



**STARTER CULTURES**  
FERMENTED SAUSAGE AT THE HIGHEST LEVEL

# STARTER CULTURES

## SMALL CAUSE – LARGE EFFECT

Starter cultures are microorganisms specially tailored to the end product that ensure a controlled process of raw sausage and raw ham. They improve the appearance and color, taste, texture and durability of the final product.

**The most important benefits by using starter cultures are:**

- Increase of product safety (reduction of hygienic risks)
- Securing a consistent product quality
- Regulation of fermentation process and improvement of color, taste and flavor
- Cost reduction due to a decrease in fermentation time
- Decrease in rejection rate



## FRUTAROM SAVORY SOLUTIONS – OUT OF ONE HAND

FRUTAROM Savory Solutions offers everything you need for the production of raw sausage (out of one hand). Our R&D team, composed of experienced food technologists, microbiologists and biotechnologists, owns the expertise not only to advise you on the suitable starter culture but can also recommend the complementary ripening agent, seasoning or combi. Our in-house BSL2 laboratory and pilot plant facilities ensure the desired efficacy and standardized quality of our products.

Since there are numerous types of raw sausages with many regional differences, customized starter cultures with tailored product properties are essential for our industrial customers.




As a producer, not merely a dealer, we at Frutarom Savory Solutions have the necessary know how and a huge variety of bacterial strains at our disposal to create the best suitable starter cultures for your needs. We offer a wide range of solutions and can react very flexibly to all kinds of customer requirements, like organic standard, halal certified or customized packaging.

Decades of experience have made us a specialist in meat fermentation. We are happy to let you benefit from our experience. Our technical sales engineers can support you at your production site in case of problems, new product implementation, process optimization and more.




## STARTER CULTURES

### FERMENTED SAUSAGE – FAST RIPENING

Product name	Product description	Dosage	Item No./ Content
<b>BITEC® STARTER LD 20</b> Starter culture	<ul style="list-style-type: none"> <li>■ fast acidification</li> <li>■ firm texture</li> <li>■ mild fermentation aroma</li> <li>■ allround culture, especially for sliceable fermented sausage produced with NCS</li> </ul>	25 g for 50 kg mass	<b>241100</b> 483895050.001 5 x 0,025 kg
		25 g for 100 kg mass	<b>241187</b> 483895000.001 5 x 0,025 kg
<b>BITEC® STARTER LS 25</b> Starter culture	<ul style="list-style-type: none"> <li>■ very fast acidification</li> <li>■ medium firm to firm texture</li> <li>■ intense, sour fermentation aroma</li> <li>■ allround culture, especially for sliceable fermented sausage produced with NCS</li> </ul>	25 g for 50 kg mass	<b>241119</b> 483804150.001 5 x 0,025 kg
		25 g for 100 kg mass	<b>241172</b> 483805100.001 5 x 0,025 kg
<b>BITEC® STARTER LS 25A</b> Starter culture	<ul style="list-style-type: none"> <li>■ fast acidification</li> <li>■ medium firm to firm texture</li> <li>■ mild fermentation aroma</li> <li>■ allround culture, especially for snacking products</li> <li>■ for recipes with NCS</li> </ul>	25 g for 50 kg mass	<b>241150</b> 483807150.001 5 x 0,025 kg
		25 g for 100 kg mass	<b>241104</b> 483814100.001 5 x 0,025 kg
<b>BITEC® STARTER R6</b> Starter culture	<ul style="list-style-type: none"> <li>■ very fast acidification</li> <li>■ high temperature, up to 36 °C applicable</li> <li>■ mild fermentation aroma</li> <li>■ especially for pizza salami, American Pepperoni</li> <li>■ for recipes with NCS</li> </ul>	25 g for 100 kg mass	<b>241084</b> 483823100.001 
<b>BITEC® STARTER R7</b> Starter culture	<ul style="list-style-type: none"> <li>■ very fast acidification</li> <li>■ mild fermentation aroma</li> <li>■ allround culture, especially for the production of fast ripened fermented sausage</li> <li>■ for recipes with NCS</li> </ul>	25 g for 100 kg mass	<b>241147</b> 483895150.001 
<b>BITEC® STARTER B2</b> Starter culture with protective properties	<ul style="list-style-type: none"> <li>■ protection against <i>Listeria monocytogenes</i></li> <li>■ fast acidification</li> <li>■ intense fermentation aroma</li> <li>■ for sliceable fermented sausages, especially for sliced products</li> <li>■ for recipes with NCS</li> </ul>	25 g for 100 kg mass	<b>241175</b> 483827100.001 5 x 0,025 kg
<b>BITEC® STARTER B3</b> Starter culture with protective properties	<ul style="list-style-type: none"> <li>■ protection against <i>Listeria monocytogenes</i></li> <li>■ very fast acidification</li> <li>■ intense fermentation aroma</li> <li>■ for sliced products with a moderate degree of drying</li> <li>■ for recipes with NCS</li> </ul>	50 g for 200 kg mass	<b>241121</b> 483828050.001 
<b>BITEC® STARTER B MILD &amp; FAST</b>	<div style="background-color: red; color: white; padding: 2px; display: inline-block; margin-bottom: 5px;"><b>NEW</b></div> <ul style="list-style-type: none"> <li>■ protection against <i>Listeria monocytogenes</i></li> <li>■ fast acidification</li> <li>■ mild, harmonious fermentation aroma even in lower pH-levels</li> <li>■ for sliceable fermented sausage of all calibers</li> </ul>	25 g for 100 kg mass	<b>249273</b> 483895230.001 5 x 0,025 kg

### FERMENTED SAUSAGE – TRADITIONAL RIPENING

<b>BITEC® STARTER LK 30</b> Starter culture	<ul style="list-style-type: none"> <li>■ slow decrease in pH-value (for traditional ripening)</li> <li>■ mild, harmonious fermentation aroma</li> <li>■ for recipes with NCS or nitrate/ salt</li> <li>■ allround culture, especially for products with mold</li> </ul>	25 g for 100 kg mass	<b>241158</b> 483815100.001 5 x 0,025 kg
<b>BITEC® STARTER LS 1</b> Starter culture	<ul style="list-style-type: none"> <li>■ slow decrease in pH-value (for traditional ripening)</li> <li>■ Mediterranean fermentation aroma</li> <li>■ allround culture</li> <li>■ for recipes with NCS or nitrate/ salt</li> <li>■ suitable for production with GdL, as an additional barrier</li> </ul>	25 g for 100 kg mass	<b>241173</b> 483803000.001 5 x 0,025 kg
<b>BITEC® STARTER B1</b> Starter culture with protective properties	<ul style="list-style-type: none"> <li>■ protection against <i>Listeria monocytogenes</i></li> <li>■ slow decrease in pH-value (for traditional ripening)</li> <li>■ intense fermentation aroma</li> <li>■ for spreadable/ soft fermented sausage and traditionally ripened, sliceable fermented sausage</li> </ul>	25 g for 50 kg mass	<b>245206</b> 483895210.001 5 x 0,025 kg
		25 g for 100 kg mass	<b>241080</b> 483825100.001 5 x 0,025 kg



NCS = nitrite curing salt, GdL = Glucono delta-lactone,  product not in stock, please observe minimum order quantities and prolonged production time for orders and samples


# BITEC® STARTER B-RANGE

## RIPENING AND PROTECTION – ALL IN ONE

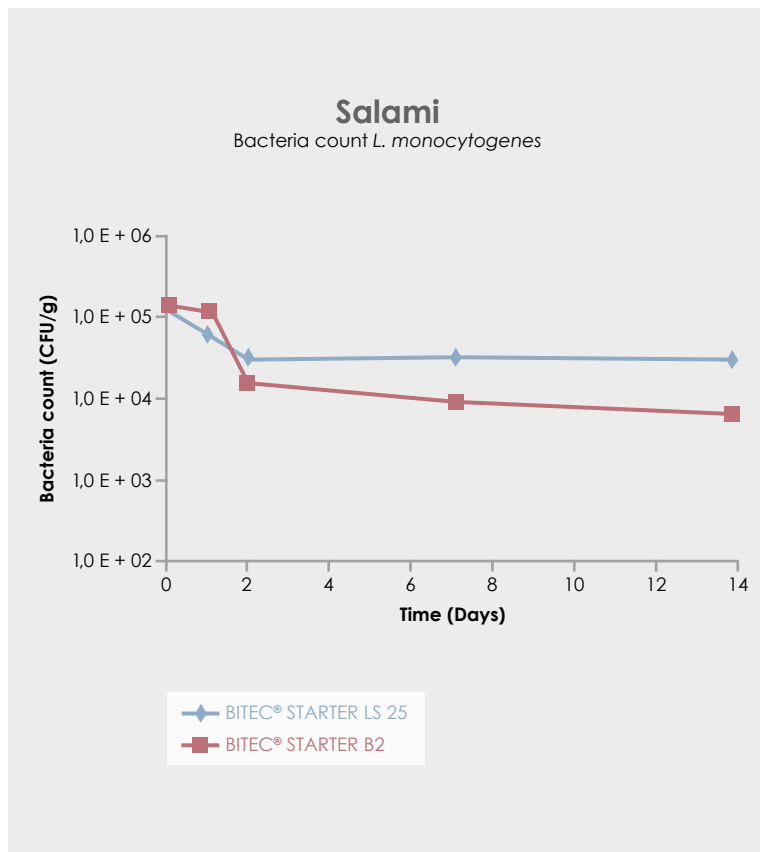
FRUTAROM Savory Solutions has created a solution that is not merely an ordinary starter culture: The BITEC® B-Range! As raw fermented sausages are not subject to a cooking process, other effective hurdles need to be established to guarantee the safety of these products. These hurdles are for example the salt and nitrite content or the decrease of  $a_w$ - and pH-levels. Starter cultures can support this process by ensuring a fast and controlled acidification during ripening. Moreover starter cultures of the BITEC® Starter B-Range exhibit antimicrobial activities against *Listeria monocytogenes*. They are able to disturb the membrane integrity of listeria cells, finally leading to cell death. That means these starter cultures not just offer the advantages of a regular ripening culture but also reduce listeria cell counts.

The BITEC® B-range offers starter cultures for fast as well as traditional ripening.

Product name	Product description	Dosage	Item No./ Content
BITEC® STARTER B1	<ul style="list-style-type: none"> <li>■ protection against <i>Listeria monocytogenes</i></li> <li>■ slow decrease in pH-value (for traditional ripening)</li> <li>■ intense fermentation aroma</li> <li>■ for spreadable/ soft fermented sausage and traditionally ripened, sliceable fermented sausage</li> </ul>	25 g for 50 kg mass	<b>245206</b> 483895210.001 5 x 0,025 kg
		25 g for 100 kg mass	<b>241080</b> 483825100.001 5 x 0,025 kg
BITEC® STARTER B2	<ul style="list-style-type: none"> <li>■ protection against <i>Listeria monocytogenes</i></li> <li>■ fast acidification</li> <li>■ intense fermentation aroma</li> <li>■ for sliceable fermented sausage, especially for sliced products</li> <li>■ for recipes with NCS</li> </ul>	25 g for 100 kg mass	<b>241175</b> 483827100.001 5 x 0,025 kg
BITEC® STARTER B3	<ul style="list-style-type: none"> <li>■ protection against <i>Listeria monocytogenes</i></li> <li>■ very fast acidification</li> <li>■ intense fermentation aroma</li> <li>■ for sliced products with a moderate degree of drying</li> <li>■ for recipes with NCS</li> </ul>	50 g for 200 kg mass	<b>241121</b> 483828050.001 
<b>NEW</b> BITEC® STARTER B MILD & FAST	<ul style="list-style-type: none"> <li>■ protection against <i>Listeria monocytogenes</i></li> <li>■ fast acidification</li> <li>■ mild, harmonious fermentation aroma</li> <li>■ for sliceable fermented sausage of all calibers</li> </ul>	25 g for 100 kg mass	<b>249273</b> 483895230.001 5 x 0,025 kg
BITEC® BACTO SAFE HS	<ul style="list-style-type: none"> <li>■ protection against <i>Listeria monocytogenes</i></li> <li>■ add on culture (must be combined with a starter culture)</li> <li>■ for all kinds of fermented sausage produced with NCS</li> </ul>	50 g for 200 kg mass	<b>241143</b> 483811000.001 

NCS = nitrite curing salt,  product not in stock, please observe minimum order quantities and prolonged production time for orders and samples

Challenge tests show how the bacterial count in fermented sausages, which have been contaminated with a high level of *Listeria monocytogenes*, drops by more than 90 % during the ripening process with a BITEC® Starter B-culture.

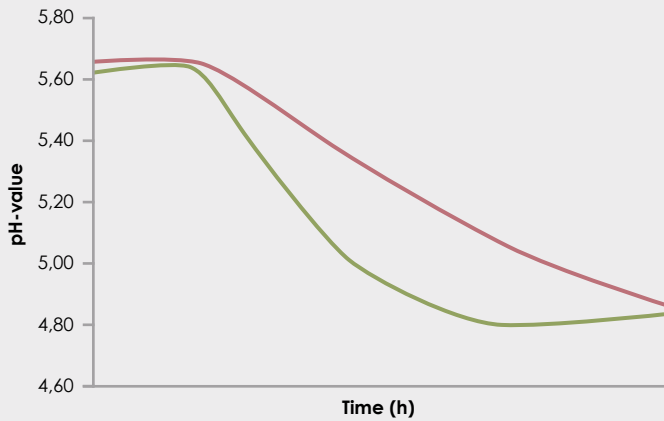


# BITEC® STARTER B MILD & FAST 249273



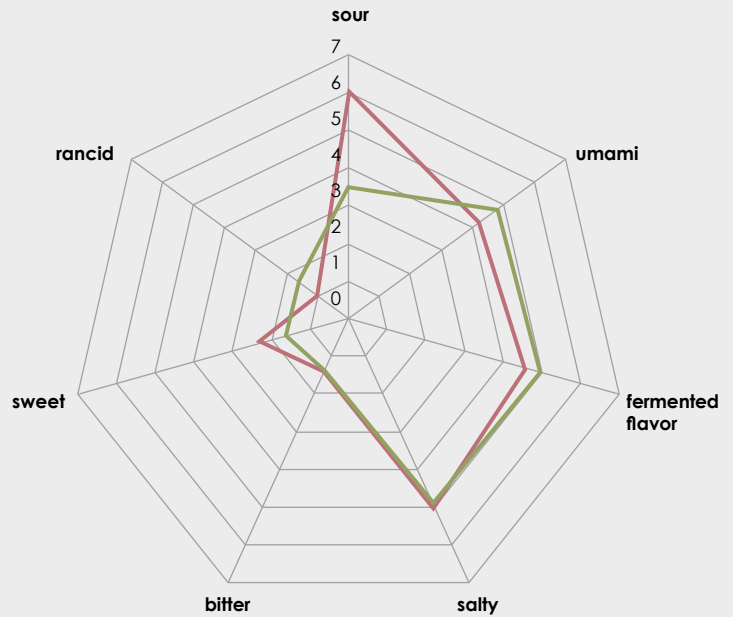
Most starter cultures with protective properties have an intense fermentation aroma. The new culture BITEC® STARTER B MILD & FAST is characterized by an especially mild and harmonious taste, even at a lower pH-value.

## Acidification development 24 °C



— BITEC® STARTER B MILD & FAST  
— reference

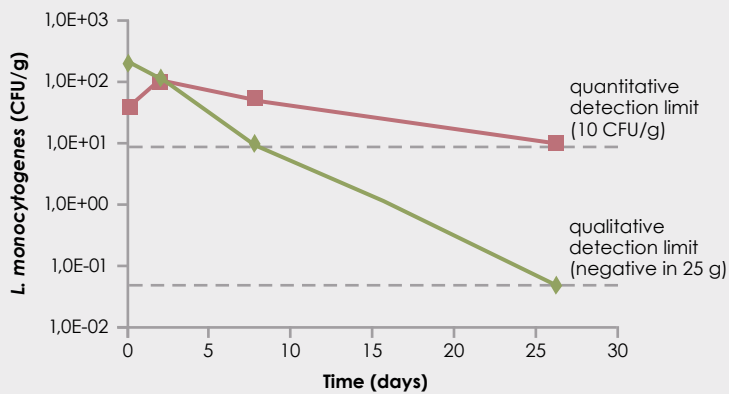
## Fermentation profile



— BITEC® STARTER B MILD & FAST  
— reference

## Challenge test – results

after recontamination with *Listeria monocytogenes*



— BITEC® STARTER B MILD & FAST  
— reference

Salami – total fat, fresh 22 % – weight loss 20 % – recontaminated with listeria after slicing – MAP packed – stored for 28 days at 4 °C




## ADVANTAGES AT A GLANCE



- higher product safety
- mild, aromatic fermentation profile, even at lower pH-value
- very good color development and stability due to a very high percentage of staphylococci strains
- wide field of application: snacking sausages, sliced salami, Mediterranean and fat reduced applications

# STARTER CULTURES

## REDDENING/RAW HAM

Product name	Product description	Dosage	Item No./ Content
<b>BITEC® STARTER SM 96</b> Starter culture	<ul style="list-style-type: none"> <li>■ reddening culture, no acidification</li> <li>■ intensive fermentation aroma</li> <li>■ good color development</li> <li>■ for raw ham – efficient reduction of nitrate</li> <li>■ for spreadable, soft and sliceable fermented sausage</li> <li>■ for recipes with NCS or nitrate/ salt, suitable for GdL products</li> </ul>	25 g for 50 kg mass	<b>241170</b> 483820350.001 5 x 0,025 kg
		25 g for 100 kg mass	<b>241142</b> 483822300.001 5 x 0,025 kg
<b>BITEC® STARTER CO 1</b> Starter culture	<ul style="list-style-type: none"> <li>■ reddening culture, no acidification</li> <li>■ intensive fermentation aroma</li> <li>■ good color development</li> <li>■ for spreadable, soft and sliceable fermented sausage and raw ham that conform organic standards</li> <li>■ for recipes with NCS or nitrate/salt</li> <li>■ carrier: organic sucrose</li> </ul>	25 g for 100 kg mass	<b>241176</b> 483843100.001 5 x 0,025 kg
<b>BITEC® STARTER SR-SC01</b> Starter culture	<ul style="list-style-type: none"> <li>■ moderate acidification</li> <li>■ mild fermentation aroma</li> <li>■ for raw ham – efficient reduction of nitrate</li> <li>■ for recipes with NCS or nitrate/salt</li> <li>■ recommended for dry curing, also for curing by injection</li> </ul>	25 g for 100 kg mass	<b>241113</b> 483897070.001 5 x 0,025 kg
<b>BITEC® STARTER C2</b> Starter culture	<ul style="list-style-type: none"> <li>■ reddening culture, no acidification</li> <li>■ profound reduction of final nitrate content</li> <li>■ very high bacteria count of staphylococcus</li> <li>■ high salt tolerance, applicable at low temperature</li> <li>■ main application in combination with nitrite replacer NatPlus</li> <li>■ for cooked sausage, cooked ham and fermented sausage</li> </ul>	25 g for 100 kg mass	<b>241085</b> 483895110.001 

## SPECIAL STARTER CULTURES

<b>BITEC® STARTER C3</b> Starter culture with protective properties	<ul style="list-style-type: none"> <li>■ for cold ripening of "Zwiebelmettwurst" produced with NCS, only use in combination with LACTALIN ZM (241358; 481754720.002) in this application</li> <li>■ protection against <i>Listeria monocytogenes</i></li> <li>■ just a weak acidification</li> </ul>	25 g for 50 kg mass	<b>241107</b> 483895170.001 5 x 0,025 kg
<b>BITEC® BACTO SAFE HS</b> Starter culture	<ul style="list-style-type: none"> <li>■ protection against <i>Listeria monocytogenes</i></li> <li>■ add on culture</li> <li>■ for spreadable, soft and sliceable fermented sausage produced with NCS</li> </ul>	50 g for 200 kg mass	<b>241143</b> 483811000.001 
<b>BITEC® SCHIMMEL SK 20 AF</b> Mold starter culture	<ul style="list-style-type: none"> <li>■ for the formation of edible mold on the surface</li> <li>■ Mediterranean fermentation aroma</li> <li>■ thick, firm layer of mold</li> <li>■ solution can be used for dipping or spraying</li> </ul>	40 g for 50 l water	<b>241468</b> 481856100.500 0,04 kg
<b>BITEC® SCHIMMEL SK 30 AF</b> Mold starter culture	<ul style="list-style-type: none"> <li>■ for the formation of edible mold on the surface</li> <li>■ harmonious fermentation aroma</li> <li>■ thick, fine layer of mold</li> <li>■ solution can be used for dipping or spraying</li> </ul>	40 g for 50 l water	<b>241935</b> 481850200.500 



# BITEC® STARTER CULTURES

## APPLICATION GUIDE FERMENTED SAUSAGE

	product name					final product					
		product features		application		spreadable fermented sausage	sliceable fermented sausage				
		inhibition of listeria	flavor	recipes with NCS	recipes with nitrate	"Teewurst/ Grobe Mettwurst/ Pfeffer- säckle"	snacking sausage	smoked	matured with mold	pizza salami (American Pepperoni)	GdL products
fast ripening	BITEC® STARTER LD 20		x	x		□	□	□□□	□		
	BITEC® STARTER LS 25		xxx	x		□	□□	□□		□	
	BITEC® STARTER LS 25A		xx	x		□	□□□	□	□		
	BITEC® STARTER R6		xx	x		□	□	□□		□□□	
	BITEC® STARTER R7		x	x		□	□□			□	
	BITEC® STARTER B2	xx	xx	x		□	□	□□□	□		
	BITEC® STARTER B3	xxx	xx	x		□	□□	□□		□	
	<b>NEW</b> BITEC® STARTER B MILD & FAST	xxx	x	x			□□□	□□□	□□□	□	
traditional ripening	BITEC® STARTER LK 30		x	x	x	□□□		□	□□		
	BITEC® STARTER LS 1		xx	x	x	□		□	□		□□
	BITEC® STARTER B1	x	xx	x	x	□□		□	□		

x = mild, xx = slightly sour/ strong, xxx = sour/ strong  
NCS = nitrite curing salt, GdL = Glucono delta-lactone

□ = possible, □□ = recommendable, □□□ = top recommendation



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