HIRSCHMANN®



SILICOSEN® / BIO SILICO®

HiClass culture plugs made of silicone rubber

DOMINIQUE DUTSCHER SAS

SILICOSEN® - BIO-SILICO®

SILICOSEN® and BIO-SILICO® are specially processed culture plugs in silicone rubber with continuous bubbles for preparation, filling and sterilisation of culture media.
Their uniform pore structure and good air permeability make them excellent for the cultivation of aerobic microorganisms.

The choice between SILICOSEN® and BIO-SILICO® culture stoppers depends on the requirements of the application.

SILICOSEN® culture stoppers have low water evaporation which makes them particularly suitable for long term cultures.

BIO-SILICO® culture stoppers have high air permeability, similar to cotton plugs.

Both types are chemically resistant, temperature resistant, liquid repellent and reusable.



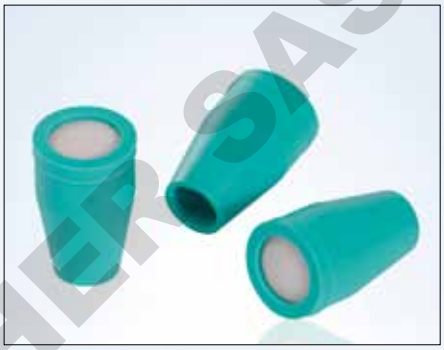
Plug type (T-Type, L-Type)

Amount of moisture evaporation is minimal, which means that there is less drying of the culture medium.



Cap type (C-Type)

Possesses superb permeability and fits tight on the media container due to sealing lip where importance is placed on mounting quality. Suitable for shaking cultures.



Super type (S-Type)

Possesses superb permeability and suitable for aerobic bacterium cultures and shaking cultures.

SILICOSEN® Features

1. Easy to use in comparison to cotton plugs which means that massive savings can be made in labor and labor costs.
2. Moisture evaporation rate is less than half of cotton plugs which means that heteropycnosis of the culture solution and pH changes are reduced.
3. Excellent heat resistance which means that plugs can be dry sterilized (180°C) and high-pressure steam sterilized for repeated use.
4. Excellent chemical resistance.
5. Can be hot water washed and disinfected. Also can be washed in neutral detergent.
6. Hydrophobic property means that bacteria proliferation is suppressed at the sealing area with the container.

BIO-SILICO® Features

1. Cell size is uniform, which provides stable, good permeability.
2. Optimum product for shaking cultures-durability and operability are excellent.
3. No skin layer, which means it is good for cleaning and fits well.



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General Technical Data

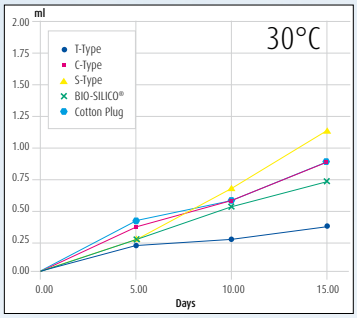
1. Air Permeability

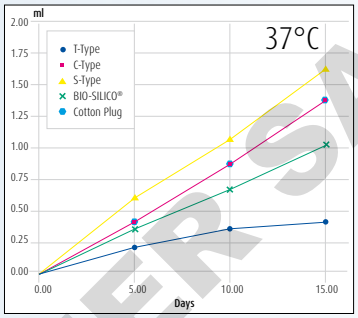
Test method:
Determine air volume in a 500 ml Erlenmeyer flask using a flowmeter at 26 mm water column.

Type	Quantity of airflow (ml/min)	No.
T-Type	30 ~ 120	T42
C-Type	2,000 ~ 4,500	C55
S-Type	2,500 ~ 4,500	S40
BIO-SILICO®	3,600 ~ 4,500	N24
Cotton Plug	50 ~ 2,000	-
Paper Plug	1,200 ~ 1,500	-

2. Evaporation of Moisture

Moisture evaporation rate is half or less of cotton plug for T-Type and approximately the same as cotton plug for C-Type.
Test method: Put 50 ml water into a medium-sized test tube with a sterile plug and allow to stand. The weight reduction due to evaporation is measured during the defined time.





3. Contamination

SILICOSEN® and BIO-SILICO® prevent the stray entry of airborne bacteria for both stationary cultures and shaking cultures.

Shaking Culture			
T-Type	C-Type	S-Type	BIO-SILICO®
0/100[1]	0/100	0/100	0/100

Stationary Culture			
T-Type	C-Type	S-Type	BIO-SILICO®
0/100	0/100	0/100	0/100

Culture time: 25 days

[1] Number of the test tubes with stray entries of airborne bacteria/ number of submitted test tubes

4. Comparison of features among culture plug types

✓ optimum

○ suitable

× not suitable

	T-Type	S-Type	BIO-SILICO®	Cotton Plug	Paper Plug
Easy Fitting	✓	✓	✓	×[2]	✓
Noculation	○	○	○	○	○
Repeated Use	○	○	○	×	×
Easy washing, Quick dryup	○	○	✓	×	×
Fitting to tubes, flacks	✓	✓	✓	×[2]	✓
Autoclaving	○	○	○	○	○
Dry air sterilization	✓	✓	○	○	○
Flame sterilization	○	○	×	✓	✓

[2] Varies depending on style of cotton plug manufacture and usage.

5. Chemical Resistance

Test method:
Immerse and leave for one week in various types of chemicals at room temperature (23°C) and then observe tensile strength changes.

	Chemicals	SILICOSEN®	BIO-SILICO®
Acids	3% Hydrochloric acid	10 ~ 25%	25 ~ 75%
	10% Sulfuric acid	< 10%	25 ~ 75%
	7% Nitric acid	25 ~ 75%	> 75%
	5% Acetic acid	10 ~ 25%	< 10%
Bases, Salts, Others	20% NaOH	10 ~ 25%	> 75%
	20% Sodium carbonate	10 ~ 25%	< 10%
	20% Sodium chloride	< 10%	< 10%
	10% Aqueous ammonia	10 ~ 25%	10 ~ 25%
	3% Hydrogen peroxide	< 10%	10 ~ 25%
	23°C Water	< 10%	< 10%
	100°C Water (1 hour)	10 ~ 25%	< 10%
Oils	Vegetable oil	10 ~ 25%	< 10%
	JIS = Oil	10 ~ 25%	25 ~ 75%
	Silicone oil	10 ~ 25%	10 ~ 25%
Solvents	Ethyl alcohol	25 ~ 75%	10 ~ 25%
	Acetone	25 ~ 75%	10 ~ 25%
	Carbon tetrachloride	> 75%	25 ~ 75%
	Toluene	> 75%	25 ~ 75%
	Neutral detegent	< 10%	< 10%

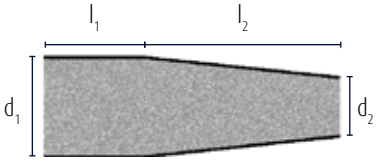
The test data are reference values, and not guaranteed performance figures of these products.

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SILICOSEN® - BIO-SILICO® - HiClass culture plugs

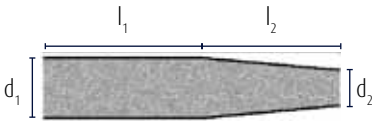
Ordering data

SILICOSEN®

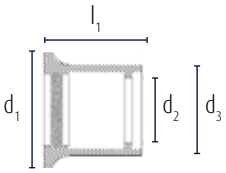


Dimensions in mm

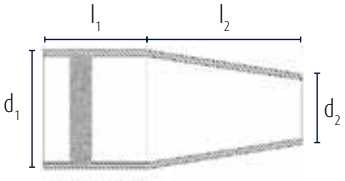
No.	Type	d_1	d_2	l_1	l_2	stand. ground	SP
890 55 10	T10	10	6	13	17	6/9	10
890 55 12	T12	12	9	13	17	9/11	10
890 55 15	T15	15	11	15	20	11/14	10
890 55 17	T17	17	13	10	30	13/16	10
890 55 19	T19	19	15	12	30	15/18	10
890 55 22	T22	22	18	15	30	18/21	10
890 55 24	T24	24	20	20	35	20/23	10
890 55 32	T32	32	22	20	40	22/30	10
890 55 42	T42	42	30	35	55	30/40	10
890 55 52	T52	52	40	40	60	40/50	10



No.	Type	d_1	d_2	l_1	l_2	stand. ground	SP
890 56 12	L12	12	9	40	10	9/11	10
890 56 17	L17	17	13	30	20	13/16	10
890 56 22	L22	22	18	30	30	18/21	10

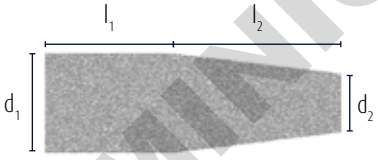


No.	Type	d_1	d_2	l_1	l_2	stand. ground	SP
890 57 20	C20	16	12	20	28	15/25	10
890 57 30	C30	26	18	30	28	25/35	10
890 57 40	C40	36	27	40	28	35/45	10
890 57 55	C55	50	34	55	28	45/55	10



No.	Type	d_1	d_2	l_1	l_2	stand. ground	SP
890 58 28	S28	28	17	18	27	17/26	10
890 58 35	S35	35	24	20	30	24/33	10
890 58 40	S40	40	28	20	30	28/38	10

BIO-SILICO®



Dimensions in mm

No.	Type	d_1	d_2	l_1	l_2	stand. ground	SP
890 59 12	N12	13	9	13	17	9/11	10
890 59 15	N15	16	11	14	22	11/14	10
890 59 17	N17	19	13	15	25	13/16	10
890 59 19	N19	21	15	16	28	15/18	10
890 59 22	N22	24	18	18	30	18/21	10
890 59 24	N24	25	20	20	32	20/23	10
890 59 32	N32	34	22	24	36	22/30	10
890 59 42	N42	44	30	32	46	30/40	10
890 59 52	N52	54	40	36	50	40/50	10

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