

Pitkin Stearns International, Inc.

KB Collection Sand Pictures

1501 W. Campus Drive, Unit D, Littleton, Colorado 80120

Tel (303) 794 – 2323, Fax (303) 794 – 3222

www.pitkinstearns.com

chrisw@pitkinstearns.com

Science principles presented in the KB Collection Sandpictures: (Formerly the “Rainbow Vision Sand Pictures”)

- **Minerals**: Sandpictures have natural sands, crushed minerals and synthetic materials.
- **Particles**: So many grains of sand!
- **Quartz**: We used crushed quartz as one of our minerals.
- **Density**: There are between 4 – 7 different densities in our sandpictures, most have 5 – 6. With different minerals having different weights, the sands don't mix.
- **Gravity**: Watch the sands fall through the air bubbles and water to rest into their final resting places.
- **Mountains**: The sands fall to create sedimentary, mountainous shapes.
- **Valleys**: When two mountains are created, the V-shape area between is called the valley.
- **Dune**: Sands fall to create mounds of sand. This happens usually when the sandpicture begins to form as the air barrier catches some and releases other colors. If the air doesn't fully catch, you can have a picture of the dunes.
- **Sedimentation**: What better example to explain sedimentary rocks? Sand grains that fall first get sand deposited on top of them creating layers in the sands.
- **Stratification**: Watch the sands build up in layers.
- **Texture**: The grain size, grain orientation and density of each mineral determine characteristics of your KB Collection Sandpicture's sandscapes.
- **Replacement**: As the sands fall, water replaces the void at the top of the sandpicture.
- **Permeability**: Water permeates between the grains, resulting in the exchange of sand and water from top to bottom.
- **Deposition**: Watch the sands fall, depositing sand to create sandscapes.
- **Luster**: Watch with front lights and back lights to see how the minerals reflect the light.
- **Stress**: The weight of the sands creates pressure. The sands fall through the weakest links in the air barrier to create mountains, valleys and dunes.
- **Evaporation**: As the water gradually evaporates, you will need to regulate your sandpicture to maintain the right balance of air to water.
- **Elevation**: Measure the sands as they create from the bottom of the sandpicture to measure the elevation in the mountains.
- **Divide**: As the sands fall, watch them fall to the right and left sides of the mountains.
- **Vortex**: Watch as the falling sands pull other sands.
- **Vein**: See the glitter form veins in the mountains.
- **Friction**: The distance between the glass panels must be the perfect width or the sands will not fall to create mountains valleys and dunes. The perfect width between panels of glass create the right spacing pinching the sands just enough so that they fall to create the mountains, valleys and dunes.

- **Clarity**: Study the water in a sandpicture for clarity. Is it cloudy or opaque? We go to great lengths to remove all impurities and sand residues so all you see are delicate strands of sands falling to create the mountains, valleys and dunes.
- **Viscosity**: The resistance of flow. Factors in a sandpicture that could affect viscosity are particle size, particle shape, particle attraction and even temperature.
- **Rate**: Watch the speed of the sands as they fall to create mountains, valleys, dunes and chaos.
- **Elapsed Time**: How long will your sandpicture to fall completely from the top to the end of the cycle.
- **Velocity**: The rate of sand falling over a period of time.
- **Inertia**: Watch with fascination as the air bubbles hold the sand and the sand resists the physical change in shape.
- **Landslides**: As the sand moves past the air barrier, the sands slide faster in an uncontrollable state.
- **Polarity Reversal**: Turn your KB Collection Sandpicture over. The axis stays the same as the sands fall to the opposite pole.
- **Algae**: We use a proprietary surfactant that keeps algae from growing inside of your sandpicture.
- **Delta**: The deposit of the stream of sands at the bottom of the sandpicture.
- **Aquifer**: The sand blend used in sandpictures must be porous and permeable to transmit the water through the sands.
- **Bedding**: Watch your sands fall to create sedimentation with the first sands (heaviest) falling on the bottom and last sands (lightest) to fall on top.
- **Turbulence**: Enjoy watching the sands fall between the bubbles in chaotic and random turbulent flows.
- **Angle of Repose**: Watch the sands fall to make mountains. At an certain angle, you will notice the sands start to slide down the mountains as the angle becomes too steep.
- **Navier-Stokes Equation**: The Navier-Stokes equations govern the motion of fluids and can be seen as Newton's second law of motion for fluids. The equation terms correspond to the inertial forces, pressure forces, viscous forces and the external forces applied to the fluid. The Navier-Stokes equations were derived by Navier, Poisson, Saint-Venant, and Stokes between 1827 and 1845.
- **Transport Phenomena**: The study of transport phenomena concerns the exchange of mass, energy, and momentum between observed and studied systems.
- **Quantum physics**: As Bohr, Einstein, Heisenberg and mainly Schroedinger stated: Each quantum is a not yet a detected entity in physics. It is a quanta, which can be anywhere in this universe at the same time unless it has been measured/detected. Once we have detected the quanta, it is then a particle (in whichever physical configuration). Based on foundation, you can structure great philosophic science and theories. The most interesting feature regarding the KB Collection Sandpictures is whenever a physicist or an astronomer discovers a new star or a galaxy, he then becomes the "creator" of that new galaxy, because he detected something that was not really there before. In our world of sandpictures, this also means that whenever you watch (detect or measure) a sandpicture you create new universes which have never been there before. Isn't that great?