



ELVALOY™ AC Acrylate Copolymers support ABS recycling

Dow is a leading solutions provider for viscosity and impact modifiers of virgin and recycled Acrylonitrile Butadiene Styrene (ABS). ABS is commonly used in various applications due to its excellent mechanical properties and ease of processing. However, recycled ABS (rABS) requires specific additives to maintain consistent performance during recycling stages.

ELVALOY™ AC Acrylate Copolymers for rABS

Why Modify ABS?

After ABS polymerization, it may be necessary to modify ABS for various reasons:

- **Property enhancement in recycling:** When using recycled ABS (rABS) from post-industrial or post-consumer waste streams, modification with polymeric modifiers can enhance properties.
- **Tailoring for niche applications:** Specific ABS formulations may be needed for high-performance applications (e.g., toughness, color).
- **Enhancing properties after additivation:** ABS may require further enhancement after the addition of fillers or other polymeric or non-polymeric additives.

GRADE	COMONOMER TYPE	ACRYLATE (WT%)	MFI (G/10MIN)	MELTING POINT (°C)	RECOMMENDED USE
ELVALOY™ AC 12024S Acrylate Copolymer	EMA	24	20	88	Good compromise between improved impact performance and lower viscosity
ELVALOY™ AC 1224 Acrylate Copolymer	EMA	24	2	91	Moderate impact performance, high efficiency, approved for food contact
ELVALOY™ AC 1330 Acrylate Copolymer	EMA	30	3	85	Best for impact performance
ELVALOY™ AC 3427 Acrylate Copolymer	EMA	27	4	94	High efficiency grade for viscosity reduction and improved gloss
ELVALOY™ AC 34035 Acrylate Copolymer	EMA	35	40	88	Best for lower viscosity and higher gloss

*These are typical properties, not to be construed as specifications.

Effect of additives on rABS properties

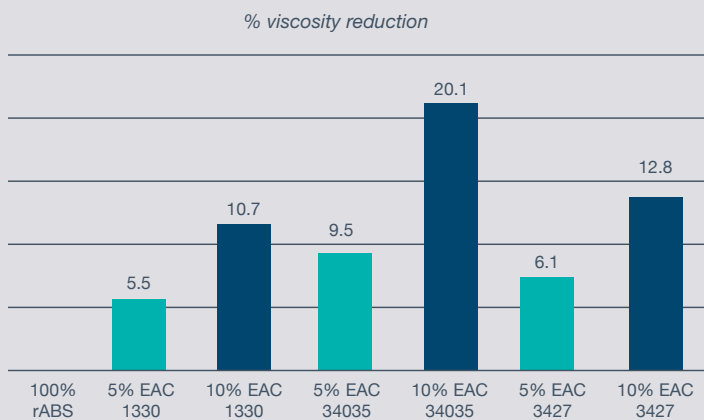
ELVALOY™ AC Acrylate Copolymers support improved processability:

- **Reduced melt viscosity:** The addition of ELVALOY™ AC Acrylate Copolymers does not significantly increase the melt viscosity of ABS, but in contrast leads to a reduction of its viscosity. This ensures smooth flow during processing.
- **Lower injection molding cycle time:** Improved flow properties lead to shorter cycle times, enhancing production efficiency.

Modified ABS maintains a high-gloss surface finish:

- ELVALOY™ AC Acrylate Copolymers **enhance the gloss** of modified ABS, resulting in visually appealing finished products. **Typical ELVALOY™ AC Acrylate Copolymers grade at 5-10% concentration offer 25% improvement in gloss and 15% reduction in viscosity versus control.**

Up to 20% viscosity reduction at 220°C (500 RAD/S)*

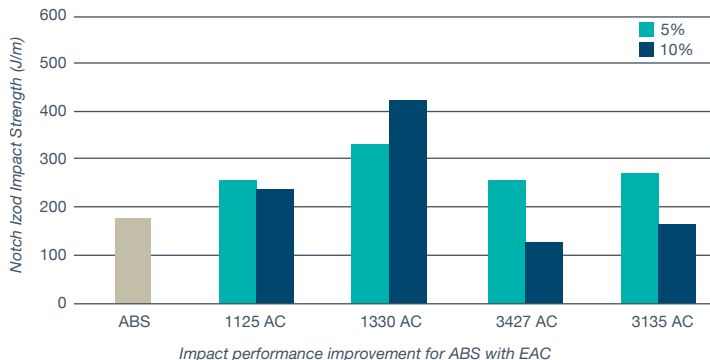


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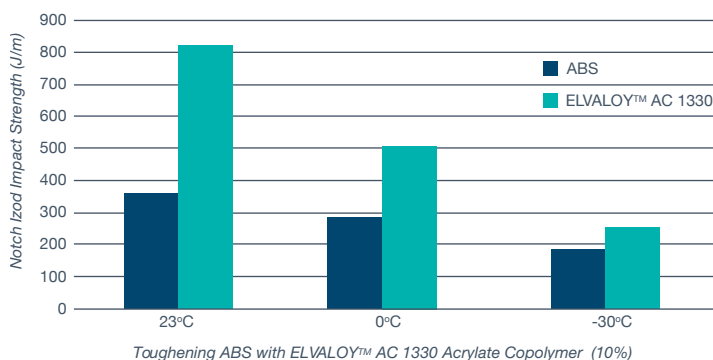
ELVALOY™ AC Acrylate Copolymers for impact modification*

ELVALOY™ AC Acrylate Copolymers are a high-performance range of modifiers designed for ABS. These ethylene acrylate copolymers offer several benefits:

- **High polarity and compatibility:** ELVALOY™ AC Acrylate Copolymers exhibit superior compatibility with ABS.



- **Low-temperature toughness*:** ELVALOY™ AC Acrylate Copolymers improve toughness even at low temperatures without significantly reducing mechanical properties.

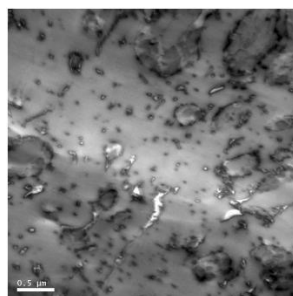


- **Improved chemical resistance:** ELVALOY™ AC Acrylate Copolymers enhance resistance against stress cracking.
- **Masterbatches compatibility:** ELVALOY™ AC Acrylate Copolymers are compatible with polymer fillers, making it suitable as carrier for masterbatch formulations.

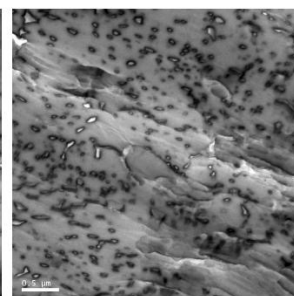
Pellet blending vs melt compounding

Many applicators in particular in the recycling and masterbatching area would prefer to add the modifier as a pellet blend right into the throat of the extruder rather than preparing an offline compound which is associated with additional cost.

This is also possible using ELVALOY™ AC Acrylate Copolymers as modifier. ELVALOY™ AC Acrylate Copolymers mix well in the injection molding machine and provides acceptable properties up to an addition level of 10%, which is sufficient for general purpose modification, recycling and masterbatching. No differences are observed.



Melt compounded
5% ELVALOY™ AC Acrylate
Copolymers in ABS



Pellet blended
5% ELVALOY™ AC Acrylate
Copolymers in ABS

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