

TITANIUM DIOXIDE – FINE POWDER WHICH TENDS TO ADHERE - MIKROPUL FILTER FOR ISK SINGAPORE

Titanium dioxide (TiO₂) is a very sticky material. Whoever had this fine powder on his hands knows how this versatile chemical adheres to surfaces.

Titanium dioxide is a widely used white pigment and applied in light, surface or sun protection. Paints, colours, window frames, plastics parts, textile fibers or cosmetics contain TiO₂ as an essential ingredient to assure colour intensity, gloss or whiteness as well as protect against yellowing.

TiO₂ is produced in steam jet mills to achieve the required fineness. Grain sizes are 99% < 1µm.

MikroPul GmbH, Köln, recently supplied another Mikro-Pulsaire dust collector for titanium dioxide production to ISK Singapore.

On site, 45.000 t/y with average particle sizes ranging between 0,22 and 0,28 µm are generated for use in plastics and paint industries. 11.200 m³ product/air mixture with about 70 g/m³ product fraction exits the steam jet mill and is separated afterwards.

The Mikro-Pulsaire dust collector 218 HP 10 TRH is ideally suitable for this application. It is a stainless steel construction designed for a maximum temperature of 230°C with 218 filter bags, each 3m long. The titanium dioxide dust retains on the bag surface whilst the clean air leaves the filter at the top. A PTFE coating of the filter bags creates even surfaces and prevents baking which would reduce filter performance.

A special inlet design induces an even air flow distribution. The filter bags are inserted from the top and mounted into the tube sheet using MikroPul's reliable bayonet fastening technology. Together with the walk in plenum, this allows fast and easy bag exchanges.

For product collection, momentary high pressure back-pulses of compressed air are induced into the filter bags from the clean gas side. Without interrupting operation, product dust is dislodged and collected in the hopper.

A proven MikroPul discharge device forwards the material to subsequent treatment. The bag cleaning is repeated periodically, once an adjustable differential pressure is reached.

To maintain a specific operating temperature level, the filter housing is equipped with a heating jacket. Also, the compressed air (50 m³ per hour) is preheated to 120°C, avoiding any condensation inside the bags.

Once again, MikroPul has demonstrated competence and expertise in this special and problematic application. To date, MikroPul Cologne alone has supplied more than 150 dust collectors for TiO₂ production to 50 customers worldwide, the biggest for gas volumes of 70.000 m³ per hour. The number of filter bags employed range from 9 for the smallest units up to 758; bag lengths are between 2 and 6m. In addition to the steam jet mill application, production lines like dryers, rotary kilns, presses, granulators, pneumatic conveying and sack filling are dedusted. Overall, a total gas volume of more than 2 Mio. m³ per hour is dedusted by MikroPul plants.

