E2U EASY USE by Fermentis

Rehydration or direct pitching of ADY, what is best?

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THE OBVIOUS CHOICE FOR BEVERAGE FERMENTATION

Dr. Gino Baart
g.baart@fermentis.lesaffre.com

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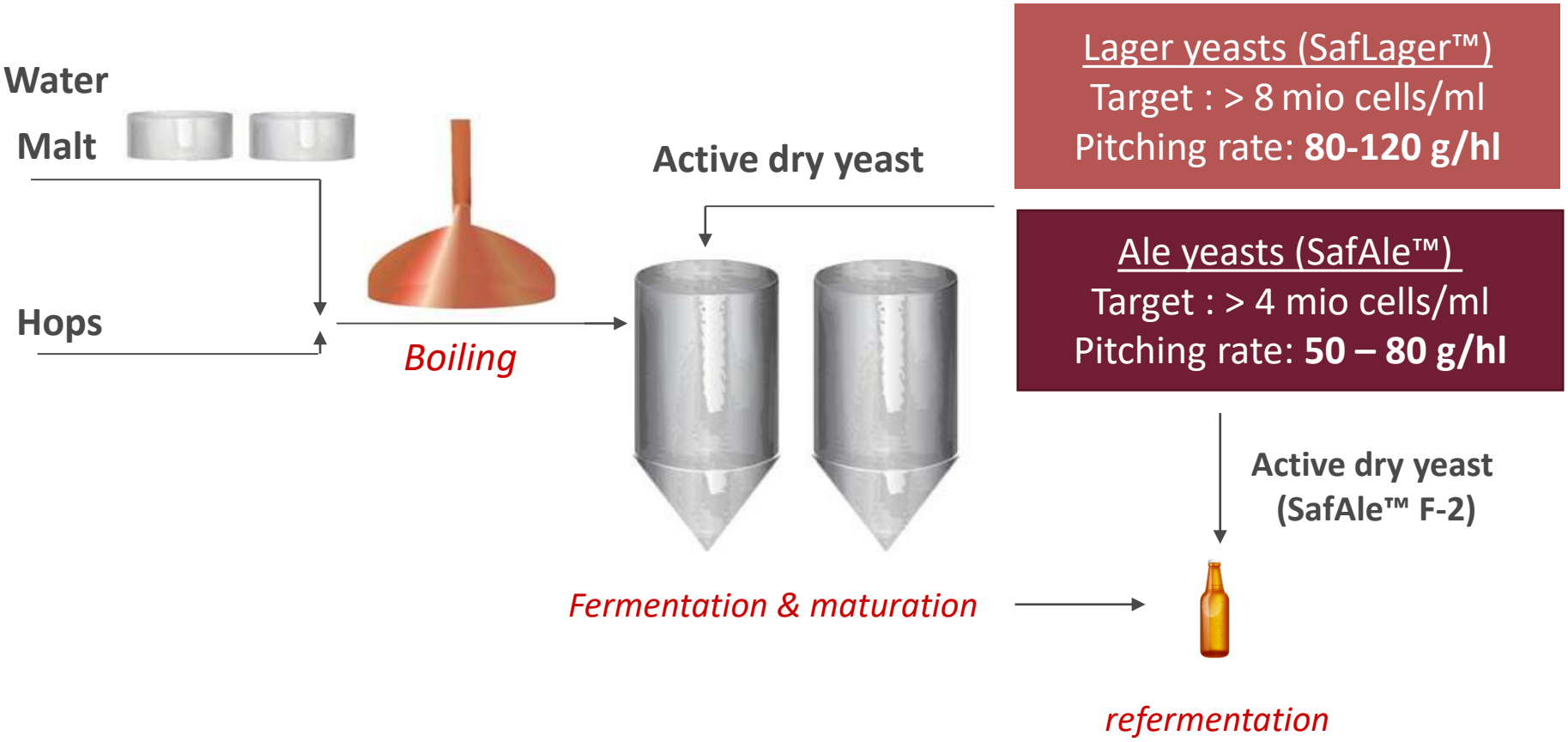
ACTIVE DRY YEAST IN THE BREWERY



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REHYDRATION OR DIRECT PITCHING OF YEAST?

Lager (SafLager™)
21 – 25 °C

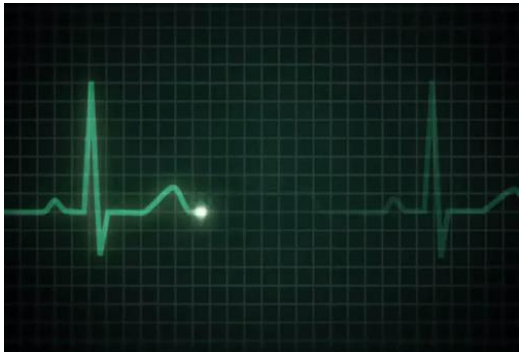
Ale (SafAle™)
25 – 29 °C

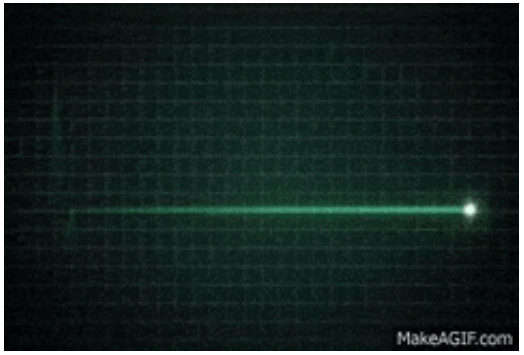
Temp. after rehydration and before pitching (°C)	Maximum time before pitching (h)
4	18
20	6
25	4

REHYDRATION

DIRECT PITCHING

What is the impact of rehydration on the yeast cell viability?





PROTOCOL

VIABILITY – CONDITIONS TESTED

	SafAle™ strains	SafLager™ strains
Strains	S-33, US-05, T-58	S-23, S-189, W34/70
Time	15, 25, 35 & 45 min. rehydration in 10 times the volume	
Agitation conditions	1. **Without agitation** (**WA**) the yeast is placed on liquid surface and rehydration is realized without agitation. 2. **Moderate agitation** (**MA**) : the yeast is placed on liquid surface, rehydration is realized without agitation during 15 min. and after the agitation is maintained at 100 rpm. 3. **Vigorous agitation** (**VA**) : the yeast is placed in a sterile flask, the medium is poured on the yeast and violent agitation is done every 2 min.	
Temperatures	8, 12, 16, 20, 32, 40 °C	
Media	Distilled water, Mineral water, Tap water, Wort at 7°P, Wort at 15°P & Wort at 25°P	

Viability measured by Trypan blue exclusion test of cell viability

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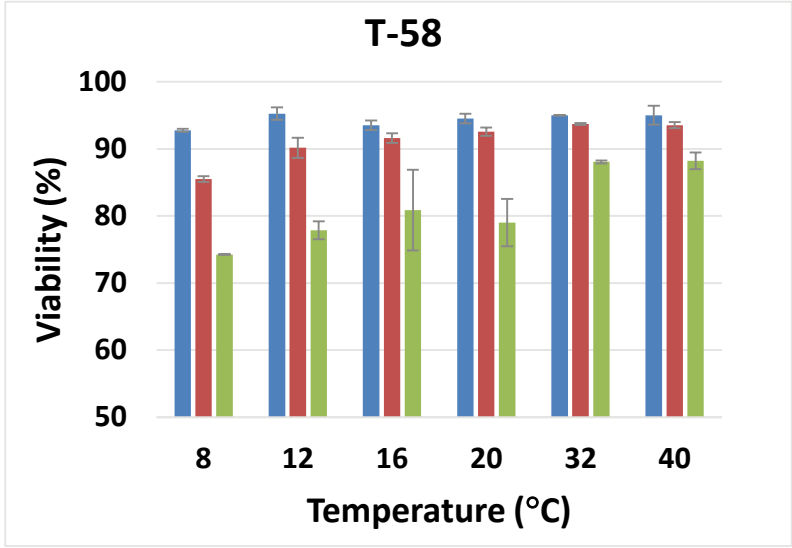
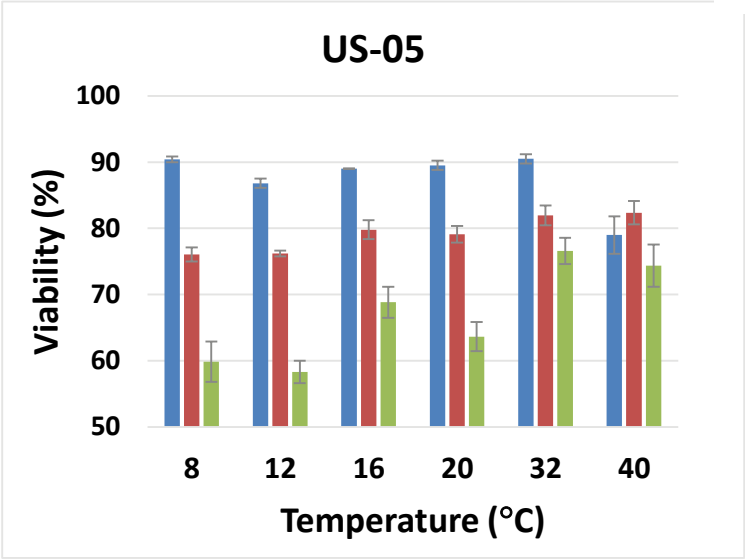
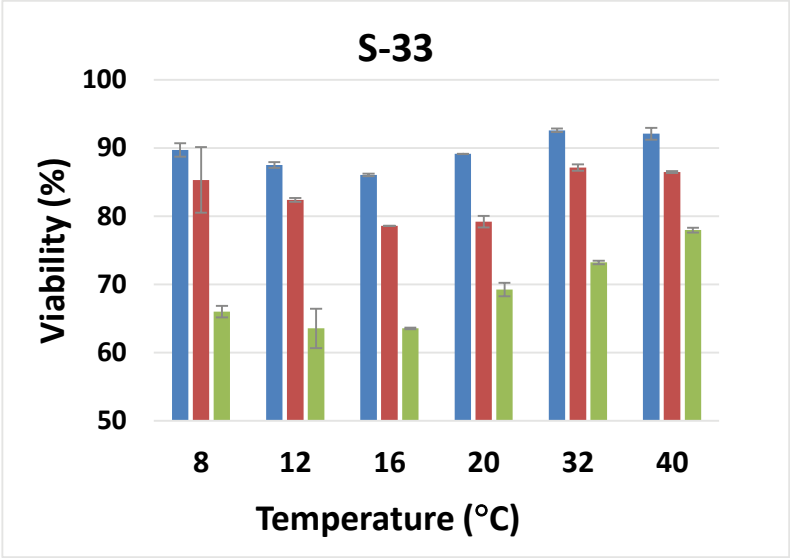
VIABILITY(%) - ALES





WA
MA
VA



Best conditions:
WA (& higher T)

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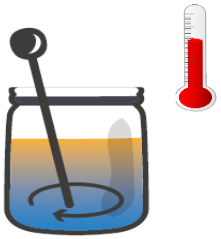
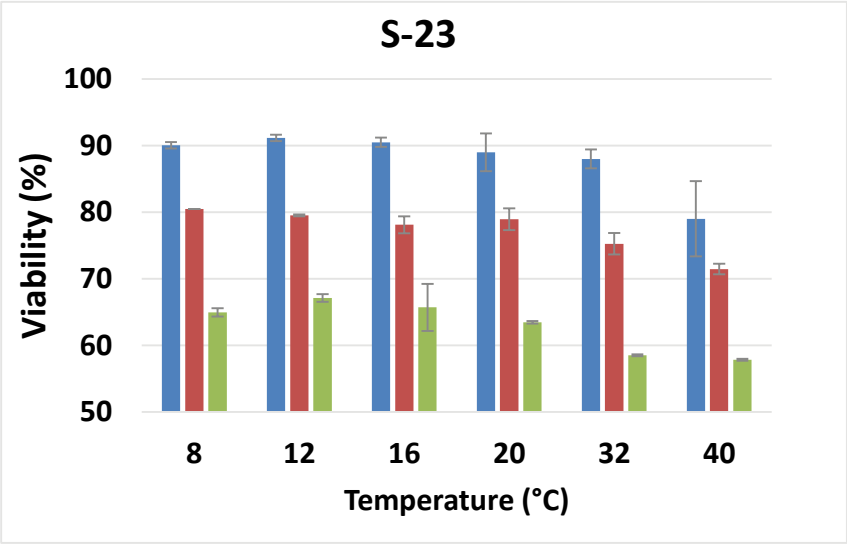
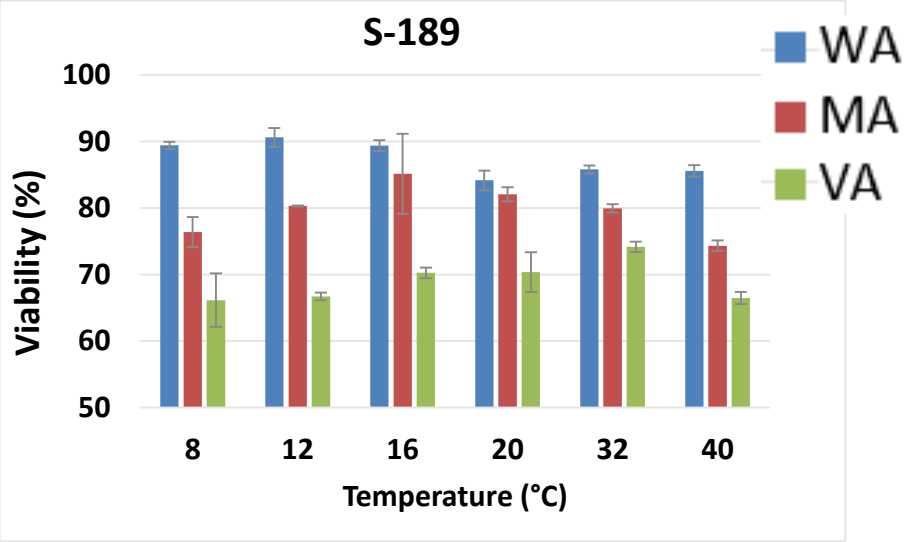
INFLUENCE OF TEMPERATURE AND AGITATION ON VIABILITY

VIABILITY (%) - LAGERS







Best conditions :
WA/MA (lower T)

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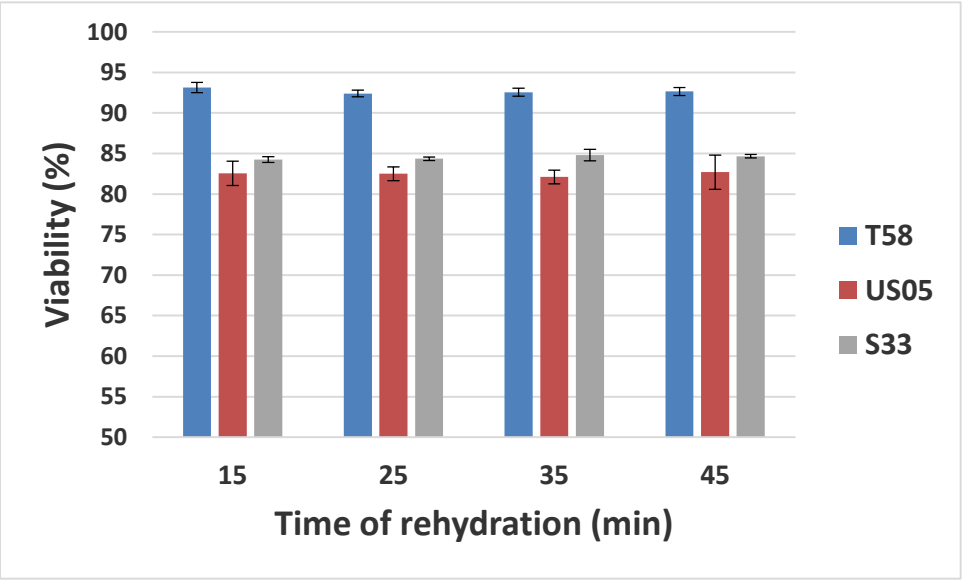
INFLUENCE OF REHYDRATION TIME ON VIABILITY

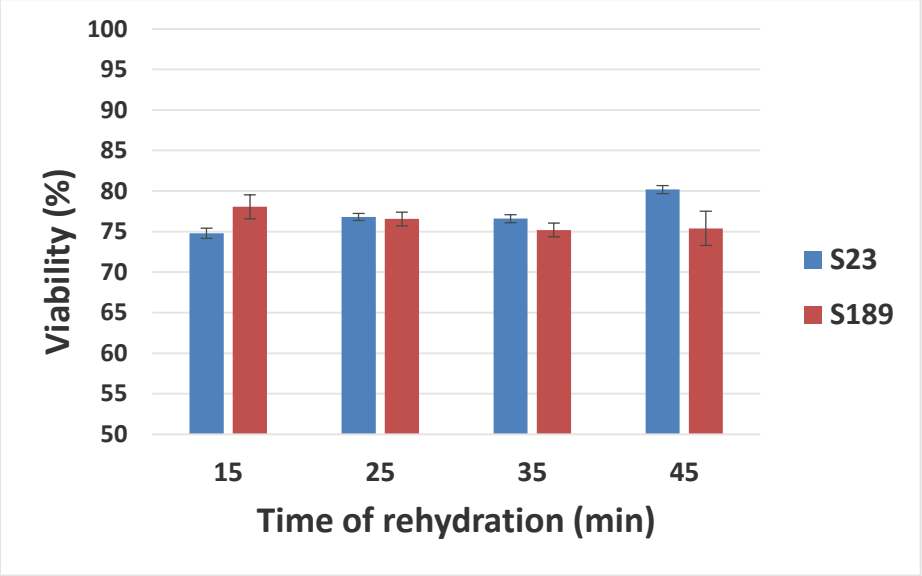
VIABILITY - ALES / LAGERS

At moderate agitation and 32°C

Ales



Lagers



Rehydration complete after 15 min with good viability

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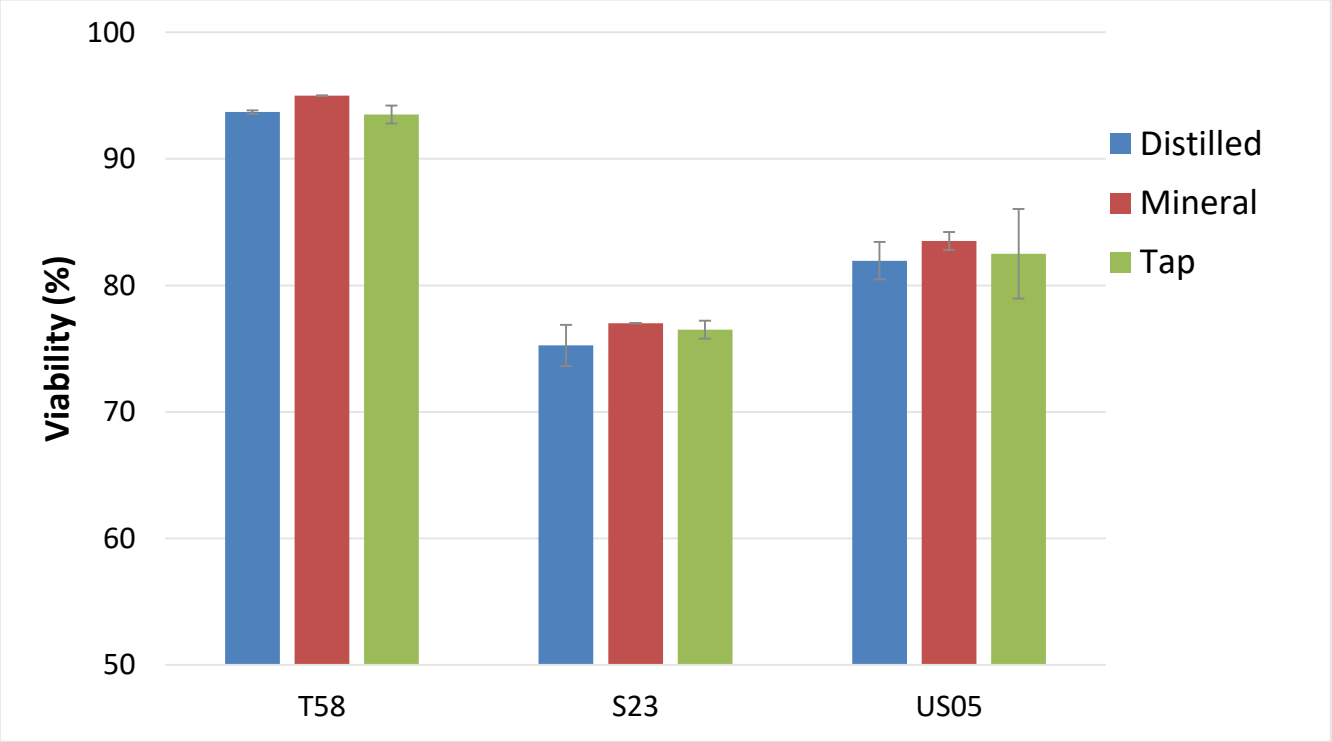
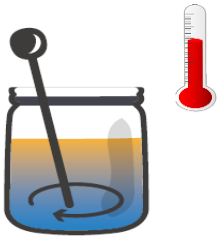
VIABILITY - ALES

At moderate agitation and 32°C

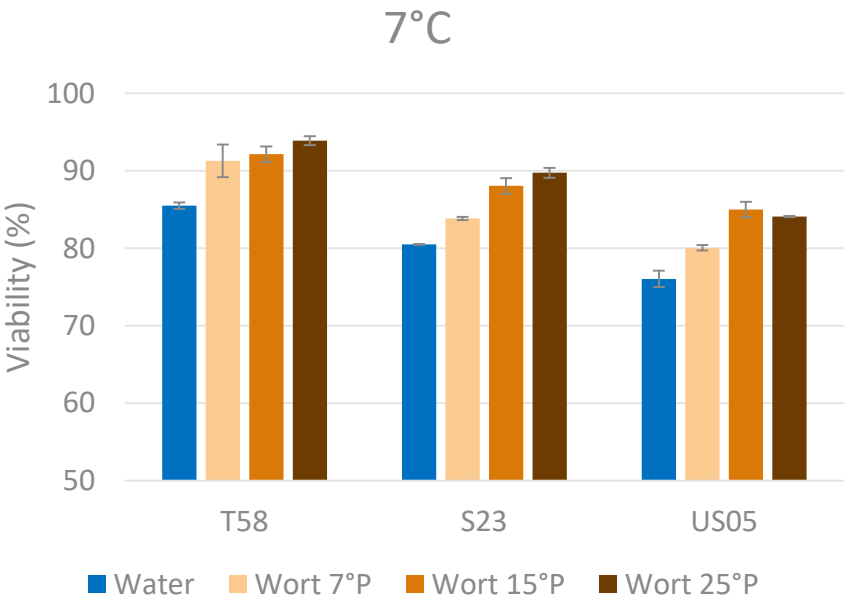


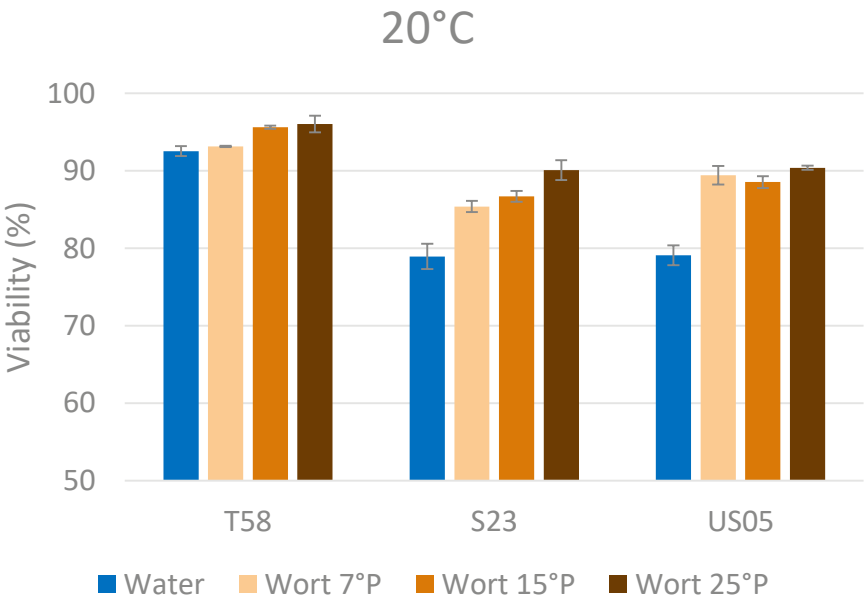
Water quality does not significantly influence viability during rehydration

VIABILITY - ALES / LAGERS



At moderate agitation





- Sugar concentration does not impact viability greatly during rehydration
- Surprisingly at HG wort, the viability is not affected compared to lower gravities

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CONCLUSIONS YEAST CELL VIABILITY

Agitation method has the highest impact in rehydration process **> No or moderate agitation** works best

Temperature does not significantly impact without or with moderate agitation.

Type of media does not significantly influence the viability.

No difference was observed with different rehydration times. (Rehydration was complete after 15 min.)

Conclusions are similar for **Ales** and **Lagers**.

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REHYDRATION OR DIRECT PITCH?

What is the impact of direct pitch on the yeast cell vitality?

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VITALITY - CONDITIONS TESTED

	SafAle™ strains	SafLager™ strains
Strains	S-04, US-05, T-58	S-23, S-189, W34/70
Rehydration conditions	1. No rehydration → Direct Pitch in wort (**DP**) 2. Rehydration in water at 30 °C with moderate agitation (**W**) 3. Rehydration in wort at 20 °C with moderate agitation (**15°P**)	
Pitching rate Standard wort Temperature	50 g/hL 15°P 20°C	100 g/hL 15°P 14°C

PROTOCOL

VITALITY - FORCED AGEING TEST

Fresh ADY

Forced ageing test*

Aged ADY

Trials:
Fresh and Aged* Samples of SafAle™ US-05 and SafLager™ S-23

*Forced ageing test - equivalency to 3 years of natural ageing

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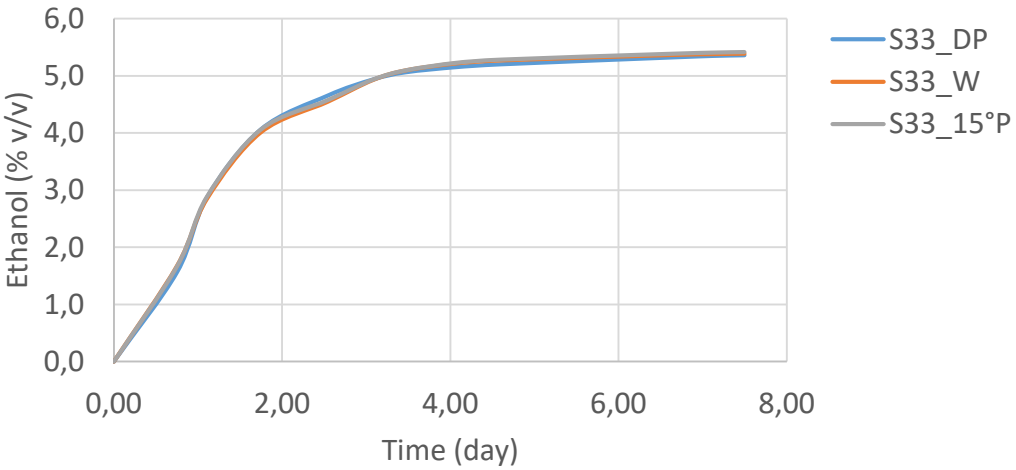
VITALITY – FOLLOW UP & ANALYSES

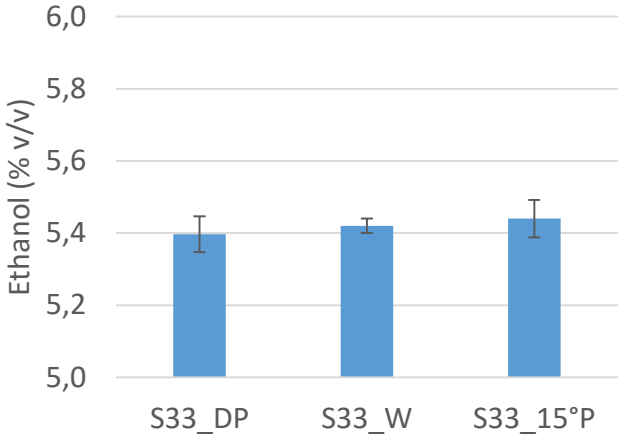
Test fermentation performance in triplicate:
Evaluate kinetics by measuring the decrease of weight of the medium which is correlated with the sugar conversion into CO_2 and ethanol.

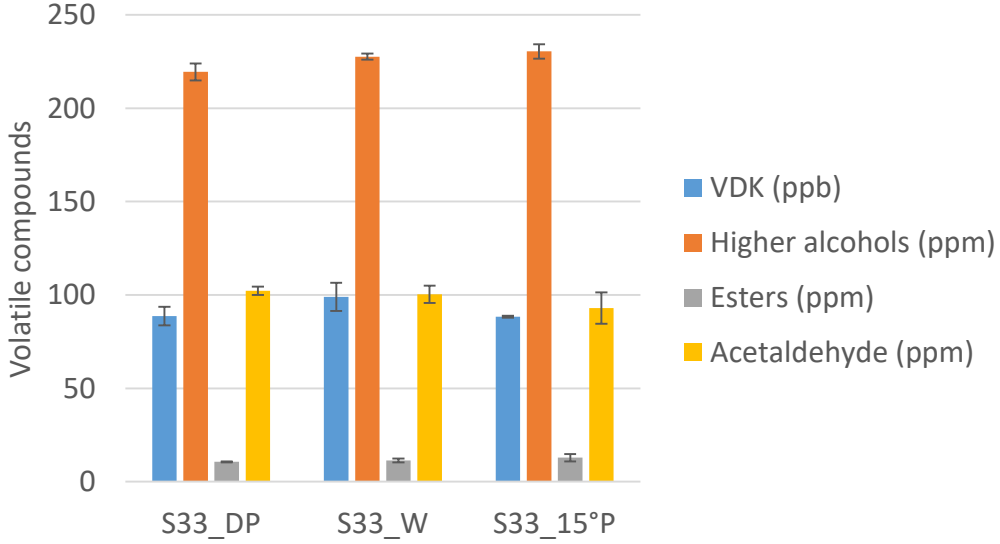
Analyses at the end of fermentation:

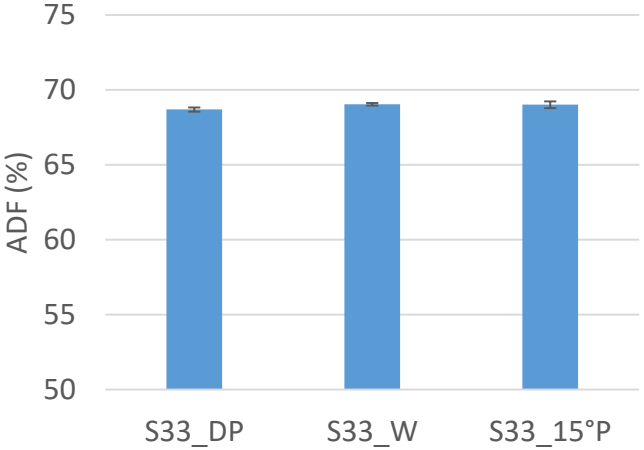
- Ethanol production
- volatile compounds
  - acetaldehyde
  - esters
  - higher alcohols
  - vicinal diketones (diacetyl, 2,3-pentadione)

VITALITY – ALES: SAFALE S-33









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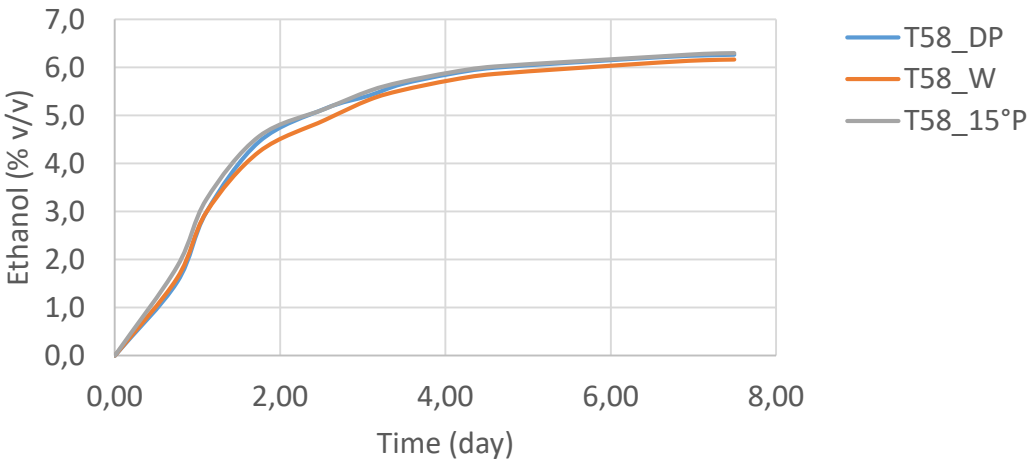
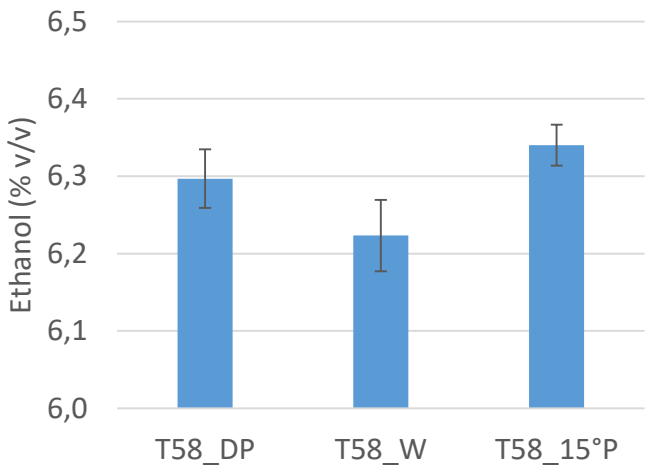
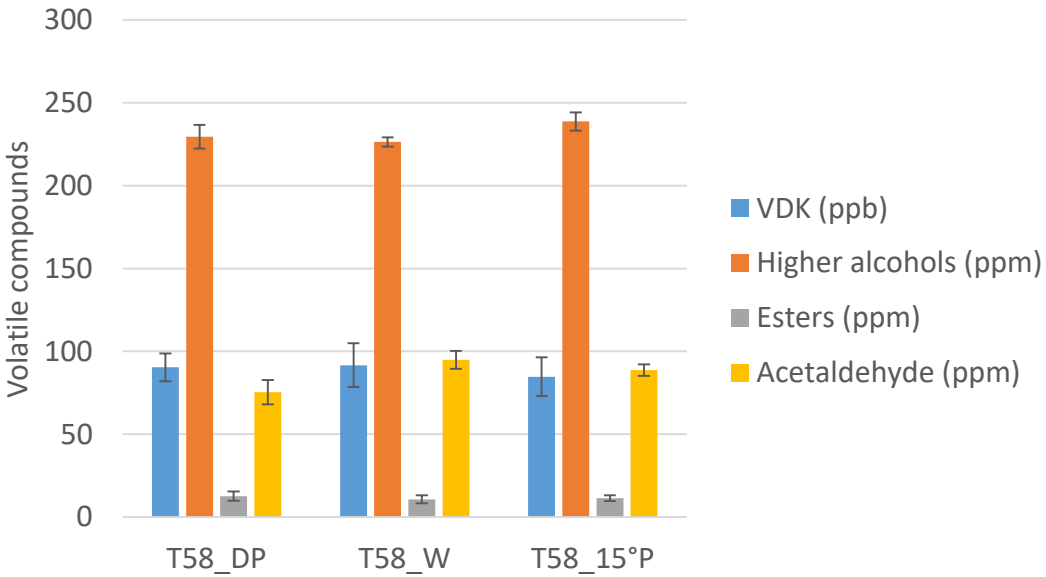
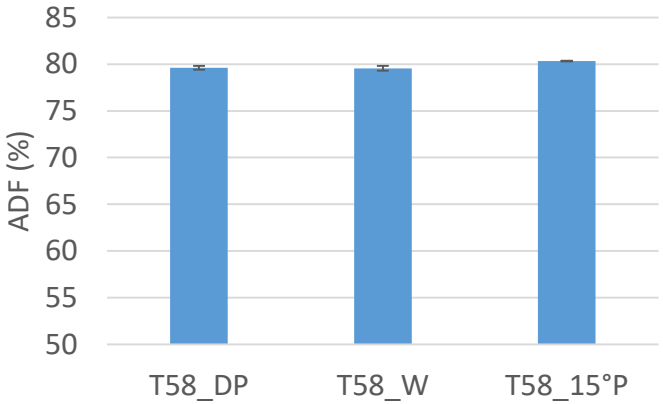
VITALITY – ALES: SAFALE T-58









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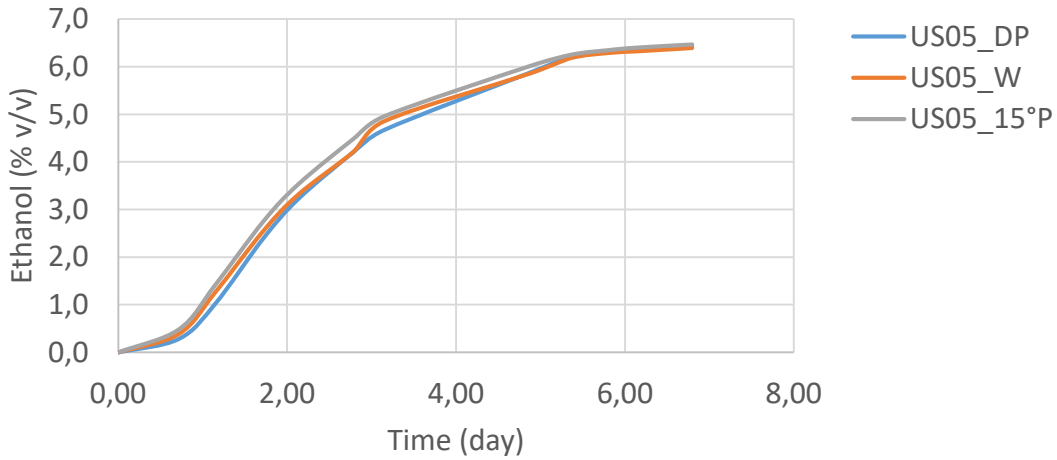
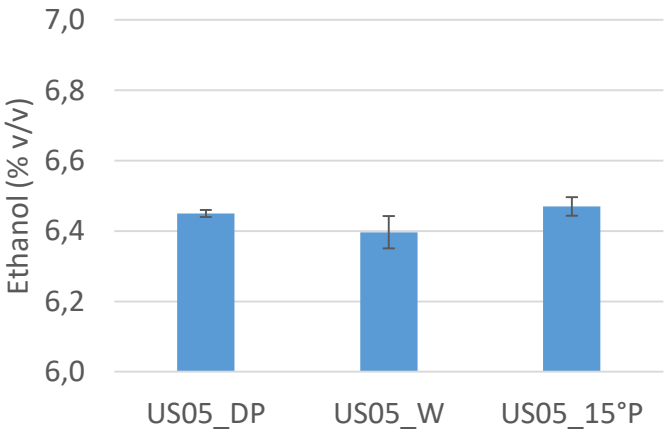
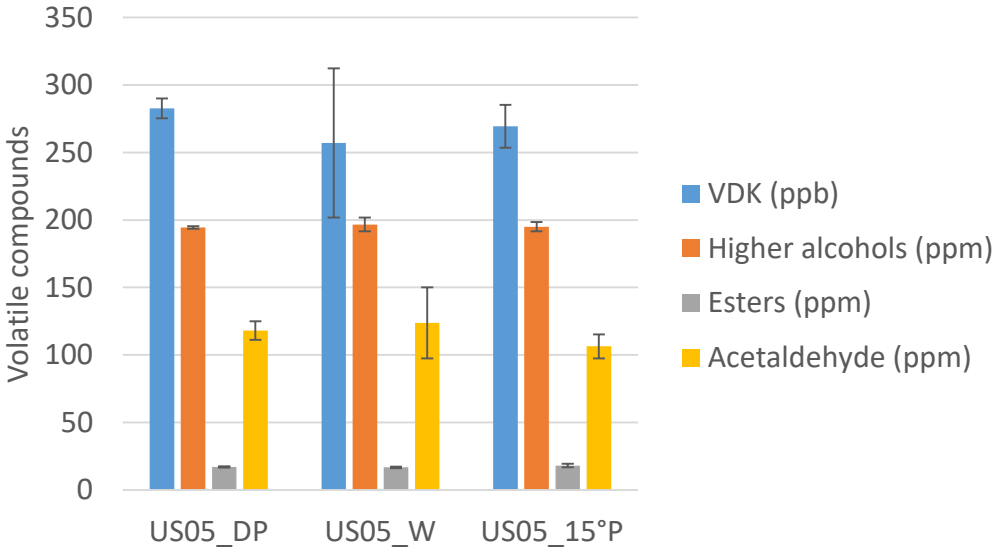
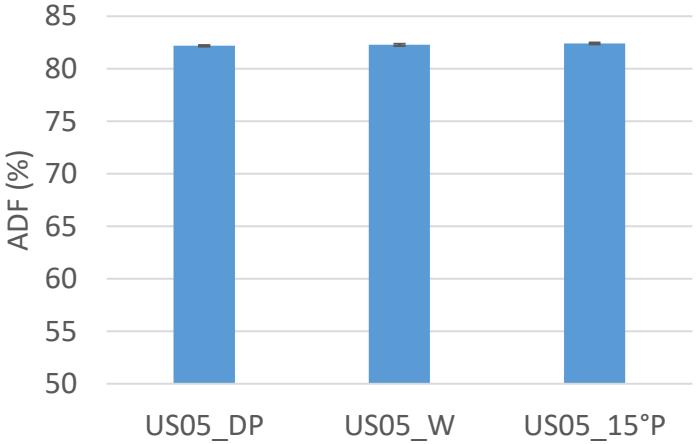
VITALITY – ALES: SAFALE US-05









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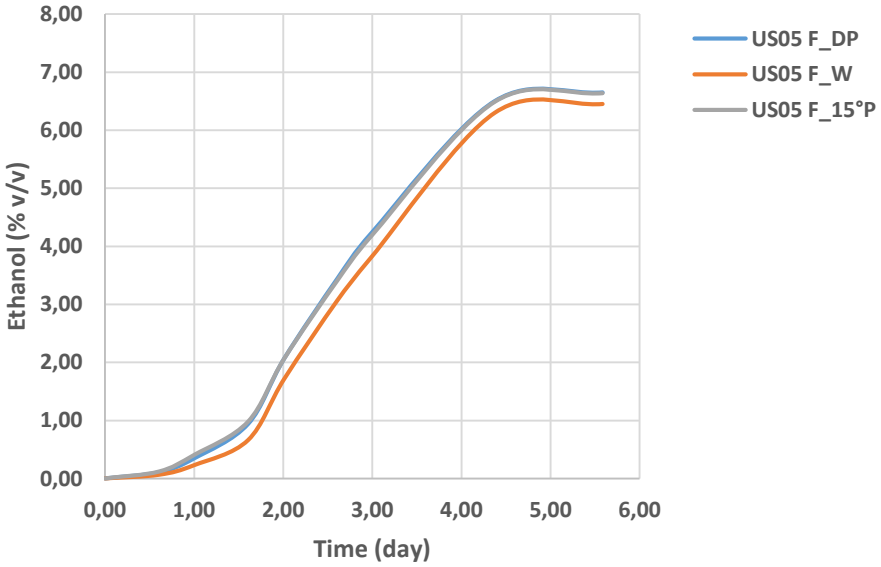
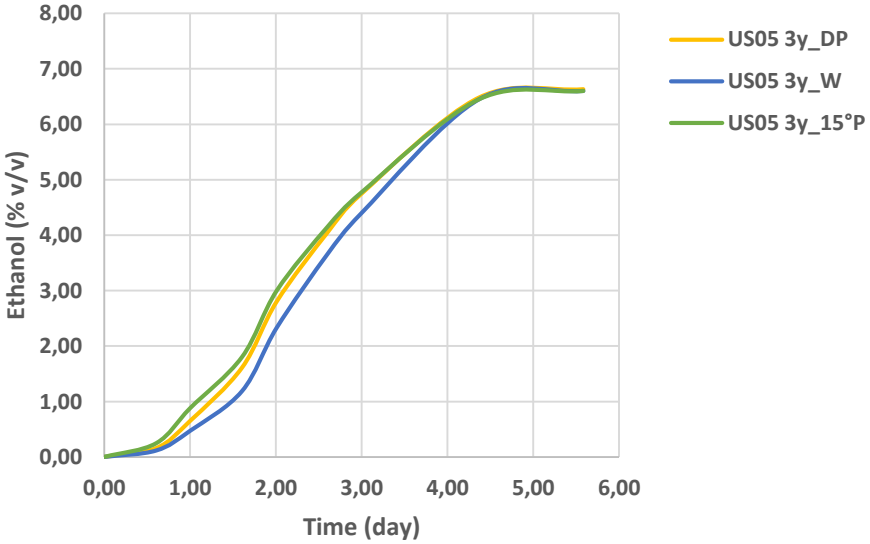
VITALITY – ALES: SAFALE US-05

Fresh ADY

Forced ageing test

Aged ADY





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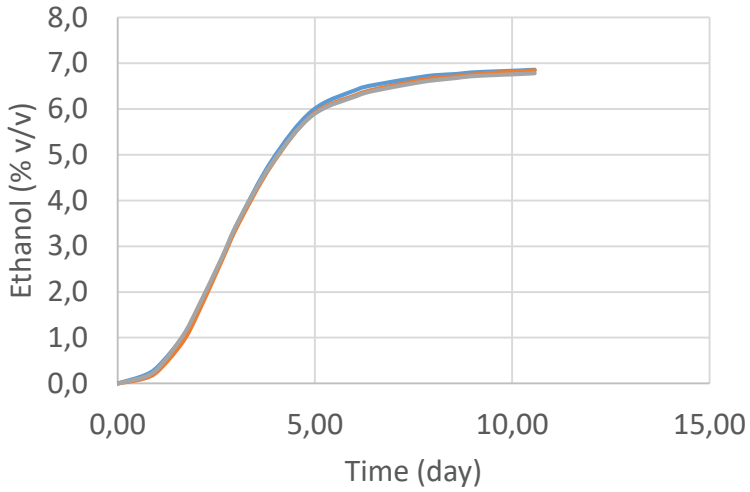
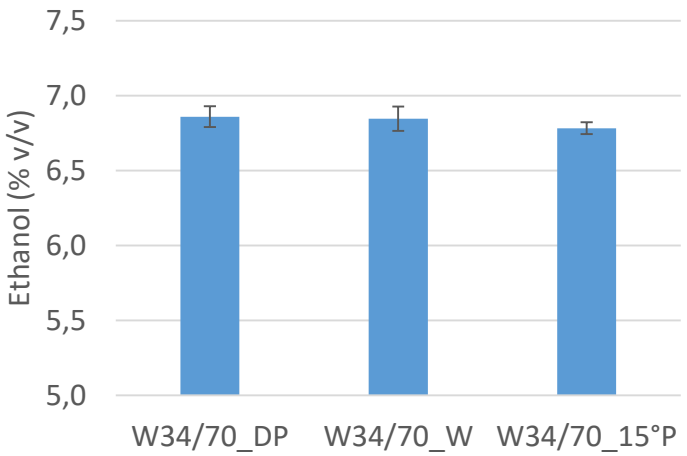
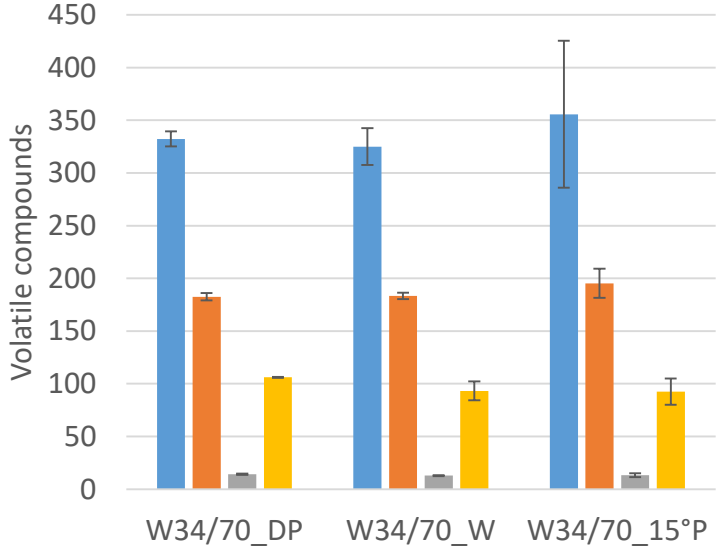
VITALITY – LAGERS: SAFLAGER W34/70

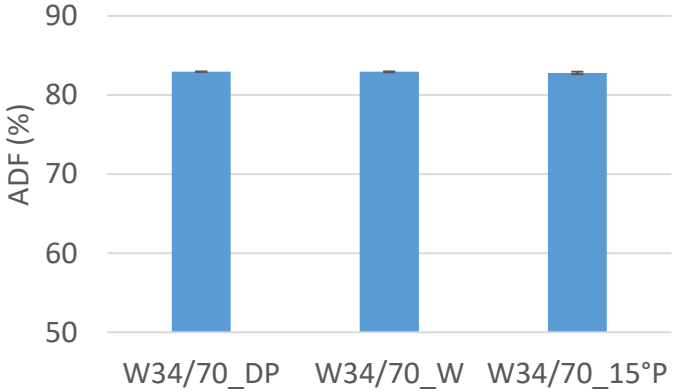


W34/70_DP
W34/70_W
W34/70_15°P





VDK (ppb)
Higher alcohols (ppm)
Esters (ppm)
Acetaldehyde (ppm)



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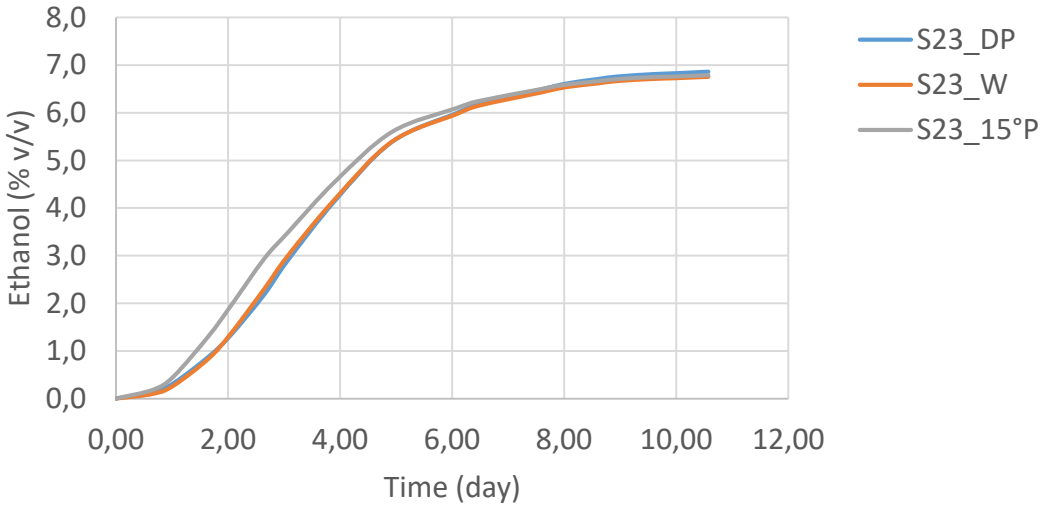
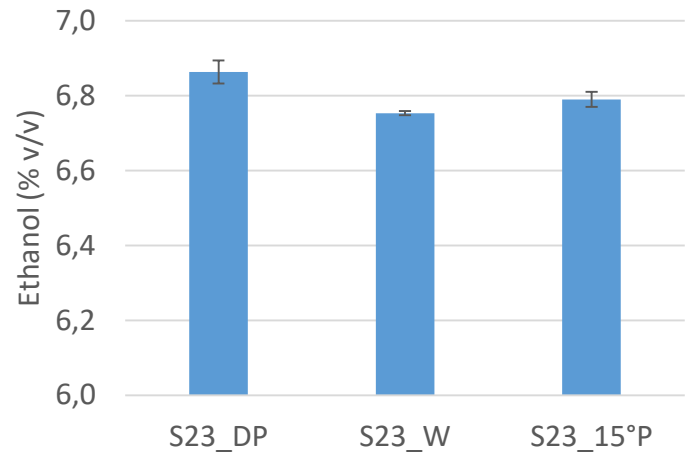
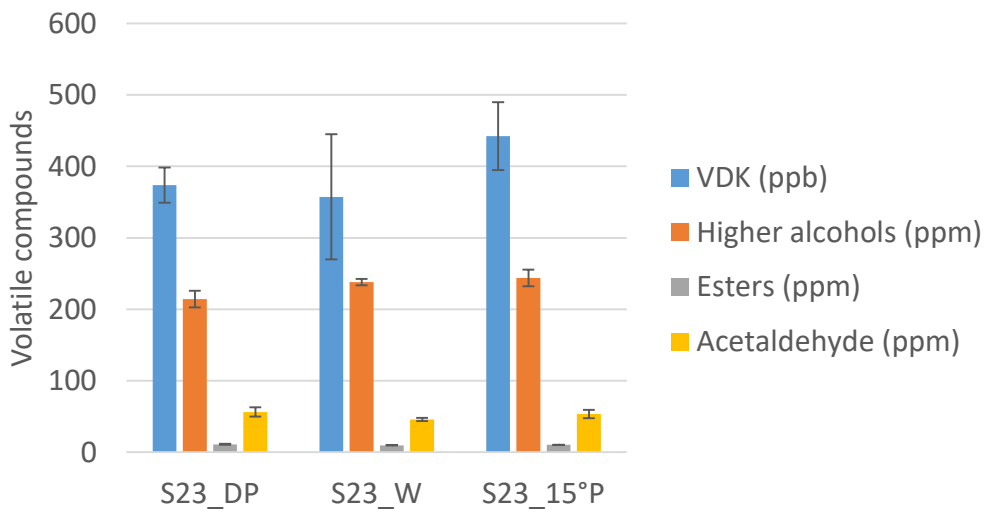
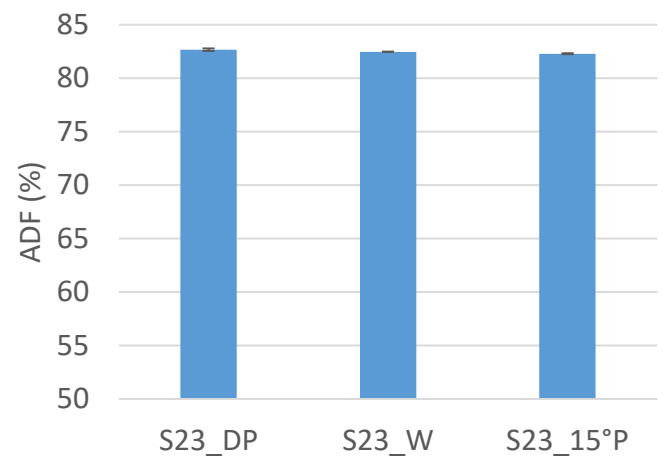
VITALITY – LAGERS: SAFLAGER S-23









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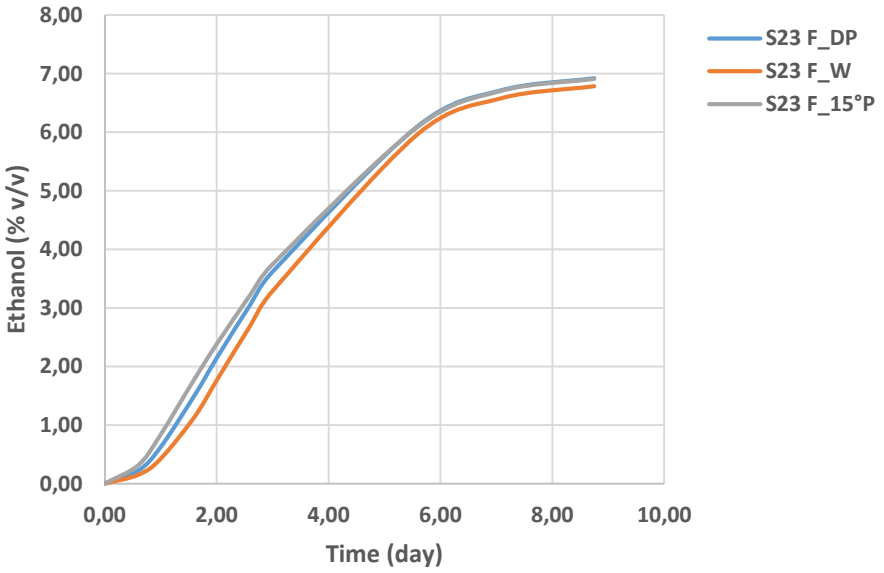
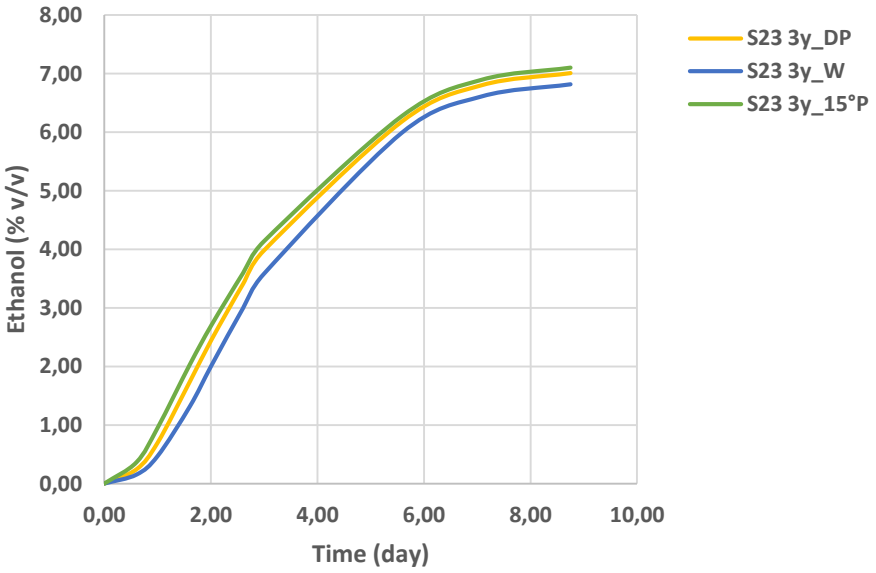
VITALITY – LAGERS: SAFLAGER S-23

Fresh ADY

Forced ageing test

Aged ADY





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CONCLUSIONS YEAST CELL VITALITY

No significant differences between direct pitch (DP), rehydration in water (W) and rehydration in wort (15 °P):

fermentation kinetics

forced aged fermentation kinetics

production of volatiles and final ABV

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SUMMARY

Direct pitching in wort or rehydration under a wide range of conditions can be used for all* Fermentis brewing strains

E2U
EASY USE
by Fermentis

Make it easy!

** Except SafAle™ F-2 (pitched in beer) & HA-18*

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FERMENTIS E2U EASY 2 USE by Fermentis ACTIVE DRY YEASTS

3 lager yeasts (SafLager™):

- S-23
- S-189
- W34/70

10 ale yeasts (SafAle™):

- US-05
- S-04
- K-97
- BE-256
- S-33
- T-58
- WB-06
- BE-134
- F-2*
- **HA-18***

** Rehydration required*

Sachets of 11,5 g

Bricks of 500 g

Boxes of 10 kg

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Thank you!

g.baart@fermentis.lesaffre.com

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