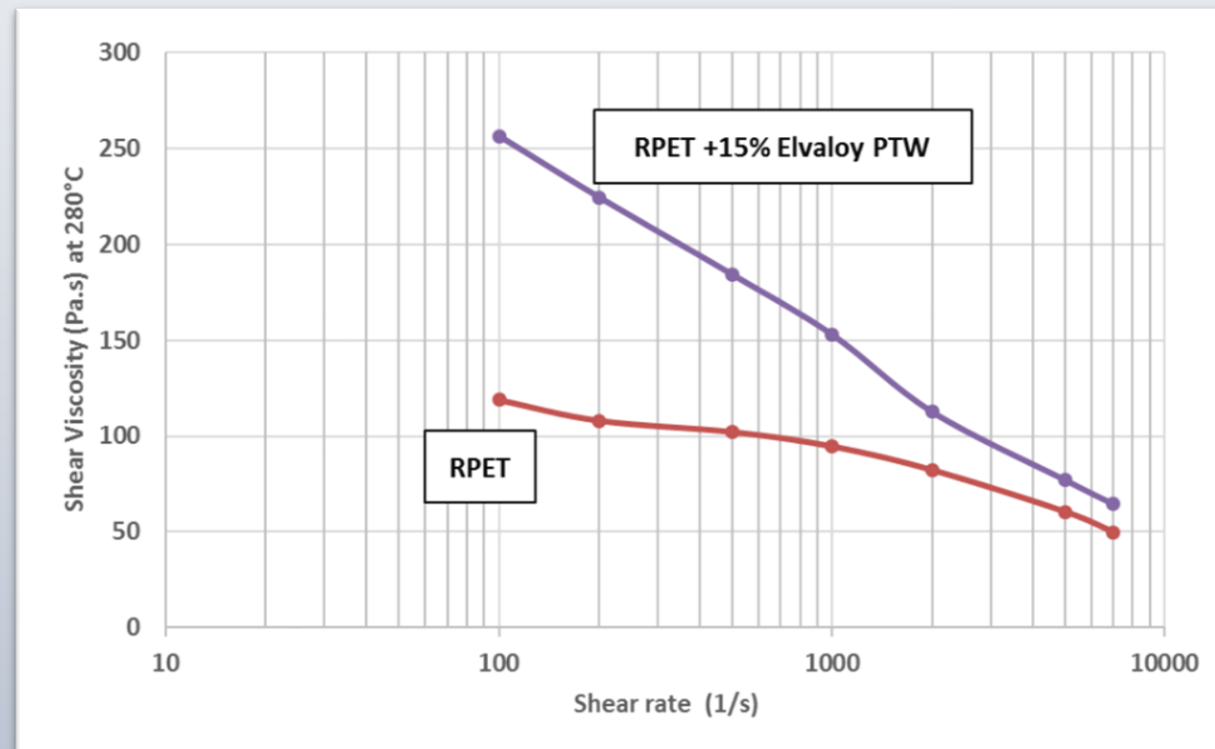
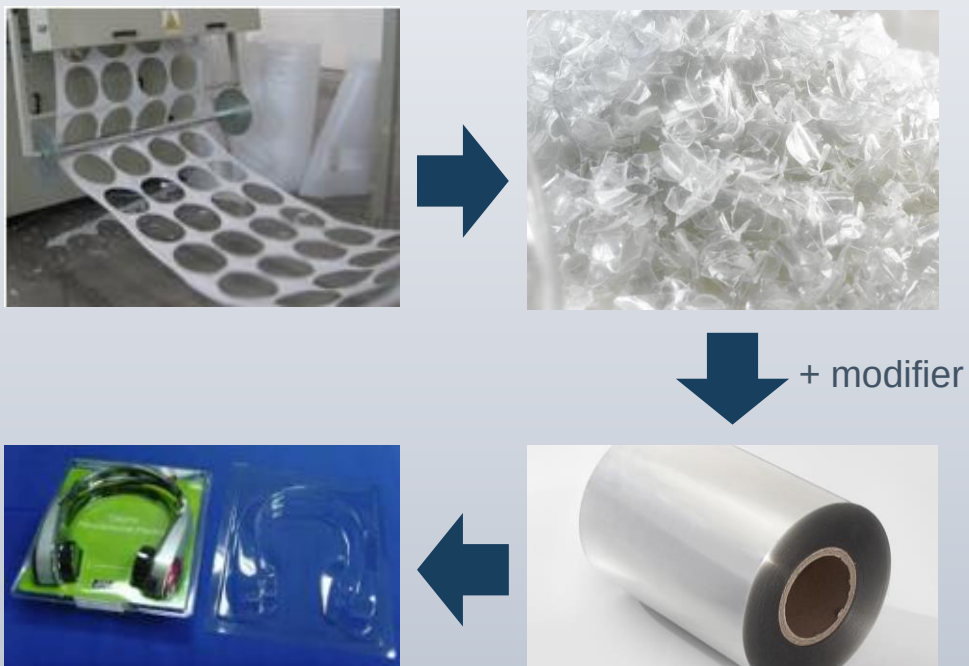
- Amorphous → **Clear**
- Max. Use Temp. determined by $T_g = 70^{\circ}\text{C}$
- Example: Deli trays, Refrigerated trays



Toughener needed to **improve impact properties** & **melt strength** of APET cast sheet.

Re-processing of PET trays and trims

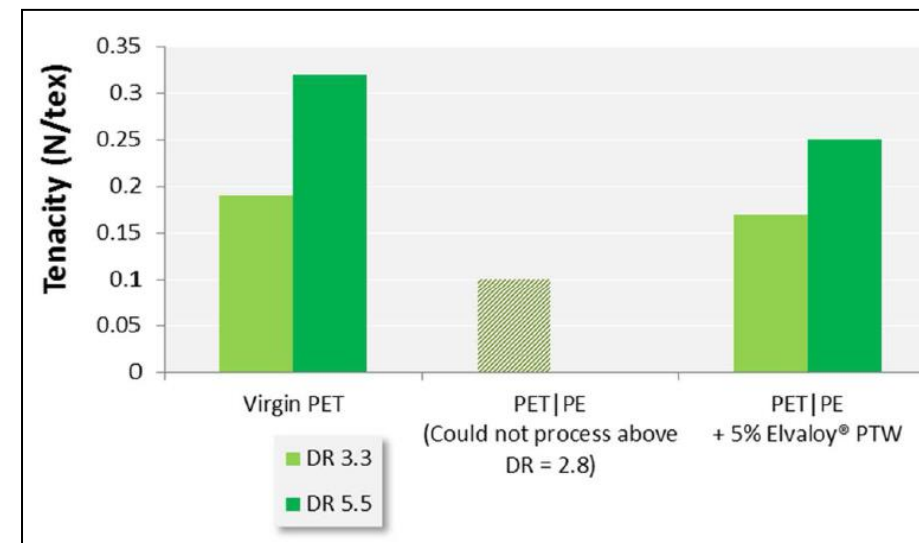
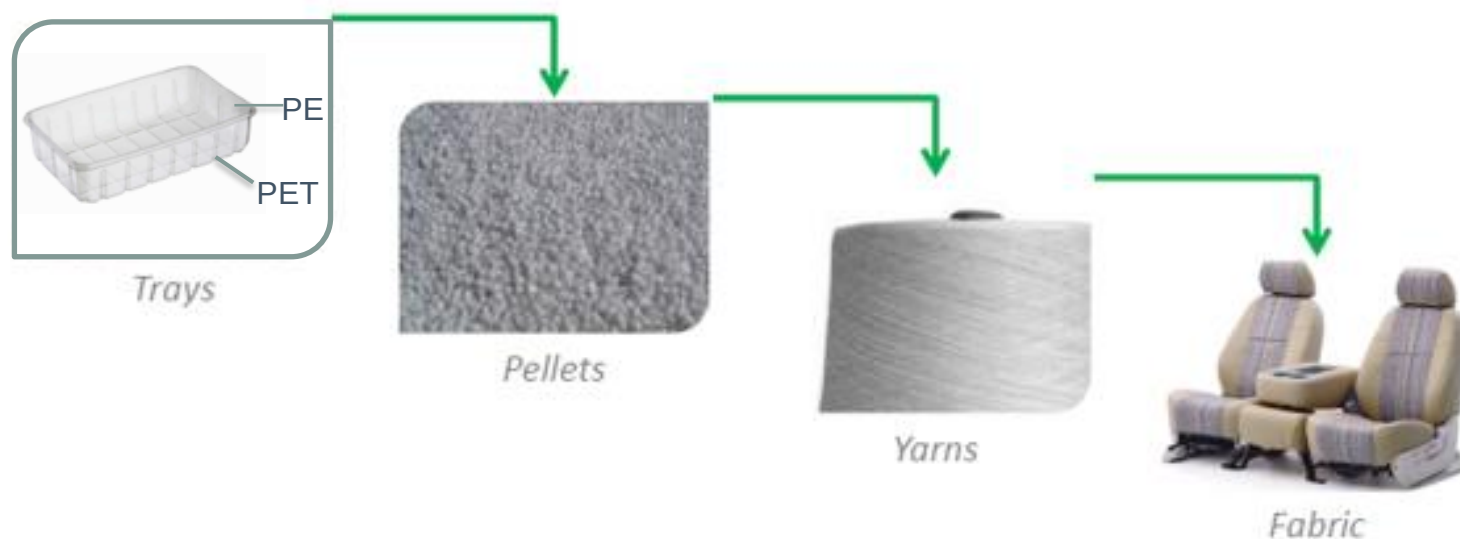
Dow PET recycling boosters as successful modifier for **recovery of PET original impact and viscosity**.



→ enable the use of **larger percentage of PET** thermoforms in recycled blend.

Alternative Second Life of a PET/PE Tray

PET/PE waste **made suitable** for high performance **fibers applications**.

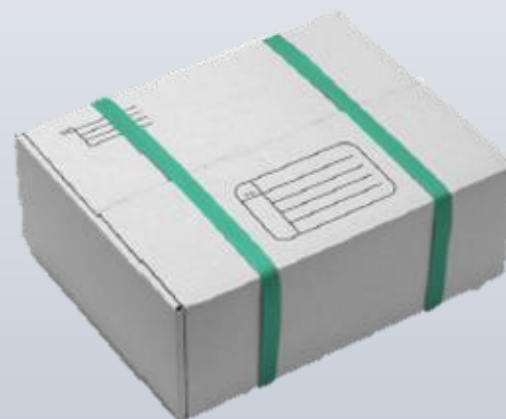
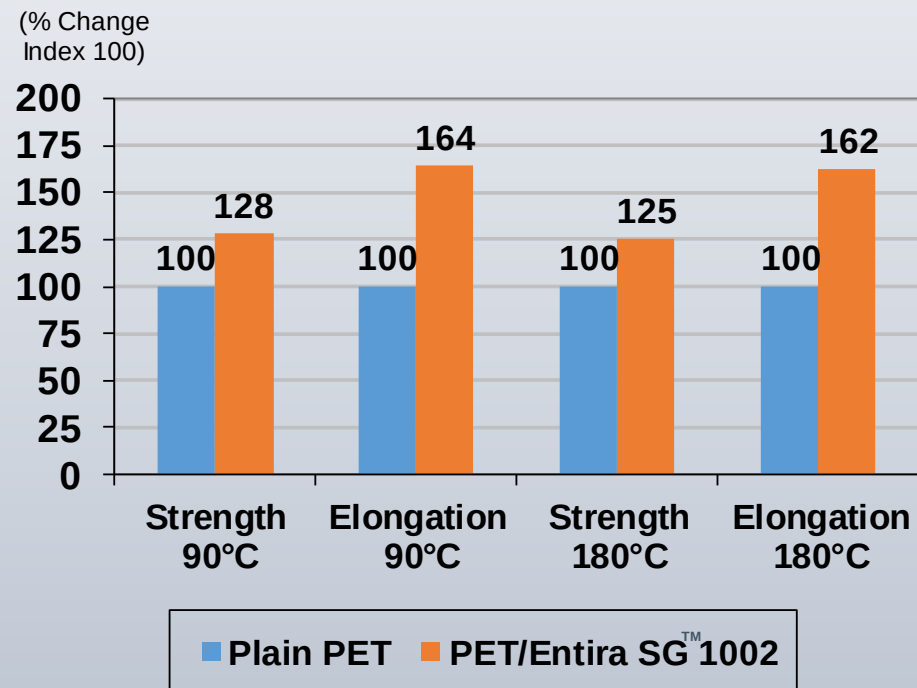


- **Without compatibilizer:** no stable extrusion process – PE contamination
- **With compatibilizer:** increase in fiber tenacity, close to virgin PET

→ enable **processability** of 'PET/PE' waste for the fabric production.

Recycled PET for strapping tapes

Dow PET recycling boosters as established PET modifiers for PET tapes and straps



→ enable higher **orientation** during processing (draw)
→ better **strength** properties in end-application.

Key Take-Aways

Dow PET recycling boosters can be used as:

- **compatibilizer** in case of contaminants of the **recycling stream** to enhance impact properties and processing
- modifier to enhance **impact properties** (impact at low T) and **processing**
- **peel-seal / tie layer** for PET → that can have a **positive impact on recycling**

Elvaloy™ AC
acrylate copolymers by 

Elvaloy™
copolymers for alloys by 



Bynel™
adhesive resins by 

Entira™
polymer modifiers by 

Appeel™
peelable resins by 



Seek Together™

**ROUTE TO NET
ZERO** 

Thank you

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