

Hydrolysed whey protein at its best



## OPTIPEP 90 DH 4 INSTANT TECHNICAL SPECIFICATION

Product Description Optipep 90 DH4 Instant is an enzyme hydrolysed Whey Protein Isolate providing a high quality source of peptides. It is lightly

hydrolysed offering a low bitter flavour profile and is suitable for use in enhanced nutritional and functional applications. This

ingredient has been instantised to improve its solubility and dispersibility in water.

Ingredient Listing Hydrolysed Whey Protein Isolate (Emulsifier: Soy Lecithin)

Customer Deimos SRL

Chemical	Specification	Typical	Test Method
Protein (TN x 6.41*) (% dry basis)	89.0 Min	90.0	Kjeldahl
Total Nitrogen (% TN)	13.0 Min	14.0	Kjeldahl
Moisture (%)	6.0 Max	5.0	Oven
Fat (%)	1.5 Max	1.3	NIR
Ash (%)	4.0 Max	3.0	Furnace 550°C
Lactose (%)	2.0 Max	1.0	Calculated
рН	6.0 Min	6.4	10% Aq Soln

<sup>\*</sup> Kjeldahl Factor adjusted for changes in Nitrogen: Protein ratio due to the degree of hydrolysis

Microbiological			
Standard Plate Count (SPC)	50,000 / g Max	<10,000 / g Max	ISO 4833:2003
Coliforms	<10 / g	<10 / g	ISO 4832:2006
E.coli	<10 / g	<10 / g	ISO 16649-2:2001
Staph. aureus	<10 / g	<10 / g	ISO 6888:2003
Salmonella	Not Detected / 25g	Not Detected / 25g	ISO 6579:2002
Yeast & Moulds	50 / g Max	<10 / g	ISO 6611:2004

Physical			
Scorched Particles	Disc B or better	Disc A	ADPI Bulletin 916
Bulk Density	$0.40 \pm 0.10 \text{ g/cc}$	0.40	IDF134:1996
Appearance		Homogenous, free-flowing pow	der Visual
Colour		Creamy white	Visual
Organoleptic		Typical, free from off-flavour	Taste

Mineral Profile			
Calcium (mg/100g)	400 - 600	500	Atomic Spectroscopy
Sodium (mg/100g)	120 - 250	170	Atomic Spectroscopy
Potassium (mg/100g)	400 - 600	500	Atomic Spectroscopy
Magnesium (mg/100g)	50 - 120	60	Atomic Spectroscopy
Phosphorous (mg/100g)	100 - 300	200	Atomic Spectroscopy
Chloride (mg/100g)	<50	<50	Titration

Hydrolysis Characteristics				
Degree of Hydrolysis (%)	4.0 ± 2		4.0	TNBS Assay
AN/TN (%)	6.0 - 12.0		9.2	Calculated
Molecular Weight Profile	>10,000	Daltons (%)	72	Size Excl. Chromatography
	5,000 - 10,000	Daltons (%)	3	Size Excl. Chromatography
	2,000 - 5,000	Daltons (%)	4	Size Excl. Chromatography
	1,000 - 2,000	Daltons (%)	3	Size Excl. Chromatography
	500 - 1,000	Daltons (%)	4	Size Excl. Chromatography
	<500	Daltons (%)	14	Size Excl. Chromatography
Average Molecular Weight		Daltons	15,011	Calculation

Prepared by SM 8.73.2.3.9 Page 1 of 2 Rev. 0 14.02.13

Arginine 1.91 2.12 Threonine 7.22 8.02 Alanine 5.31 5.90 Packaging Proline 5.85 6.50 Tyrosine 2.82 3.13 Methionine 2.22 2.47 Sealed. The product will be heat sealed. The product will be palletised and shrink wrapped.  Phenylalanine 3.04 3.38 Lysine 9.06 10.06 Tryptophan 1.96 2.18  Protein Utilisation* PEER 3.5 BV 104 PDCAAS 0.98 Digestibility 98 % - 100 % As per scientific literature  Fatty Acid Profile Saturates (%) < 0.5 Mono-unsaturates (%) < 0.5 Cholesterol (mg/100g) 5  Carbohydrates Lactose (%) 1.0 Glucose (%) < 0.10 Sucrose (%) 0.010 Sucros	OPTIPEP 90 DH 4 INSTANT			TECHNICAL SPECIFICATION
Amino Acid Profile         (g per 100g Powder)         (g per 100g Protein)         This product is suitable for individuals with the following dictary requirements: Kosher, Halai, Vegetarian, Cool acids and Vegeta				
Leucine 9.68 10.75   This product is suitable for individuals with the solutione 5.00 5.56   Vagotarian, Covolutions, distury comments. Kosher, Halai, Vagotarian, Covolutor, Halai, Covolutor,				Diet Suitability
Lations				This product is suitable for individuals with the
Valine 4.9.1 5.46 Vegetation, Concluding will be printed in large blue writing on white sacks. "Optpeep". Manufactured by Carbory Food Ingredients By V 104 PDCAS 0.38 Digestibility 98 % - 100 % Vegetations (%) 4.0.5 Carbory Mones. Testing Will be individually coded by an automatic ink jet system to ensure traceability.  Vegetation (No. 1.200 vegetation, Concluding will be printed in large blue writing on white sacks. "Optpeep". Manufactured by Carbory food Ingredients and processor EU number. Sections (%) 4.0.10 Sucrose				•
Total Branched Chain Amino Acids   19.59   21.77				
Aspartic Acid 11.48 12.76 Glutamic Acid 16.71 18.57 Serine 5.24 5.82 Storage  Storag				Diabetics, GMO Free, Nut/Seed free.
Storage   Stor				
Serine         5.24         5.82         Store under clean, cool, dry conditions not of exposed to direct stanglish or strong odours and switching of the strong odours. The strong odours and switching direct contact with walls and floors. Recommended shelf life is 36 months. The strong odours and switching direct contact with walls and floors. Recommended shelf life is 36 months. The strong odours and switching direct contact with walls and floors. Recommended shelf life is 36 months. The strong odours are strong of the				Storage
Silycine   1.70   1.89   exposed to direct sunlight or strong odours and avoiding direct contact with walls and floors. Recommended shelf life is 36 months. Threenine   7.22   8.02   Alanine   7.22   8.02   Alanine   5.31   5.90   Packaging   Prolline   5.85   6.50   Prolline   5.85   6.50   Tyrosine   2.82   3.13   Phonylatanine   2.22   2.47   Phenylatanine   3.04   3.38   Lysine   9.06   10.06   Tryptophan   1.96   2.18    Processor EU number.   Protein Utilisation*   PER   3.5   3.5   BV   104   PDCAAS   0.98   Digestibility   98% - 100 %   *As per scientific literature    Fatty Acid Profile   Saturates (%)   <0.5   Mono-unsaturates (%)   <0.5   Cholesterol (mg/100g)   5    Carbohydrates   Lactose (%)   1.0   Glucose (%)   <0.10   Energy   372 Kcal / 1557 KJ				
Arginine 1.48 1.65 and avoiding direct contact with walls and floors. Recommended shelf life is 36 months. Threonine 7.22 8.02  Alanine 7.22 8.02  Alanine 5.31 5.90 Packaging  Proline 5.85 6.50  Tyrosine 2.82 3.13 polythene liners. Each sack will be heat sealed. The product will be palletised and shrink wrapped. Phenylalanine 3.04 3.38  Lysine 9.06 10.06  Tryptophan 1.96 2.18  Processor Utilisation*  PER 3.5  BV 104  PDCAAS 0.98  Digestibility 98 % · 100 %  *As per scientific literature  Fatty Acid Profile  Saturates (%) < 0.5  Mono-unsaturates (%) < 0.5  Cholesterol (mg/100g) 5  Carbohydrates  Lactose (%) 1.0  Glucose (%) < 0.10  Energy 372 Kcal / 1557 KJ				
Anguine   1.91	•			
Arginine 1.91 2.12 Threonine 7.22 8.02 Alanine 7.22 8.02 Alanine 5.31 5.90 Packaging Proline 5.85 6.50 Tyrosine 2.82 3.13 polythene liners. Each sack will be heat sealed. The product will be palletised and shrink wrapped. Phenylalanine 3.04 3.38 Lysine 9.06 10.06 Tryptophan 1.96 2.18  Protein Utilisation* PFR 3.5 Manufactured by Carbery Food Ingredients and processor EU number.  PPotein Utilisation* PER 3.5 Manufactured by Carbery Food Ingredients and processor EU number.  Protein Utilisation*  Fatty Acid Profile Saturates (%) < 0.5 Mono-unsaturates (%) < 0.5 Cholesterol (mg/100g) 5  Carbohydrates Lactose (%) 1.0 Glucose (%) < 0.10  Energy 372 Kcal / 1557 KJ	Histidine	1.48	1.65	
Alanine 5.31 5.90 Packaging  Proline 5.85 6.50 Tyrosine 2.82 3.13 Methionine 2.22 2.47 Cystine 2.241 2.68 Phenylalanine 3.04 3.38 Lysine 9.06 10.06 Tryptophan 1.96 2.18  Protein Utilisation*  PER 3.5 BV 104 PDCAAS 0.98 Digestibility 98 % - 100 % *As per scientific literature  Fatty Acid Profile Saturates (%) < 0.5 Cholesterol (mg/100g) 5 Carbohydrates Lactose (%) 1.0 Giucose (%) 3.72 Kcal / 1557 KJ	Arginine	1.91		
Proline 5.85 6.50 Tyrosine 2.82 3.13 Methionine 2.22 2.47 Cystine 2.41 2.68 Cystine 3.04 3.38 Lysine 9.06 10.06 Tryptophan 1.96 2.18  Protein Utilisation* PER 3.5 Digestibility 98 % - 100 % *As per scientific literature  Fatty Acid Profile Saturates (%) < 0.5 Cholesterol (mg/100g) 5  Carbohydrates Lactose (%)	Threonine			
Tyrosine         2.82         3.13         Packed in 20 kg multi-wall paper-sacks with polyhene liners. Each sack will be heat sealed. The product will be heat sealed. The product will be palletised and shrink wrapped.           Cystine         2.41         2.68         shrink wrapped.           Phenylalanine         3.04         3.38         Labelling           Tryptophan         1.96         2.18         Labelling           The following will be printed in large blue writing on white sacks. "Opipep", Manufactured by Carbery Food Ingredients and processor EU number.           PCTAS         0.98         Manufactured by Carbery Food Ingredients and processor EU number.           PERY         3.5         Coding           *As per scientific literature         **Coding           *Fatty Acid Profile         **Cod.5           Saturates (%)         <0.5	Alanine	5.31	5.90	Packaging
Tyrosine   2.82   3.13	Proline	5.85	6.50	Packed in 20 kg multi-wall paper-sacks with
Methionine         2.22         2.47         sealed. The product will be palletised and shrink wrapped.           Cystine         2.41         2.68         shrink wrapped.           Phenylalanine         3.04         3.38         Labelling           Tryptophan         1.96         2.18         Labelling           The following will be printed in large blue writing on white sacks. "Optipep", Manufactured by Carbery Food Ingredients and processor EU number.           PER         3.5         Manufactured by Carbery Food Ingredients and processor EU number.           PDCAAS         0.98         Coding           Digestibility         98 % - 100 %         Coding           * As per scientific literature         Each sack will be individually coded by an automatic ink jet system to ensure traceability.           Fatty Acid Profile           Saturates (%)         <0.5	Tyrosine	2.82	3.13	
Phenylalanine   3.04   3.38   Lysine   9.06   10.06   10.06   Tryptophan   1.96   2.18   Labelling   The following will be printed in large blue writing on white sacks. "Optipep", Manufactured by Carbery Food Ingredients and processor EU number.	Methionine	2.22	2.47	
Lysine 9.06 10.06 Tryptophan 1.96 2.18  Protein Utilisation* PER 3.5 BV 104 PDCAAS 0.98 Digestibility 98 % - 100 %  *As per scientific literature  Fatty Acid Profile Saturates (%) < 0.5 Mono-unsaturates (%) < 0.5 Cholesterol (mg/100g) 5  Carbohydrates Lactose (%) 1.0 Glucose (%) < 0.10 Sucrose (%) 372 Kcal / 1557 KJ	Cystine	2.41	2.68	shrink wrapped.
Tryptophan 1.96 2.18  Protein Utilisation* PER 3.5 BV 104 PDCAAS 0.98 Digestibility 98 % - 100 %  * As per scientific literature  Fatty Acid Profile Saturates (%) < 0.5 Polysaturates (%) < 0.5 Cholesterol (mg/100g) 5  Carbonydrates Lactose (%) 1.0 Glucose (%) < 0.10 Sucrose (%) < 0.10 Sucrose (%) 372 Kcal / 1557 KJ	Phenylalanine	3.04	3.38	
Tryptophan  1.96 2.18  The following will be printed in large blue writing on white sacks. "Optipep", Manufactured by Carbery Food Ingredients and processor EU number.  PDCAAS  Digestibility  98 % - 100 %  * As per scientific literature  Fatty Acid Profile  Saturates (%)  Ao.5  Mono-unsaturates (%)  Cobjective (mg/100g)  5  Carbohydrates  Lactose (%)  1.0  Glucose (%)  Sucrose (%)  40.10  Sucrose (%)  372 Kcal / 1557 KJ	Lysine	9.06	10.06	Labelling
Protein Utilisation* PER 3.5 BV 104 PDCAAS 0.98 Digestibility 98 % - 100 %  * As per scientific literature  Fatty Acid Profile Saturates (%) < 0.5 Mono-unsaturates (%) < 0.5 Cholesterol (mg/100g) 5  Carbohydrates Lactose (%) 1.0 Glucose (%) < 0.10 Sucrose (%) < 0.10 Sucrose (%) < 0.10 Since (%)	Tryptophan	1.96	2.18	
PER 3.5 BV 104  PDCAAS 0.98 Digestibility 98 % - 100 %  * As per scientific literature  Fatty Acid Profile Saturates (%) < 0.5 Mono-unsaturates (%) < 0.5 Cholesterol (mg/100g) 5  Carbohydrates Lactose (%) 1.0 Glucose (%) < 0.10 Sucrose (%) < 0.10 Sucrose (%) < 0.10  Energy 372 Kcal / 1557 KJ				The following will be printed in large blue
The state of the s	Protein Utilisation*			
Digestibility	PER	3.5		
Digestibility  * As per scientific literature  Fatty Acid Profile  Saturates (%)  Mono-unsaturates (%)  Polysaturates (%)  Carbohydrates  Lactose (%)  Glucose (%)  Sucrose (%)  372 Kcal / 1557 KJ	BV	104		and processor Lo number.
* As per scientific literature  Fatty Acid Profile  Saturates (%)	PDCAAS	0.98		
Fatty Acid Profile  Saturates (%) < 0.5  Mono-unsaturates (%) < 0.5  Polysaturates (%) < 0.5  Cholesterol (mg/100g) 5   Carbohydrates  Lactose (%)	Digestibility	98 % - 100 %		Coding
Fatty Acid Profile  Saturates (%)	* As per scientific literature			
Fatty Acid Profile         Saturates (%)       <0.5				•
Mono-unsaturates (%)   <0.5     Polysaturates (%)   <0.5     Cholesterol (mg/100g)   5     Carbohydrates     Lactose (%)   1.0     Glucose (%)   <0.10     Sucrose (%)   <0.10     Energy   372 Kcal / 1557 KJ	Fatty Acid Profile			automano mm jet opotem to onouro macousmij.
Polysaturates (%) < 0.5 Cholesterol (mg/100g) 5  Carbohydrates Lactose (%) 1.0 Glucose (%) < 0.10 Sucrose (%) < 0.10  Energy 372 Kcal / 1557 KJ	Saturates (%)	<0.5		
Cholesterol (mg/100g)       5         Carbohydrates       1.0         Lactose (%)       1.0         Glucose (%)       <0.10	Mono-unsaturates (%)	<0.5		
Carbohydrates         Lactose (%)       1.0         Glucose (%)       <0.10	Polysaturates (%)	<0.5		
Lactose (%) 1.0  Glucose (%) <0.10  Sucrose (%) <0.10  Energy 372 Kcal / 1557 KJ	Cholesterol (mg/100g)	5		
Glucose (%) <0.10 Sucrose (%) <0.10 Energy 372 Kcal / 1557 KJ	Carbohydrates			
Sucrose (%) <0.10  Energy 372 Kcal / 1557 KJ	Lactose (%)	1.0		
Energy 372 Kcal / 1557 KJ	Glucose (%)	<0.10		
	Sucrose (%)	<0.10		
Fibre Nil Nil	Energy	372 Kcal / 1557 KJ		
	Fibre	Nil		

Prepared by SM 8.73.2.3.9 Page 2 of 2 Rev. 0 14.02.13