1989
PAGEV®
Turkish Plastics Industry Foundation

Bio-based and biodegradable Plastics

- **Bioplastics: a new member of the plastics family**

The term “bioplastics” describes two different concepts:

- *Biodegradable plastics* – referring to the specificity of the plastic at its end-of-life
- *Bio-based plastics* - meaning plastics made from a renewable raw material source

It is important to understand that bio-based plastics are not biodegradable per se (e.g. bio-based polyethylene, bio-PET, bio-PVC, cellulose acetate) and that biodegradable plastics are not necessarily bio-based but can also be fossil-based (e.g. biodegradable polyesters). Both biodegradable and non-biodegradable plastics should be properly disposed of and must not end up as litter.

- **Bio-based plastics can either be recycled or used for energy production**

As most conventional plastics, bio-based plastics need to be recycled in separate streams for each material type (e.g. PET-stream). Since they are chemically identical to their conventional counterparts, where a recycling stream for a specific plastic type is established (e.g. PE or PET), the bio-based alternatives (bio-PE, bio-PET) can be recycled together with it. In terms of energy recovery, the energy content of such plastics can be similar to that of conventional plastics. The CO_2 absorbed during the growth phase of the bio-based feedstock represents the bio-based carbon content within the plastics, thus making them CO_2-neutral when used for energy recovery.

- **Biodegradable plastics: key to making separate collection of bio-waste a success**

The choice of whether or not to use biodegradable plastics is directly linked to its functionality and not to the raw material base of the plastic. It is important to use them in applications where, after use, they can be recovered and processed. A good example is the compostable plastic bag, which can be used in areas where the separate collection of organic waste is already in place. Certified biodegradable plastics that are designed to be recovered by means of organic recycling are expected to be treated in anaerobic digesters (producing biogas) or composting plants. They are marked for this purpose with logos such as the *Seedling* logo. Recent studies demonstrate that optical systems can easily identify and separate them. In view of the small size of the current market for biodegradable plastics, composting or energy recovery are usually the best waste treatment options.

1989
PAGEV®
Turkish Plastics Industry Foundation

Key recommendations:

1. Provide a level-playing field for all plastics

It is crucial that a level-playing field is maintained for traditional, biodegradable and bio-based plastics. The biodegradable characteristics should only be promoted in applications where biodegradability offers an added value in terms of resource efficiency, emissions reduction and cost-savings.

2. Take the functionality of a product as the guiding principle

Market requirements should remain a determining factor in choosing the plastic grade with the desired property profile. The choice should therefore be directly linked to the functionality and not to the raw material base of the plastic which can be either fossil or bio-based.

3. Make sure claims refer to established standards

Environmental claims regarding biodegradability, compostability or bio-based content should comply with appropriate standards such as ISO 18606 or EN 13432 and EN 14995 dealing with the biodegradability of compostable plastics in specific and well-defined industrial composting environments.