BASF
We create chemistry

Chemetall
expect more

AC Separol ECO 3000

Improved sustainable interleaving powder

Bret Penrod

Glass Problems Conference

Chemetall – Glass segment at a glance

Surface Treatment global business unit of BASF's Coatings division

One-stop supplier

50 subsidiaries & distributors worldwide

&

8 production sites abroad

>2000

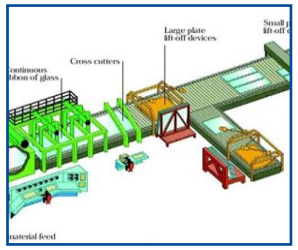
Glass Processing customers worldwide

> 60 Years of experience

Inte

Our solutions portfolio

Serving multiple application sectors, including float glass, automotive, mirror, and insulating glass

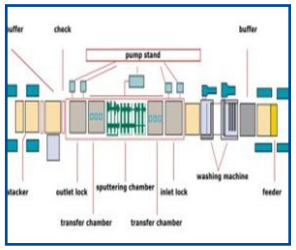


Float & Sheet Glass

- Defect Marking Inks
- Evaporable
- Cutting Fluids
- Anti Stain Coatings
- Interleaving Powders
- Product & Technical Support

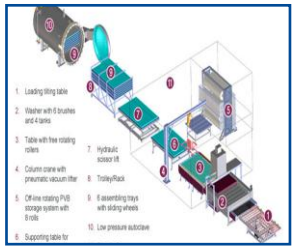
Automotive Glass

- Cutting Fluids
- Coolants & Flocculants
- Washing Compounds
- Separating Powders
- Product & Technical Support



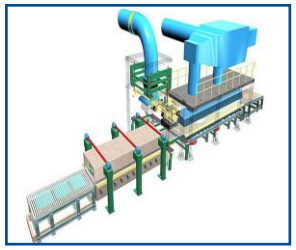
Coated Glass

- Cutting Fluids
- Interleaving Powders
- Washing & Cleaning Compounds
- Polishing Agents



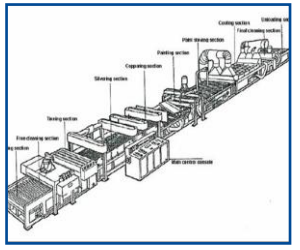
Lamination Line

- Cutting Fluids
- Separating Powders
- Washing & Cleaning Compounds



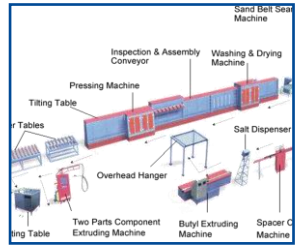
Tempering Line

- Cutting Fluids
- Coolants
- Flocculants
- Washing & Cleaning Compounds



Mirror

- Cutting Fluids
- Interleaving Powders
- Coolants
- Flocculants
- Washing & Cleaning Compounds
- Polishing Agents



Insulating Glass

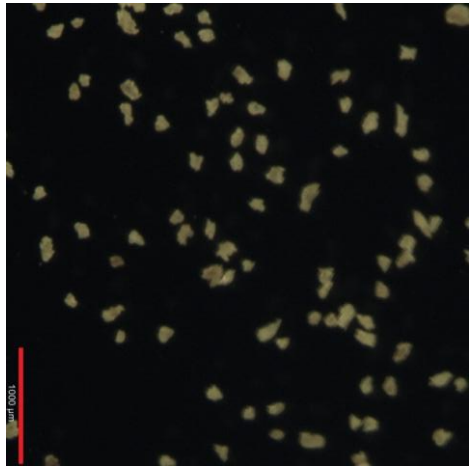
- Cutting Fluids
- Coolants
- Flocculants
- Washing & Cleaning Compounds
- Marking Sticks
- Solvents
- Anti Stick Agents

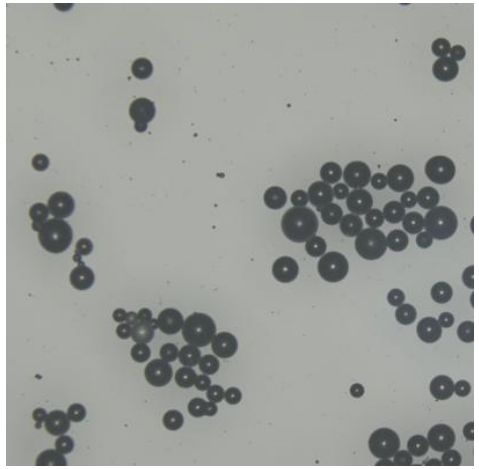
Assessment of interleaving powders

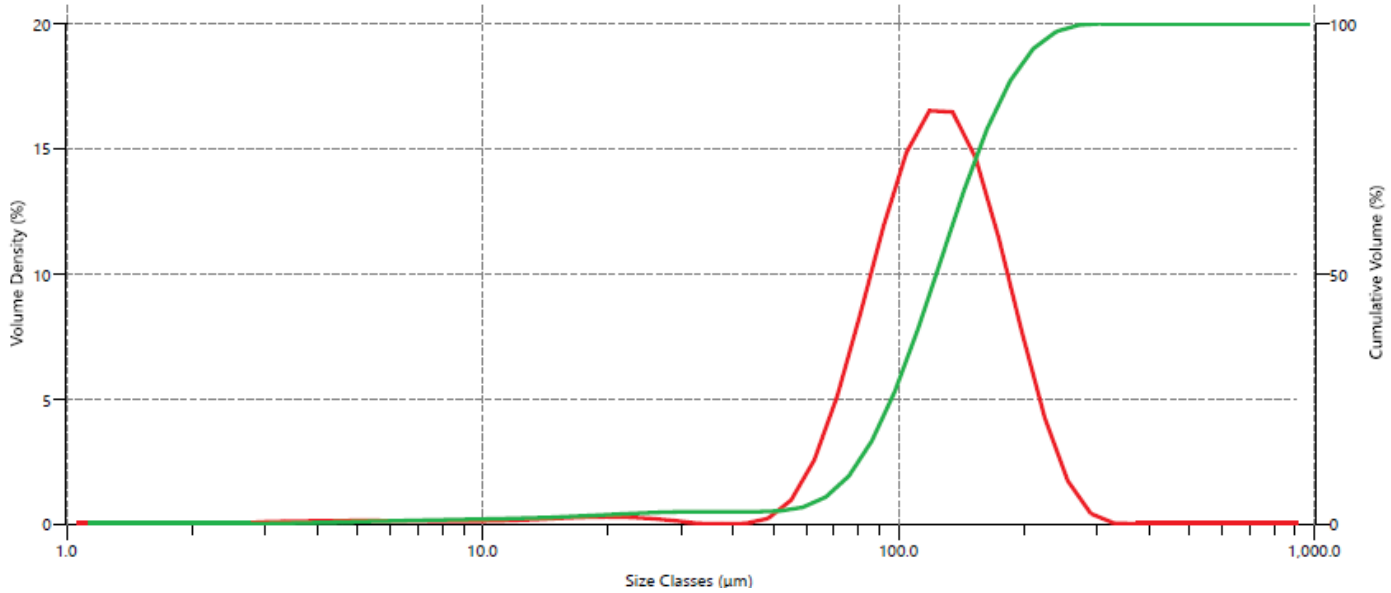
- Distribution of particle size and shape
- Resistance to temperature, separation, and washability
- Response during weathering tests, along with separation and washability
- Flow characteristics and performance in powdering machines
- Adhesion to glass
- Mechanical properties

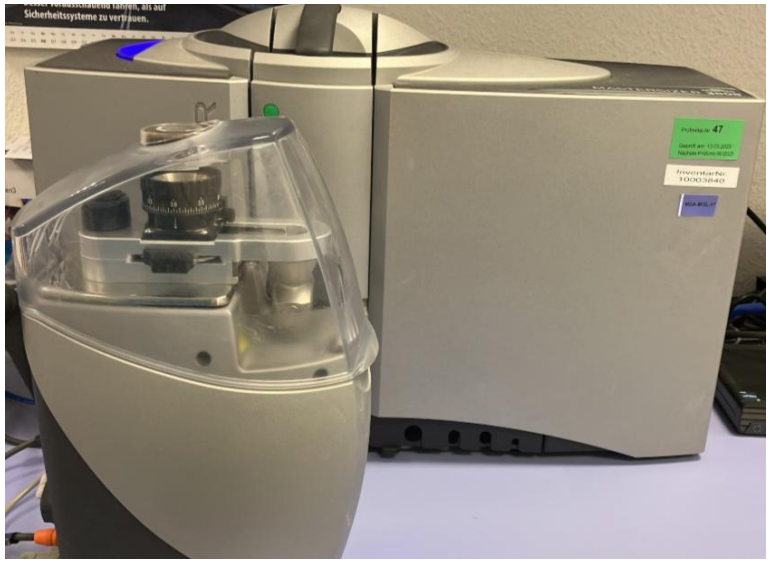
Distribution of particle size and shape

- Measurement by laser diffraction
  - ▶ Particle size distribution
- Screening sieve analysis
  - ▶ Oversize and foreign particle detection
- Microscope analysis for particle shape







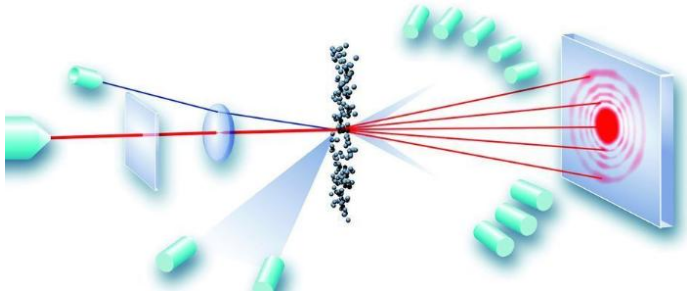


Laser diffraction vs sieving

Secondary particle
(agglomeration)

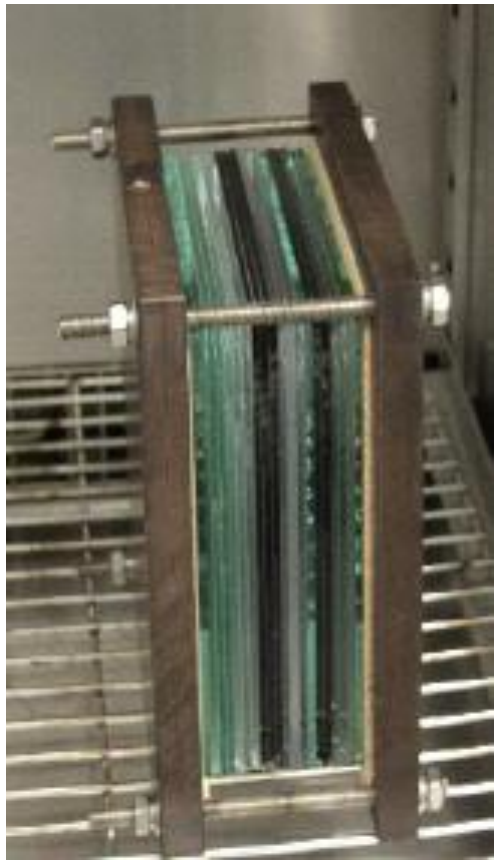
- Sieving is used for oversize and residue analysis
  - ▶ Oversize particle can clog the systems
- Sieving is giving fast information about particle sizes
- Sieving often shows too low values in the smaller particle range as no (or fewer) primary particles can be detected
  - ▶ Adipic acid agglomerates

- Laser diffraction is giving a fast detailed analysis of the particle size distribution
  - ▶ D_1 and D_{99} can be mathematical fragments
- Detects primary particle
  - ▶ Can be used for agglomeration substances e.g., adipic acid
- No visual inspection of oversize and residues possible



Response during weathering tests, along with separation and washability

- Standard weathering assessment
  - 60°C, 92% relative humidity, for 14 days
  - 1000 Nm torque applied
  - A minimum of three samples for each product is required
- Separation is evaluated immediately following the test and again 24 hours after its completion
- Washability (removal of powder) is tested using pressurized air and a washing machine
- Corrosion resistance is inspected manually
  - A new method is currently being evaluated



Resistance to temperature, separation, and washability

- Identical stacking method as used in the weathering test
  - Torque of 1000 Nm applied
- Conducted at three distinct temperatures
  - 80°C, 100°C, and 120°C
- Assessing separation and sticky beads
- Utilize pressurized air to remove powder (3 bar)
- Inspect for sticky (molten) beads

Flow characteristics and performance in powdering machines and safety

- Flow Characteristics:
  - Ford cup, 4 mm
    - Full discharge
    - Flow measurement
    - Unrestricted flow
- Powdering Equipment
  - Evaluate performance with various machines in our laboratory
- Safety Considerations
  - Dust management
  - Risk of slipperiness

Adhesion to glass

- Application of powder onto the glass surface
- Verification of the quantity applied on the glass surface
- Vertical tapping
  - Specified height
- Reevaluation of the quantity remaining on the glass surface
- Testing parameters
  - Varied amounts of powder
  - Different temperatures of the glass surface

Comparison of AC Separol G, AC Separol ECO 1000 and AC Separol ECO 3000

	Pure PMMA	AC Separol ECO 3000	AC Separol ECO 1000
Sustainable content	0%	100%	100%
Mean particle size	~120 µm	~120 µm	~120 µm
Loss on tapping	30%	35%	75%
Softening point	~100°C	-* *material can't melt	-* *material can't melt
Flow characteristics	Free flowing	Not free flowing	Free flowing
Powdering machines: Roller Spray	 Yes Yes	 No* *under evaluation Yes	 Yes Yes
Washability	No residues	No residues	No residues
Separation	Very good	Very good* *under evaluation	good (turns bad after storing due to high loss)
Chemical interaction with low-e coatings	not observed	not observed	not observed

Highlights of AC Separol ECO 3000

- Excellence Performance on float glass
- Clean Handling – No Dust or Slipping
- PMMA-level Adhesion
- 100% Sustainable & Biodegradable
- Stable Flowability in Production
- Ready for More –
  Coated Glass & Additives Coming

Discover the future of sustainable glass protection – choose AC Separol ECO 3000 today!

BASF We create chemistry | Chemetall expect more

BASF

We create chemistry