
CHECK USE OF BY-PRODUCTS: COFFEE PEELS

Art. 184-bis - D.Lgs. 152/06

Rev. 00 - 04/08/2020



1. INTRODUCTION

The company deals with coffee roasting. In the working cycle it produces waste and scraps, which must subsequently be disposed of by authorized companies. However, not all waste is contaminated with dangerous substances or has undergone processes that make it no longer usable. This study focuses in particular on the waste represented by the parchment, commonly called the "peel" of the coffee bean, and on its potential use as a by-product.

The enhancement of by-products allows the company to be able to count on a valuable renewable source and to reduce the costs associated with the disposal of production residues, thus avoiding affecting resources of greater value from a general point of view.

Underlying efforts to reduce waste and maximize profit are some common principles, such as the efficient use of inputs, the replacement of materials, and the minimization of unnecessary activities.

2. REGULATORY FRAMEWORK

At the regulatory level, there has been an evolution over time of the European and Italian provisions on by-products, since the sector is adjacent to that of waste.

Currently, their identification is governed by Article 184-bis of Legislative Decree 152/2006 and subsequent amendments, introduced by Legislative Decree 205/2010 which transposed Directive 2008/98 / EC on the regulation of waste, which establishes the four conditions that a substance or object must comply with in order to be identified as a by-product and not as a waste:

- a) the substance or object originates from a production process, of which it forms an integral part, and whose primary purpose is not the production of that substance or object;
- b) it is certain that the substance or object will be used, in the course of the same or a subsequent production or use process, by the manufacturer or by another company;
- c) the substance or object can be used directly without any further treatment other than normal industrial practice;
- d) the further use is legal, i.e. the substance or object meets, for the specific use, all relevant requirements regarding products and the protection of health and the environment and will not lead to overall negative impacts on the environment or human health.

A by-product (Fig. 1) is a residue of a manufacturing process that is certainly used without particular processing or through normal industrial treatments.

Fig. 1 – By-product production scheme



The Ministry of the Environment issued, with Ministerial Decree no. 264 of 13/10/2016, the Regulation containing the indicative criteria to facilitate the demonstration of the existence of the requirements for the qualification of production residues as by-products and not as waste.

3. PRODUCTION CYCLE

The company deals with coffee roasting.

The coffee drupes must be properly treated before use. The most important operation is roasting, that is the roasting of the coffee beans which will then be ground.

Fig. 2 – Structure of a coffee drupe



Once fully ripe, the coffee berries are harvested and processed on the plantation to separate the coffee seed from the outer skin. Subsequently the seeds are transported on ships and by road to the company, where they are subjected to a flow of hot air for the removal of the parchment. Roasting is the final process reserved for coffee beans capable of transforming the raw bean, which tends to be tasteless, into the toasted bean.

Schematically, the work cycle can be summarized as follows:

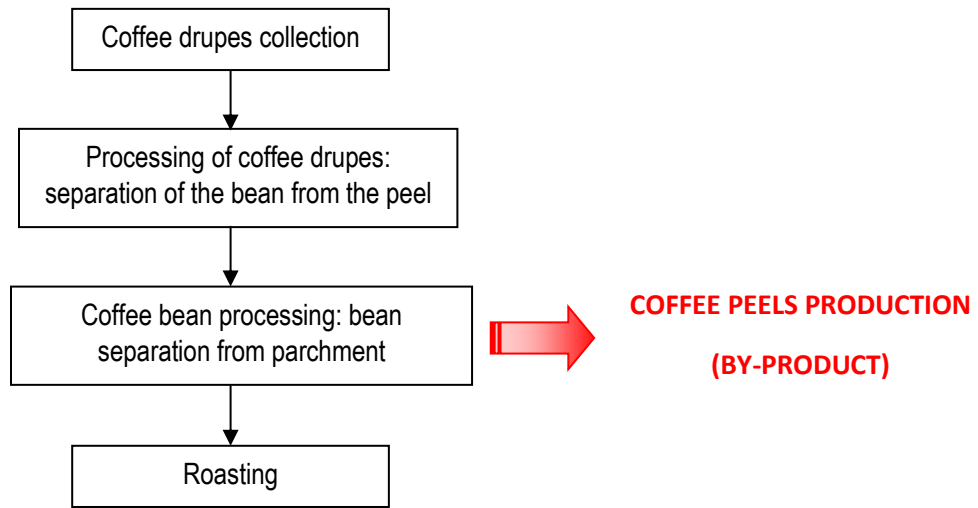


Fig. 3 – From drupe to roasted coffee beans



The parchment made up of the "peel" that covers the grain, is a fibrous and mucilaginous material, which is produced exclusively through the use of hot air. No dangerous substances are used, therefore, a subsequent use as a by-product rather than disposal as waste can reasonably be expected.

From an estimate made on the basis of data relating to the last 3 years, the average monthly production of the Company varies from about 1.000 kg to about 1.200 kg.

4. COMPLIANCE WITH BY-PRODUCTS REGULATIONS

Below we analyze the four conditions required by art. 184-bis co. 1 of Legislative Decree 152/06, to verify whether the parchment can be considered a by-product:

REQUIREMENT TO DEMONSTRATE	VALUTAZIONE	RATING
a) The substance or object originates from a production process, of which it forms an integral part, and whose primary purpose is not the production of that substance or object	REQUIREMENT SATISFIED	The primary purpose of the Company's work cycle is the production of roasted coffee; parchment is a waste originated during the processing of the coffee bean, which must undergo the final roasting phase.
b) It is certain that the substance or object will be used, during the same or a subsequent production or use process, by the manufacturer or by another company	REQUIREMENT SATISFIED	The parchment will be used by the Organic Farm for the production of compost and for mulching the garden. The "certainty of use" is demonstrated through the signing of a by-product supply contract between the Company and the Organic Farm. The contract contains the technical information, the methods of production, storage, transport and timing of use of the by-product.
c) The substance or object can be used directly without any further treatment other than normal industrial practice	REQUIREMENT SATISFIED	The operations and activities envisaged by Ministerial Decree 264/2016, which constitute normal industrial practices, are: washing, drying, air insufflation, refining, grinding, homogenization, natural fermentation, centrifugation, dehydration, physical-mechanical disintegration. No further treatments are required for the production of compost and for mulching the garden.
d) Further use is legal, i.e. the substance or object meets, for the specific use, all relevant requirements regarding products and the protection of health and the environment and will not lead to overall negative impacts on the environment or human health	REQUIREMENT SATISFIED	The parchment was analyzed for the search for metals and pesticides by Accredia certified laboratories, in order to verify the conformity of the requisites necessary for subsequent use (see Annex). The technician from the Organic Farm has expressed a positive opinion on the use of coffee peels for the production of compost and for mulching the garden. The subsequent use of the by-product will therefore not lead to overall negative impacts on the environment or human health.

5. ORGANIC FARM

The farm is dedicated to organic farming and for this reason it is constantly looking for and paying attention to eco-sustainable methods and practices.

After a careful evaluation of the test reports of the analyzes carried out on the coffee peels, the farm believes it can use them in the following activities:

- ❖ Garden mulch: the coffee peels create a thin crust on the ground that allows the roots to grow away from the sun, keeping the soil moist and rich in organic matter. Furthermore, the parchments contain specific characteristics that allow to keep insects and snails away from the vegetables.
- ❖ Compost: the coffee peels are used for the production of organic compost.

These activities are necessary for the cultivation of organic agricultural products, which, as such, must be treated exclusively with natural substances.

6. CONCLUSIONS

As described in the previous paragraphs, the parchments (coffee bean husks) meet the four requirements of art. 184-bis co. 1 of Legislative Decree 152/06 relating to the definition of "by-product".

The waste deriving from the operations of separating the coffee bean from the parchment can therefore be managed as by-products and no longer as waste.

The Company's parchments will be reused by the Organic Farm for the production of compost and for mulching the garden.