



# Our word is our bond

**02** PRINCIPLE PROCESS

**03** APPLICATION

**04** NUTRITIONAL VALUE



## SBPP

**Module:** Sugar Beet Pulp, Pellets  
**HS Code:** 2303 2010  
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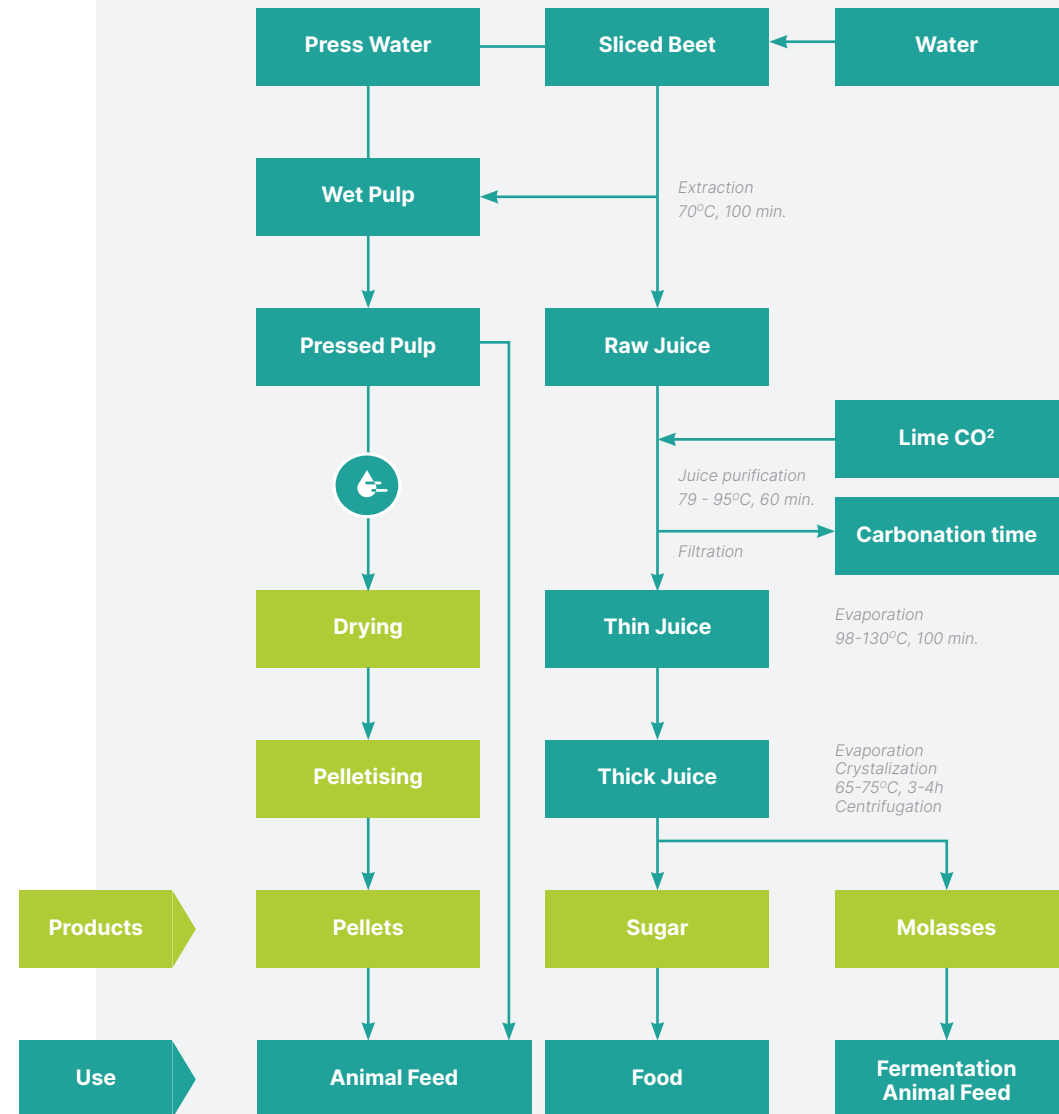
## 02 PRINCIPLE PROCESS

A typical processing line from beet to sugar, including the treatment of the by-products, is displayed on the right side.

Before processing, the beets are washed with water to remove dirt and other large debris, before being sliced. The slices undergo extraction with water at temperatures around 70°C for about 100 minutes. The raw juice obtained from this procedure is purified by a treatment with milk of lime and carbon dioxide, leading to: *carbonation sludge*. This sludge is removed by filtration and pressed as carbonation lime. The resulting juice is called “*thin juice*”, which is concentrated by evaporation to “*thick juice*”. Evaporation is carried out in multi-stage evaporators working at a temperature range of 98-130°C at different pressures.

The resulting “*thick juice*” is further concentrated to crystal magma from which crystalline sugar is recovered by centrifugation. During the centrifugation process, the crystals are separated from the syrup. The crystals are dried, cooled and stored for further use. The remaining syrup however, the so-called *molasses*, is mainly used as animal feed or as fermentation substrate.

The material remaining from the treated sliced beets is referred to as *wet pulp*. This pulp is pressed and dried to remove water and is commonly pelletized, leading to **Sugar Beet Pulp Pellets (SBPP)**.



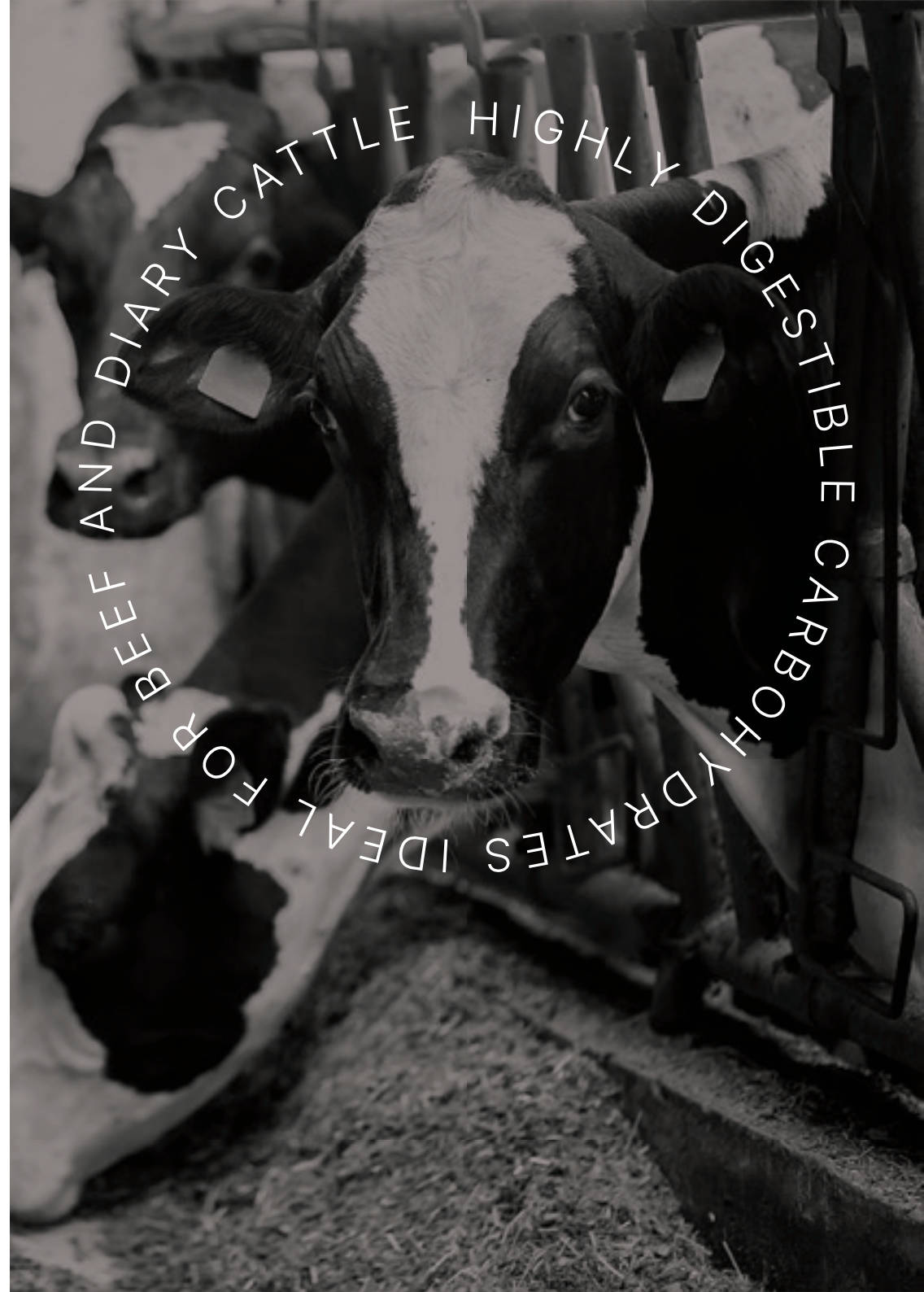
## 03 APPLICATION

**SBPP** are mainly used as a single component for **direct feeding** to cattle **or** as an **ingredient in compound feed**. Application of SBPP in pig- (sows), sheep-, goat and pet-food diets is also commonly found, although limited since there is little supplemental feeding of sheep, goats, pet-food and sow feeding. There are limitations on the feeding of SBPP to the above category of animals, as these are all monogastric and may encounter saturation- and health issues in case product inclusion is too high.

Typical sources of energy in feed originate from starch or sugar. The specific composition of the **high amount of excellent digestible carbohydrates** makes SBPP a perfectly suitable choice for dairy cattle as well as for beef cattle. SBPP contain abt. 80% carbohydrates, of which 5-10% consist of sucrose, abt. 23% cellulose, abt. 24% hemi-cellulose, abt. 23% pectin and about 2% lignin. These carbohydrates are very well digested by micro-organisms in the rumen, via fermentation, resulting in a crude fiber digestibility of over 80% and a Nitro Free Extract (NFE) digestibility of over 90%. As a result; the **energy-value of the SBPP is very high**.

For decades now, SBPP has been considered as a highly valued energy/carbohydrate component in cattle rations, used widely in Europe, Morocco, North America, Middle East and Asia. It's proven that **SBPP increases the milk in terms of volume and proteins**, stimulated by a greater production of prop ionic acid in the rumen. The so called "structure value" provides a good balance in the rumen and supports health.

Feed products from Sugar beet are **high in fiber and energy**. Therefore, they are **primarily used in feeding ruminants** (dairy cows, beef cattle, sheep), but can also be fed to non-ruminants.



## 04 NUTRITIONAL VALUE

SBPP has the following specific characteristics:

- very high digestible nutritional values
- low mineral contents
- production of more milk and milk proteins
- provides the right balance between:
  - a. “fast digestible energy” for the rumen, providing the dairy cattle with the opportunity to produce enough intestine digestible protein;
  - b. “slow digestible rumen by-passed carbohydrates” needed for optimal intake of rumen by-pass protein in the small intestine

Especially in dairy cattle recipes, SBPP is irreplaceable. In addition to the Indicative Nutritional Values as shown on the right side, SBPP provides a **sweet taste to the compound feed**, which significantly **improves the overall feed intake**, compared to Citrus Pulp, which results in a compound feed with a more “bitter” taste, lowering the ultimate intake.

Depending upon availability and price, a recipe for dairy cows always contains a **minimum of 5% SBPP. It's possible to increase to maximum inclusion rate of 30 up to 40%.**

Despite all the nutritional information on SBPP, the usual contractual trading specifications for Unmolassed Sugar Beet Pulp Pellets are:

- **Moisture content**      **max 13,5 – 14,0%**
- **Diameter size**        **6 - 10mm**
- **Sucrose**                **max 10,5%**
- **Fibre abt.**             **16,0 - 19,0%**

Sugar beet pulp pellets	Sucrose			
Generic Analysis (in %)	< 10%	10 - 15%	15 - 20%	> 20%
Dry Matter	90,1	90,3	91,5	91,5
Crude Ash	6,7	6,9	8,2	7,8
Crude Protein	9,1	8,9	10,5	10,9
Crude Fat	9	9	8	7
Crude Fibre	17,9	16,7	13,7	12,6
NFE	55,5	56,9	58,3	59,5
Starch	1	1	1	1
Sugars	7,2	11,9	18,3	22,6
Calcium	8,2	7,1	8,7	8,1
Magnesium	0,9	1	0,8	0,7
Phosphorums	2,7	2,1	2,3	1,6
Potassium	4,6	7,3	17	17,2
Sodium	1,2	1,8	1,6	2,4
Chloride	1,1	1,1	1,1	1,1
Iron	0,5	0,5	0,5	0,4
Digestability (in%)	< 10%	10 - 15%	15 - 20%	> 20%
Protein	62	62	67	67
Fat	40	80	34	27
Crude Fibre	82	82	82	82
NFE	92	92	92	92
By-pass protein	53	45	35	28
Illeal by-pass protein	89	89	89	89
Amino Acids in g/16g N	< 10%	10 - 15%	15 - 20%	> 20%
Lysine	5,6	4,9	4,1	3,6
Methionin	1,6	1,4	1,3	1,1
Cystin	1,4	1,2	1	0,9
Thereonin	5	4,4	3,8	3,5
Tryptophan	1	0,9	0,7	0,6