CABOT

FUMED METAL OXIDES

APPLICATION GUIDE

CAB-O-SPERSE® DISPERSIONS FOR PRESSURE SENSITIVE ADHESIVES

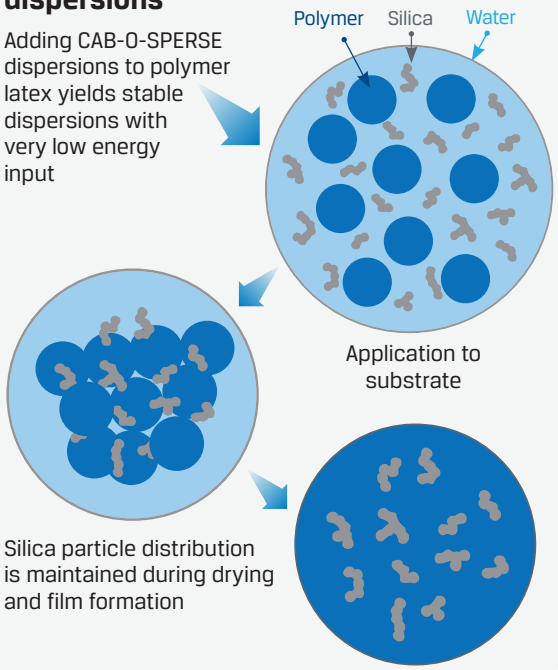
WHY CAB-O-SPERSE DISPERSIONS IN PSAs?

CAB-O-SPERSE dispersions provide the following benefits to waterborne pressure sensitive adhesives (PSAs):

1. Ease of processing
2. PSA Performance Enhancement
   - Increased cohesive shear strength
   - Preserved adhesive peel strength
   - Improved thermal stability
   - Tunable optical properties (clarity/haze)
3. Ultra-high Purity

The advantage of CAB-O-SPERSE dispersions

Adding CAB-O-SPERSE dispersions to polymer latex yields stable dispersions with very low energy input

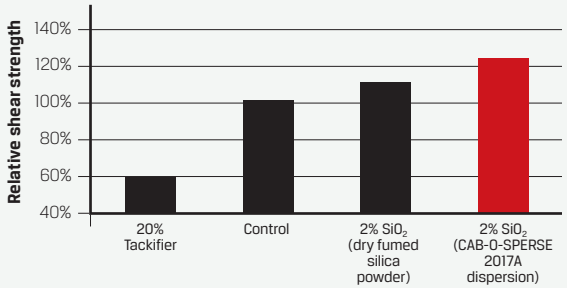


IMPROVING STRENGTH IN ACRYLIC SYSTEMS

Cohesive shear strength

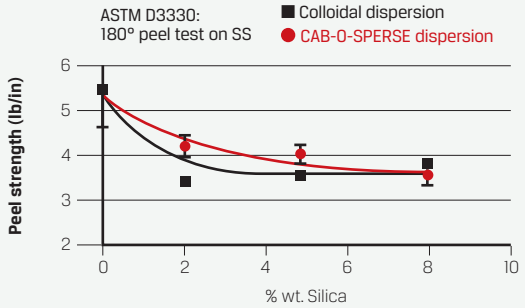
CAB-O-SPERSE dispersions:

- Increase shear strength vs. dry powder alternatives at equivalent loading
- Offset reductions in shear strength caused by organic tackifiers typically used to increase adhesion
- Deliver >20% improvement in shear strength at ≥2% wt. silica vs control



Greater adhesive strength retention

CAB-O-SPERSE dispersions deliver greater peel strength retention than comparable colloidal silica dispersions

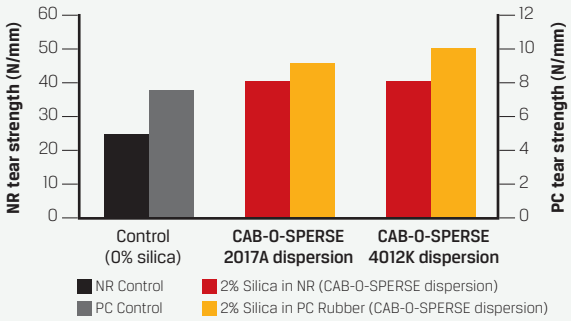


VERSATILITY IN OTHER POLYMER SYSTEMS

Use in other adhesive systems

CAB-O-SPERSE dispersions can improve the mechanical properties of many other waterborne polymers in addition to acrylics

CAB-O-SPERSE dispersions increase tear strength of natural rubber (NR) and polychloroprene (PC) rubber films by up to 65%.



Polymers capable of hydrogen bonding can interact favorably with CAB-O-SPERSE silica and alumina dispersions and gain even more strength.

RELATIVE PERFORMANCE IN ADHESIVES

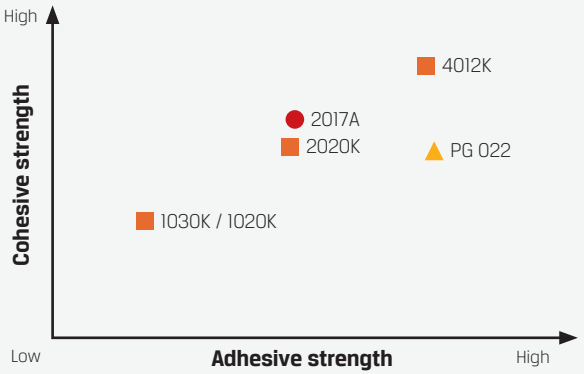
Suggested products:
CAB-O-SPERSE 2017A, 2020K, 4012K, 1020K, 1030K, PG022, 1015E dispersions

General guidelines:

- Large particles facilitate formulation stability and yield greater surface roughness
- In anionic systems, cationic CAB-O-SPERSE products promote the best adhesion performance, and anionic CAB-O-SPERSE products promote the best balance of performance and formulation stability

Legend:

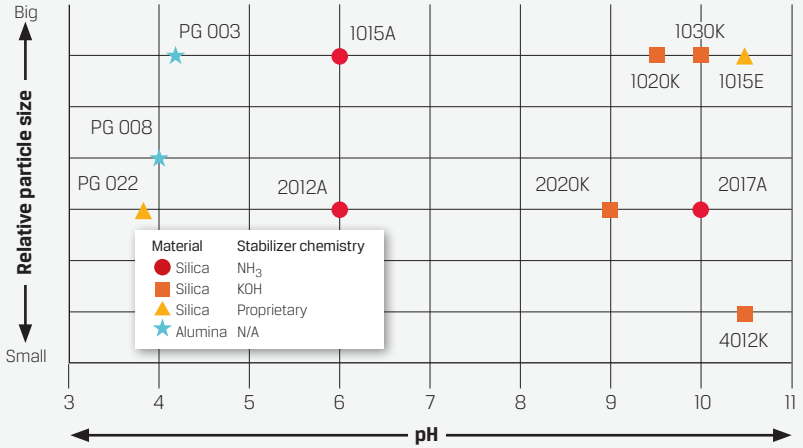
Material	Stabilizer chemistry	Particle charge
● Silica	NH_3	Anionic
■ Silica	KOH	Anionic
▲ Silica	Proprietary	Cationic



Note: Data are for constant solids loading

CAB-O-SPERSE PRODUCTS AND PROPERTIES

CAB-O-SPERSE product	Loading	Charge
1015A	15%	Anionic
1020K	20%	Anionic
1030K	30%	Anionic
2012A	12%	Anionic
2017A	17%	Anionic
2020K	20%	Anionic
4012K	12%	Anionic
PG 003	40%	Cationic
PG 008	40%	Cationic
PG 022	20%	Cationic



FORMULATION INFORMATION

Waterborne PSA formulation in %wt.:

- Water (25-35%)
- Polymer (40-55%)
- Tackifier or plasticizer (5-15%)
- Viscosifier (0-15%, optional)
- CAB-O-SPERSE metal oxide (2-10%, dry particle wt.)

For waterborne organic tackifiers consider rosin ester dispersions or resin dispersions, such as:

- Tacolyn™ 3179 H
- Tacolyn 5193

For removable PSAs, consider less tacky acrylics, such as:

- ROBOND™ PS-8120 HV

For more permanent waterborne acrylic systems consider:

- ROBOND PS-90
- Acronol® 220

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Technical Support
North America: +1 800 462 2313
South America: +55 11 2144 6400
Europe: +371 6705 0700
Asia Pacific: +86 21 5175 8800