EUCAST EUROPEAN COMMITTEE ON ANTIMICROBIAL SUSCEPTIBILITY TESTING

European Society of Clinical Microbiology and Infectious Diseases

European Committee on Antimicrobial Susceptibility Testing

Routine and extended internal quality control for MIC determination and agar dilution for yeasts, moulds and dermatophytes as recommended by EUCAST

Version 7.0, valid from 2023-08-14

This document should be cited as: "The European Committee on Antimicrobial Susceptibility Testing. Routine and extended internal quality control for MIC determination and agar dilution for yeasts, moulds and dermatophytes as recommended by EUCAST. Version 7.0, 2023. http://www.eucast.org."

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Notes

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1. In EUCAST quality control (QC) tables, both ranges and targets are listed. Repeat testing of EUCAST quality control strains should yield individual MIC values randomly distributed within the recommended ranges. If the number of tests is ≥10, the mode MIC should be the target value.

2. Ranges and targets are established by EUCAST.

3. EUCAST quality control strains for routine QC are used to monitor the entire test performance (material, inoculum, incubation, reading etc). At least 2 quality control strains with different target MICs should be tested at regular intervals, or if panels are used irregularly with every panel set up for clinical use or research purposes. Mould QC strains should always be included for antifungal susceptibility testing of mould, specially when using the resistance agar-screening methods (E.Def 10.2).

4. QC ranges are presented both as one summary table and in separate tables for each strain. Both tables contain the same data.

5. For information about the reference methods for susceptibility testing of yeast and moulds see "Methods in antifungal susceptibility testing of yeasts E.Def 7.4", "Methods in antifungal susceptibility testing of moulds E.Def 9.4 and 10.2", and "Methods in antifungal susceptibility testing of dermatophytes E.Def 11.0", respectively.

6. Abreviations: ATCC: American Type Culture Collection. CNM-CL: Yeast collection of the Spanish National Centre of Microbiology. SSI: Statens Serum Institute. DPL: David Perlin.

7. Strain availability information: The QC strains (except the ATCC strains) are deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where they are available.

Changes from previous version

Version 7.0, valid from 2023-08-14	**Changes** Cells containing a change or an addition from EUCAST QC Tables v. 6.0 are marked yellow (Format changes are not marked yellow).
1. Notes	Reference to E.Def 7.3.2 have been revised to 7.4 here and throught the whole document.
3. Routine QC	The following QCs names (*Aspergillus fumigatus* ATCC MYA-1163; *Aspergillus fumigatus* AFM32458; *Aspergillus fumigatus* DPL55985) were missing and have been added to the list.
4. Summary Antifungals QCs	The sheet has been split into two pages, one for MICs (4a) and the other for antifungal-containing agar methods (4b). Ranges and target concentrations for rezafungin against *Candida* ATCC strains have been added.
5. ATCC 6258	Target and range concentrations for rezafungin have been added. These values only apply for rezafungin MICs obtained with Tween-20 supplemented growth medium as specified in the E.Def 7.4 method document.
6. ATCC 22019	Target and range concentrations for rezafungin have been added. These values only apply for rezafungin MICs obtained with Tween-20 supplemented growth medium as specified in the E.Def 7.4 method document.
7. CNM-CL-F8555	Target and range concentrations for rezafungin have been added. These values only apply for rezafungin MICs obtained with Tween-20 supplemented growth medium as specified in the E.Def 7.4 method document.
8. CNM-CL-3403	Target and range concentrations for rezafungin have been added. These values only apply for rezafungin MICs obtained with Tween-20 supplemented growth medium as specified in the E.Def 7.4 method document.

EUCAST EUROPEAN COMMITTEE ON ANTIMICROBIAL SUSCEPTIBILITY TESTING
European Society of Clinical Microbiology and Infectious Diseases

Version 7.0, valid from 2023-08-14

Routine quality control

Candida krusei ATCC 6258*
Candida parapsilosis ATCC 22019*
Candida albicans CNM-CL F8555*
Candida krusei CNM-CL 3403*
Aspergillus fumigatus ATCC 204305
Aspergillus flavus ATCC 204304
Aspergillus flavus CNM-CM 1813*
Aspergillus fumigatus SSI-4524*
Aspergillus fumigatus SSI-5586*
Trichophyton indotineae (prev. *Trichophyton interdigitale*) SSI-9363*
Trichophyton rubrum SSI-7583*
Aspergillus fumigatus DPL1035 homozygous/SSI-1794*
Aspergillus fumigatus NIH4215* (ATCC MYA-1163)
Aspergillus fumigatus DPL32458*
Aspergillus fumigatus DPL55985**

*The QC strains indicated with an * are available from the Culture Collection University of Gothenburg https://www.ccug.se/

**This QC strain is soon available at the Culture Collection University of Gothenburg https://www.ccug.se/

European Subcommittee on Antifungal Susceptibility Testing (EUCAST AFST)

Routine and extended internal quality control for antifungal susceptibility as recommended by EUCAST Version 7.0, valid from 2023-08-14

This document should be cited as: "The European Committee on Antimicrobial Susceptibility Testing. Routine and extended internal quality control for MIC determination and agar dilution for yeasts, moulds and dermatophytes as recommended by EUCAST. Version 7.0, 2023. http://www.eucast.org."

QC strains	Drug MICs (mg/L)																			
	Amphotericin B		Anidulafungin		Fluconazole		5-FC		Isavuconazole		Itraconazole		Micafungin		Posaconazole		Rezafungin##		Terbinafine	
	Target	Range	Target	Range	Target	Range	Target	Range	Target	Range	Target	Range	Target	Range	Target	Range	Target	Range	Target	Range
Candida krusei ATCC 6258	0.25-0.5	0.125-1	0.03	0.016-0.06	32	16-64	2	1-4	0.03	0.016-0.06	0.06	0.03-0.125	0.06	0.03-0.125	0.03	0.016-0.06	0.008-0.016	0.004-0.03	-	-
Candida parapsilosis ATCC 22019	0.25-0.5	0.125-1	0.5	0.25-1	1	0.5-2	0.25	0.125-0.5	0.016	0.008-0.03	0.06	0.03-0.125	1	0.5-2	0.03	0.016-0.06	0.25-0.5	0.125-1	-	-
Candida albicans CNM-CL F8555	0.125-0.25	0.06-0.5	-	-	64	32-128	0.125	0.06-0.25	-	-	0.5	0.25-1	-	-	0.25	0.125-0.5	0.004	0.002-0.008	-	-
Candida krusei CNM-CL 3403	0.5	0.25-1	-	-	32	16-64	4	2-8	-	-	0.25	0.125-0.5	-	-	0.125	0.06-0.25	0.008-0.016	0.004-0.03	-	-
Candida albicans ATCC 64548	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	0.0005-0.002	-	-
Candida albicans ATCC 64550	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	0.002-0.008	-	-
Aspergillus fumigatus ATCC 204305	0.5	0.25-1	-	-	-	-	-	-	-	-	0.25	0.125-0.5	-	-	0.06-0.125	0.03-0.25	-	-	-	-
Aspergillus flavus ATCC 204304	1	0.5-2	-	-	-	-	-	-	-	-	0.25	0.125-0.5	-	-	0.25	0.125-0.5	-	-	0.5	0.25-1
Aspergillus flavus CNM-CM 1813	2	1-4	-	-	-	-	-	-	-	-	0.25	0.125-0.5	-	-	0.25	0.125-0.5	-	-	0.5	0.25-1
Trichophyton indotineae SSI-9363*[#]	-	-	-	-	-	-	-	-	-	-	[0.06]	[0.03-0.25]	-	-	-	-	-	-	[0.016]	[0.016-0.06]
Trichophyton rubrum SSI-7583*	-	-	-	-	-	-	-	-	-	-	[0.016]	[0.008-0.03]	-	-	-	-	-	-	[0.016]	[0.008-0.03]

* Targets and ranges for *Trichophyton* isolates are tentative hence in brackets. [#] *T. indotineae* was previously regarded as a variant of *T. interdigitale*
These Rezafungin QC values only apply for rezafungin MICs obtained with Tween-20 supplemented growth medium as specified in the E.Def 7.4 method document.

QC strains	Drug MICs (mg/L)	
	Voriconazole	
	Target	Range
Candida krusei ATCC 6258	0.06-0.125	0.03-0.25
Candida parapsilosis ATCC 22019	0.03	0.016-0.06
Candida albicans CNM-CL F8555	1	0.5-2
Candida krusei CNM-CL 3403	0.25	0.125-0.5
Candida albicans ATCC 64548	-	-
Candida albicans ATCC 64550	-	-
Aspergillus fumigatus ATCC 204305	0.5	0.25-1
Aspergillus flavus ATCC 204304	1	0.5-2
Aspergillus flavus CNM-CM 1813	1	0.5-2
Trichophyton indotineae SSI-9363*[#]	[0.25]	[0.125-1]
Trichophyton rubrum SSI-7583*	[0.03]	[0.008-0.03]

* Targets and ranges for *Trichophyton* isolates are tentative hence in brackets. [#] *T. indotineae* was previously regarded as a variant of *T. interdigitale*

European Subcommittee on Antifungal Susceptibility Testing (EUCAST AFST)

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E.Def 10.2 Growth scoring and interpretation on azole and echinocandin screening agar plates for EUCAST recommended QC strains (two days of incubation)

Design of 4-well Azole plate:

Itraconazole (4 mg/L)	Voriconazole (2 mg/L)
Posaconazole (0.5 mg/L)	Growth control (-)

Scores for QC strains on azole agar (48 h):

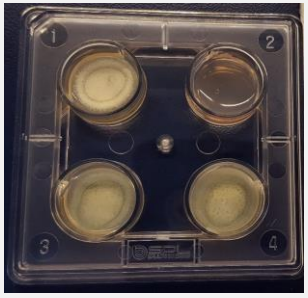
***Aspergillus fumigatus* SSI-4524**

2-3 0.5-2

0-1 3

***Aspergillus fumigatus* SSI-5586**

2-3 0



2-3 3

Score definition Azole agar: 0: no visible growth; **0.5**: 1-5 tiny colonies; **1**: weak/minimal growth (either as >5 tiny colonies or confluent weak growth where the azole agar has been inoculated (covering ≤ half the well); **2**: clearly visible growth with hyphal extension but not covering the entire well (and less than the control well); **3**: un-inhibited prominent growth covering the majority of the well and similar to that in the control well.

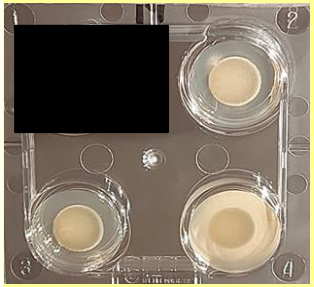
Design of 4-well Echinocandin plate:

	Anidulafungin (0.25 mg/L)
Micafungin (0.125 mg/L)	Growth control (-)

Reading QC strains on echinocandin agar (48 h):

***Aspergillus fumigatus* ATCC 204305**

Disk like*



Disk like* Fluffy radiating hyphae

***Aspergillus fumigatus* DPL103/SSI-1794**

Fluffy radiating hyphae

Fluffy radiating hyphae Fluffy radiating hyphae

***Disk like morphology on echinocandin agar (discreete radiating hyphae but much less than in control well)
Score definition Echinocandin agar: disk like growth on the candin agars versus normal groth with radiating fluffy hyphae on the control agar is an indication of activity and thus susceptibility. In contrast radiating fluffy hyphae extending from the centre growth on the candin agars indicates resistance. (Additional QC strains for echinocandin agar screening are shown in page 17-19.)

Candida krusei ATCC 6258[a]

Version 7.0, valid from 2023-08-14

See EUCAST E.Def 7.4 for MIC methodology

Antimicrobial agent	MIC[b] (mg/L)	
	Target	Range
Amphotericin B	0.25-0.5	0.125-1
Anidulafungin	0.03	0.016-0.06
Caspofungin	NA[c]	NA[c]
Fluconazole	32	16-64
Flucytosine	2	1-4
Isavuconazole	0.03	0.016-0.06
Itraconazole	0.06	0.03-0.125
Micafungin	0.06	0.03-0.125
Posaconazole	0.03	0.016-0.06
Rezafungin[##]	0.008-0.016	0.004-0.03
Voriconazole	0.06-0.125	0.03-0.25

[a] ATCC: American Type Culture Collection.

[b] *Candida* QC strains require MIC reading in a spectrophotometer after one day of incubation.

[c] Not available.

[##] These Rezafungin QC values only apply for rezafungin MICs obtained with Tween-20 supplemented growth medium as specified in the E.Def 7.4 method document.

Candida parapsilosis ATCC 22019[a]

Version 7.0, valid from 2023-08-14

See EUCAST E.Def 7.4 for MIC methodology

Antimicrobial agent	MIC[b] (mg/L)	
	Target	Range
Amphotericin B	0.25-0.5	0.125-1.0
Anidulafungin	0.5	0.25-1.0
Caspofungin	NA[c]	NA[c]
Fluconazole	1	0.5-2
Flucytosine	0.25	0.125-0.5
Isavuconazole	0.016	0.008-0.03
Itraconazole	0.06	0.03-0.125
Micafungin	1	0.5-2
Posaconazole	0.03	0.016-0.06
Rezafungin[##]	0.25-0.5	0.125-1
Voriconazole	0.03	0.016-0.06

[a] ATCC: American Type Culture Collection.

[b] *Candida* QC strains require MIC reading in a spectrophotometer after one day of incubation.

[c] Not available.

[##] These Rezafungin QC values only apply for rezafungin MICs obtained with Tween-20 supplemented growth medium as specified in the E.Def 7.4 method document.

Candida albicans CNM-CL F8555[a]

Version 7.0, valid from 2023-08-14

See EUCAST E.Def 7.4 for MIC methodology

Antimicrobial agent	MIC[b] (mg/L)	
	Target	Range
Amphotericin B	0.125-0.25	0.06-0.5
Anidulafungin	NA[c]	NA[c]
Caspofungin	NA[c]	NA[c]
Fluconazole	64	32-128
Flucytosine	0.125	0.06-0.25
Isavuconazole	NA[c]	NA[c]
Itraconazole	0.5	0.25-1
Micafungin	NA[c]	NA[c]
Posaconazole	0.25	0.125-0.5
Rezafungin[##]	0.004	0.002-0.008
Voriconazole	1	0.5-2

[a] CNM-CL: Yeast collection of the Spanish National Centre of Microbiology. The QC strain is deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where will be available.

[b] *Candida* QC strains requires MIC reading in a spectrophotometer after one day of incubation.

[c] Not available.

[##] These Rezafungin QC values only apply for rezafungin MICs obtained with Tween-20 supplemented growth medium as specified in the E.Def 7.4 method document.

Candida krusei CNM-CL 3403[a]

Version 7.0, valid from 2023-08-14

See EUCAST E.Def 7.4 for MIC methodology

Antimicrobial agent	MIC[b] (mg/L)	
	Target	Range
Amphotericin B	0.5	0.25-1
Anidulafungin	NA[c]	NA[c]
Caspofungin	NA[c]	NA[c]
Fluconazole	32	16-64
Flucytosine	4	2-8
Isavuconazole	NA[c]	NA[c]
Itraconazole	0.25	0.125-0.5
Micafungin	NA[c]	NA[c]
Posaconazole	0.125	0.06-0.25
Rezafungin[##]	0.008-0.016	0.004-0.03
Voriconazole	0.25	0.125-0.5

[a] CNM-CL: Yeast collection of the Spanish National Centre of Microbiology. The QC strain is deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where will be available.

[b] *Candida* QC strains require MIC reading in a spectrophotometer after one day of incubation.

[c] Not available.

[##] These Rezafungin QC values only apply for rezafungin MICs obtained with Tween-20 supplemented growth medium as specified in the E.Def 7.4 method document.

Aspergillus fumigatus ATCC 204305[a]

Version 7.0, valid from 2023-08-14

See EUCAST E.Def 9.4 for MIC methodology

Antimicrobial agent	MIC[b] (mg/L)	
	Target	Range
Amphotericin B	0.5	0.25-1
Anidulafungin	NA[c]	NA[c]
Caspofungin	NA[c]	NA[c]
Fluconazole	NA[c]	NA[c]
Flucytosine	NA[c]	NA[c]
Isavuconazole	NA[c]	NA[c]
Itraconazole	0.25	0.125-0.5
Micafungin	NA[c]	NA[c]
Posaconazole	0.06-0.125	0.03-0.25
Rezafungin	NA[c]	NA[c]
Voriconazole	0.5	0.25-1

[a] ATCC: American Type Culture Collection.

[b] *Aspergillus* QC strains should be read visually at a no growth inhibition endpoint after 2 days of incubation.

[c] Not available.

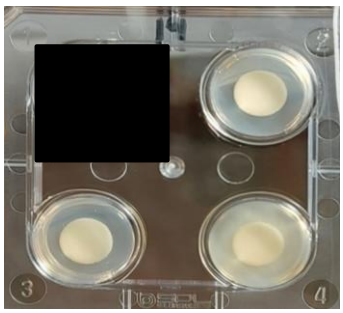
See EUCAST E.Def 10.2 for echinocandin screening agar method

QC strain which is a phenotypically wild type for echinocandins
Well 2 anidulafungin (0.25 mg/L), well 3 micafungin (0.125 mg/L), and well 4 drug free control well.

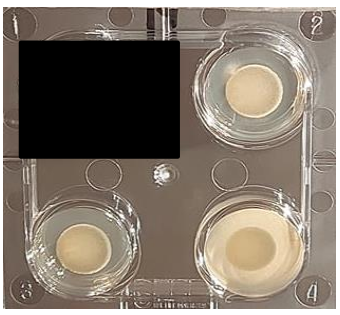
Reading criteria

Echinocandin wild-type phenotype:
Aspergillus strains with wild-type phenotype grow with a dense disk like appearance on echinocandin agars without the typical fluffy radiation halo around the main colony found only on drug free agar.

Reverse 24 h



Reverse 48 h



Aspergillus flavus ATCC 204304[a]

Version 7.0, valid from 2023-08-14

See EUCAST E.Def 9.4 for MIC methodology

Antimicrobial agent	MIC[b] (mg/L)	
	Target	Range
Amphotericin B	1	0.5-2
Anidulafungin	NA[c]	NA[c]
Caspofungin	NA[c]	NA[c]
Fluconazole	NA[c]	NA[c]
Flucytosine	NA[c]	NA[c]
Isavuconazole	NA[c]	NA[c]
Itraconazole	0.25	0.125-0.5
Micafungin	NA[c]	NA[c]
Posaconazole	0.25	0.125-0.5
Rezafungin	NA[c]	NA[c]
Terbinafine	0.5	0.25-1
Voriconazole	1	0.5-2

[a] ATCC: American Type Culture Collection.

[b] *Aspergillus* QC strains should be read visually at a no growth inhibition endpoint after 2 days of incubation.

[c] Not available.

Aspergillus flavus CNM-CM 1813[a]

Version 7.0, valid from 2023-08-14

See EUCAST E.Def 9.4 for MIC methodology

Antimicrobial agent	MIC[b] (mg/L)	
	Target	Range
Amphotericin B	2	1-4
Anidulafungin	NA[c]	NA[c]
Caspofungin	NA[c]	NA[c]
Fluconazole	NA[c]	NA[c]
Flucytosine	NA[c]	NA[c]
Isavuconazole	NA[c]	NA[c]
Itraconazole	0.25	0.125-0.5
Micafungin	NA[c]	NA[c]
Posaconazole	0.25	0.125-0.5
Rezafungin	NA[c]	NA[c]
Terbinafine	0.5	0.25-1
Voriconazole	1	0.5-2

[a] CNM-CM: Spanish National Centre for Microbiology, Filamentous Fungi Culture Collection. The QC strain is deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where will be available.

[b] *Aspergillus* QC strains should be read visually at a no growth inhibition endpoint after 2 days of incubation.

[c] Not available.

A. fumigatus SSI-4524 [a]

Version 7.0, valid from 2023-08-14

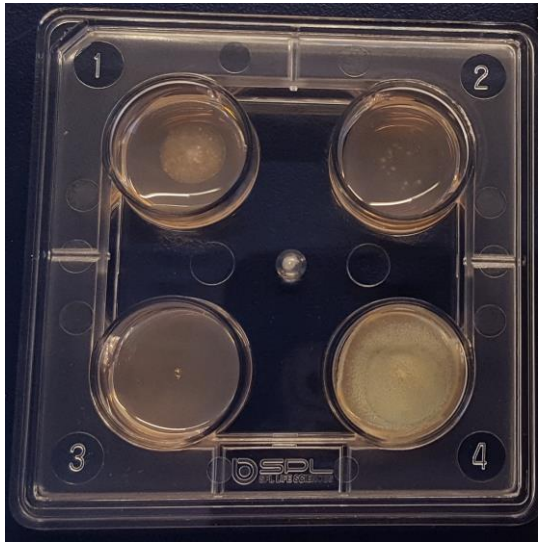
See EUCAST E.Def 10.2 for Azole screening test

QC strain harbouring TR34/L98H substitution for quality control of azole-containing agar plates.

Well 1 (itraconazole 4 mg/L), well 2 (voriconazole 2 mg/L), well 3 (posaconazole 0.5 mg/L), and well 4 (drug free control well).

Score definition
0: no visible growth;
0.5: 1-5 tiny colonies;
1: weak/minimal growth (either as >5 tiny colonies or confluent weak growth where the agar has been inoculated (covering ≤ half the well));
2: clearly visible growth with hyphal extension but not covering the entire well (and less than the control well);
3: un-inhibited prominent growth covering the majority of the well and similar to that in the control well.

2-3	0.5-2
0-1	3



[a] SSI: Statens Serum Institut, Copenhagen, Denmark
The QC strain is deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where it is available.

A. fumigatus SSI-5586 [a]

Version 7.0, valid from 2023-08-14

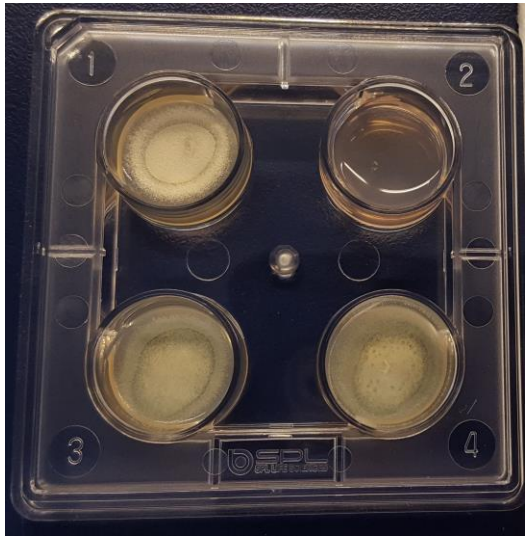
See EUCAST E.Def 10.2 for azole screening test

QC strain harbouring G54W substitution for quality control of azole-containing agar plates.

Well 1 (itraconazole 4 mg/L), well 2 (voriconazole 2 mg/L), well 3 (posaconazole 0.5 mg/L), and well 4 (drug free control well).

Score definition
0: no visible growth;
0.5: 1-5 tiny colonies;
1: weak/minimal growth (either as >5 tiny colonies or confluent weak growth where the agar has been inoculated (covering ≤ half the well));
2: clearly visible growth with hyphal extension but not covering the entire well (and less than the control well);
3: un-inhibited prominent growth covering the majority of the well and similar to that in the control well.

2-3	0
2-3	3



[a] SSI: Statens Serum Institut, Copenhagen, Denmark
The QC strain is deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where it is available

Trichophyton indotineae (prev. *Trichophyton interdigitale*) SSI-9363[a]

Version 7.0, valid from 2023-08-14

See EUCAST E.Def 11.0 for MIC methodology

Antimicrobial agent	MIC (mg/L)	
	Target	Range
Amorolfine	(0.125-0.25)	(0.03-0.25)
Amphotericin B	NA[b]	NA[b]
Anidulafungin	NA[b]	NA[b]
Caspofungin	NA[b]	NA[b]
Fluconazole	NA[b]	NA[b]
Flucytosine	NA[b]	NA[b]
Isavuconazole	NA[b]	NA[b]
Itraconazole	0.06	(0.03-0.25)
Micafungin	NA[b]	NA[b]
Posaconazole	NA[b]	NA[b]
Rezafungin	NA[b]	NA[b]
Terbinafine	(0.016)	(0.016-0.06)
Voriconazole	(0.25)	(0.125-1)

[a] SSI: Statens Serum Institut, Copenhagen, Denmark. The QC strain is deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where it is available.

[b] Not available.

Values indicated in brackets () are tentative

Trichophyton rubrum SSI-7583[a]

Version 7.0, valid from 2023-08-14

See EUCAST E.Def 11.0 for MIC methodology

Antimicrobial agent	MIC (mg/L)	
	Target	Range
Amorolfine	(0.125)	(0.03-0.125)
Amphotericin B	NA[b]	NA[b]
Anidulafungin	NA[b]	NA[b]
Caspofungin	NA[b]	NA[b]
Fluconazole	NA[b]	NA[b]
Flucytosine	NA[b]	NA[b]
Isavuconazole	NA[b]	NA[b]
Itraconazole	(0.016)	(0.008-0.03)
Micafungin	NA[b]	NA[b]
Posaconazole	NA[b]	NA[b]
Rezafungin	NA[b]	NA[b]
Terbinafine	(0.016)	(0.008-0.03)
Voriconazole	(0.03)	(0.008-0.03)

[a] SSI: Statens Serum Institut, Copenhagen, Denmark. The QC strain is deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where it ise available.

[b] Not available.

Values indicated in brackets () are tentative

A. fumigatus NIH4215 [a]

Also known as: ATCC MYA-1163

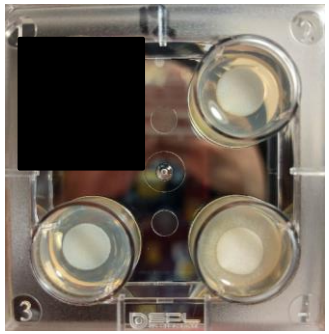
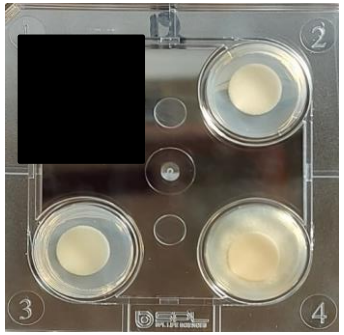
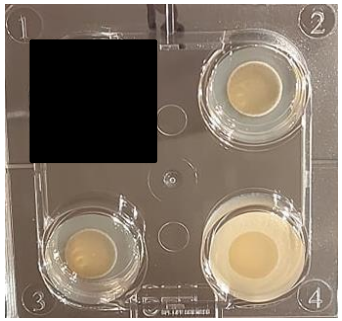
Version 7.0, valid from 2023-08-14

See EUCAST E.Def 10.2 for echinocandin screening test

QC strain which is a phenotypically wild type for echinocandins

Well 2 anidulafungin (0.25 mg/L), well 3 micafungin (0.125 mg/L), and well 4 drug free control well.

Echinocandin wild-type phenotype:
Aspergillus strains with wild-type phneotype grow with a dense disk like appearance on echinocandin agars without the typical fluffy radiation halo around the main colony found only on drug free agar.

	24h incubation	**48h incubation**
Front:		
Reverse: read in a mirror		

[a] The QC strain is deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where it is available

A. fumigatus DPL1035 (homozygous) [a]

Also known as: SSI-1794

Version 7.0, valid from 2023-08-14

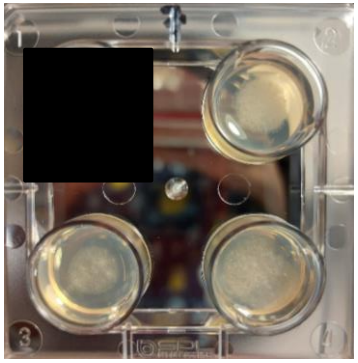
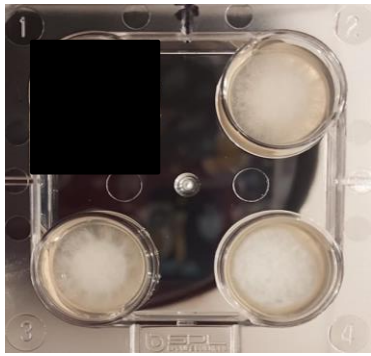
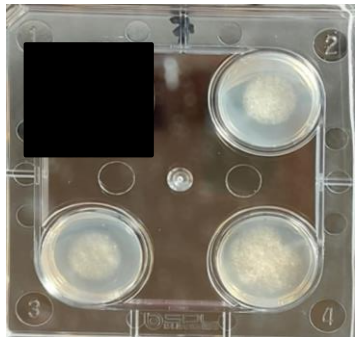
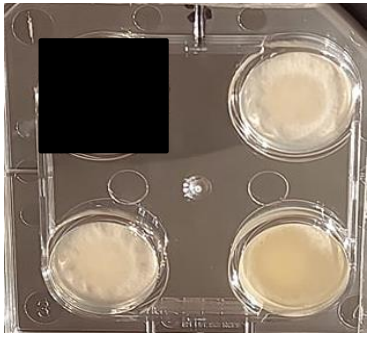
See EUCAST E.Def 10.2 for echinocandin screening test

QC strain harbouring a substitution for quality control of echinocandin-containing agar plates. The strain is laboratory engeneered and derives from David Perlin's laboratory. Well 2 anidulafungin (0.25 mg/L), well 3 micafungin (0.125 mg/L), and well 4 drug free control well.

Reading criteria

Echinocandin non wild-type phenotype with anidulafungin and micafungin EUCAST MEC 16 and 4 mg/L, respectively:
The candin strain with non wild-type phenotype produce the fluffy radiating ring both on drug free and drug containing agars after 48h incubation. Similar growth between drug-free and drug-containing wells is observed after 24h.

For comparison to a wild type Echinocandin S strain (see QC ATCC MYA-1163 and QC ATCC 204305):
Aspergillus wildtype strains grow with a dense disk like appearence on candin agars without the typical fluffy radiation halo around the main colony found only on drug free agar.

	24h incubation	**48h incubation**
Front:		
Reverse: read in a mirror		

[a] SSI: Statens Serum Institut, Copenhagen, Denmark

[a] The QC strain is deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where it is available

A. fumigatus DPL32458 [a]

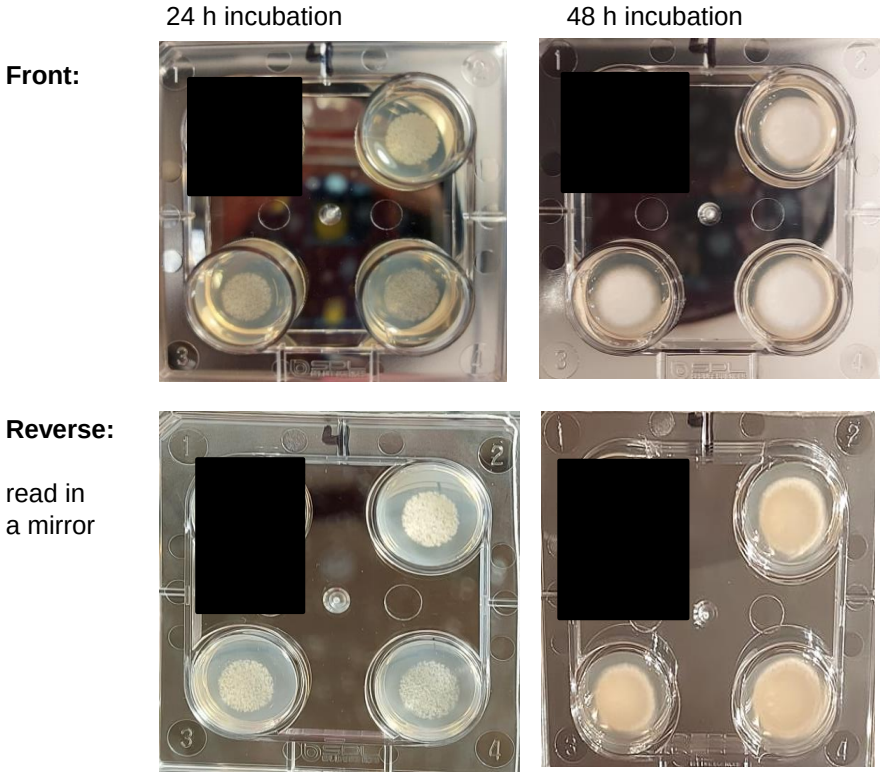
Version 7.0, valid from 2023-08-14

See EUCAST E.Def 10.2 for echinocandin screening test

Strain deriving from a patient failing echinocandin therapy. Suitable as a QC strain for echinocandin-containing agar plates. The strain derives from David Denning's laboratory.
Well 2 anidulafungin (0.25 mg/L), well 3 micafungin (0.125 mg/L), and well 4 drug free control well.

Reading criteria
Echinocandin non wild-type phenotype with anidulafungin and micafungin EUCAST MEC 16 and 8 mg/L, respectively:
The candin strain with non wild-type phenotype produce the fluffy radiating ring both on drug free and drug containing agars after 48h incubation. Similar growth between drug-free and drug-containing wells is observed after 24h.

For comparison to a wild type Echinocandin S strain (see QC ATCC MYA-1163 and QC ATCC 204305):
Aspergillus WT strains grow with a dense disk like appearence on candin agars without the typical fluffy radiation halo around the main colony found only on drug free agar.



[a] The QC strain is deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where it is available

A. fumigatus DPL55985 [a]

Version 7.0, valid from 2023-08-14

See EUCAST E.Def 10.2 for echinocandin screening test

Echinocandin resistant laboratory selected strain. Suitable as a QC strain for echinocandin-containing agar plates. The strain derives from David Perlin's laboratory.

Well 2 anidulafungin (0.25 mg/L), well 3 micafungin (0.125 mg/L), and well 4 drug free control well.

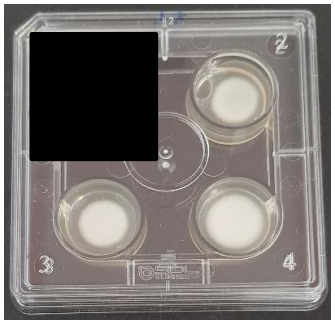
Reading criteria

Echinocandin non wild-type phenotype (anidulafungin and micafungin EUCAST MEC 4 and 8 mg/L, respectively)
The strain produce a comparable fluffy radiating ring both on drug free and drug containing agars after 48h incubation. Similar colony morphology comparing drug-free and drug-containing wells is also observed after 24h.

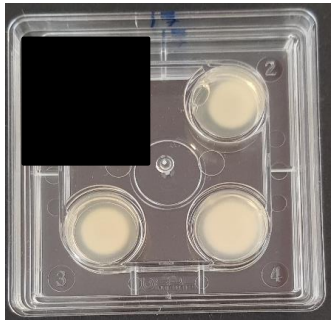
For comparison to a wild type Echinocandin S strain (see QC ATCC MYA-1163 and QC ATCC 204305):
Aspergillus wildtype strains grow with a dense disk like appearence on candin agars without the typical fluffy radiation halo around the main colony found only on drug free agar.

Front 24 h incubation

Front 48 h incubation



Reverse 48 h incubation
(read in a mirror)



[a] The QC strain is deposited in the Culture Collection University of Gothenburg https://www.ccug.se/ from where it is available