

Introducing PROBIND®

Transglutaminase, Enzyme Blends and Binder Products



PROBIND®

TRANSGLUTAMINASE

PROBIND® portfolio includes **Transglutaminase enzyme** and Transglutaminase-based functional blends for optimal performance.

Transglutaminase is an enzyme naturally present in the majority of organisms tissues and involved in various biological processes.

Transglutaminase is widely used to improve the physical and functional properties of food products.



BINDER

ALGINATES

Products from the **BINDER** series are functional formulations based on alginates and calcium to give structure, improve texture and overall appearance to a variety of food products.

Alginate is one of the most versatile biopolymers to be found in nature. It is extracted from the cell walls of brown seaweed. It is commonly used in the food and pharmaceutical sectors.

General Information

BDF Natural Ingredients is a Biotech company specialized in the research, manufacture and commercialization of innovative and technological additives for the Food and Nutrition & Cosmetics industries. We have extended our know-how and experience in the development, application and use of enzymes, proteins, clean label, antioxidants and starter cultures. BDF's portfolio covers the need of multiple sectors as Meat, Fish, Vegan, Dairy, Bakery, Supplements and Cosmetics.

BDF's **internal R+D+I Department** and a highly qualified staff, specialized in food technology is continually working to develop new product lines and applications for providing innovative solutions for food manufacturers.

The company has extensive experience in European and global markets; this allows them to offer clients a top quality commercial service, together with technical assessment adapted to all clients' individual needs.

Quality is BDF's internal work philosophy. Food safety is fundamental, and with it their commitment to achieve the highest possible quality in all productive processes. BDF's HACCP system is totally integrated with FSSC 22000 certification.

BDF possesses certified authorization from Halal Correct (the Netherlands) for HALAL CERTIFICATION and KOSHER CERTIFICATION from the London Beth Din Kashrut Division (KLBD).



Clean Label Solutions From Nature

ABingredients.com • 973.227.1390 • 973.227.0172 (fax) • Info@abingredients.com

What is PROBIND®?

PROBIND® is a portfolio of products that includes Transglutaminase (TG) enzyme and TG-based functional blends.

Transglutaminase is an enzyme naturally present in the majority of organisms tissues and involved in various biological processes. This enzyme is obtained by microbial fermentation of *Streptomyces mobaraensis*, which is a natural process. This enzyme catalyses the formation of covalent bonds between the aminoacids Glutamine and Lysine of distinct types and origins of proteins such as: caseins, myosins, soya globulins, glutens, actins, etc.

Its crosslinking property is widely used to improve the physical and functional properties of food products.

Transglutaminase flexibility and adaptability

Transglutaminase is a multi-purpose, highly versatile product that works on a wide range of substrate proteins.

In order to optimize the enzymatic reaction and maximize the functionality, BDF formulated the enzyme with different functional ingredients.

Find the most suitable **PROBIND®** formula for you from this broad portfolio.

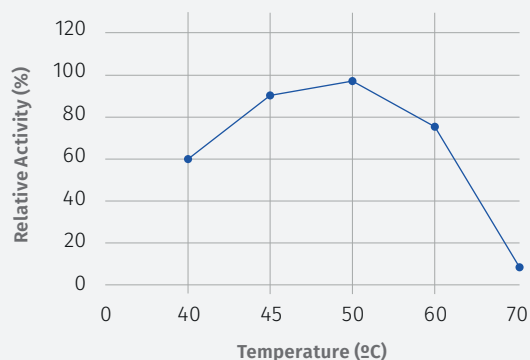
	Industries					Certificates		
PROBIND TXo	+	+	+	+	+	+	+	+
PROBIND MB	+	+	+	+		+	+	+
PROBIND GT	+							
PROBIND SB	+*	+				+		
PROBIND CH			+			+	+	+
PROBIND VEG					+	+	+	+

*Contains fish gelatin

Basic transglutaminase properties

Transglutaminase temperature dependence

Enzymatic activity vs. Temperature



- + Transglutaminase is activated at > 2°C
- + Optimum Temperature (maximum activity) is ~50°C
- + Inactivation Temperature above 60°C

For more information, please feel free to consult our Sales Team.

info@abingredients.com

- + Optimum pH (maximum activity) is 6-7

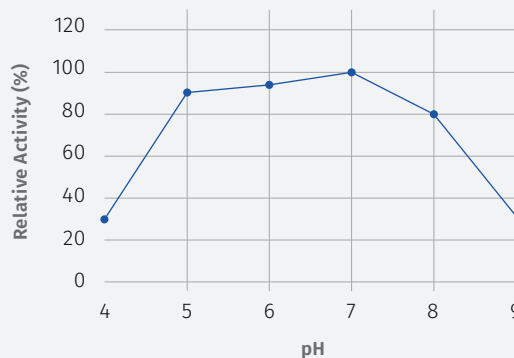
If you want to receive more information, ask our Sales Team.

More information is available on request:

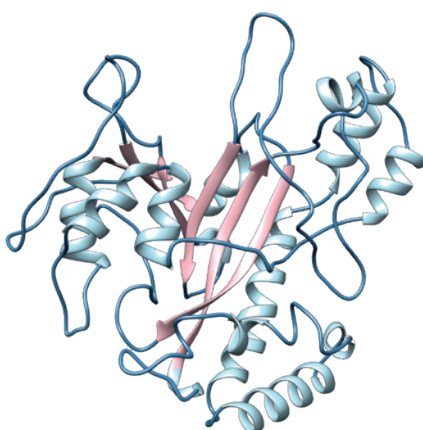
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Transglutaminase pH dependence

Enzymatic activity vs. pH

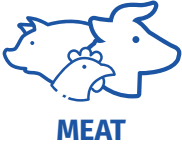











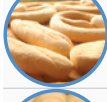
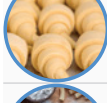



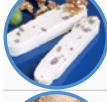



TG 3D structure



PROBIND® TX

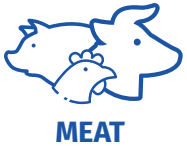







The following details the most suitable **BDF PROBIND®** blends for the food industry. Each blend's formula has been specifically designed for each category, its broad range of activities will ensure optimum solutions for your food products.

Main ingredients		Maltodextrin, transglutaminase and sunflower oil*	
		*Sunflower oil is used as anti dusting agent, product without sunflower oil is also available	
Market	Application	Main benefit	
 <p>MEAT</p>	 <p>Cooked products: emulsified sausages</p>	Improves texture and meat bite	
	 <p>Cooked products: ham</p>	Improves texture and elasticity, helps to reduce slicing losses	
	 <p>Cooked products: meat balls</p>	Improves texture. Improve consistency and bite	
	 <p>Fermented products: dry cured fermented meat (salami, pepperoni, cured products...)</p>	Improves texture and reduce drying time	
	 <p>Raw products: raw sausages, burgers</p>	Improves texture and cohesion	
	 <p>Kebab</p>	Improves binding and meat slice. Reduce holes. Helps to reduce water and fat losses	
 <p>FISH</p>	 <p>Surimi</p>	Improves texture and elasticity	
	 <p>Fish ball</p>	Improves texture and elasticity	
 <p>BAKERY</p>	 <p>Bread</p>	Improves the bread making of the low protein wheat flours and damaged wheat flour. Improves the volume and texture	
	 <p>Bread frozen dough</p>	Improves the volume and texture of frozen dough	
	 <p>Puff pastry fresh and frozen</p>	Improves the volume and texture	
	 <p>Gluten free bread and raised products</p>	Improves the functionality in gluten free flours	
 <p>VEGAN</p>	 <p>Meat like products</p>	Improves texture, elasticity and binding	
	 <p>Structured tofu</p>	Allows the use of tofu leftovers, otherwise considered a waste ingredient, creating a value-added product	
	 <p>Dairy like products</p>	Improves texture, elasticity, and viscosity	

PROBIND® MB

BDF PROBIND MB blends are enzyme preparations for food production, designed as an innovative way to give portion control in meat, fish and dairy processing. These transglutaminase preparation are mixed with milk proteins as functional proteins.

Main ingredients Sodium caseinate, maltodextrin, transglutaminase and anti dusting agent: sunflower lecithin*
*Some MB references include phosphates

Market	Application	Main benefit
 MEAT	 <p>Structured meat products</p>	Allows to transform meat trimmings into standardized portions with high added value. Suitable for all types of meat
	 <p>Cooked products: kebab</p>	Improves binding and meat slice. Reduce holes. Helps to reduce water and fat losses. Suitable for all types of meat
	 <p>Cooked products: turkey bacon</p>	Allows to transform minced turkey fillets with fat layer into an alternative to classic pork bacon
 FISH	 <p>Raw products: structured fish</p>	Allows to transform fish trimmings or fillets into standardized portions with high added value products
 DAIRY	 <p>Structured cheese</p>	Allows to transform cheese leftovers to a new product with characteristics similar to cheese and which melts less during cooking

PROBIND® SB

BDF PROBIND SB blends are enzyme preparations for those clients who need EXTRA BINDING in structured products. These transglutaminase preparations are mixed with a special fish gelatin as functional protein.

Main ingredients Fish gelatin, salt, trisodium phosphate (E-339iii), maltodextrin, transglutaminase and sunflower oil (technical aid).

Market	Application	Main benefit
<p>MEAT</p>	<p>Structured chicken (high binding needed)</p>	Allows injected meat binding. Allows the binding of all types of meat
<p>FISH</p>	<p>Structured fish and seafood</p>	Allows to transform fish trimmings or fillets into standardized portions with high added value products
<p>MEAT / FISH</p>	<p>Bacon wrapped scallops fillet</p>	Allows the binding of different raw materials in order to create high value products

PROBIND® GT

BDF PROBIND GT blends are enzyme preparations for food production, designed as an innovative way to give portion control in meat, specially for those applications which contain high amount of fat. These transglutaminase preparations are mixed with pork gelatin as functional proteins.









Main ingredients Pork gelatin, sodium chloride, pentasodium triphosphate (E-451i) maltodextrin, transglutaminase and anti-dusting agent: sunflower oil (Technical aid)

Market	Application	Main benefit
<p>MEAT</p>	<p>Raw products: fat binder</p>	Allows to bind different meat cuts together, even with high fat content
	<p>Structured pork trimmings, structured lean pork and structured fatty pork</p>	Allows to transform pork meat trimmings into standardized portions with high added value, joining protein parts with fat parts
	<p>Reformed bacon</p>	Allows to create whole bacon produced with fat trimmings and lean meat
	<p>Rolled bacon, double bacon</p>	Allows to create special applications with bacon

PROBIND® CH

BDF PROBIND CH blends are enzyme preparations for food production, designed for improving characteristics of dairy products. These transglutaminase preparations are mixed with milk proteins as functional proteins.






Main ingredients **Milk proteins, lactose and transglutaminase**

Market	Application	Main benefit
 <p>DAIRY</p>	 <p>Set yogurt</p>	Increases creaminess and texture, reduces syneresis, helps to lower the addition of SMP, fat content or sugar content. Helps to reduce stabilizers
	 <p>Stirred yogurt</p>	Increases creaminess and texture, reduces syneresis, helps to lower the addition of SMP, fat content or sugar content. Helps to reduce stabilizers
	 <p>Fermented milk (Kefir, Ayran, Doogh...)</p>	Increases creaminess and texture, reduces syneresis, helps to lower the addition of SMP, fat content or sugar content. Helps to reduce stabilizers
	 <p>Sour cream</p>	Increases creaminess and texture, reduces syneresis, helps to lower the addition of SMP or milk protein, fat content or sugar content. Helps to reduce stabilizers
	 <p>Cottage cheese</p>	Improves yield, improves texture and reduces syneresis
	 <p>Tvorog cheese</p>	Improves yield, improves texture and reduces syneresis
	 <p>Fresh cheese</p>	Improves yield, improves texture and reduces syneresis

PROBIND® VEG

BDF PROBIND VEG blends are enzyme preparations for food production, designed for improving characteristics of vegan products. These transglutaminase preparations are mixed with pea flour as functional protein.

Main ingredients Pea flour, maltodextrin, transglutaminase and anti dusting agent: sunflower oil (Technical aid)

Market	Application	Main benefit
	 <p>Cooked products: vegan frankfurters</p>	Improves texture and meat-like mouthfeel of vegan or vegetarian emulsified frankfurters
	 <p>Burgers</p>	Improves texture and cohesion
	 <p>Vegan balls</p>	Improves texture and cohesion
	 <p>Vegan cottage</p>	Bouncy texture and defined curd grains

What is BINDER?

Products from the **BINDER** series are functional formulations based on alginates and calcium.

Alginate is one of the most versatile biopolymers to be found in nature. It is extracted from the cell walls of brown seaweed. It is commonly used in the food and pharmaceutical sectors.

The **BINDER** series are designed to give structure to a variety of different products.

BINDER flexibility and adaptability

BINDER are gelling agents particularly suited for retaining water, improving texture and overall appearance of meat and fish, as well as other food products, such as vegetables and fruit etc. Different formulations are proposed depending on the needed gelling speed.

Main ingredients

Thickener: Sodium alginate (E-401), firming agent: calcium sulphate (E-516), stabilizer: tetrasodium diphosphate (E-450iii)

Market	Application	Main benefit
<p>MEAT</p>	<p>Structured meat</p>	Allows to transform meat trimmings into standardized portions with high added value
	<p>Fat extender</p>	Allows extending all kinds of fat, which once structured don't melt with the heat
	<p>Meat extender</p>	Allows extending meat, which once structured can be grounded, sliced, frozen, cooked...
	<p>Cooked products: sausages</p>	Improves texture
	<p>Burgers</p>	Burgers with an extra yield of 40%. Improves meat bite texture. Burger does not reduce the size after cooking. Cooking loss is less than 15%. (Normal cooking lose in burgers is 20-25%)
	<p>Structured meat (direct application)</p>	Allows to transform meat trimmings into standardized portions with high added value
<p>FISH</p>	<p>Structured fish</p>	Allows to transform fish trimmings into standardized portions with high added value and develop innovative products creations (for example: structured fish and vegetables)
<p>VEGAN</p>	<p>Burgers</p>	Improves texture and cohesion. Burger does not reduce the size after cooking
	<p>Vegan balls</p>	Improves texture and cohesion. Vegan balls does not reduce the size after cooking
<p>DAIRY</p>	<p>Tvorog</p>	Increases yield