F. Harley

#1 DUST CONTROL SPECIALISTS

Antistatic / Conductive Filter Fabrics in Bag Filters

..an ignored area of SAFETY !

For Plant Owners / Managers / Operators, Safety Officers

Bag Filter function…….

- Dust Separation from the air /gas and dust collection in the Bag Filter,
- Separation process takes place on the filtering side,
- For effective filtration, optimum cake formation on filter surface is necessary,

NOW,

Q. What would possibly happen, if Electrostatic Charges are developed on the filter surface, and if there is no dissipation of these charges ?

Ans.1. ***Spark Generation,*** leading to,

the unfortunate possibilities……..

- Holes in the bags, causing ***high emissions*** and ***product loss***,
- Explosion of the Bag Filter Unit causing ***loss of lives***
- Spreading of fire towards the backstream causing further ***damage & loss to plant equipment.***

Ans.2. **Ineffective filtration**

- Due to the non dissipation of the Electrostatic Charges developed as synthetic filter medias have low conductivity properties (practically insulators), the particles become more charged, ***allowing more particles to cling onto the filter surface,***
- Leading to ***ineffective cleaning*** of the Filter Bags
- Causing ***rise in the differential pressure drop level*** across the Bag Filter Unit, and
- Create just the ***conditions for a spark generation or an explosion !***

Therefore,
considering
'Genuine' Antistatic /
Conductive Filter Bags is a
step in ***the right direction !***

‘Genuine’ Vs. ‘Fake’ Antistatic Filter Bags / Media

Genuine

- Conductive fibres are used in the batt, and not wires.
- For achieving better conductivity, scrim construction includes SS Yarn across the machine & cross direction of the fabric – NOT WIRES !!
- Fibres are evenly blended, thereby imparting uniform surface conductivity.
- Conductivity shall be observed across the fabric too.

Fake

- The indegenously manufactured **Stainless Steel Impregnated Antistatic Needlefelt** variety uses SS Wires in the batt, as a mere statement for being termed as Antistatic.
- To make matters worse, sometimes it is observed that MS wires are used in place of the specified SS wires – to cut cost !!
- The other common variety i.e. the **Copper Wire Scrim**.
- Both varieties exhibit no surface conductivity and across the fabric too.
- The physical presence of SS Wire or Copper Wire in the scrim is aimed at creating the impression only !
- The wires eventually cut through the fabric with the flexing action upon pulsing.

Q. Why do you need ***Antistatic Filter Fabrics*** ?

Your *SAFETY* !

Some more questions, which you may answer

Q. 1. How are you assured that the ANTISTATIC Filter bags supplied are genuinely ANTISTATIC ?

Q. 2. What is meant by ANTISTATIC ?

Q. 3. Do you ascertain the ANTISTATIC property of the fabric at your end ?

Q. 4. Does your existing supplier exhibit the ANTISTATIC property, or just submits a certificate ?

Q. 5. Do you simply believe the certificate ?

Q. 6. Are you sure you are getting the right product and not the 'right' certificate, only ?

Q. 7. Are you aware of the International Test Standard applicable for testing ANTISTATIC Fabrics ?

Q. 8. Are you aware of the source of ANTISTATIC Fabrics ?

DO YOU HAVE ANSWERS TO "ALL" THE ABOVE QUESTIONS ?

Yes / No

DO YOU WANT TO CONTINUE THE SAME WAY ?

Yes / No

What is Antistatic / Conductive Filter Media ?

- A fabric which offers least electrical resistance to an exposure of a low voltage charge.

- Normally, synthetic fibres possess insulating properties, and not conductive properties.

- Effectively, this means that ‘fake’ Antistatic / Conductive Filter Bags practically function as potentially hazardous insulators !

What makes the Filter Media **Antistatic / Conductive ??**

Blending of the basic fibres with Conductive Fibres

(NOT WIRES !!)

CONDUCTIVE FIBRES

- Bekinox – stainless steel fibres & yarns
- R.Stat/P – polyester fibres
- Epitropic – carbon coated fibres

Resistance Guideline

As a guideline the following figures apply,

Resistance above 10^8	**- Insulated or Not Anti-Static**
Resistance 10^8 & less than 10^8	**- Conductive**

Note : All units in MegaOhms / cm

The imparting of Anti-static property to the fabric becomes a method to increase the conductivity of the fabric and bring them from the Non-conductive to the anti-static range above.

Anti – Static Filter Media

a safety measure normally ignored, for small gains today. At what cost ?

Static Electrical charges can build up on filter dust cake and on filter media, and may discharge causing a spark causing holes on the filter bags leading to emissions, and worst – this could lead to an explosion !

Hence, whilst filtering dust's which generate static electrical charges, and which are also potentially explosive, it is extremely essential to dissipate these static charges developed continously, before it is too late, as it is not practically possible to monitor the rise in the static charges.

For such applications, the selection of the filter media requires some understanding for safe Bag Filter operation; as it is the function of the filter media to do just that – dissipate static charges. Unfortunately, this is the ignored or unknown hazard of many plant operators.

The most appropriate filter media for such application is commonly termed as the 'anti – static filter media' / 'conductive felts', which provides electrical conductivity and constant contact throughout the filter media, thus facilitating discharge and eliminating static build up.

This can only be obtained by the incorporation of conductive fibres. Unfortunately, very little attention is given or applied to this safety aspect in plant operations, and 'Antistatic' Filter Bags are procured in a very generic manner i.e. almost without any technical evaluation, whatsoever. This has given rise to fake and cheap 'Antistatic' Filter Media being pushed in the Industry, which is a risk to plant and personnel safety. These filter medias are in all practical purposes – Insulators ! This is totally opposite to the desired property of 'Genuine' Antistatic Filter Media. Furthermore, these 'Fake' Antistatic Filter Media also affect the effective filtration, as with the electrostatic force developed cleaning of the bags becomes difficult, and the exposure level of risk with respect to sparks and possible accidents only increases.

Call us at **F. Harley……..**

- for **conducting checks** of the **current filter media** in use,
- for your regular requirement for Filter Bags for such **Safety Applications**, and **other Applications also**,
- wherein you may require **re - selection advice** on the filter media.
- With our experience and testing facilities, you are **assured of installing the right material** for your application and requirement.

Further, you are most welcome to visit our facilities for viewing trials and inspections of your materials, and a discussion for any filter media problems you are facing.

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