



NORLAND PRODUCTS INCORPORATED

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NORLAND DRY FISH GELATIN - FOOD/PHARMACEUTICAL GRADE

Norland Fish Gelatin is manufactured by the hydrolysis of collagen which is a principal protein found in skin and bones. Animal gelatin is typically extracted from bovine or porcine skin while fish gelatin is produced from the skin of deep water fish such as cod, haddock and pollock. This allows it to have many of the same characteristics of animal gelatin. Since the gelatin is manufactured only from the skins of kosher fish, it is able to meet strict kosher standards.

Norland Fish Gelatin is a Type A gelatin and can be supplied as a liquid or dry product depending on the user's application. Its gel point is lower than animal gelatin which makes it suitable for frozen or refrigerated products or for use as a dry coating. Norland Fish Gelatin dissolves faster and easier than animal gelatin so it can be readily added to products that are to be chilled.

SPECIFICATIONS FOR NORLAND FISH GELATIN

DRY

Appearance	Granular
Odor as supplied	Slight Acetic
Color in solution	Amber
pH of 10% solution	4.0-7.5
Solids	85% min
Loss on Drying	15% max
Viscosity of 10% solution @ 30°C	7 - 10 cs
Total Ash	2.0% max
Heavy Metals	< 20 ppm
Arsenic	< 1 ppm
Chromium	< 10 ppm
Lead	<1.5 ppm
Fluoride	< 50 ppm
Sulfur Dioxide	< 50 ppm
Aerobic Bacteria Count	<1000/g
Salmonella	Test neg/25g
Edcherichia Coli	Test neg/25g
Yeast Count	< 100/g
Mold Count	< 100/g
Preservatives	No
Kosher Certification	OU

Listed below is a comparison of the amino acids in Norland Fish Gelatin made from cod skins and gelatin made from calf skins.

Amino Acid	Fish Gelatin (Residues/1000)	Animal Gelatin Amino Acids
Alanine	112	114
Arginine	49	51
Aspartic Acid	48	45
Cysteine	---	---
Glutamic Acid	72	71
Glycine	347	313
Histidine	11	5
Hydroxylysine	5	11
Hydroxyproline	60	86
Isoleucine	11	11
Leucine	21	25
Lysine	28	34
Methionine	13	6
Phenylalanine	13	13
Proline	96	135
Serine	63	37
Threonine	24	18
Tryptophane	---	---
Tyrosine	9	3
Valine	18	22