



EHEDG Guideline 43 on hygienic conveyors and belts A Volta Perspective

Who is EHEDG?

The **European Hygienic Engineering & Design Group** (EHEDG) is an association of equipment manufacturers, food industries, research institutes and public health authorities. It was founded in 1989 with the aim to promote hygiene during the processing and packing of food products.

The principal goal of EHEDG is the promotion of safe food by improving hygienic engineering and design in all aspects of food manufacture.

EHEDG actively supports European legislation, which requires that handling, preparation processing and packaging of food is done hygienically using hygienic machinery and in hygienic premises (EC Directive 2006/42/EC for Machinery, EN 1672-2 and EN ISO 14159 Hygiene requirement).

The EHEDG mission is defined as:

“EHEDG enables safe food production by providing guidance as an authority on hygienic engineering and design”.

Part of the mechanism for promoting the above goal is the drafting of guidelines and over 40 have been published to date.

Guideline 43

Guideline 43 was published in late April 2016 and contains, amongst other topics, an overview of 4 basic belt types; fabric/ply, thermoplastic, modular and wire mesh.

The Guideline is accessible for free to EHEDG members only and must be downloaded by them individually at the following link

http://vdmashop.de/advanced_search_result.php?keywords=4250697520473

Volta personnel are not at liberty to send the PDF document to any 3rd party.

A general summary would be that all other belt types that incorporate plastic (i.e. ply and modular) are no longer considered hygienic in direct food contact where wet cleaning is implemented (the scope of the guideline is the “.. *hygienic design of belt conveyors...for use in an environment where wet cleaning is mandatory*” - Page 5) and should not be considered on new conveyors.

This is one of the first guidelines or set of rules to declare ‘food grade’ belts unfit for food processing by examining not just the raw materials from which the belts’ working surface is made but also the overall belt manufacture and construction (fabrication).

What’s demanded from fabric/ply belts?

Fabric/ply belts need to have the material layers “embedded” and edges should be sealed to avoid fraying.



“For hygienic reasons, it is important to keep the fabric embedded and not exposed to any dirt. Edge fraying should be avoided by sealing or by using special designed “non-fraying” or knitted fabric conveyor belts. “ - Page 9.

“Mechanical fasteners are not permitted” – Page 10.

This makes the cheaper versions of these belts unsuited to virtually all humid and greasy applications as well as a host of others where wash downs are performed.

The guidelines also lay out stringent controls for belt condition which will effectively reduce the working lifetime of fabric belts that do conform to hygienic principles by forcing companies that conform to EHEDG to be more critical of belt damage and its hygienic impact.



“All belt surfaces should be regularly examined for damage (e.g. worn top coating, edges fraying, surface cuts and crevices) and dirt accumulation. Particular care is needed with complex fabrications involving welded flights, guides and sidewalls.” - Page 11.

A call for Modular Belts to be phased out

Possibly the most significant statement in terms of Volta is that regarding modular belts. There were questions raised as to whether this technology has a place at all in a hygienic manual and mainly in order to not make the guideline irrelevant to many users the following compromise was reached.



“The design of modular belts, relying as they do on links and pins, is per se not considered hygienic.

Due to the widespread use of these belts, characterizing the entire range of these products as categorically unhygienic would not be practical at this time.” - Page 20

In short; the belts are not considered fit for direct food contact and should not be installed on a new conveyor (unless there are unavoidable reasons such as a curved belt path or temperatures unsuitable to thermoplastic belts) and NO modular belt system is considered hygienic. The guideline concentrates on explaining some of the less problematic modular designs and discussing disinfection regimens.

Thermoplastic Belting

Thermoplastic belting is discussed on Page 12 (8.2 Friction driven homogeneous belts) and Page 15 (8.3 Positive driven homogeneous belts).

The material is not criticized in any way although reinforcement by way of tensioning members (Habasit/Gates) is seen as a hygienic hazard and must be carefully sealed (Page 12) and bad surface quality is not permitted (*“belt must...have a good patina” - Page 14*).

Regarding belt splicing, butt welding is considered the most hygienic while lace is permitted.

Fasteners are not considered hygienic in the same way as they are not so for fabric/ply belts as they introduce another material into the belt structure.

Two broad categories of thermoplastic Positive Drive belt are discussed and the guideline favours central toothed belts (SuperDrive™) over lateral toothed belts (DualDrive™).



“A central and round tooth design also leaves the majority of the running side of the belt smooth and free from dirt traps, thereby facilitating the cleaning process.” - Page 16.

The guideline is also critical of hollow welded on teeth.



“Hollow teeth are not recommended as they can fill with liquids”. - Page 17.

The guideline also prefers fixed side wall on conveyors over welded side wall for reasons of cleanability but permits their use.



*“Corrugated side walling should be avoided where possible because is more difficult to clean than static flat sidewalls that are often part of the conveyor construction. Nevertheless, in some cases, a side wall or guard that is fixed to the belt is required. Special care should be taken with the welded technology to make sure there are no cracks and crevices”.
- Page 18*

The main reason for hygienic concern is the axle and sprocket arrangement – this is noted on Page 14 where special attention is demanded to reduce tolerances in sprocket bores and to take special care in cleaning where plastic meets metal.



“All positively driven belt system requires the mounting of sprockets on the conveyor axes. Great care should be taken to reduce the space between the sprockets and the axes.

*NOTE: Unless permanently bonded, the seam between plastic and metal elements requires special attention for cleaning.”
- Page 14*

Conveyor Issues

Important rules regarding conveyor materials is also noted on Pages 8-9 (6. Materials of construction) including a definition of surface quality and a reference to Guideline 32 on materials. Thermoplastic material in conjunction with improved conveyor design is the way forward as far as EHEDG is concerned for the moment.

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