



NUMBER 5629

soteras™ CCS-V binder

for high stability ceramic coated lithium ion battery separators

general

A primary purpose of the ceramic-coated separator in lithium ion batteries is to increase temperature tolerance and to provide mechanical stability. Heat shrinkage of the separator film can profoundly affect the lifespan and safety of lithium ion batteries. The ceramic coating on the separator provides a safety benefit to the cell by providing a heat-resistant layer.

Soteras™ CCS-V binder enables separator producers to meet ever more stringent safety requirements from lithium ion battery cell producers. It employs Ashland's unique 2-component cross-linking system:

1. unique polymer which promotes adhesion to separator (Soteras™ CCS-V binder)
2. cross-linking agent to ensure thermal and mechanical stability (Soteras™ CCS-B crosslinker)

Soteras™ CCS-V binder has high permeability, low levels of moisture after drying and the binder is insoluble in electrolyte for long-term stability.

physical properties

characteristics	specification	method	unit
appearance	clear to hazy liquid	visual, 25 °C	
% solid	19.0 - 21.0	WI 183	%
Brookfield viscosity	5500 - 14000	LVT, spindle#4, 3 rpm, 25 °c	cps

key features of Soteras™ CCS-V binder:

- o has high thermal stability to above 170°C for improved cell safety
- o has stability with high energy substrates
- o has high permeability, making it suitable for use at higher charge rates or at high voltage systems
- o is not soluble in electrolyte
- o is compatible with both polyethylene (PE) and polypropylene (PP) separators

Dosage suggestions:

formulation	ceramic	ratio of CCS-V: CCS-B (actives*)	Soteras™ CCS % vs ceramic	typical slurry solids % target
1	Alumina	10:1	5.0 - 8.0%	25 - 30%
2	Boehmite	10:1	4.5 - 6.5%	21 - 32%

* component Soteras™ CCS-V binder is delivered as 20% actives material, and component Soteras™ B crosslinker as 100% actives

For a case study, please contact Ashland representatives.

packaging

Soteras™ CCS-V binder is available in pails, drums and totes.

Soteras™ CCS-B crosslinker is available in 20 liter drums.

product safety

Read and understand the Safety Data Sheet (SDS) before using this product.