

Winemaking



Brilliant products

Fermenters SK

Tips for technology and program selection



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MACERATION

The quality and style of red wines largely depend on the maceration process and the correct extraction of polyphenols – anthocyanins and tannins. With correctly guided extraction, we can influence the colour of red wines and the structure of taste.

With an intensive submerging of cap in the initial phase of the maceration process, mostly anthocyanins (pigments) are eluted and with further fermentation and formation of alcohol, also tannins are eluted from skins and seeds. With the right fermenter and maceration program, the elution of polyphenol compounds can be guided and thus we can produce the right style of wine.

The temperature at maceration and fermentation is also very important, because the quantity of anthocyanins and polysaccharides in wine can be increased by the correct cooling of grape pomace and the pre-fermentation cold maceration.

During the process of fermentation and maceration, it is also very important that the cap is submerged very gently not to damage seeds, which could result in elution of sour and bitter tannins. In case of a reduced physiological maturity of tannins, which is the consequence of inadequate ripeness of the grapes, it is possible to reduce the extraction of sour and immature tannins into the wine by an automatic removal of seeds already during the maceration and fermentation. It is known that more than 60% of tannins in the end wine are contained in the seeds, so the regulation of the quantity of seeds is an important innovation in the process of the maceration.



Punch-down fermenter PK



Punch-down fermenter FPK



Punch-down fermenter PIP

1 PREFERMENTATION

1.1 Cold soak / Cold maceration

We suggest FPK, PK or PIP fermenter with efficient cooling system and pneumatic punch down cylinder in order to homogenate grape, increase extraction of color and water soluble phenolic compounds from the skins in the fermenter.

↳ **Recommended program:**

Duration: 1 - 4 days

Set temperature (T) ≤ max 10° C (alarm set on mobile; available with Vintelligence temperature control system)

Punch down set: once every 24 h

SO₂ ~ 60 ppm

Characteristics of cold soak:

Prevention of spontaneous fermentation.

Punch-down system is used to increase extraction of colour and other water soluble phenolic compounds from skins.

Cold soak helps emphasize brighter fruit notes, colour intensity, palate fullness, aromatic intensity/complexity.

Results:

brighter colour, more stabile colour, less tawniness with added complexity



2 FERMENTATION & MACERATION

2.1 Yeast rehydration

We suggest FPK, PK or PIP fermenters with punch down system and pumping over in order to homogenate yeast and nutrients.

↳ **Recommended program:**

Set temperature (T) ~ 23°C (if the winery equipment allows heating)

Duration: 10 min

Punch down set: once after yeast addition

Pumping over: 15 min

2.2 Tannin extraction

In order to apply best tannin management, we suggest FPK, PK or PIP fermenters with punch down system combined with pumping over system with sparger. Fermenters enable easy draining and emptying.

↳ **Recommended program:**

Duration: 7-10 days

Set temperature (T) < 25-30°C (alarm set on mobile, available with Vintelligence temperature control system)

Punch down set: depends on maceration stage

SOFT EXTRACTION
PROGRAM

see pages 4 - 5

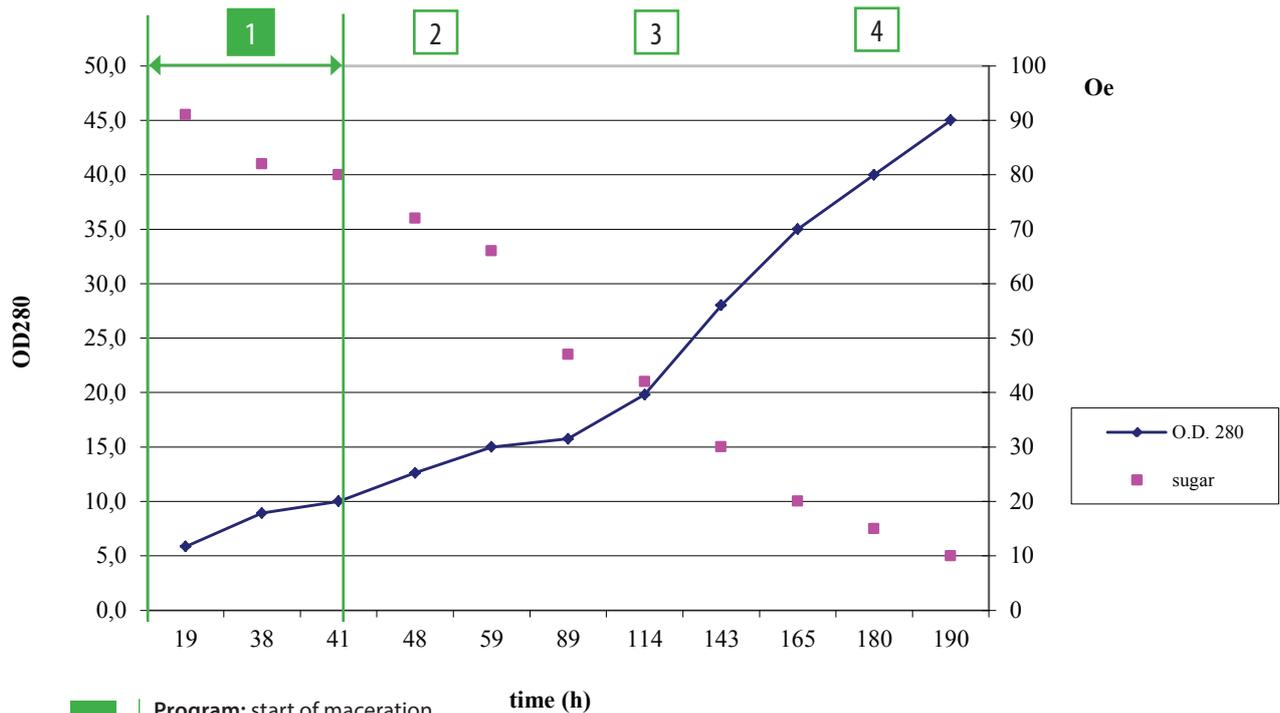
MEDIUM EXTRACTION
PROGRAM

see pages 6 - 7

ENHANCED EXTRACTION
PROGRAM

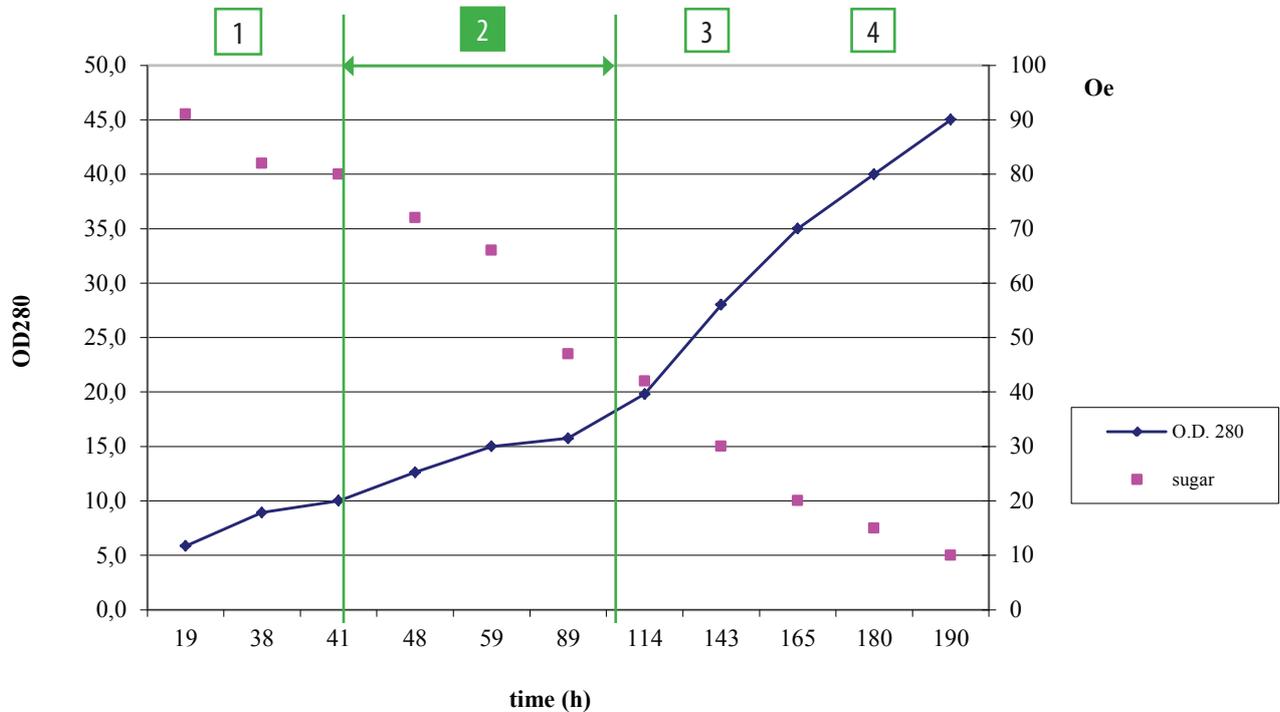
see pages 8 - 9

↳ TANIN EXTRACTION: SOFT TANIN EXTRACTION - phase 1



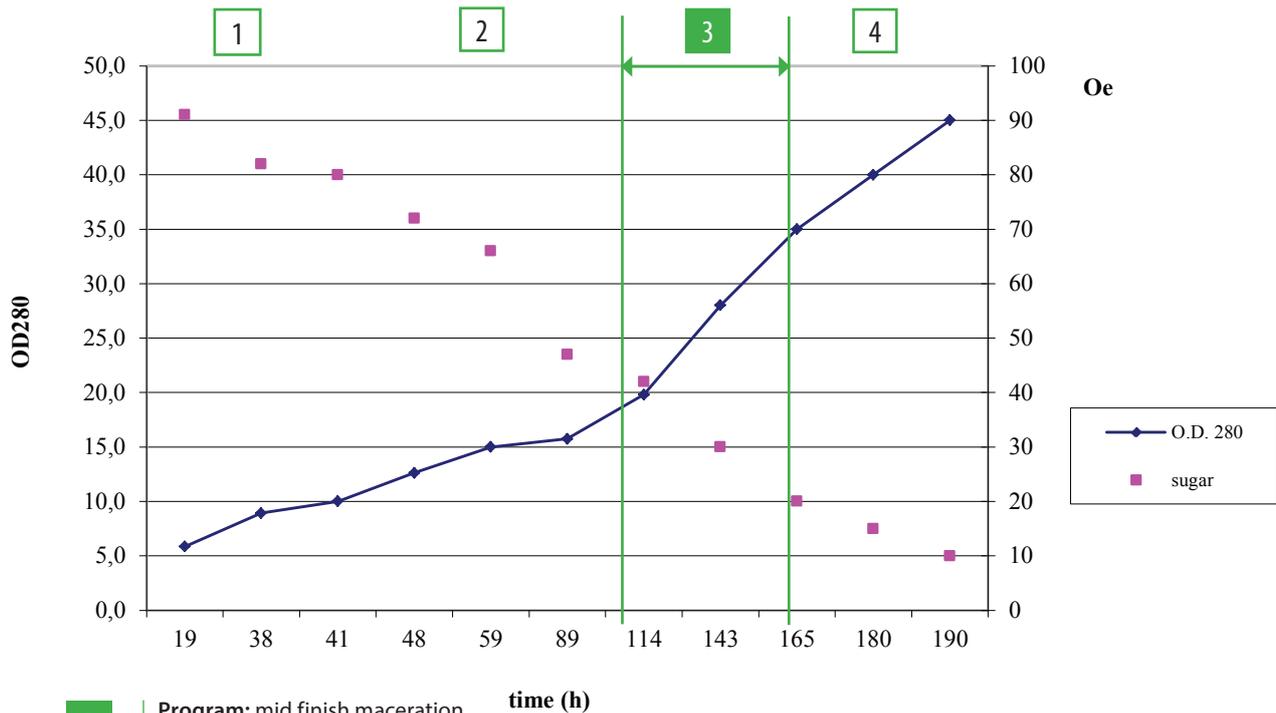
- 1** Program: start of maceration
 Density: 1090 - 1080
 (T) set: 20 - 25 °C (alarm set and connected to your mobile; available with Vintelligence temperature control system)
 Punch down: one every 12 h
 Pump over: 1/2 volume every 12h (1 volume/day); just after punch down
 Aeration: venture on at pump over (5 mg O₂/L/day)
 Aeration macro Ox: off

↳ TANIN EXTRACTION: SOFT TANIN EXTRACTION - phase 2



- 2** Program: mid start maceration
 Density: 1080-1040
 (T) set: 25 - 27 °C (alarm set and connected to your mobile; available with Vintelligence temperature control system)
 Punch down: one every 24 h
 Pump over: 1 volume every 24h, just after punch down
 Aeration venture: venture on at pump over (5 mg O₂/L/day)

↳ TANIN EXTRACTION: SOFT TANIN EXTRACTION - phase 3



3

Program: mid finish maceration

Density: 1040-1020

(T) set: 25 °C (alarm set and connected to your mobile; available with Vintelligence temperature control system)

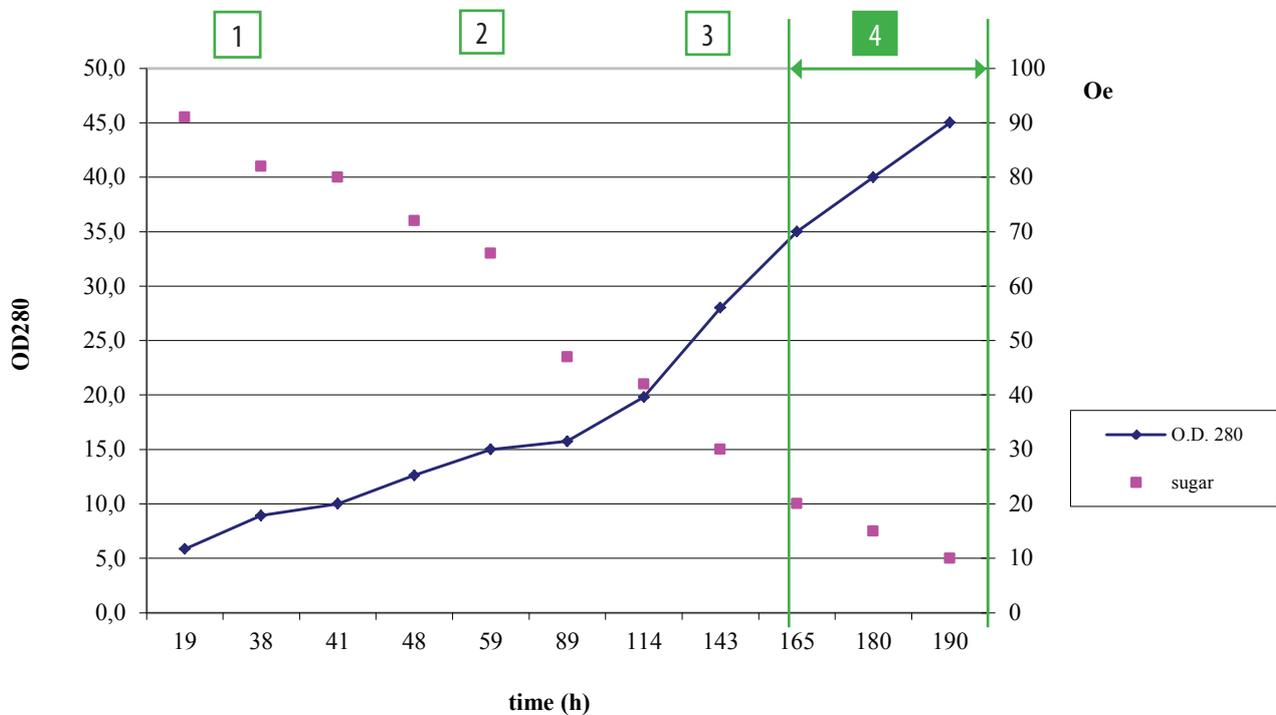
Punch down: one every 12 h

Pump over: 1/4 of volume every 12h (0,5 volume/day), just after punch down

Aeration venture: venture on at pump over (5 mg O₂/L/day)

Aeration macro Ox: one addition 3 ml/L

↳ TANIN EXTRACTION: SOFT TANIN EXTRACTION - phase 4



4

Program: finish of maceration

Density: 1020-995

(T) set: 25 °C (alarm set and connected to your mobile; available with Vintelligence temperature control system)

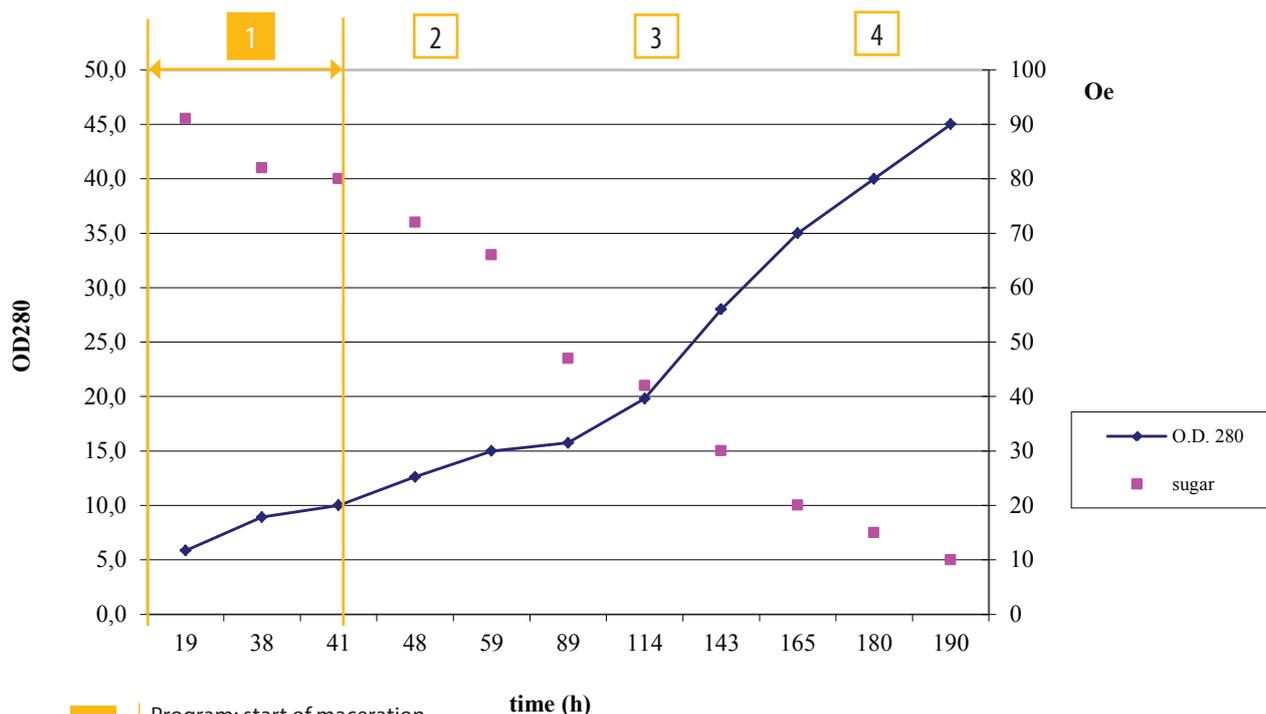
Punch down: one every 24 h

Pump over: 1/2 of volume every 24h

Aeration venture: venture on during pump over (up to 2,5 mg/L/day)

Aeration macro Ox: one addition 2 ml/L

↳ TANIN EXTRACTION: MEDIUM TANIN EXTRACTION - phase 1



1

Program: start of maceration

Density: 1090-1080

T set: 20-25 °C (alarm set and connected to your mobile; available with Vintelligence temperature control system)

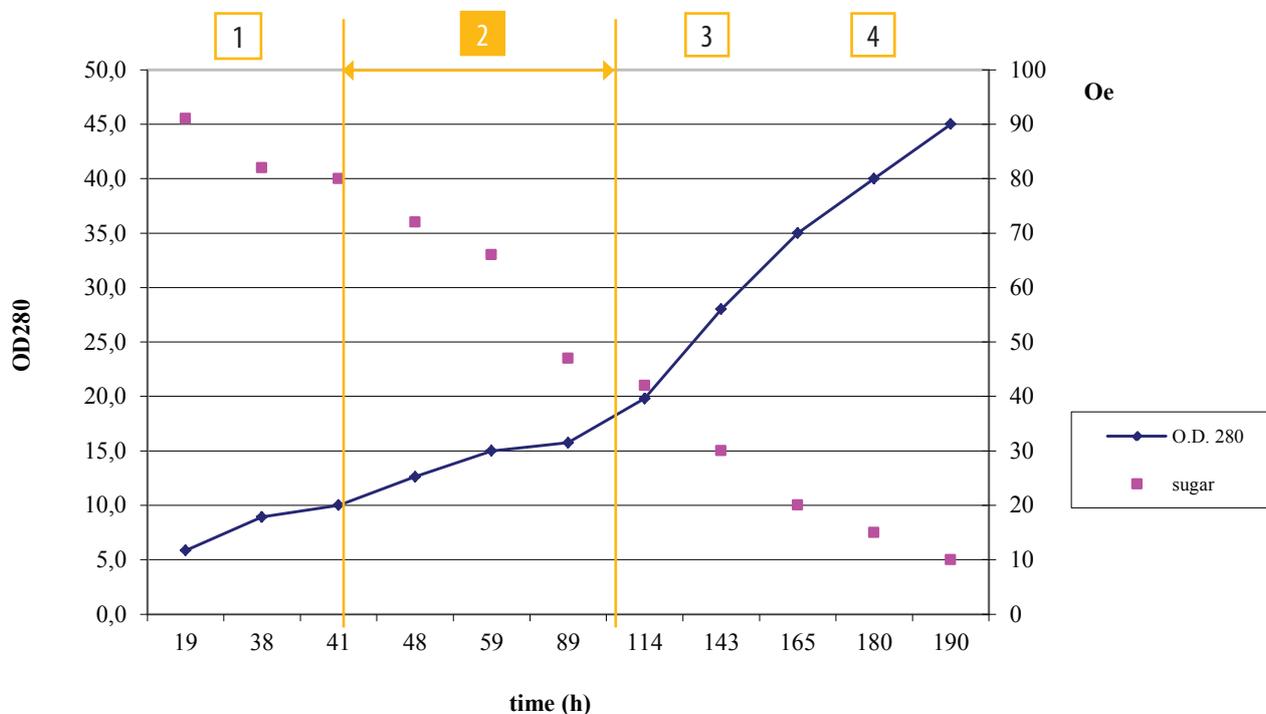
Punch down: one every 12 h

Pump over: ½-1 volume every 12h (1-2 volumes/day), just after punch down

Aeration: venture on at pump over (5 mg O₂/L/day)

Aeration macroOx: off

↳ TANIN EXTRACTION: MEDIUM TANIN EXTRACTION - phase 2



2

Program: mid start maceration

Density: 1080-1040

(T) set: 25-28 °C (alarm set and connected to your mobile, available with Vintelligence temperature control system)

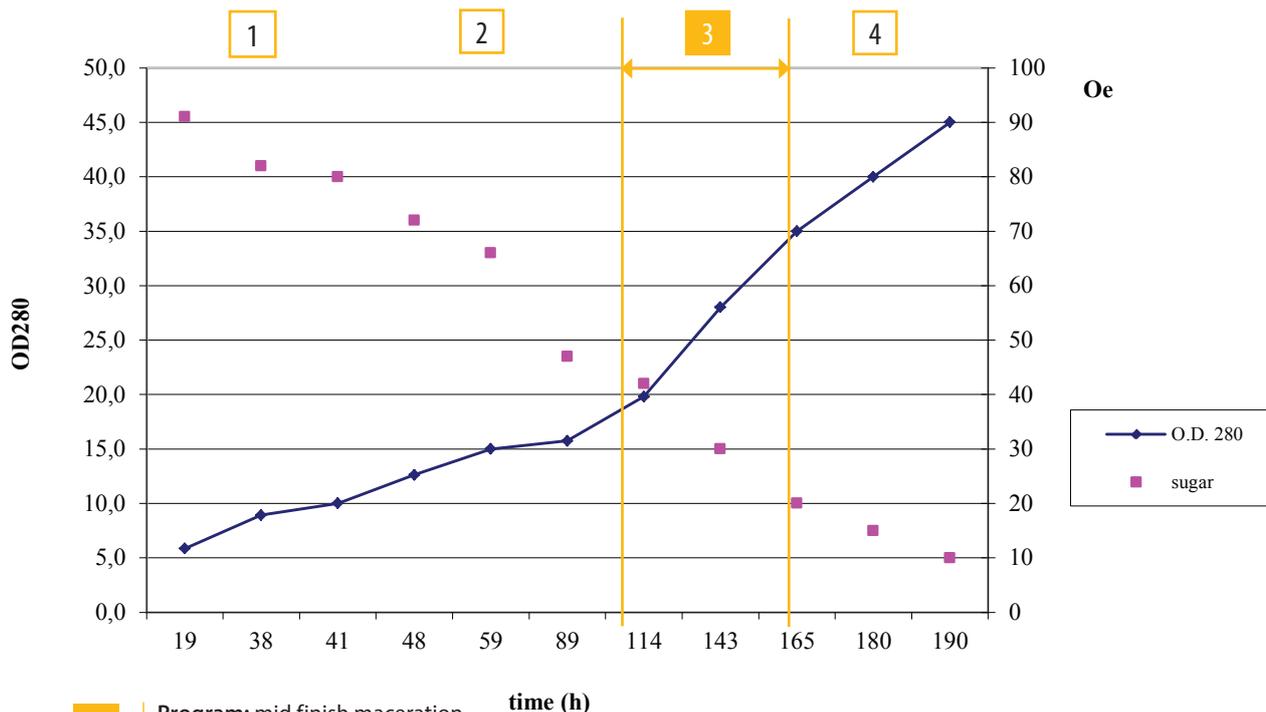
Punch down: one every 12 h

Pump over: every 8h (1 volume/day), just after punch down

Aeration venture: venture on at pump over (5 mg O₂/L/day)

Aeration macroOx: one addition 2 ml/L

↳ TANIN EXTRACTION: MEDIUM TANIN EXTRACTION - phase 3



3

Program: mid finish maceration

Density: 1040-1020

(T) set: 25-28 °C (alarm set and connected to your mobile, available with Vintelligence temperature control system)

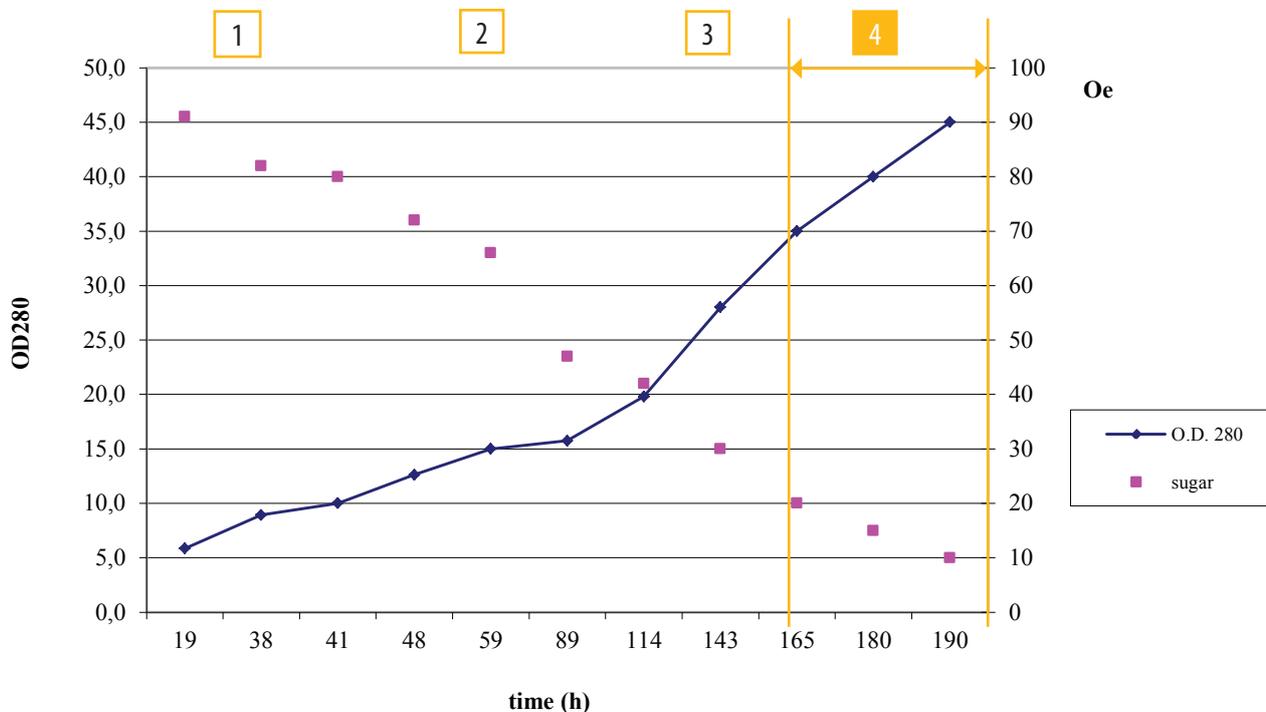
Punch down: one every 12 h

Pump over: 1/4 of volume every 12h (0,5 volume/day), just after punch down

Aeration venture: venture on at pump over (5 mg O₂/L/day)

Aeration macroOx: one addition 2 ml/L

↳ TANIN EXTRACTION: MEDIUM TANIN EXTRACTION - phase 4



4

Program: finish of maceration

Density: 1020-995

(T) set: 25-30 °C (alarm set and connected to your mobile, available with Vintelligence temperature control system)

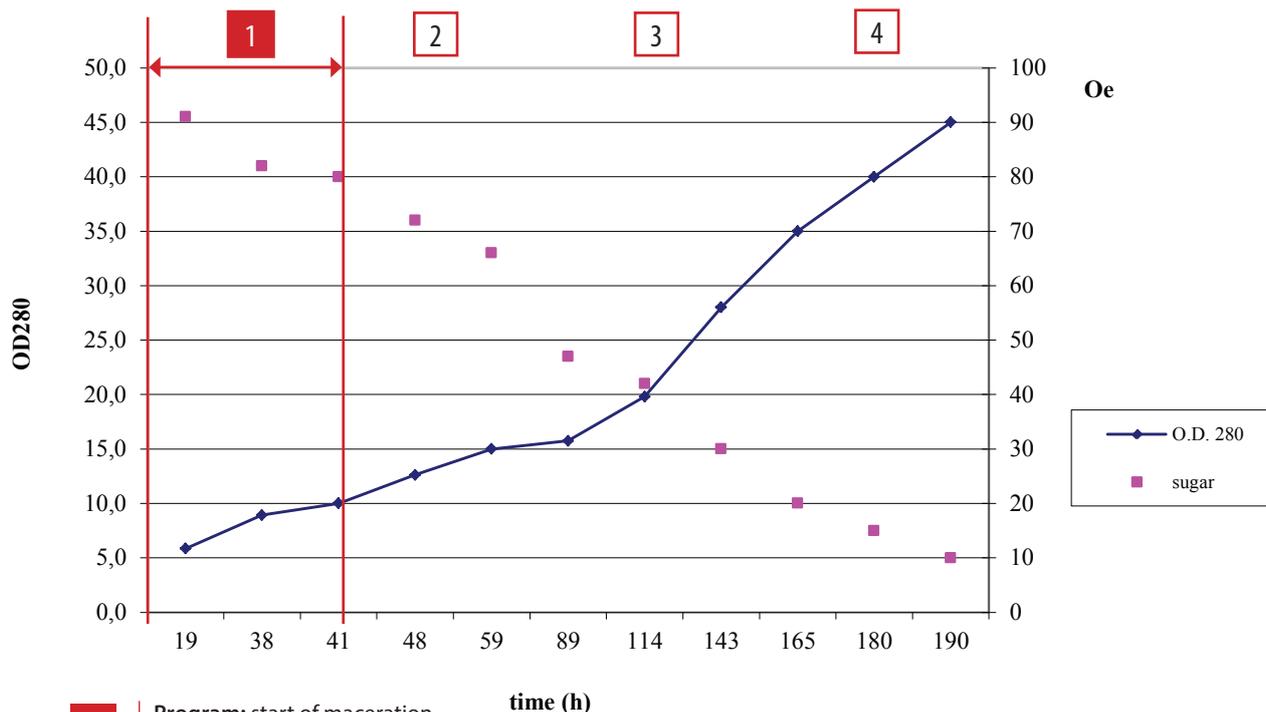
Punch down: one every 12 h

Pump over: 1/2 of volume every 24h

Aeration venture: venture on during pump over (up to 2,5 mg/L/day)

Aeration macroOx: one addition 1 ml/L

↳ TANIN EXTRACTION: HARD TANIN EXTRACTION - phase 1



1

Program: start of maceration

Density: 1090-1080

(T) set: 20-25 °C (alarm set and connected to your mobile, available with Vintelligence temperature control system)

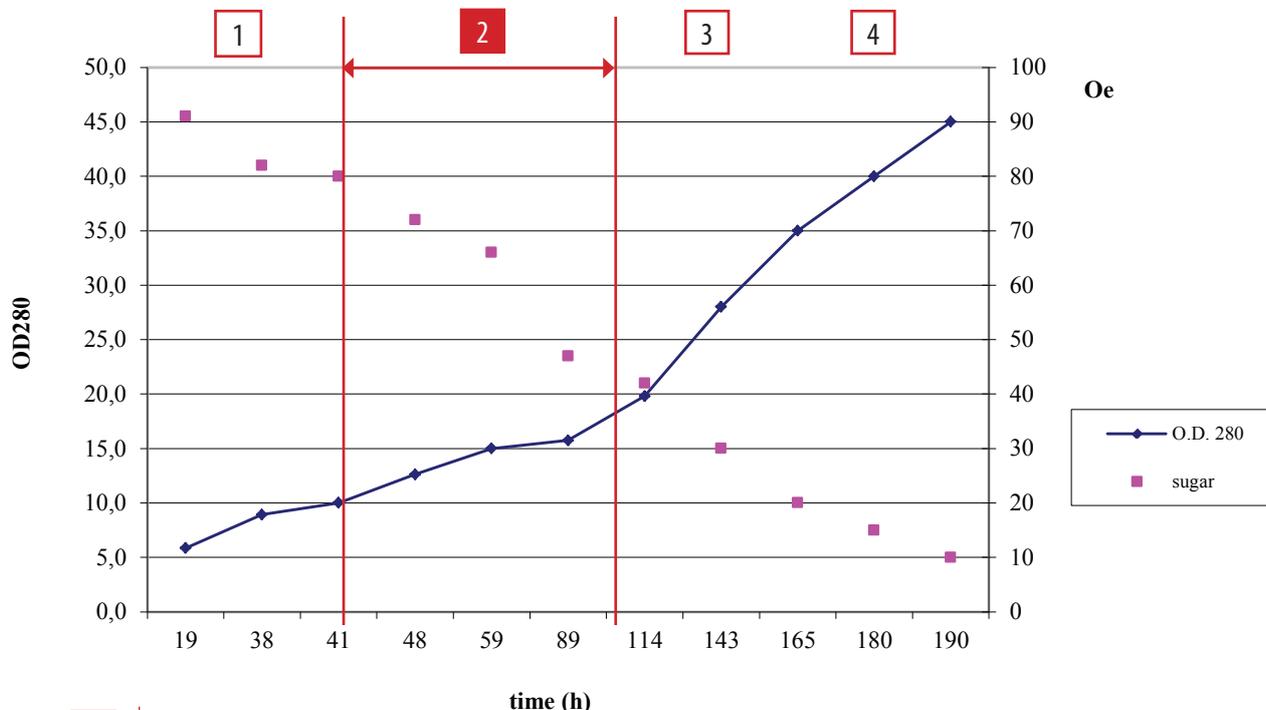
Punch down: one every 12 h

Pump over: 1/2 volume every 12h (1 volume/day), just after punch down

Aeration: venture on at pump over (5 mg O₂/L/day)

Aeration macroOx: off

↳ TANIN EXTRACTION: HARD TANIN EXTRACTION- phase 2



2

Program: mid start maceration

Density: 1080-1040

(T) set: 25-30 °C (alarm set and connected to your mobile, available with Vintelligence temperature control system)

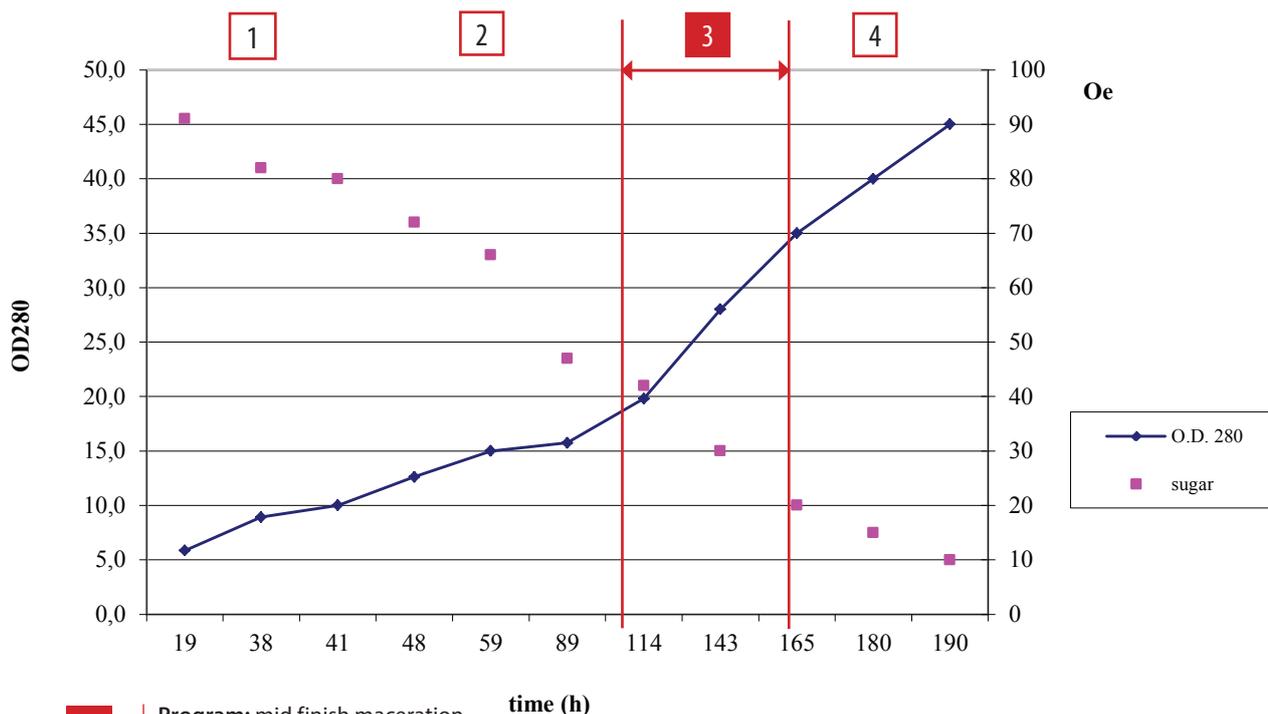
Punch down: one every 8 h

Pump over: every 6h (2 volumes/day), just after punch down

Aeration venture: venture on at pump over (5 mg O₂/L/day)

Aeration macroOx: one addition 2 ml/L

↳ TANIN EXTRACTION: **HARD TANIN EXTRACTION - phase 3**



3

Program: mid finish maceration

Density: 1040-1020

(T) set: 25-30 °C (alarm set and connected to your mobile, available with Vintelligence temperature control system)

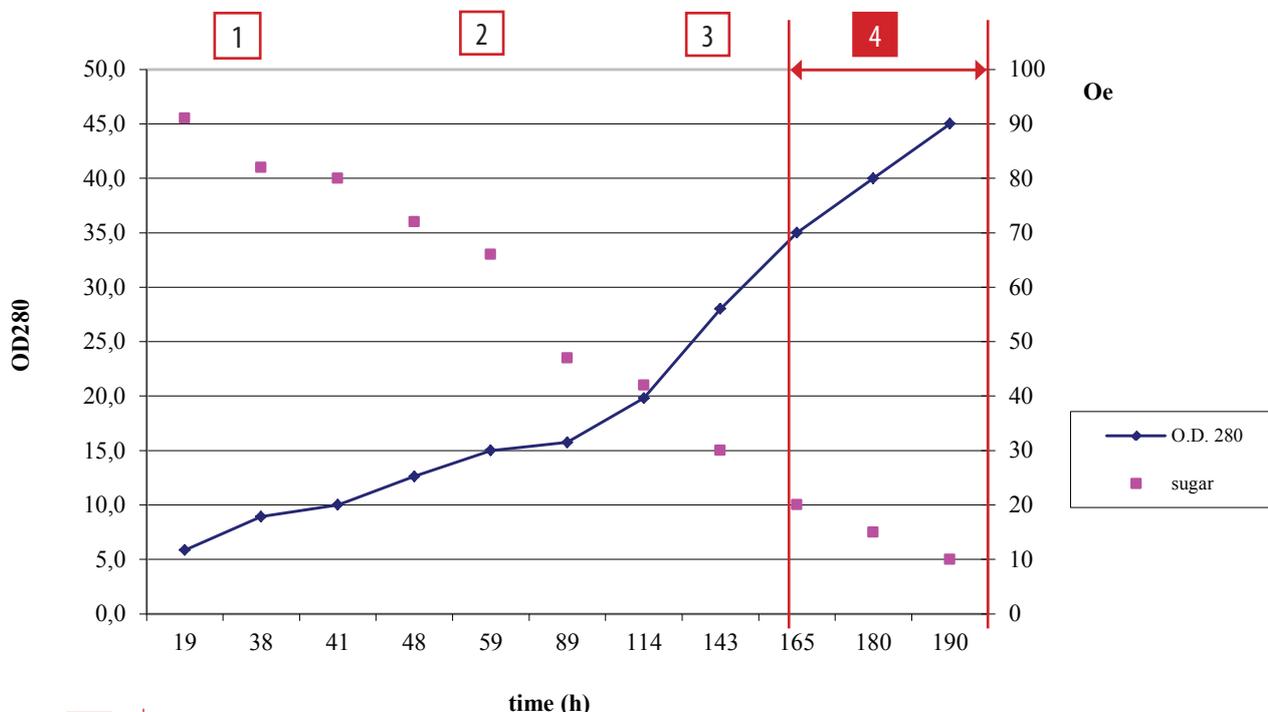
Punch down: one every 8 h

Pump over: 1/2 of volume every 12h (1 volume/day), just after punch down

Aeration venture: venture on at pump over (5 mg O₂/L/day)

Aeration macroOx: one addition 2 ml/L

↳ TANIN EXTRACTION: **HARD TANIN EXTRACTION - phase 4**



4

Program: finish of maceration

Density: 1020-995

(T) set: 25-30 °C (alarm set and connected to your mobile, available with Vintelligence temperature control system)

Punch down: one every 12 h

Pump over: 1/2 of volume every 24h

Aeration venture: venture on during pump over (up to 2,5 mg/L/day)

Aeration macroOx: one addition 1 ml/L

2.3 Aeration / Microoxygenation / Inerting

SK-Group offers detailed oxygen management for optimized alcoholic fermentation and integrated maceration techniques.

Oxygen management contains venture tube, macroOx diffusers and microOx treatment. If inert atmosphere is needed (at post fermentation stage) SK-inerting system is recommended.

↳ Recommended oxygen management:

Venture system: addition of oxygen during pump over

MacroOx: addition of oxygen at higher concentration from 1 to 5 mL/L (1,4 – 7 mg/L)

MicroOx: addition of oxygen at smaller concentration range: 1-5 mg/L/month

Inerting system: CO₂ or N₂ addition over the cap at eg. postfermentation stage

2.4 Seed removal during maceration

Phenolic compounds are major constituents of wine and they have an impact on certain sensory properties such as color, mouth-feel characteristics and taste (bitterness). Manipulation of the levels of these compounds in wine through the application of viticultural and oenological practices may therefore be a useful tool of improving the wine quality.

One of the factors that contribute to phenolic maturity and, potentially 'green tannins', includes the balance between seed and skin tannins. Seeds make from 3 to 5% of the berry weight. Since the seeds contain more than 60% of the final wine tannins, the regulation of the quantity of seeds is an important factor in the process of the maceration. Therefore, in some varieties and vintages, when grapes are not mature enough, it can be useful to take out different proportions of seeds during the maceration.

The PIP system enables to remove the seeds from the fermenter and to lower tannin perception in wine.

↳ Recommended seed removal program:

(T) set ~ 20-22°C

Punch down set: one punch down before seed removal

Pumping over: as required by program

Seed removal: starting at mid-start phase. Remove from 10-80% of seeds.

Choose the desired program:

Program 10%	10% seeds removed	valve open for 5 min / every 12h
Program 30%	30% seeds removed	valve open 5 min / every 6h
Program 50%	50% seeds removed	valve open for 5 min / every 4h



3 POST FERMENTATION

Post-fermentation maceration enables the liberation of some skin and seeds tannins and polysaccharides from yeasts and mannoproteins.

For post fermentation technology SK-Group recommends PK, KC or FPK closed fermenter which prevents oxidation and wine spoilage.

Special inserts inject CO₂ or N₂ over the cap in order to keep grape ferments in inert atmosphere.

↳ **Recommended program for post fermentation:**

(T) set ~ 20-22°C

Time: from few days to 3 weeks

Punch down set: no punch down

Pumping over: 1/8 of volume, once per day

Inerting: CO₂ or N₂ addition over the cap, 10 min sparging after each punch down and every day

The length of the post fermentation depends on: wine style, variety tannin poverty, if wine has to be rich in tannins, if the grape was good quality (healthy, mature, destemmed, sorted).

The advantages are: better tanin structure, the wine intends to age in barrels, higher colour stability, higher colour intensity, higher total phenolics

4 EMPTYING

After draining of fermenter, grapes could be emptying directly to wine press via free fall or pump. PIP fermenters contains special rotating agitator which facilitates emptying of fermenter.

↳ **Recommended program for post fermentation emptying:**

Punch down set: once just before draining

Rotating agitator: switch by hand or automatically every 30 sek.

If reduction occurs, wine could be aerated through draining 'sieve'