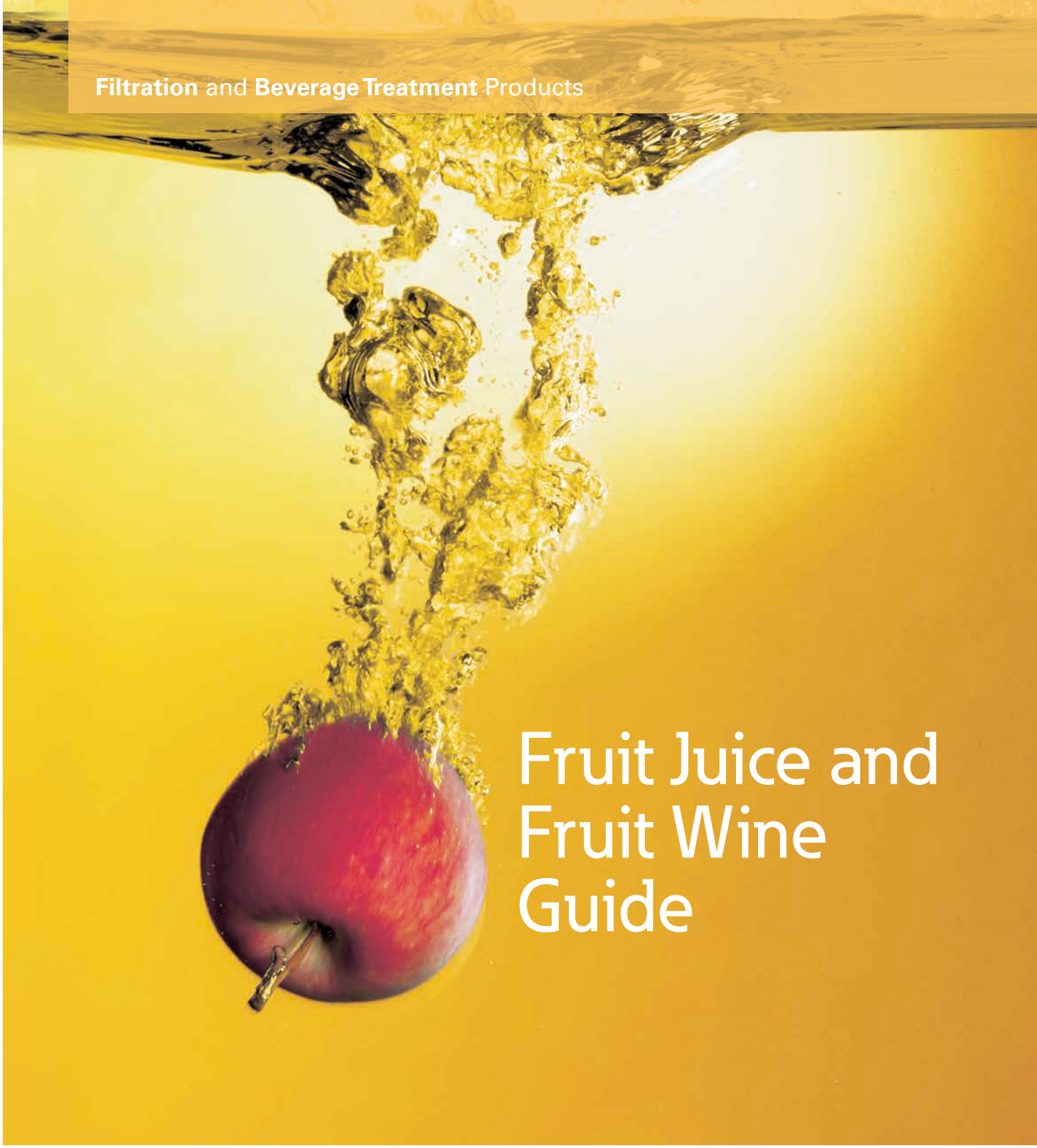
Filtration and **Beverage Treatment** Products

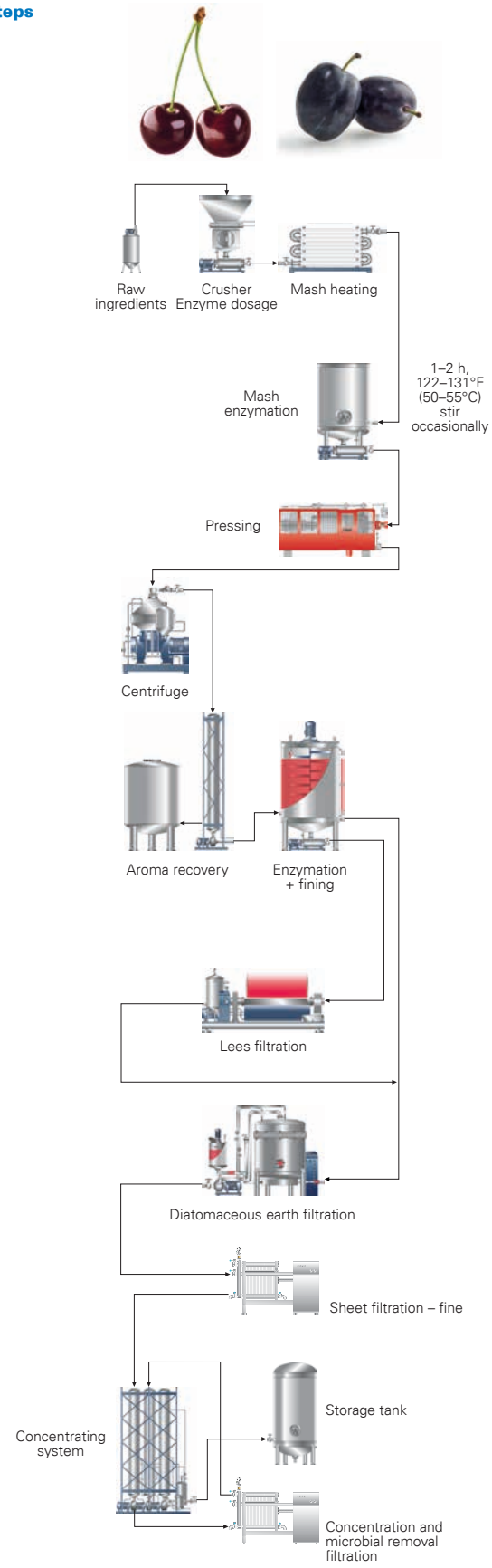


Fruit Juice and Fruit Wine Guide

Powering Business Worldwide

Fruit Juice Processing from Stone Fruit

Process steps



Production of concentrate from sour cherries, clear juice

Raw ingredients:
Ripe and sound, fresh or frozen fruit
Thawing of frozen fruit
Mash heating to 140–158°F (60–70°C)
Mechanical stone removal, if required

Mash enzyme dosage:
Low pectin content eliminates mash enzymation and prevents instability of juices.

No mash maceration time.
Continuously fill the press to prevent stones from settling in the mash tank.

Juice extraction:
Using a press or decanter (only mash from fruit without stones). For belt presses increase thickness of non-destoned mash.

Pectin degradation: approx. 1–2 h at 122–131°F (50–55°C)
Panzym® Pro Color enzyme: 0.61–1.53 fl oz/short ton (20–50 ml/t) or
Panzym BE XXL enzyme: 0.46–0.92 fl oz/short ton (15–30 ml/t)
For increased filterability:
Panzym Flux enzyme: 0.31–0.92 fl oz/shortton (10–30 ml/t)
Check via alcohol test
Fining: 2–4 h at 122–131°F (50–55°C)
SIHA PURANIT™/SIHA PURANIT UF fining agent:
16–32 oz/short ton (500–1,000 g/t)
Levasil® BF30 silica sol fining agent:
15.34–30.68 fl oz/short ton (500–1,000 ml/t)
Gelatine Fine Granules fining agent: 1.60–3.20 oz/short ton (50–100 g/t)
Plant protein as an alternative to gelatine:
SIHA® Pea Protein fining agent: 1.60–3.20 oz/short ton (50–100 g/t)

Lees filtration with
BECOLITE™ 5000 perlite
Dosage: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

Diatomaceous earth filtration with
BECOGUR™ 200 diatomaceous earth (approx. 10%)
BECOGUR 3500 diatomaceous earth (approx. 90%)
Dosage: approx. 32–38.41 oz/short ton (1–1.2 kg/t)

Sheet filtration – fine with
BECO® KD 10 or BECOPAD® 350 depth filter sheets
Flow rate: 0.41 gpm/ft² (1,000 l/m²/h)

Concentration with
simultaneous microbial removal and polishing filtration of semi-concentrate (35–40 Brix) at 158–176°F (70–80°C) with
BECO SD 30 or BECOPAD 270 depth filter sheets
Flow rate: 0.20 gpm/ft² (500 l/m²/h)

Production of concentrate from plums, clear juice

Raw ingredients:
Ripe and sound, fresh or frozen fruit
Thawing of frozen fruit
Mash heating to 122–131°F (50–55°C)
Mechanical stone removal, if required

Mash enzyme dosage:
Panzym Pro Color enzyme: 3.07–4.60 fl oz/short ton (100–150 ml/t) or
Panzym BE XXL enzyme: 2.45–3.68 fl oz/short ton (80–120 ml/t)

Mash enzymation:
1–2 h at 122–131°F (50–55°C)
Stir occasionally

Juice extraction:
Using a press or decanter (only mash from fruit without stones). For belt presses increase thickness of non-destoned mash.

Pectin degradation: approx. 1–2 h at 122–131°F (50–55°C)
Panzym Pro Color enzyme: 1.53–2.45 fl oz/short ton (50–80 ml/t) or
Panzym BE XXL enzyme: 0.92–1.84 fl oz/short ton (30–60 ml/t)
For increased filterability:
Panzym Flux enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
Check via alcohol test
Fining: 2–4 h at 122–131°F (50–55°C)
SIHA PURANIT/SIHA PURANIT UF fining agent:
16 oz/short ton (500 g/t)
Levasil BF30 silica sol fining agent:
15.34–30.68 fl oz/short ton (500–1,000 ml/t)
Gelatine Fine Granules fining agent: 1.60– 3.20 oz/short ton (50–100 g/t)
Plant protein as an alternative to gelatine:
SIHA Pea Protein fining agent: 1.60–3.20 oz/short ton (50–100 g/t)

Lees filtration with
BECOLITE 5000 perlite
Dosage: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

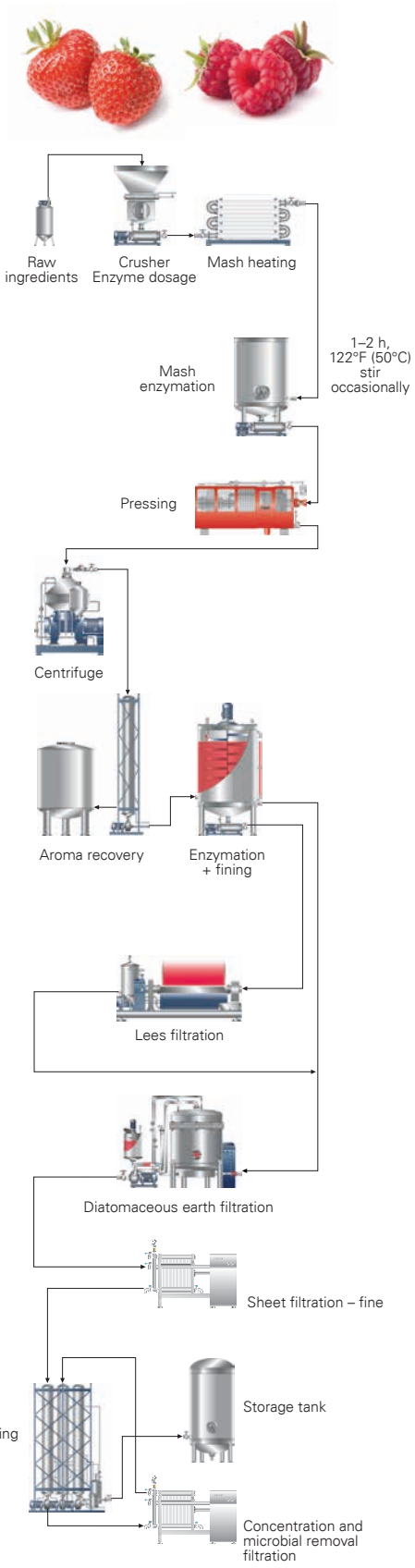
Diatomaceous earth filtration with
BECOGUR 200 diatomaceous earth (approx. 10%)
BECOGUR 3500 diatomaceous earth (approx. 90%)
Dosage: approx. 32–38.41 oz/short ton (1–1.2 kg/t)

Sheet filtration – fine with
BECO KD 10 or BECOPAD 350 depth filter sheets
Flow rate: 0.41 gpm/ft² (1,000 l/m²/h)

Concentration with
simultaneous sterile and polishing filtration of semi-concentrate (35–40 Brix) at 158–176°F (70–80°C) with
BECO SD 30 or BECOPAD 270 depth filter sheets
Flow rate: 0.20 gpm/ft² (500 l/m²/h)

Fruit Juice Processing from Soft Fruit

Process steps



Production of concentrate from strawberries, clear juice

Raw ingredients:
Ripe and sound, fresh or frozen fruit
Thawing of frozen fruit
Mash heating to 120–131°F (50–55°C) or
cold enzyming at approx. 68°F (20°C) to protect the color

Mash enzyme dosage:
Panzym Pro Color enzyme: 1.53–2.45 fl oz/short ton (50–80 ml/t) or
Panzym BE XXL enzyme: 0.92–1.53 fl oz/short ton (30–50 ml/t)
For frozen fruit, the dosages may have to be increased significantly.
For cold enzyming, the dosages should be doubled.

Mash enzymation:
1–2 h at 122–131°F (50–55°C) or
2–4 h at 68°F (20°C)
Stir occasionally

Juice extraction:
Using a press or decanter

Pectin degradation: approx. 1–2 h at 122–131°F (50–55°C)
Panzym Pro Color enzyme: 0.61–1.53 fl oz/short ton (20–50 ml/t) or
Panzym BE XXL enzyme: 0.46–0.92 fl oz/short ton (15–30 ml/t)
For increased filterability:
Panzym Flux enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
Check via alcohol test
Fining: 2–4 h at 122–131°F (50–55°C)
SIHA PURANIT/SIHA PURANIT UF fining agent:
16 oz/short ton (500 g/t)
Levasil BF30 silica sol fining agent:
15.34–30.68 fl oz/short ton (500–1,000 ml/t)
Gelatine Fine Granules fining agent: 1.60–3.20 oz/short ton (50–100 g/t)
Plant protein as an alternative to gelatine:
SIHA Pea Protein fining agent: 1.60–3.20 oz/short ton (50–100 g/t)

Lees filtration with
BECOLITE 5000 perlite
Dosage: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

Diatomaceous earth filtration with
BECOGUR 200 diatomaceous earth (approx. 10%)
BECOGUR 3500 diatomaceous earth (approx. 90%)
Dosage: approx. 32–38.41 oz/short ton (1–1.2 kg/t)

Sheet filtration – fine with
BECO KD 10 or BECOPAD 350 depth filter sheets
Flow rate: 0.41 gpm/ft² (1,000 l/m²/h)

Concentration with
simultaneous microbial removal and polishing filtration of
semi-concentrate (35–40°Brix) at 158–176°F (70–80°C) with
BECO SD 30 or BECOPAD 270 depth filter sheets
Flow rate: 0.20 gpm/ft² (500 l/m²/h)

Production of concentrate from raspberries, clear juice

Raw ingredients:
Ripe and sound, fresh or frozen fruit
Thawing of frozen fruit
Mash heating to 122–131°F (50–55°C)

Mash enzyme dosage:
Panzym Pro Color enzyme: 1.84–3.68 fl oz/short ton (60–120 ml/t) or
Panzym BE XXL enzyme: 1.53–3.07 fl oz/short ton (50–100 ml/t)
For frozen fruit, the dosages may have to be increased significantly.

Mash enzymation:
1–2 h at 122–131°F (50–55°C)
Stir occasionally

Juice extraction:
Using a press or decanter

Pectin degradation: approx. 1–2 h at 122–131°F (50–55°C)
Panzym Pro Color enzyme: 0.61–1.53 fl oz/short ton (20–50 ml/t) or
Panzym BE XXL enzyme: 0.46–0.92 fl oz/short ton (15–30 ml/t)
For increased filterability:
Panzym Flux enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
Check via alcohol test
Fining: 2–4 h at 122–131°F (50–55°C)
SIHA PURANIT/SIHA PURANIT UF fining agent:
16 oz/short ton (500 g/t)
Levasil BF30 silica sol fining agent:
15.34–30.68 fl oz/short ton (500–1,000 ml/t)
Gelatine Fine Granules fining agent: 1.60–3.20 oz/short ton (50–100 g/t)
Plant protein as an alternative to gelatine:
SIHA Pea Protein fining agent: 1.60–3.20 oz/short ton (50–100 g/t)

Lees filtration with
BECOLITE 5000 perlite
Dosage: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

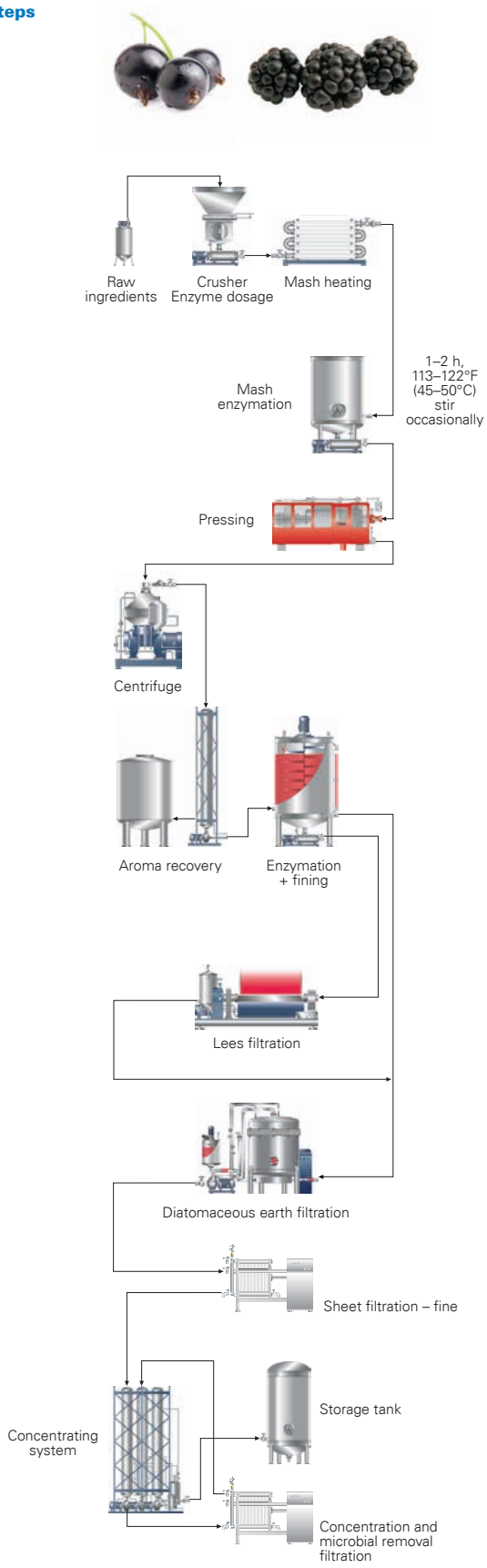
Diatomaceous earth filtration with
BECOGUR 200 diatomaceous earth (approx. 10%)
BECOGUR 3500 diatomaceous earth (approx. 90%)
Dosage: approx. 32–38.41 oz/short ton (1–1.2 kg/t)

Sheet filtration – fine with
BECO KD 10 or BECOPAD 350 depth filter sheets
Flow rate: 0.41 gpm/ft² (1,000 l/m²/h)

Concentration with
simultaneous sterile and polishing filtration of
semi-concentrate (35–40°Brix) at 158–176°F (70–80°C) with
BECO SD 30 or BECOPAD 270 depth filter sheets
Flow rate: 0.20 gpm/ft² (500 l/m²/h)

Fruit Juice Processing from Soft Fruit

Process steps



Production of concentrate from blackcurrants, clear juice

Raw ingredients:
Ripe and sound, fresh or frozen fruit
Thawing of frozen fruit
Mash heating to 113–122°F (45–50°C)

Mash enzyme dosage:
Panzym Pro Color enzyme: 3.07–6.14 fl oz/short ton (100–200 ml/t) or
Panzym BE XXL enzyme: 2.45–4.91 fl oz/short ton (80–160 ml/t)
For frozen fruit, the dosages may have to be increased significantly.

Mash enzymation:
1–2 h at 113–122°F (45–50°C)
Stir occasionally

Juice extraction:
Using a press or decanter

Pectin degradation: approx. 1–2 h at 122–131°F (50–55°C)
Panzym Pro Color enzyme: 0.92–1.84 fl oz/short ton (30–60 ml/t) or
Panzym BE XXL enzyme: 0.61–1.23 fl oz/short ton (20–40 ml/t)
For increased filterability:
Panzym Flux enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
Check via alcohol test
Fining: 2–4 h at 122–131°F (50–55°C)
SIHA PURANIT/SIHA PURANIT UF fining agent:
16–32 fl oz/short ton (500–1,000 g/t)
Levasil BF30 silica sol fining agent:
15.34–30.68 fl oz/short ton (500–1,000 ml/t)
Gelatine Fine Granules fining agent: 3.20–6.40 oz/short ton (100–200 g/t)
Plant protein as an alternative to gelatine:
SIHA Pea Protein fining agent: 3.20–6.40 oz/short ton (100–200 g/t)

Lees filtration with
BECOLITE 5000 perlite
Dosage: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

Diatomaceous earth filtration with
BECOGUR 200 diatomaceous earth (approx. 10%)
BECOGUR 3500 diatomaceous earth (approx. 90%)
Dosage: approx. 32–38.41 oz/short ton (1–1.2 kg/t)

Sheet filtration – fine with
BECO KD 10 or BECOPAD 350 depth filter sheets
Flow rate: 0.41 gpm/ft² (1,000 l/m²/h)

Concentration with
simultaneous microbial removal and polishing filtration of
semi-concentrate (35–40°Brix) at 158–176°F (70–80°C) with
BECO SD 30 or BECOPAD 270 depth filter sheets
Flow rate: 0.20 gpm/ft² (500 l/m²/h)

Production of concentrate from blackberries, clear juice

Raw ingredients:
Ripe and sound, fresh or frozen fruit
Thawing of frozen fruit
Mash heating to 122–131°F (50–55°C)

Mash enzyme dosage:
Panzym Pro Color enzyme: 2.45–4.91 fl oz/short ton (80–160 ml/t) or
Panzym BE XXL enzyme: 1.84–3.68 fl oz/short ton (60–120 ml/t)
For frozen fruit, the dosages may have to be increased significantly.

Mash enzymation:
1–2 h at 122–131°F (50–55°C)
Stir occasionally

Juice extraction:
Using a press or decanter

Pectin degradation: approx. 1–2 h at 122–131°F (50–55°C)
Panzym Pro Color enzyme: 0.61–1.53 fl oz/short ton (20–50 ml/t) or
Panzym BE XXL enzyme: 0.46–0.92 fl oz/short ton (15–30 ml/t)
For increased filterability:
Panzym Flux enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
Check via alcohol test
Fining: 2–4 h at 122–131°F (50–55°C)
SIHA PURANIT/SIHA PURANIT UF fining agent:
16–32 fl oz/short ton (500–1,000 g/t)
Levasil BF30 silica sol fining agent:
15.34–30.68 fl oz/short ton (500–1,000 ml/t)
Gelatine Fine Granules fining agent: 3.20–6.40 oz/short ton (100–200 g/t)
Plant protein as an alternative to gelatine:
SIHA Pea Protein fining agent: 3.20–6.40 oz/short ton (100–200 g/t)

Lees filtration with
BECOLITE 5000 perlite
Dosage: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

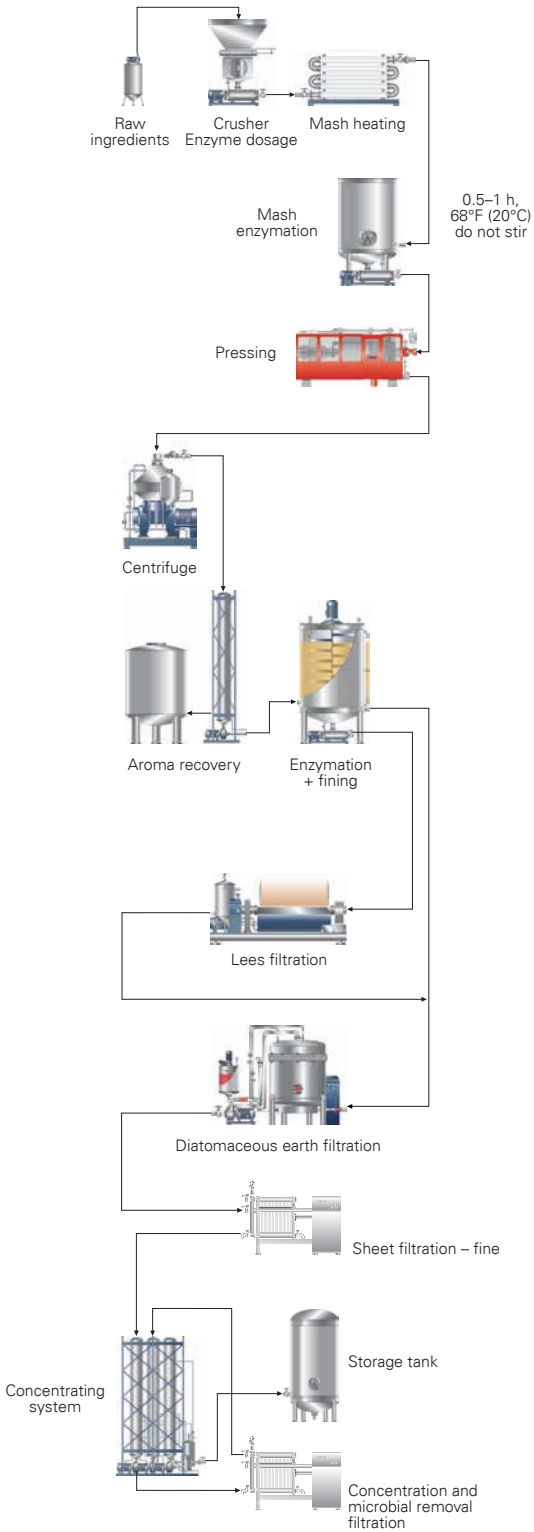
Diatomaceous earth filtration with
BECOGUR 200 diatomaceous earth (approx. 10%)
BECOGUR 3500 diatomaceous earth (approx. 90%)
Dosage: approx. 32–38.41 oz/short ton (1–1.2 kg/t)

Sheet filtration – fine with
BECO KD 10 or BECOPAD 350 depth filter sheets
Flow rate: 0.41 gpm/ft² (1,000 l/m²/h)

Concentration with
simultaneous sterile and polishing filtration of
semi-concentrate (35–40°Brix) at 158–176°F (70–80°C) with
BECO SD 30 or BECOPAD 270 depth filter sheets
Flow rate: 0.20 gpm/ft² (500 l/m²/h)

AJC and Fruit Juice Processing from Pomaceous Fruit

Process steps



Production of AJC with hot clarification and sterile filtration

Raw ingredients:
Ripe, sound, washed

Mash enzyme dosage:
Panzym YieldMASH XXL enzyme: 1.53–2.15 fl oz/short ton (50–70 ml/t) or
Panzym First Yield enzyme: 2.15–3.07 fl oz/short ton (70–100 ml/t)

Mash enzymation:
At approx. 68°F (20°C), without stirring
Bucher press: 0.5–1 h
Belt press: 1 h
Decanter: 1 h

Juice extraction:
With possible secondary extraction
pomace/water ratio = 1:0.5–1

Starch degradation: approx. 1 h at 122–131°F (50–55°C)
Panzym HT 300 enzyme: 0.61–1.84 fl oz/short ton (20–60 ml/t) or
Panzym AG XXL enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
Check via iodine test
Pectin degradation: approx. 1 h at 122–131°F (50–55°C)
Panzym Pro Clear enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t) or
Panzym XXL enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
For increased filterability:
Panzym Flux enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
Check via alcohol test
Fining: 2–4 h at 122–131°F (50–55°C)
SIHA PURANIT/SIHA PURANIT UF fining agent:
32 oz/short ton (1,000 g/t)
Levasil BF30 silica sol fining agent:
15.34–30.68 fl oz/short ton (500–1,000 ml/t)
Gelatine Fine Granules fining agent: 3.20–6.40 oz/short ton (100–200 g/t)
Plant protein as an alternative to gelatine:
SIHA Pea Protein fining agent: 3.20–6.40 oz/short ton (100–200 g/t)

Lees filtration with
BECOLITE 5000 perlite
Dosage: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

Diatomaceous earth filtration with
BECOGUR 200 diatomaceous earth (approx. 10%)
BECOGUR 3500 diatomaceous earth (approx. 90%)
Dosage: approx. 32–38.41 oz/short ton (1–1.2 kg/t)

Sheet filtration – fine with
BECO KDS 12 or BECOPAD 350 depth filter sheets
Flow rate: 0.41 gpm/ft² (1,000 l/m²/h)
Alternative: Ultra filtration (UF), if necessary with following
sterile filtration (ACB/TAB) with BECO PROTECT® FS 0.2 µm
as pre-filter and BECO MEMBRAN PSplus 0.2 µm as final filter cartridges

Concentration with
simultaneous microbial removal and polishing filtration of
semi-concentrate (35–40°Brix) at 158–176°F (70–80°C) with
BECO SD 30 or BECOPAD 270 depth filter sheets
Flow rate: 0.20 gpm/ft² (500 l/m²/h)

Production of clear apple juice with cold clarification

Raw ingredients:
Ripe, sound, washed

Mash enzyme dosage:
Panzym YieldMASH XXL enzyme: 1.53–2.15 fl oz/short ton (50–70 ml/t) or
Panzym First Yield enzyme: 2.15–3.07 fl oz/short ton (70–100 ml/t)

Mash enzymation:
At approx. 68°F (20°C), without stirring
Bucher press: 0.5–1 h
Belt press: 1 h
Decanter: 1 h

Juice extraction:
With possible secondary extraction
pomace/water ratio = 1:0.5–1

Without previous aroma recovery

Starch degradation: approx. 4 h at approx. 68°F (20°C)
Panzym F2 enzyme: 1.53–4.60 fl oz/short ton (50–150 ml/t)
Check via iodine test
Pectin degradation: approx. 4 h at approx. 68°F (20°C)
Panzym Pro Clear enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t) or
Panzym XXL enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
For increased filterability:
Panzym Flux enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
Check via alcohol test
Fining: 2–4 h at 122–131°F (50–55°C) or 4–8 h at approx. 68°F (20°C)
SIHA PURANIT/SIHA PURANIT UF fining agent:
16–32 fl oz/short ton (500–1,000 g/t)
Levasil BF30 silica sol fining agent:
15.34–30.68 fl oz/short ton (500–1,000 ml/t)
Gelatine Fine Granules fining agent: 3.20–6.40 oz/short ton (100–200 g/t)
Plant protein as an alternative to gelatine:
SIHA Pea Protein fining agent: 3.20–6.40 oz/short ton (100–200 g/t)

Lees filtration with
BECOLITE 5000 perlite
Dosage: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

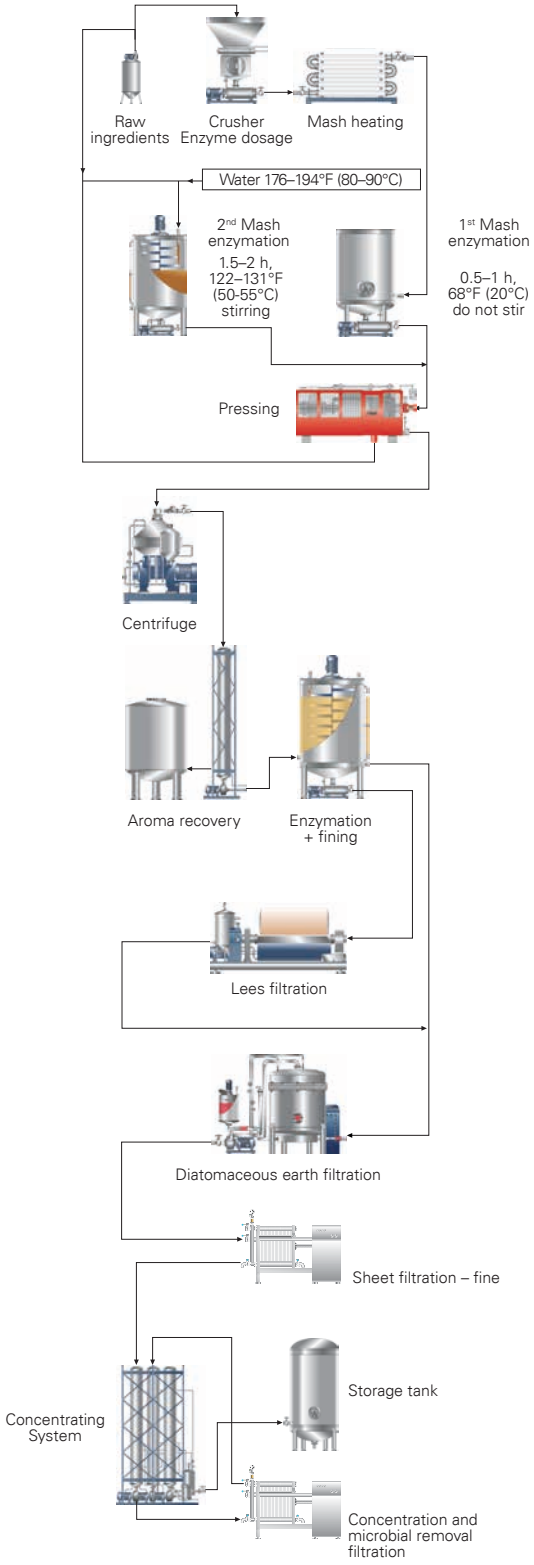
Diatomaceous earth filtration with
BECOGUR 200 diatomaceous earth (approx. 10%)
BECOGUR 3500 diatomaceous earth (approx. 90%)
Dosage: approx. 32–38.41 oz/short ton (1–1.2 kg/t)

Sheet filtration – fine with
BECO KDS 12 or BECOPAD 350 depth filter sheets
Flow rate: 0.41 gpm/ft² (1,000 l/m²/h)
Alternative: Ultra filtration (UF), if necessary with following
sterile filtration (ACB/TAB) with BECO PROTECT FS 0.2 µm
as pre-filter and BECO MEMBRAN PSplus 0.2 µm as final filter cartridges

Particle filtration before bottling with
BECO PROTECT PG depth filter cartridges (5 µm)
Flow rate: 800 l/h/30" filter cartridge
Storage or bottling

Mash Enzymation and Fruit Juice Processing from Pomaceous Fruit

Process steps



Yield increase through 2nd mash enzymation

Raw ingredients:
1 part pomace from 1st pressing
+ 0.6–1 part (depending on first yield from 60–80%)
Demineralized water at 176–194°F (80–90°C)

Mash enzyme dosage, depending on first yield:
Panyzm Second Yield enzyme
a) 80% yield: 7.67–15.34 fl oz/short ton (250–500 ml/t) pomace
b) 70% yield: 4.91–11.66 fl oz/short ton (160–380 ml/t) pomace
c) 60% yield: 3.68–7.36 fl oz/short ton (120–240 ml/t) pomace

2nd mash enzymation tenure:
1.5–2 h at 122–131°F (50–55°C)
With vigorous stirring

Juice extraction:
Using a press or decanter
possibly followed by blending of 1st juice and 2nd juice

Starch degradation: approx. 1 h at 122–131°F (50–55°C)
Panzym HT 300 enzyme: 0.61–1.84 fl oz/short ton (20–60 ml/t) or
Panzym AG XXL enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
Check via iodine test
Pectin degradation: approx. 1 h at 122–131°F (50–55°C)
Panzym Pro Clear enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t) or
Panzym XXL enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
For increased filterability:
Panzym Flux enzyme: 0.31–0.92 fl oz/short ton (10–30 ml/t)
Check via alcohol test
Fining: 2–4 h at 122–131°F (50–55°C)
SIHA PURANIT/SIHA PURANIT UF fining agent: 32 oz/short ton (1,000 g/t)
Levasil BF30 silica sol fining agent:
15.34–30.68 fl oz/short ton (500–1,000 ml/t)
Gelatine Fine Granules fining agent: 3.20–6.40 oz/short ton (100–200 g/t)
Plant protein as an alternative to gelatine:
SIHA Pea Protein fining agent: 3.20–6.40 oz/short ton (100–200 g/t)

Lees filtration with
BECOLITE 5000 perlite
Dosage: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

Diatomaceous earth filtration with
BECOGUR 200 diatomaceous earth (approx. 10%)
BECOGUR 3500 diatomaceous earth (approx. 90%)
Dosage: approx. 32–38.41 oz/short ton (1–1.2 kg/t)

Sheet filtration – fine with
BECO KDS 12 or BECOPAD 350 depth filter sheets
Flow rate: 0.41 gpm/ft² (1,000 l/m²/h)
Alternative: Ultra filtration (UF), if necessary with following **sterile filtration (ACB/TAB)** with BECO PROTECT FS 0.2 µm as pre-filter and BECO MEMBRAN PSplus 0.2 µm as final filter cartridges

Concentration with
simultaneous microbial removal and polishing filtration of semi-concentrate (35–40°Brix) at 158–176°F (70–80°C) with
BECO SD 30 or BECOPAD 270 depth filter sheets
Flow rate: 0.20 gpm/ft² (500 l/m²/h)

Production of naturally cloudy apple juice

Raw ingredients:
Fully ripe (low starch content), sound and washed

Mash enzyme dosage:
Panzym YieldMASH XXL enzyme: 0.92–1.53 fl oz/short ton (30–50 ml/t) or
Panzym First Yield enzyme: 1.23–1.84 fl oz/short ton (40–60 ml/t)

1st Mash enzymation:
0.5–1 h at approx. 68°F (20°C)
Without stirring

Juice extraction:
Using a press or decanter

Vitamin C dosage: 6.40–12.80 oz/short ton (200–400 g/t) *
directly into the buffer tank

Removal of instable solids via centrifuge

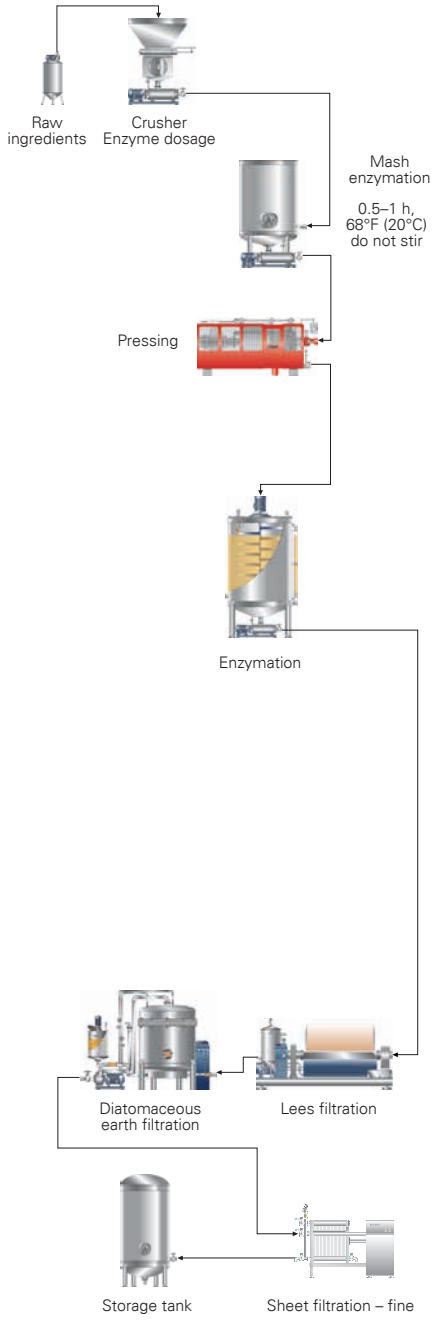
Early pasteurization without long intermediate storage to prevent solid loss of stability through enzymatic activity and fermentation.

Storage or filling:
If no centrifuge was used for the removal of instable solids, the juice should be drawn off the coarse unfiltered sediment in the storage tank prior to bottling.

* Please refer to national law

Small-scale fruit processors and fruit distilleries: Recommendations for processing of clear juices

Process steps



Pomaceous fruit, clear juice

Raw ingredients:
Pomaceous fruit: Apple, pear, quince
Ripe, sound, washed and grinded fruits

Mash enzymation:
approx. 1 h at 68°F (20°C), without stirring
Panzym Univers enzyme: 12.80 fl oz/1,000 gal (10 ml/hl)
Pay attention to an even distribution of enzyme in the mash

Juice extraction:
Pressing

Oxidation protection, as required:
Ascorbic acid stabilizer: 1.67–3.34 lb/1,000 gal (20–40 g/hl)

Juice enzymation:
2–4 h at 68°F (20°C):
Starch degradation:
Panzym F2 enzyme: 0.64–2.56 fl oz/1,000 gal (0.5–2 ml/hl)
Pectin degradation:
Panzym Univers enzyme: 1.28–2.56 fl oz/1,000 gal (1–2 ml/hl)

Fining:
6–8 h at 68°F (20°C):
SIHA PURANIT fining agent: approx. 8.35 lb/1,000 gal (100 g/hl)
[at pH < 3.5 and 68°F (20°C) SIHA Ca-Bentonite G fining agent:
approx. 8.35 lb/1,000 gal (100 g/hl)]
Levasil BF30 silica sol fining agent: 64–128 fl oz/1,000 gal (50–100 ml/hl)
Gelatine Fine Granules fining agent: 0.83–2.5 lb/1,000 gal (10–30 g/hl)
(higher dosing required for fruit rich in tannin)
Plant protein as an alternative to gelatine:
SIHA Pea Protein fining agent: 0.83–2.5 lb/1,000 gal (10–30 g/hl)

Lees filtration with
BECOLITE 5000 perlite: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

Coarse filtration:
BECOGUR 200 diatomaceous earth:
approx. 10% at 0.84–1.67 lb/100 gal (100–200 g/hl)
BECOGUR 3500 diatomaceous earth:
approx. 90% at 0.84–1.67 lb/100 gal (100–200 g/hl)
or BECOPAD 580 depth filter sheet
Fine filtration:
BECOPAD 350 depth filter sheet

Particle filtration before bottling with
BECO PROTECT PG depth filter cartridges (5 µm)
Flow rate: 800 l/h/30" filter cartridge
Bottling at approx. 176°F (80°C), depending on germ load and heat holding time

Pitted fruit/soft fruit, clear juice

Raw ingredients:
Pitted fruit: Cherry, plum, mirabelle plum
Soft fruit: Blackcurrant, strawberry, blackberry
Ripe, sound, washed and grinded fruits

Mash enzymation:
1–2 h at 113–131°F (45–55°C), occasional stirring
Rich-colored fruit: Panzym Univers enzyme:
12.80 fl oz/1,000 gal (10 ml/hl)
Alternatively for cherry processing:
Hot pressing at 140–158°F (60–70°C) without using enzymes

Juice extraction:
Pressing

Juice enzymation:
2–4 h at 122–131°F (50–55°C) or
8–12 h at 68°F (20°C):
Panzym Univers enzyme: 2.56–10.24 fl oz/1,000 gal (2–8 ml/hl)

Fining:
1–2 h at 122–131°F (50–55°C) or
4–8 h at 68–86°F (20–30°C)
SIHA PURANITF fining agent: 2.09–4.17 lb/1,000 gal (25–50 g/hl)
[at pH < 3.5 and 68°F (20°C) SIHA Ca-Bentonite G fining agent:
approx. 2.09–4.17 lb/1,000 gal (25–50 g/hl)]
Levasil BF30 silica sol fining agent: 6.4–25.6 fl oz/100 gal (50–200 ml/hl)
Gelatine Fine Granules fining agent: 0.42–1.67 lb/1,000 gal (5–20 g/hl)
Plant protein as an alternative to gelatine:
SIHA Pea Protein fining agent: 0.42–1.67 lb/1,000 gal (5–20 g/hl)

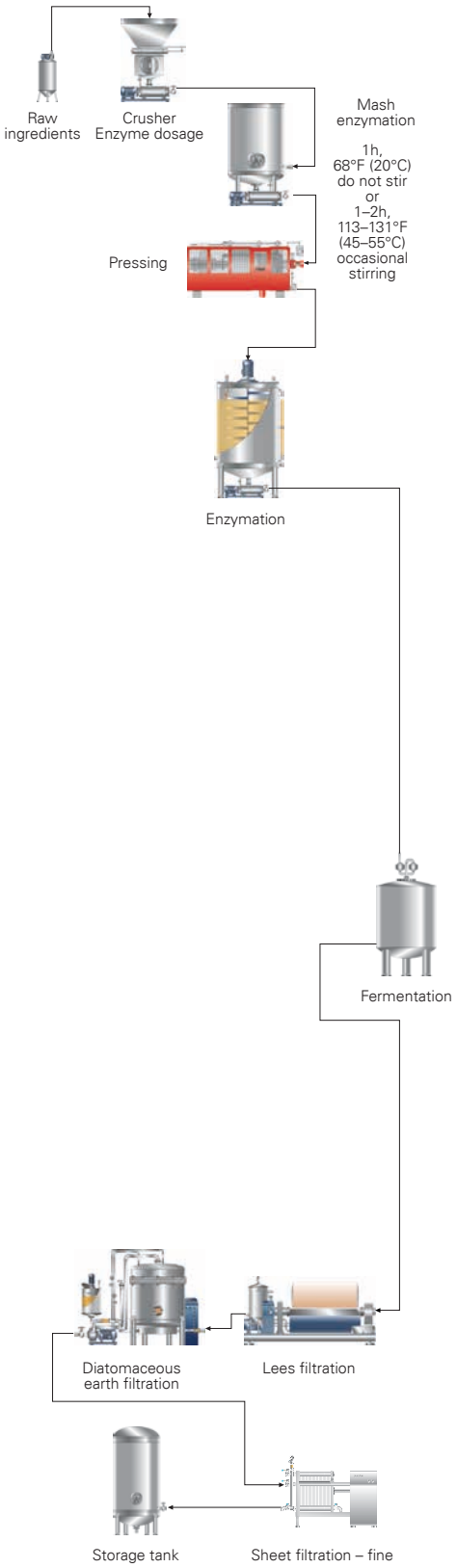
Lees filtration with
BECOLITE 5000 perlite: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

Coarse filtration:
BECOGUR 200 diatomaceous earth:
approx. 10% at 0.84–1.67 lb/100 gal (100–200 g/hl)
BECOGUR 3500 diatomaceous earth:
approx. 90% at 0.84–1.67 lb/100 gal (100–200 g/hl)
or BECOPAD 580 depth filter sheet
Fine filtration:
BECOPAD 350 depth filter sheet
Colored juices: BECOPAD 450 depth filter sheet

Particle filtration before bottling with
BECO PROTECT PG depth filter cartridges (5 µm)
Flow rate: 800 l/h/30" filter cartridge
Bottling at approx. 176°F (80°C), depending on germ load and
heat holding time

Fruit Wine Processing from Pomaceous, Pitted and Soft Fruit

Process steps



Fruit wine

Raw ingredients:
Pomaceous fruit: Apple, pear quince
Pitted fruit: Cherry, plum, mirabelle plum
Soft fruit: Blackcurrant, strawberry, blackberry
Ripe, sound, washed and grinded fruit

Mash enzymation:
Pomaceous fruit: approx. 1 h at 68°F (20°C) without stirring,
Panzym Univers enzyme: 12.80 fl oz/1,000 gal (10 ml/hl)
Pitted and soft fruit: 1–2 h at 113–131°F (45–55°C), occasional stirring
Rich-colored fruit: Panzym Univers enzyme: 12.80–38.4 fl oz/1,000 gal (10–30 ml/hl)

Juice extraction: Pressing

Juice stabilization: Addition of sulfur to pressed juice:
SIHA Potassium Pyrosulphite stabilizer: 0.25–0.83 lb/1,000 gal (6–10 g/hl)
Addition should follow the microbiological burden of incoming fruit

Juice enzymation:
Starch degradation (pomaceous fruit)**:**
Panzym F2 enzyme: 0.64–2.56 fl oz/1,000 gal (0.5–2 ml/hl)
Pectin degradation: Panzym Univers enzyme: 0.64–2.56 fl oz/1,000 gal (0.5–2 ml/hl)
No holding time: Starch and pectin degradation occur during fermentation

Chaptalization, as required

Acification:
Lactic Acid 80% stabilizer: max. 3.13 lb/100 gal (3.75 g/l)* (optional for fruits low in acid)

Fermentation (make sure to only use cleaned fermentation vessels with fermentation air locks)**:**
SIHA Active Yeast 3: 1.67 lb/1,000 gal (20 g/hl)
SIHA Active Yeast 8 (Burgundy Yeast): 1.67 lb/1,000 gal (20 g/hl)
Rehydration of active dry yeast in juice water mixture (50:50) with
SIHA® SpeedFerm™ yeast nutrient
Yeast nutrient:
Fermentation Salt yeast nutrient: max. 8.35 lb/1,000 gal (100 g/hl),
step-wise addition until mid of alcoholic fermentation
SIHA Vitamin B1 yeast nutrient: max. 0.01 lb/1,000 gal (0,6 g/1,000 l)
SIHA PROFERM™ $H+^2$ combined yeast nutrient: max. 3.34 lb/1,000 gal (40 g/hl)

After fermentation: Racking followed by sulfurization with
SIHA Potassium Pyrosulphite stabilizer: 0.83–1.34 lb/1,000 gal (10–16 g/hl)

Fining:
SIHA Active Bentonite G fining agent: approx. 2.09–8.35 lb/1,000 gal (25–100 g/hl)
[at pH < 3.5 SIHA Ca-Bentonite G fining agent: approx. 8.35 lb/1,000 gal (100 g/hl)]
Levasil BF30 silica sol fining agent: 6.4–25.6 fl oz/1,000 gal (50–200 ml/hl)
Gelatine Fine Granules fining agent: 0.42–1.67 lb/1,000 gal (5–20 g/hl)
(higher dosing required for fruit rich in tannin)
Plant protein as an alternative to gelatine:
SIHA Pea Protein fining agent: 0.42–1.67 lb/1,000 gal (5–20 g/hl)

Stabilitzation:
SIHA Potassium Pyrosulphite stabilizer: Target value, free SO_2: 4.67–6.68 oz/1,000 gal (35–50 mg/l)
Potassium Sorbate stabilizer: max. 2.24 lb/1,000 gal (26.8 g/hl) (for wines with residual sugar)

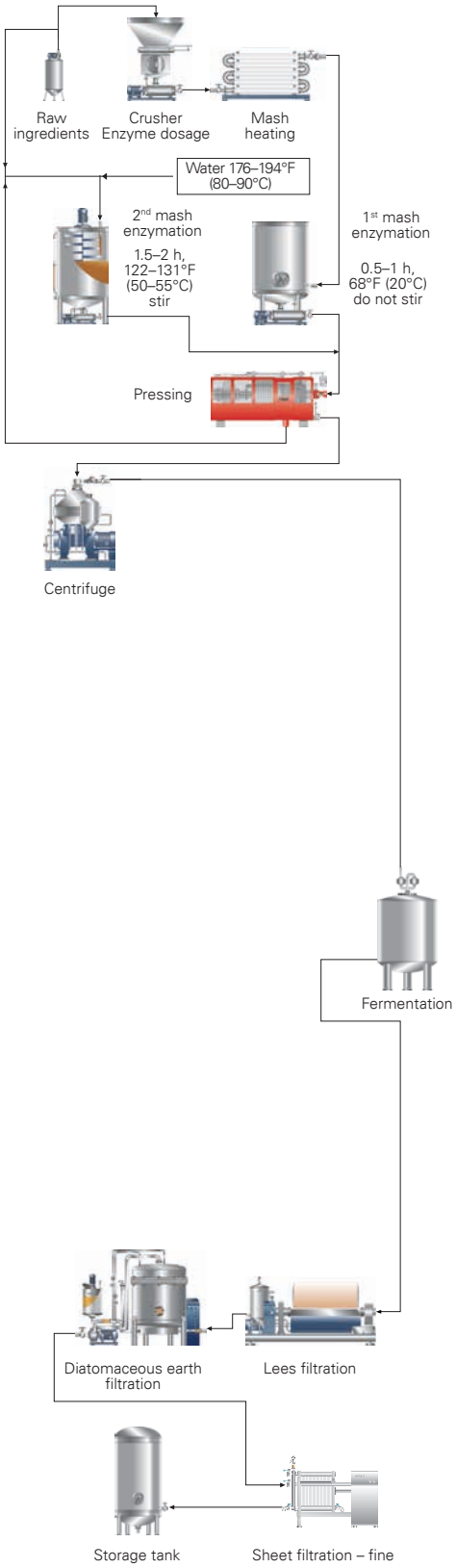
Lees filtration with BECOLITE 5000 perlite: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

Coarse filtration:
BECOGUR 200 diatomaceous earth: approx. 10% at 0.84–1.67 lb/100 gal (100–200 g/hl)
BECOGUR 3500 diatomaceous earth: approx. 90% at 0.84–1.67 lb/100 gal (100–200 g/hl)
or BECOPAD 580 depth filter sheet
Fine filtration: BECOPAD 350 depth filter sheet
Microbial removal or sterile filtration: BECOPAD 220 depth filter sheet or
alternatively BECO PROTECT PG or FS depth filter cartridges in 0.3 µm and
BECO MEMBRAN PSplus membrane filter cartridges 0.45 µm or 0.65 µm

* Guidelines from March 1, 2003

Fruit Wine Processing from Apples and Pears (Cider)

Process steps



Cider

Raw ingredients:
Ripe, sound and washed fruit

1st mash dosage:
Panzym First Yield enzyme: 8.96–12.8 fl oz/short ton (7–10 ml/hl)

1st mash enzymation:
0.5–1 h at approx. 68°F (20°C), without stirring

Possible process step: Juice extraction with secondary extraction (2nd mash enzymation):
Maximum yield, Panzym Second Yield enzyme:
12.8–25.6 fl oz/short ton (10–20 ml/hl) pomaceous fruit
1.5–2 h at 122–131°F (50–55°C), with vigorous stirring

Juice extraction:
Possibly blending of first and second juice

Alcoholic fermentation:
SIHA Active Yeast 3 or SIHA Active Yeast 8 (Burgundy Yeast): 1.67 lb/1,000 gal (20 g/hl)
Rehydration of active dry yeast in juice water mixture (50:50) at 95°F (35°C)

Fermentation temperature: 63–72°F (17–22°C)

Enzymation/alcoholic fermentation:
Panzym Flux enzyme: 1.28–3.84 fl oz/short ton (1–3 ml/hl) for pectin degradation and improved sedimentation
Higher alcohol yield with Panzym HT 300 enzyme:
2.56–3.84 fl oz/short ton (2–3 ml/hl)

Rehydration of active dry yeast:
SIHA SpeedFerm yeast nutrient: 1.67 lb/1,000 gal (20 g/hl)

Yeast nutrients/alcoholic fermentation:
Fermentation Salt yeast nutrient: max. 8.35 lb/1,000 gal (100 g/hl), step-wise addition until mid of alcoholic fermentation
SIHA Vitamin B_1 yeast nutrient: max. 0.01 lb/1,000 gal (0.6 g/1,000 l)
SIHA PROFERM H+[2] combined yeast nutrient: max. 3.34 lb/1,000 gal (40 g/hl)

Optional: Malolactic fermentation (MLF):
SIHALACT™ Oeno lactic acid bacteria (citrate-positive) after alcoholic fermentation
(see Wine Navigator brochure, chapter MLF)

Lees filtration with
BECOLITE 5000 perlite: 102.24–143.42 lb/100 ft² (5–7 kg/m²)

Diatomaceous earth filtration:
BECOGUR 200 diatomaceous earth: approx. 10% at 0.84–1.67 lb/100 gal (100–200 g/hl)
BECOGUR 3500 diatomaceous earth: approx. 90% at 0.84–1.67 lb/100 gal (100–200 g/hl)

Stabilization:
Cold stabilization: BECO Steril 40 or BECO KDS 15 depth filter sheets
Room temperature: BECOPAD 220, BECO KD 10 or BECO Steril 40 depth filter sheets

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