

CLOSED LOOP COMPOUNDS

The solution for innovative circular-economy

Sustainable, economical, high-quality



WIPAG Closed Loop Compounds allow customers' own production waste to be processed and re-used. Having this high degree of certainty with regard to the quality of the homogeneous input material means excellent potential for re-using the recycled compound in equivalent applications.

WIPAG's proprietary, patented, and economically efficient Closed Loop recycling process makes it possible to process thermoplastic waste for potential re-use in challenging applications. This potential is made possible by our special technologies, such as for composite separation and paint removal. Various selective separation processes (density, optical and electrostatic separation, demetallization) and our use of fine melt filters help us produce exceptionally high-quality compounds.

Using our Closed Loop products makes it possible to reduce new materials usage. Our customers mix these WIPAG compounds in at ratios of up to 60%. Replacement components can even be manufactured using 100% recycled compounds. This approach translates to significant cost savings in raw materials procurement. To this end, we have developed the concept of Recycling-as-a-Service (RaaS®).

RaaS® was developed in context of ensuring that our customers remain the owners of their materials; WIPAG merely bills customers for the agreed recycling services. Depending on individual customers' waste material flows, WIPAG can provide and combine a wide range of processing technologies.

Today, our standard services include processing multi-layered composites and complex production waste made of PP, PP/EPDM, PA6, PA66, ABS and PC/ABS. Application-specific solutions based on other polymers or filler combinations can be developed as well. Moreover, re-using processed production waste creates excellent CO₂-savings potential.

Product	PP EPDM TV from paint removal (Closed Loop)
Energy consumption - Prime [kWh/kg]	8,71
Presumed energy provider	German electricity mix (2017): 0,486 kgCO ₂ /kWh
Energy consumption - WIPAG [kWh/kg]	0,02
Energy provider	hydropower: 0,013 kgCO ₂ /kWh
CO _{2e} emissions savings per kg of compound	8,7

Today, the Closed Loop process is primarily employed in the automotive industry, which has very high standards of quality for the products it uses. The compounds can be transferred to other industries easily.

Previously realized Closed Loop applications (RaaS®) include:

- Bumpers, rocker panels – paint stripping of PP, PP/EPDM
- Instrument boards, side cladding for doors – composite separation
- Headlight covers – paint stripping of PC
- Window enclosures – paint stripping of ABS, PC/ABS

WIPAG Closed Loop Compounds (RaaS®): Advantages at a glance

- Customer retains ownership of materials
- Re-using known materials means greater quality assurance
- Can be used in equivalent components

Comparison of properties – new materials vs. recycled compounds

	New product PP/PEDM	Recycled compound PP/EPDM
Color	black	black
Filler content (talcum) [%] ISO 3451-1	20	20
MVR [cm ³ /10min] ISO 1133	13	14
Tensile modulus [MPa] ISO 527	1450	1600
Tensile strength [MPa] ISO 527	15	16
Impact strength 23°C [kJ/m ²] ISO 179/1eU	NB	NB
Charpy impact strength 23°C [kJ/m ²] ISO 179/1eA	53	48

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