CEMEP

European Committee of Manufacturers of Electrical Machines and Power Electronics

Warning on the Feasibility of Recycling and Recycled-Content Targets under the Critical Raw Materials Act



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CEMEP has long supported greater resource efficiency, circularity and the responsible use of critical raw materials, particularly copper and permanent magnets. However, we are concerned that recycling and recycled-content targets under the Critical Raw Materials Act may exceed the material volumes and qualities physically and economically available in Europe. Using permanent magnets as the most critical example, this letter highlights constraints that must be addressed to avoid material shortages, rising costs and risks to European industrial competitiveness

Key Points:

- Regulatory targets must reflect the actual availability of end-of-life material
- Recycling capacity cannot scale without sufficient and reliable feedstock
- Recycled material must meet application specific quality and performance requirements
- Permanent magnets are application specific and cannot be freely substituted
- Product diversity and complex designs limit recovery, reuse and closed-loop recycling
- Reuse and remanufacturing can contribute, but their economic and industrial scalability remains uncertain
- Unrealistic targets and quotas could create material shortages and disadvantage European manufacturers

Key Challenges:

End-of-life material is inherently limited. Achieving ambitious recycling and recycled-content targets requires not only suitable recycling technologies, but also sufficient end-of-life material. Recycling can only begin once products reach the end of their service life, which often exceeds 20 years for many Permanent Magnet applications like, for example electric motors. Consequently, much of the rapidly growing magnet stock remains in use. Meanwhile, demand is rising sharply in e-mobility, renewable energy and industrial applications, while corresponding end-of-life volumes will only become available years or decades later. Recycled-content requirements for new products may therefore outpace the physical availability of suitable recycling feedstock.

Available products do not automatically provide recoverable material. Magnets are often encapsulated or integrated into complex assemblies. In waste treatment facilities automated extraction of magnet material from other waste types is not available yet. Manual identification, removal and separation can consequently be technically difficult, labour-intensive and uneconomic.

Material quality is as important as quantity. Permanent magnets are not interchangeable commodities. They differ in alloy composition, magnetic properties, geometry, magnetisation direction, coatings and thermal resistance. A magnet suitable for packaging cannot meet the demanding requirements of an electric motor.
This diversity also complicates recycling.

The central challenge is ensuring sufficient end-of-life material that can be economically recovered and recycled into secondary material which consistently meets diverse application requirements. Both are essential to establish a European circular supply chain and achieve the CRMA's recycling and possible future recycled-content targets.

CEMEP respectfully calls for targets, timelines and implementation mechanisms to reflect these physical and technical constraints. A gradual, evidence-based approach, developed in close cooperation with industry, is essential to strengthen circularity without creating shortages or weakening European manufacturing.

About us

CEMEP is the European Committee of Manufacturers of Electrical Machines and Power Electronics, representing an industry with a market value of more than EUR 28bn and around 180,000 employees. The full members of CEMEP are 13 national associations and 7 corporate members in Europe, representing manufacturers of electric motors, variable speed drives and uninterruptible power supply (UPS) industries.

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