

The role of yeast within fermentation is central for the production of fermented alcoholic beverages. In addition to this beneficial role, yeasts are also able to cause spoilage to alcoholic beverages both during and after fermentation.

Spoilage yeast growth can affect the chemical composition of the beverage, generating off flavors, undesirable aroma or altered appearance. It can also lead to broken packaging due to increasing pressure. Such spoilage can generate high economic losses and impact brand image.

For soft drinks, presence of spoilage yeast is also critical. Not only can presence of yeast impact the product similarly, it can lead to unwanted alcoholic fermentation.

Labor intensive and lengthy investigations after spoilage detection can generate further spoilage risks as origination can come from a wide variety of sources throughout the production process. Long investigations can increase losses as higher volume of spoiled product could be produced or production could be interrupted for a long period of time.

Pall GeneDisc Technologies help industries to reduce these risks with solutions enabling the following:

- Implementation of rapid decision making tests for product release and key control points of the process
- Fast investigations after spoilage detection

GeneDisc System Benefits

Rapid — Pall's GeneDisc method allows a detection and identification of spoilage yeast in as fast as 30 h and direct monitoring, *Brettanomyces* quantification or colony identification in 2 h.

Flexible — Analysis with enrichment ensures high sensitivity (as low as 1 cell /sample) when precise information is the priority. With direct monitoring, contamination assessment is sped up when quick results are required (reduced to 2 hours).

Easy to use — GeneDisc solutions are designed for routine use. Implementing PCR (Polymerase Chain Reaction) has never been this easy.

Modular — Screening and identification solutions allow testing on various sample types.

Solutions Designed for Beverage Industry

Accelerated decision-making — GeneDisc technology allows for early preventive controls to reduce risk of product spoilage and speed up batch release. For wine industry, quantification of *Brettanomyces bruxellensis* and spp. in 2 hours ensures real-time process control at critical steps (e.g. between alcoholic and malolactic fermentations and during ageing).

GeneDisc® Technologies

For the rapid and flexible detection and identification of spoilage yeast in beverages



Fast corrective actions implementation — Reduce negative financial impact of spoilage with rapid root cause analysis in case of contamination.

Tailor-made informative method — Two GeneDisc options for various testing strategies:

Reduced hands-on cost — Ease of use simplifies testing workflows and on-site implementation.

GeneDisc Plate for Yeast Screening	GeneDisc Plate for Yeast ID
Screens for yeast	Detects and identifies 12 major spoilage yeast strains and species simultaneously
For testing yeast-free samples (e.g. bottled product, raw materials, soft drinks)	For assessing risk associated with spoilage detected using the GeneDisc Plate for Yeast Screening
	For testing wild spoilage yeast in samples containing process yeast
	For <i>Brettanomyces</i> quantification in wine samples

Spoilage Yeast ID

Major Spoilage Yeast	• <i>Saccharomyces</i> spp. (including <i>S. cerevisiae</i>, <i>S. pastorianus</i>, <i>S. cerevisiae</i> var. <i>diastaticus</i>) • <i>Brettanomyces</i> / <i>Dekkera</i> spp. (including <i>B. / D. bruxellensis</i>) • <i>Candida</i> spp. / <i>Pichia</i> spp. • <i>Zygosaccharomyces</i> spp. (including <i>Z. bailii</i>) • <i>Saccharomycodes</i> spp. • <i>Schizosaccharomyces</i> spp.
Organoleptic Impact	• Off-flavors and sensory defects (e.g. acetic acid, phenolic compounds, esters, acetaldehyde) • Film formation • Turbidity • Sediment • Unwanted alcoholic fermentation
Effect on Process	• Decreased filterability • Exploding bottles or bulging cans

How the System Works



Technical Information

Enrichment Time	Down to 28 h – Optional
Sample Preparation Time	< 1 hour for 48 samples
Hands-on Time	About 45 minutes for 48 samples (<1 min/sample)
PCR Cycle Time	About 1 hour
Total Turnaround Time	- Down to 30 h for detection - Down to 2 h for direct monitoring, <i>Brettanomyces</i> quantification and colony identification
GeneDisc Plate for Yeast ID – Targets	<i>Saccharomyces</i> spp. <i>Saccharomyces cerevisiae</i> <i>Saccharomyces pastorianus</i> <i>Saccharomyces cerevisiae</i> var. <i>diastaticus</i> <i>Brettanomyces</i> / <i>Dekkera</i> spp. <i>Brettanomyces</i> / <i>Dekkera bruxellensis</i> <i>Candida</i> spp. / <i>Pichia</i> spp. <i>Zygosaccharomyces</i> spp. <i>Zygosaccharomyces bailii</i> <i>Saccharomyces</i> spp. <i>Schizosaccharomyces</i> spp.
Limit of Detection (with enrichment)	Down to 1 cell/sample before enrichment
Limit of Detection (direct monitoring)	Down to 1 cell/mL
Compatible with	- Filterable samples - Unfilterable samples - Yeast slurry and fermenter
Internal Positive Control	Ensure PCR reaction is not affected by the presence of inhibitors for each sample DNA extract

Ordering Information

Part Number	Description	Samples/pack
Equipment		
EGDUL1A230 (EU)	GeneDisc Cycler Ultra-Lyser	—
EGDUL1A120 (US)		
or		
EGDBH48230 (EU)	GeneDisc DryBlock Heater 48	—
EGDBH48120 (US)		
EGDCV3A	GeneDisc Cycler Base Unit	
EGDSV3A	GeneDisc Cycler Sub Unit	—
Consumables		
PFOOD1100	Extraction Pack Food 1	100
GYEASCR106006	GeneDisc Plate for Yeast Screening	36
GYEASCR112006		72
GYEASID103012	GeneDisc Plate for Yeast ID	36
GYEASID106006		36

We also offer a full product range for pathogen detection in food and water as well as detection and identification of spoilage bacteria in beverages (Beer spoilage bacteria, TAB spoilage).

Quantitative tests for pathogens in water (*Legionella*, *E. coli*, *Enterococcus*) are also available.

For more information including part numbers please contact us.

Further Readings

- Poster: Performance Evaluation of the GeneDisc Method for Detection and Identification of Beer Spoilage Yeast, Jemmal S. *et al.*, Pall Corporation.
- Poster: Performance Evaluation of the GeneDisc Method for Detection and Identification of Wine Spoilage Yeast, Jemmal S. *et al.*, Pall Corporation.



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