

BOUSSEY CONTROL EUROPE

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TECHNICAL DATASHEET STATICONTROL AS15

Date : 8/11/2013

STATICONTROL AS15 is an internal emulsifier – antistatic additive mainly used for LDPE film mixing LLDPE, HDPE, PP. Normal dosage: 1 % to 2 %.

The use from 1 to 2 % of AS15 produces a good antistatic effect ($10^{11/10}$ ohms) appearing quickly and lasting. STATICONTROL AS15 is produced with a low temperature process, eliminating the possibility of thermic degradation of its components.

TECHNICAL DATA:

- active ingredient	15 % fatty esters/polyol
- base	LDPE (with processing aid)
- density at 20°C kg/cm ³	# 930
- apparent density kg/m ³	# 600
- moisture rate	< 0,1 %
- appearance	cylindrical pellets
- thermal stability	250 to 300°C for a few minutes transit time
- stock in its packing	no limitation
- packing	25 kg net bags on pallet of 1125 kg

Cautions : do not pre-heat over 45°C (risk of agglomerating).

Use : to mix with dosage or/and mixing machine.

STATICONTROL AS15 produces immediate antistatic effect from a few minutes to a few hours after extrusion (Corona treatment speeds up migration), this for a lasting of a few years according dosage rate and without rubbing. Normal rate used is 1 to 2 % (Rs: $10^{11/10}$ ohms) for PEbd. Some minerals components can absorb the antistatic product and decrease its migration so its efficiency. Linear LDPE addition is also decreasing migration, we advise 2 % dosage ; slip additive increases migration, so dosage of 1 % is used.

With 2 % of AS15, the slip effect got is 'average' and the decrease on surface treatment is at least 1 dyne/cm. It is safer to increase slightly the power of the Corona treatment.

These values are only given for indication and are depending of process/production/use parameters.

Check the seal ability for strong dosage. STATICONTROL AS15 has a lubricating effect which can produce an increase (or a decrease) of a few % of the output regarding the quality and configuration of screw/barrel. A slight purging effect can occur during the first minutes of extrusion.



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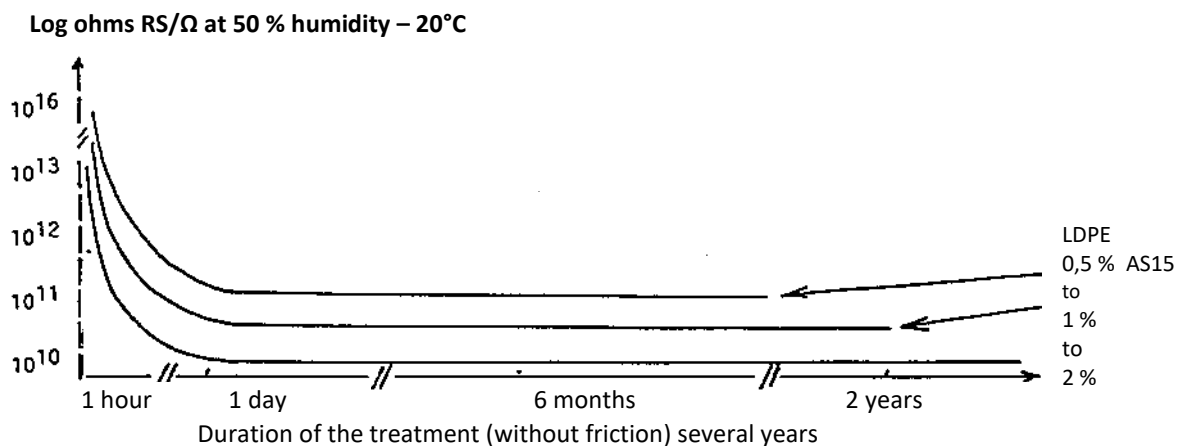
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In most cases, performances are very good even at low humidity rates (ex. 20 % at 20° C). Dosage rates must be tested before use in production to check their optimum value regarding efficiency parameters (fastness, migration lasting) economic and technical as surface tension etc.

We can perform measurements of surface tension, antistatic performances on your samples and advise you.

Curves hereover are only given for indication, they vary according to the material used process and end used conditions.

ANTISTATIC TREATMENTS

INTRODUCTION:

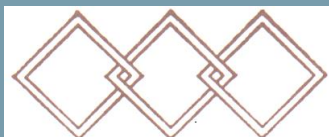
Electrostatic charges are mostly generated by friction (triboelectric effect) or from induction. They are producing negative effects as: dust, bad handling, electric discharges, sparks.

Their elimination can be done either with electrostatic bars (without any lasting effect), either chemically (with lasting effect) by using migrating agents in the resin and on the surface (these additives are using surrounding humidity to decrease the surface resistivity of the treated material from 10¹⁶ to 10^{10/12} ohms, this is avoiding any charge accumulation (charge is disappearing at once before growing), either by adding in the resin conductive materials as carbon or metal (these treatments which are difficult to process, give the possibility to reach very low resistivity as 10^{5/6} ohms independently of surrounding humidity).

BOUSSEY – CONTROL designed several additives (migrating):

INTERNAL ANTISTATIC PRODUCT, as:

- **AS15** antistatic treatment for **LDPE**
 - **AS11N** antistatic treatment for **PP, plasticized PVC**
- and SURFACE ANTISTATIC, as **AS-90-EIO**.



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These additives are approved for food packaging and give efficient antistatic treatment with fast action (a few minutes to a few hours after processing) lasting several years (without rubbing) depending dosering (even at low humidity rate as 20 % at 20°C).

IMPORTANT :

Like all migrating agents, these additives are producing secondary effects:

- sometimes positive : slip effect, anti-fog, de-molding effect.
- sometimes negative : decrease of the surface tension: printing or gluing more difficult to achieve (dyne level must be checked, Corona or Flame treatment can be needed), lubricating effect in the process, seal ability can also be modified.

We have produced optimum quality and rules of use for our additives in the limit of knowledge today's technology. We keep in mind, in our advices, your work conditions as compatibility, printing, seal ability, organoleptic, etc.

We are organized to measure your samples for surface tension (dynes/cm) and electrostatic performances (measurement of half decay and Rs under controlled atmosphere).

Comparatives electrostatic measurements must be done at constant temperature and humidity, performances measurements must be done at 20°C and 50 % humidity. The weight of water in the air must be known (it will strongly influence the performance of your additive). Performance at lower humidity, must also be checked.

A/ surface resistivity: with 2 electrodes, can be operated with smooth and flat materials.

B/ half decay time: electrostatic charge produced with a generator or by friction (triboelectric effect) is induced in the material and immediately after (with an appropriate field meter) we measure the time spend by the material to lose half of its electrostatic charge (for flat and thin materials, you can use a laboratory charge analyser). All measurements are done at 50 % humidity and 20°C.

Surface resistivity RS	1/2 decay time	Antistatic treatment quality (dissipative) (example: anti-dust treatment)
10^{10} ohms	< 1 second	very good
10^{11}	1 second	good
10^{11} to 10^{12}	5 seconds	good (acceptable)
10^{12}	10 seconds	acceptable (to be checked)
10^{12} to 10^{13}	10 to 100 seconds	bad