Static

Static electricity is an electrical charge that is created when two objects or materials that have been in contact with each other are separated. When in contact, the surface electrical charges of the objects try to balance each other by moving to the closest possible conductive surface. If static electricity is not dissipated, the charge may build up eventually developing enough energy to discharge as a spark to a nearby ground point (usually a metal object) or an object with an opposite charge.

Static electricity in powder processing

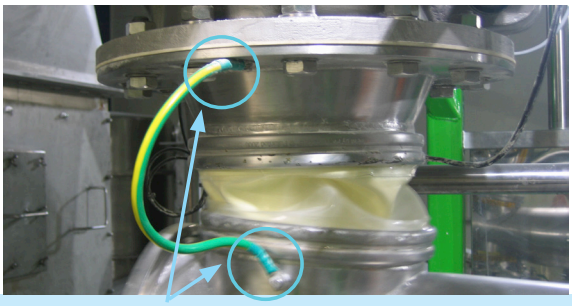
Generating electrostatic charge during powder processing is almost inevitable due to the surface contact, separation and movement when powder flows through the system.

Most powders are not good conductors of electricity, so electrostatic charges will accumulate on them, the processing equipment, isolated metal components, and other surfaces.

The generated charge is not generally hazardous unless it is allowed to accumulate, at which point it is capable of igniting flammable dust cloud atmospheres should a spark discharge occur.

This is one of the key reasons reducing dust in the production atmosphere is a very important aspect of factory health and safety controls. Sparks from ungrounded, charged conductors are responsible for most fires and explosions ignited by static electricity.

Many flexible connectors are made of non-conductive material, such as rubber and silicone. This increases the risk of electrostatic build up and sparking within the product flowing through the connector as there is less opportunity for the charge to be dissipated.



IMPORTANT: the metal connections on earthing/grounding cables need to be kept clean and tightly secured to ensure effectiveness.

BFM® and Static

BFM®'s flexible connector range is designed to create a sealed system to help eliminate dust in the production environment. In addition, the base material chosen for our non-breathable connectors, Seeflex, is a relatively good conductor assisting in the dissipation of static charge.

Our specialty Anti-Static product, Seeflex 040AS, has anti-static material properties that gives even more conductivity and is ideal for particularly high-risk products and processes.

Our connectors have been independently tested by IBExU with regards to ATEX safety standards (see over page for results).

The BFM® fitting provides two key advantages in environments where flammable dust clouds can occur alongside static build-up:

1. BFM®'s do not leak like conventional flexible connectors. This eliminates the presence of a risky dust cloud occurring exterior to the pipework. Eliminating this source of dust significantly reduces the possibility of a secondary explosion.
2. The Seeflex 040AS product, with its higher conductivity, eliminates the possibility of build-up of static electric charges.

See over page for an illustration of how the BFM® Seeflex 040AS works to dissipate static vs traditional flexible connectors.

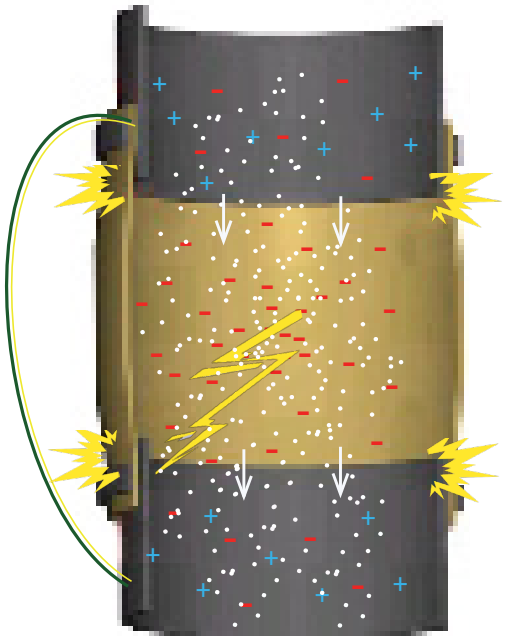
NOTE: Although BFM® 040AS is specifically designed to help dissipate static, grounding straps are still required to ensure the safe release of any unexpected current/electrical charge.

BFM® and Static (contd.)

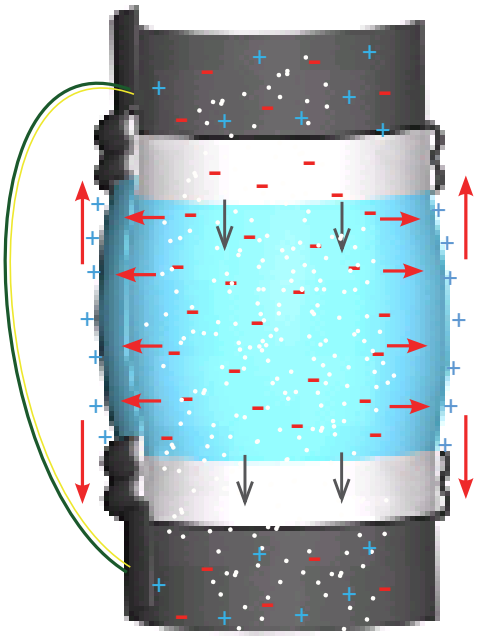
TRADITIONAL FLEXIBLE CONNECTORS
(EG. SILICONE)

Traditional materials allow a build up of static charge that can create sparks as it tries to jump to the nearest conductive surface (in this case, the metal pipes).

These sparks can potentially ignite dust or gas in the surrounding area, resulting in an explosion.



BFM® SEEFLEX 040AS



BFM®'s Seeflex 040AS dissipates any charge build up through conduction to the grounded spigots.

This therefore eliminates the dangerous build-up of static that can result in sparks and potential explosions.

ATEX Compliance

The table below summarises the core BFM® product range that has been independently tested by IBExU for compliance with ATEX safety standards.

		BFM® CONNECTOR MATERIALS (WITHOUT RINGS)		
		SEEFLEX 040E & 020E	SEEFLEX 040AS	LM4
SURFACE RESISTANCE (OHMS)		10^{10}	10^{8}	10^{9}
MAXIMUM DIAMETER		Gas Zones: Up to 650mm/25½" Dust Zones: Up to 1,650mm/65"	Gas Zones: Up to 650mm/25½ " Dust Zones: Up to 1,650mm/65"	Gas Zones: Up to 650mm/25½ " Dust Zones: Up to 1,650mm/65"
	EXPLOSION ZONE			
FREE FALL	**Dust Ex zones** *Interior/Exterior: 20-22*	1m	2m	1m
	Gas-ex Zones *Exterior: 1 + 2*	Explosion Group 11a: 1m Explosion Group 11B + 11c: N/A (Except Zone 22/2: 1m)	2m	1m
PNEUMATIC TRANSPORT	**Dust Ex Zones** *Interior/Exterior: 20-22*	200mm	200mm	200mm
	Gas-ex Zones *Exterior 1+2*	Not applicable	200mm	200mm
COMPLIES WITH THE FOLLOWING REGULATIONS:		FDA CFR 177.1680 & 177.2600 (EC) 1935/2004, 2023–2006, 10/2011, USDA & 3A (20-).	FDA CFR 177.1680 & 177.2600	FDA CFR 177.1680 & 177.2600

The Atex suitability quoted above is based in independent IBExU testing. Product variations outside the length ranges quoted above would need to be tested independantly. For more information, and for results for connectors with rings, please refer to the 'BFM® Declaration of Compliance - Atex'. Copies of the independent IBExU Reports are also available on request.