

Product Information

High-temperature polyimide **TECAPOWDER P84** enhances the electrochemical properties

Improving the performance of lithium batteries

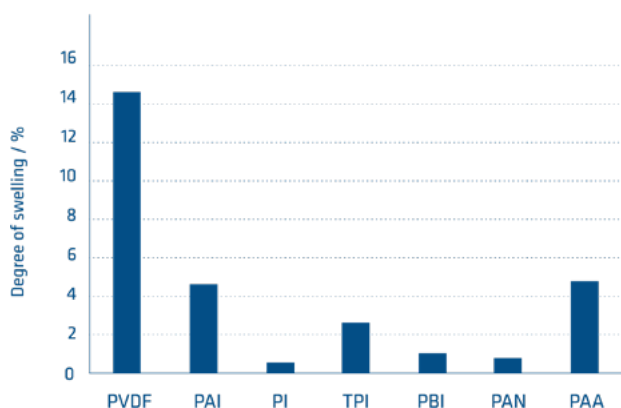
Demand for electric vehicles and energy storage systems is rising. A key factor when it comes to competitiveness vis-à-vis combustion engines and acceptance of the systems is the battery technology. Progress in the field of electrical performance is considerable. For example, the energy density of lithium-ion batteries has almost doubled within the past ten years.

Manufacturers of electric vehicles face the challenge of developing innovative batteries with improved charging and discharging rates. The decisive factors in a long service life – even after several charging cycles – are the adhesion and thickness of the coating. Here, highly adhesive, soluble high-temperature polyimides are used as binding agents. Acting as an electrode binder, the fully imidized polymer

TECAPOWDER P84 improves the performance both of batteries with lithium ions and those with lithium-ceramic technology. The high-performance plastic produced by Ensinger Sintimid in Lenzing (Austria) is a thermally stable, co-polyimide-based binding agent and can be dissolved in highly polar solvents. As a result, TECAPOWDER P84 improves the performance of anodes, cathodes and separators in batteries.



No swelling with **TECAPOWDER P84**



Comparison with degree of swelling.

Studies have confirmed

The highly adhesive, soluble P84 co-polyimides, when used as binders in heavy-duty anodes on a Si/C basis, in particular improve the electrochemical properties (cycling performance and rate capabilities) but also simplify the anode preparation process.

Compared with other polymeric binding agents such as polyvinylidene fluoride (PVDF) TECAPOWER P84 is not flammable, non-meltable, is a good insulator and stands out for good adhesion to metals.

Property profile:

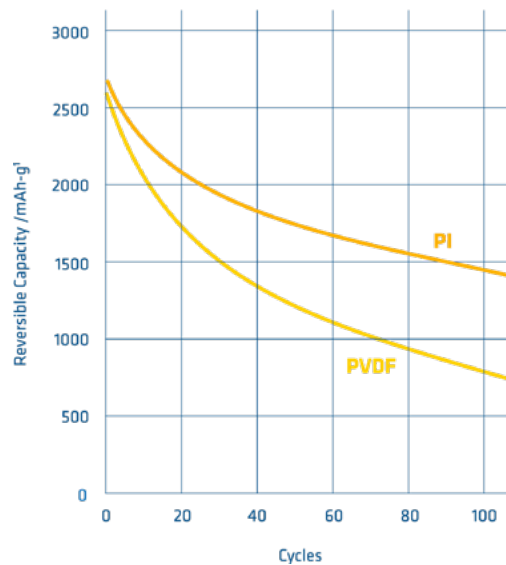
- High thermal resistance
- Good wear resistance at elevated temperatures
- Very good creep resistance
- High compressive strength
- Very high glass transition temperature
- Excellent mechanical properties
- High purity
- Good plasma erosion
- Low outgassing

In battery manufacture the polymer can be applied in dissolved form or using a dry-coating technique. Ensinger offers TECAPOWDER P84 for the production of high-performance lithium batteries in lots of different variants, from solution-quality granules through to fine powder.

Grades:

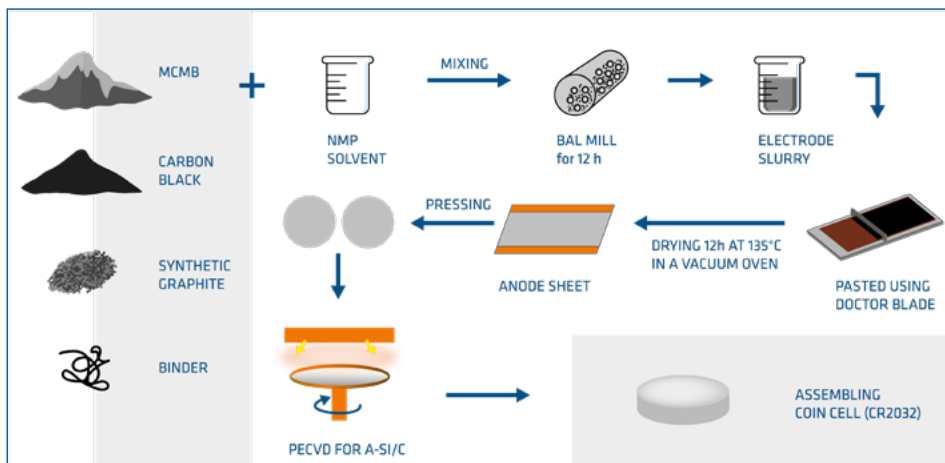
- TECAPOWDER P84 solution grades:
 - Granules for the production of polyimide solutions
- TECAPOWDER P84 fine mesh grades:
 - for use in dry-coating processes

Higher Capacity +87% with TECAPOWDER P84



Ensinger Sintimid has been manufacturing non-melttable polyimides for more than 30 years. Production in Lenzing is ISO-certified.

TECAPOWDER P84 binder for efficiency increase



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Summary

TECAPOWDER P84 is not flammable, non-melttable, is a good insulator and stands out for good adhesion to metals. As compared with other polymeric binding agents such as polyvinylidene fluoride (PVDF) TECAPOWDER P84 improves the performance!

TECAPOWDER P84 ist based on P84® by Evonik.