

Clear Whey Protein RTM

Market Review

Protein Science and Technology Team



Brand	Product Name	Flavour	Market	Powder + Water per serving	Protein (g)/ serving	% Protein/ powder	Ingredients
Gatorade	G Zero with Protein	Fruit Punch	US	15g + 500ml	10	67%	Whey Protein Isolate , <i>Citric Acid</i> , Maltodextrin, Sodium Citrate, Salt, Monopotassium Phosphate, Natural Flavor, Sucralose, Silicon Dioxide, Acesulfame Potassium, red 40
phd	Smart Clear Whey	Strawberry Daiquiri	EU	25g + 300/400ml	20	80%	Whey Protein Hydrolysate , Flavouring, Acid (<i>Citric Acid</i> , <i>Phosphoric Acid</i>), Sweetener (Sucralose), Sodium chloride, Colouring (Beetroot Red), Anti Foaming Agent (Silicon Dioxide)
MYPROTEIN	Clear Whey Isolate	Cranberry & Raspberry	EU	24g + 300/400	20	83%	Whey Protein Hydrolysate , Natural Flavouring, Acid (<i>Citric Acid</i>), Acidity Regulator (<i>Phosphoric Acid</i>), Anti-Foaming Agents (Dimethyl Polysiloxane, Silicon Dioxide), Sweetener (Sucralose).
The Protein Works	Clear Diet Whey	Cranberry & Peach	EU	20g + 300ml	16	80%	Whey Protein Isolate , <i>Citric Acid</i> , Flavouring, Natural Colouring (beetroot powder, curcumin), Acetyl-L-Carnitine, Emulsifier (Monosodium Phosphate), Green Tea Extract, Sweetener (Sucralose), Vitamin B5 (Calcium D-Pantothenate), Vitamin B6 (Pyridoxine Hydrochloride), Chromium Picolinate, Vitamin B12 (Methylcobalamin)
BULK	BULK Clear Whey Isolate	Strawberry & Watermelon	UK	25g + 350 ml	20	80%	Whey Protein Hydrolysate , Flavouring, Colour (Beetroot Red), Acid (<i>Citric Acid</i>), Anti-Foaming Agents (Polydimethylsiloxane, Silicon Dioxide), Sweetener (Sucralose).
Applied Nutrition	Clear Whey Protein	Strawberry & Raspberry	UK	25g + 400ml	21	84%	Hydrolysed Whey Protein , Acids (<i>Citric Acid</i> , <i>Malic Acid</i>), Natural Flavours, Sweeteners (Sucralose, Stevia), Antifoam Agent (Silicon Dioxide), Sodium Chloride, Natural Colour.
ISOPURE	ISOPURE INFUSIONS	Mixed Berry	US	25g + 300ml	20	80%	Whey Protein Isolate , Natural Flavor, <i>Citric Acid</i> , Stevia Leaf Extract, Turmeric Extract (Color)
BioTech USA	Iso Whey Zero Clear	Tropical Fruit	US	25g + 300ml	21	84%	Whey Protein Isolate , flavorings, defoamer [anti-foaming agents (dimethyl polysiloxane, silicon dioxide), emulsifiers (E 471, E 435), preservative (potassium sorbate), acid (<i>citric acid</i>), acidity regulator (E 507)], sweetener (sucralose), colors (tartrazine, Allura Red AC)1.
Protein 20	Protein 20 Whey Protein Isolate	Orange Mango	US	32g + 414ml	20	63%	Whey Protein Isolate , Erythritol, Natural Flavours, Silicon Dioxide, Antifoam Powder (Maltodextrin, Canola Oil, Emulsifier, Carnauba Wax, Mixed Tocopherols), Electrolyte Blend (Magnesium Citrate, Sodium Citrate, Monopotassium Phosphate, Salt) Reb A (Stevia Leaf Extract), Beta Carotene (Colour).
MuscleTech	ISO WHEY CLEAR	Arctic Cherry Blast	US	27g + 473ml	22	81%	ProHydrolase, Bromelain, Whey Protein Isolate , Natural and Artificial Flavours, Sucralose, Acesulfame-Potassium, Anti-Foam (Polydimethylsiloxane, Methylated Silica), Beta-Carotene (Colour).

Powder Analysis



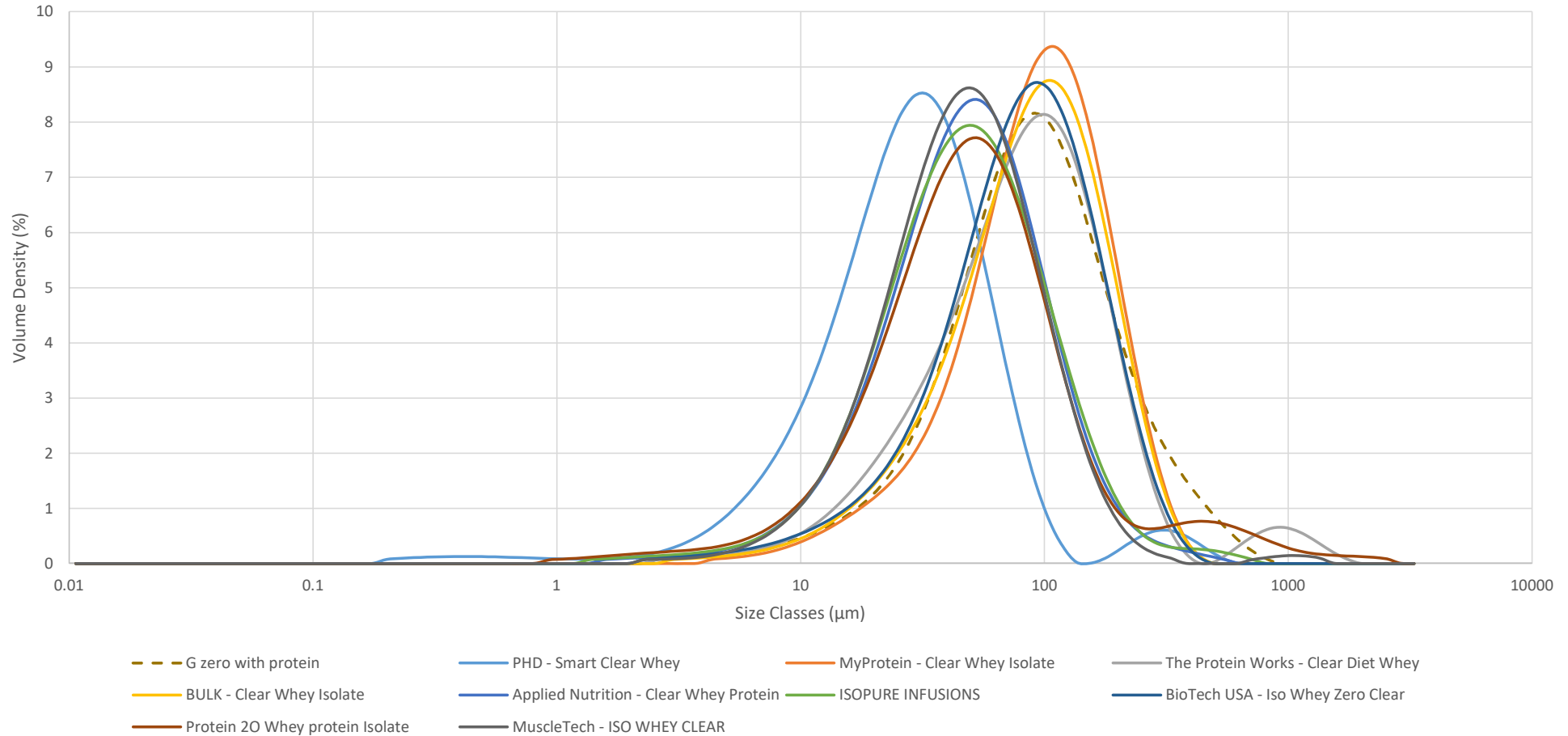
Particle Size analysis, Water content

- **Water content** –
 - Protein 20 Whey Protein Isolate had the lowest water content, BULK Clear Whey Isolate had the highest
- **Particle Size** –
 - PHD Smart Clear Protein had the smallest average particle size,
 - MyProtein Clear Whey Isolate had the largest average particle size,
 - G Zero protein had the largest Dx (90) size (i.e. 10% of particles larger than 247.7µm) which may result in an increased risk of segregation.

Product Name	Water (%)	Particle Size Analysis				
		D [4,3] µm	Dx (10) µm	Dx (50) µm	Dx (90) µm	Span
G Zero with Protein	4.2	121	29.5	89.4	247.7	2.44
PHD - Smart Clear Whey	4.89	32.8	9.16	27.8	63.5	1.96
MyProtein - Clear Whey Isolate	4.99	109.0	32.9	95.4	203.0	1.79
The Protein Works - Clear Diet Whey	5.14	124.0	25.0	83.9	204.0	2.14
BULK - Clear Whey Isolate	5.08	104.0	28.7	89.6	199.0	1.90
Applied Nutrition - Clear Whey Protein	3.44	65.0	17.0	48.5	121.0	2.15
ISOPURE INFUSIONS	4.29	64.2	16.6	47.5	124.0	2.26
BioTech USA - Iso Whey Zero Clear	4.95	97.0	27.3	83.3	186.0	1.90
Protein 20 - Whey Protein Isolate	3.23	97.0	15.8	49.6	155.0	2.80
MuscleTech - ISO WHEY CLEAR	4.11	57.6	17.4	46.9	110.0	1.98

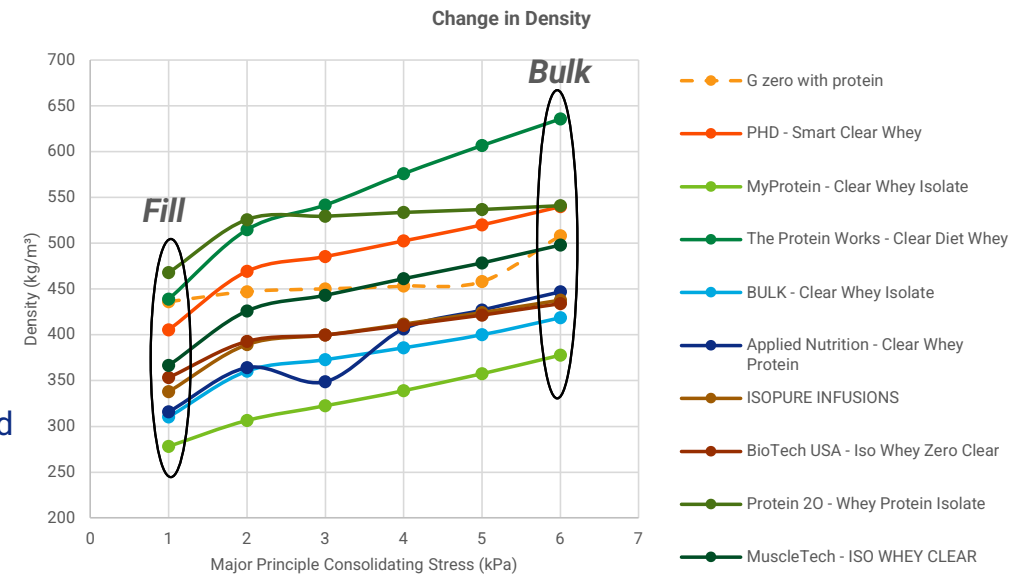
Powder Particle Size Analysis

- G zero with protein in “dashed line” to allow for comparison



Density & Flowability

- **Particle Density** - is defined as the mean weight of the particles per unit volume, excluding the volume occupied by interstitial air. Particle density of the powders were in the range of 1.12 – 1.25 g/cm³
- **Fill Density** - density to be expected when the powder is poured into a container
- **Bulk/Max Density** - density to expect if the material is poured and compacted to high stress
- **Change in Density** –Smaller deltas between Fill and Bulk densities indicates less deformation of particles. A change of more than 30% from Fill Density to Max Density indicates a more cohesive material, greater packing, and reduced flowability.
- **Flow Index** – is a measure of how flowable a powder will be under stress (tested at 10 kPa). All powders had flow indices in the range of Free to Easy Flowing.



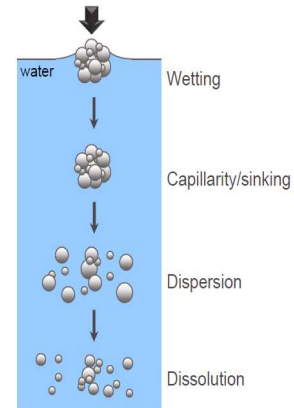
Product Name	Particle Density (g/cm ³)	Fill Density (kg/m ³)	Bulk Density @ stress 5 (kg/m ³)	Change in Density (%)	Flow Index (@ 10 kPa)
G Zero with Protein	1.25	436	508	14	0.07
PHD - Smart Clear Whey	1.23	405.2	540	33	0.09
MyProtein - Clear Whey Isolate	1.12	278	377.5	37	0.23
The Protein Works - Clear Diet Whey	1.19	438.9	635.5	45	0.20
BULK - Clear Whey Isolate	1.18	310.1	418.4	35	0.10
Applied Nutrition - Clear Whey Protein	1.24	315.9	446.9	41	0.18
ISOPURE INFUSIONS	1.22	337.9	437.7	30	0.08
BioTech USA - Iso Whey Zero Clear	1.17	353.2	434.1	23	0.07
Protein 20 - Whey Protein Isolate	1.25	468	540.8	16	0.02
MuscleTech - ISO WHEY CLEAR	1.20	366.3	498	36	0.08



Rehydration Properties

Rehydration Properties

- **Wettability** – “the time needed to achieve complete wetting of a given quantity of powder when a powder is gently dropped on the surface of water and immersed without agitation”
 - All powders had wettability > 300 seconds which would be typically for whey predominant powders
- **Dispersibility** – “the ability of the powder to disintegrate into particles small enough to permeate a 150 µm sieve and is determined on a dry solid’s basis”
 - Dispersibility ranged from 64.3% (Applied Nutrition) to 85.2% (The Protein Works)
- **Insolubility** – “involves dispersing a certain amount of powder in water under defined conditions (powder quantity, water volume, temperature of water), followed by the recovery of sediment after centrifugation, and measuring its volume”
 - Most powders had insolubility Index of < 0.01 ml, except for The Protein Works (0.45 ml) and Protein 20 (0.2ml)



Product Name	Wettability Time (seconds) @20°C	Dispersibility (%) @ 25°C	Insolubility Index (ml) @24°C
G Zero with Protein	>300		
PHD - Smart Clear Whey	>300	78.3	<0.01
MyProtein - Clear Whey Isolate	>300	82.1	<0.01
The Protein Works - Clear Diet Whey	>300	85.2	0.45
BULK - Clear Whey Isolate	>300	71.0	<0.01
Applied Nutrition - Clear Whey Protein	>300	64.3	<0.01
ISOPURE INFUSIONS	>300	74.4	<0.01
BioTech USA - Iso Whey Zero Clear	>300	74.8	<0.01
Protein 20 - Whey Protein Isolate	>300	66.3	0.2
MuscleTech - ISO WHEY CLEAR	>300	67.0	<0.01

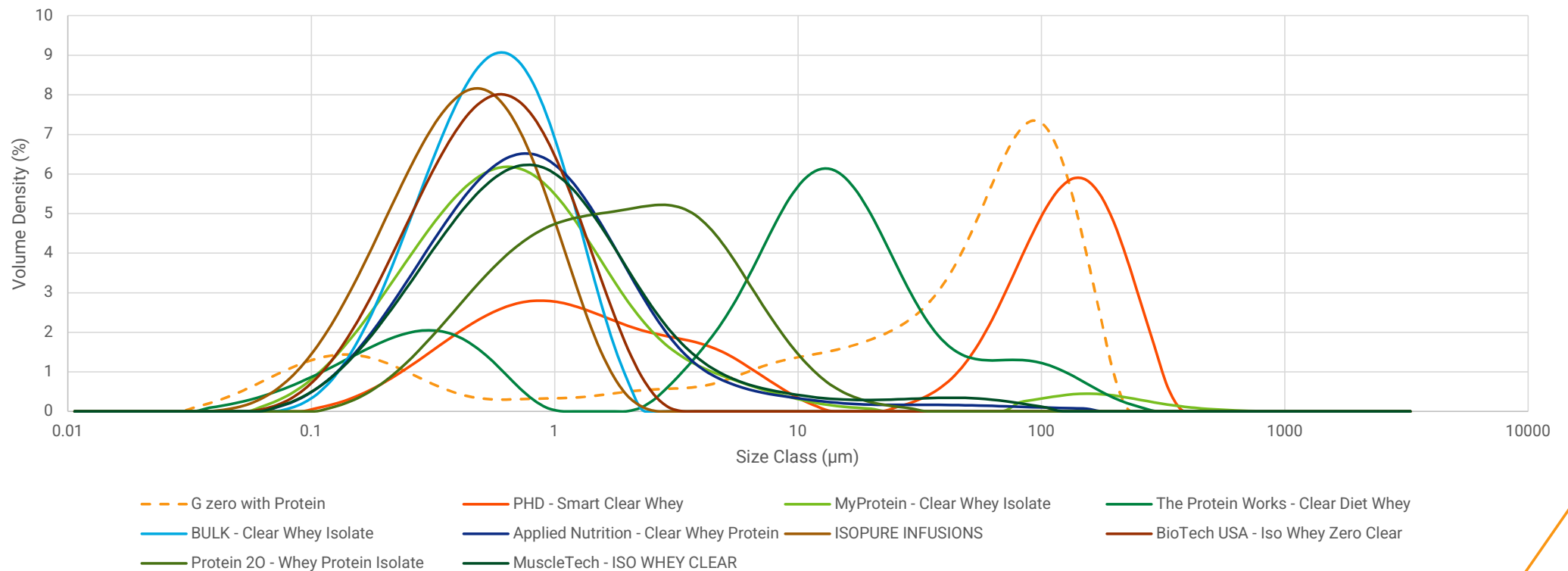
Rehydrated particle size analysis

- Powders were reconstituted based on label directions using a Protein Shaker
- Particle Size Analysis data indicated that G Zero Protein and PHD powders had the poorest rehydration (i.e. largest size lumps remaining after mixing)
 - Large Dx (90) values for both indicate that large lumps of powder remained after mixing, this may be attributed to aggregates forming during the mixing process which do not dissolve sufficiently.

Product Name	D [4,3] μm	Dx (10) μm	Dx (50) μm	Dx (90) μm
G Zero with Protein	86.30	12.70	82	162.2
PHD - Smart Clear Whey	108	0.559	104	222
MyProtein - Clear Whey Isolate	17.7	0.12	0.44	6.92
The Protein Works - Clear Diet Whey	2.45	0.15	0.52	3.02
BULK - Clear Whey Isolate	0.46	0.12	0.34	0.97
Applied Nutrition - Clear Whey Protein	8.21	0.16	0.57	4.57
ISOPURE INFUSIONS	0.64	0.07	0.24	0.73
BioTech USA - Iso Whey Zero Clear	0.42	0.07	0.28	0.95
Protein 20 - Whey Protein Isolate	2.66	0.23	1.13	6.46
MuscleTech - ISO WHEY CLEAR	6.46	0.17	0.69	25.2

Rehydrated Particle Size Analysis - Graph

- Graph of rehydrated particle size – G zero with protein in “dashed line” to allow for comparison



Colour, pH, Viscosity

- **Colour** values ranged significantly, primarily due to differences in flavours of competitor products analysed
- **pH** values ranged from 2.74 (ISOPURE INFUSIONS) to 4.11 (PHD – Smart Protein Clear)
- **Viscosity** values ranged from 1.89 mPas (MyProtein) to 3.60 mPas (G Zero Protein).
 - Typical for “water like” liquids.

Product Name	Colour			pH	Apparent Viscosity @300 1/s (mPas)
	L*	a*	b*		
G Zero with Protein	32.76	2.41	0.23	3.11	3.60
PHD - Smart Clear Whey	28.62	3.26	2.72	4.11	2.53
MyProtein - Clear Whey Isolate	30.53	3.15	-1.37	3.25	1.89
The Protein Works - Clear Diet Whey	35.26	0.85	13.18	4.43	2.71
BULK - Clear Whey Isolate	30.16	3.59	-1.55	3.29	2.40
Applied Nutrition - Clear Whey Protein	30.78	2.73	-0.90	3.01	2.91
ISOPURE INFUSIONS	27.40	6.32	0.27	2.74	2.44
BioTech USA - Iso Whey Zero Clear	30.43	-0.33	7.07	3.25	2.89
Protein 20 - Whey Protein Isolate	30.95	-0.45	4.72	3.43	2.92
MuscleTech - ISO WHEY CLEAR	31.13	0.85	0.51	2.98	2.78

Product Overviews



Gatorade Zero with Protein

- Available flavours – Fruit Punch, Glacier Freeze, Glacier Cherry
- Available formats – Single serve sachet (10 pack)
- Gatorade Zero with Protein has all the electrolytes of Gatorade Thirst Quencher with zero sugar and 10g of protein. A refreshing way to help kick start recovery.
- Suggested Use: Mix each 15g powder packet with 16.9oz (500ml) water. For best results, mix with a blender bottle

Ingredients (Fruit Punch):

WHEY PROTEIN ISOLATE, CITRIC ACID, MALTODEXTRIN, SODIUM CITRATE, SALT, MONOPOTASSIUM PHOSPHATE, NATURAL FLAVOR, SUCRALOSE, SILICON DIOXIDE, ACESULFAME POTASSIUM, RED 40



Nutrition Facts	
1 serving per container	
Serving Size	
1 packet (15g)/Makes about 16.9 fl oz	
Amount Per Serving	
Calories	45
% Daily Value*	
Total Fat 0g	0%
Sodium 230mg	10%
Total Carbohydrate 2g	1%
Total Sugars 0g	
Includes 0g Added Sugars	0%
Protein 10g	17%
Potassium 80mg	0%
Not a significant source of saturated fat, trans fat, cholesterol, dietary fiber, vitamin D, calcium, and iron.	
*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	



PHD

SMART CLEAR WHEY

- Available flavours – Mojito, Orange Margarita, Pina Colada, Strawberry Daiquiri
- Available formats – 500g Tub
- refreshing, clear and delicious whey protein isolate without the milky taste and texture.
- Delivering the highest quality 20g protein per serving with less than 1g sugar, and only 85kcal per serve
- Full dissolvable, premium whey protein isolate powder, light and refreshing, hydrated during the day whilst supporting muscle tissue
- Suggested Use: Add 1 scoop (25g) to ice cold water and shake, leave to stand for 1 minute

Ingredients (Strawberry Daiquiri Version):

Whey Protein Hydrolysate (Milk), Flavouring, Acid (Citric Acid, Phosphoric Acid), Sweetener (Sucralose), Sodium chloride, Colouring (Beetroot Red), Anti Foaming Agent (Silicon Dioxide)



Typical Values (when mixed with water±)	Per 100g	Per Scoop (25g)
Energy	1449kJ / 362kcal	341kJ / 85kcal
Fat	0.5g	0.1g
Of which saturates	0.2g	0.0g
Carbohydrate	4.0g	1.0g
Of which sugars	0.0g	0.0g
Fibre	0.9g	0.2g
Protein	80.0g	20.0g
Salt	0.61g	0.02g
BCAA's		4857mg



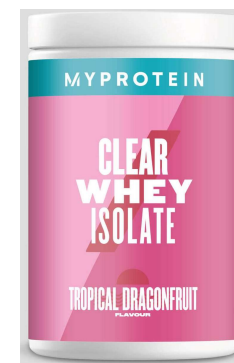
MYPROTEIN

Clear Whey Isolate

- Available flavours – Apple, Bitter Lemon, Blood Orange, Grape, Lemon Iced Tea, Mango & Coconut, Mojito, Orange, Peach Tea, Pineapple, Pink Grapefruit, Rainbow Candy, Ramune, Tropical Dragon fruit, Watermelon
- Available formats – 875g Tub
- High-quality hydrolyzed whey protein isolate, 20g protein, light and refreshing, no milky taste/texture, 4g BCAA's and 3g glutamine, low in sugar, fruity flavors, 0.1g of fat, 0.3g of sugar, and less than 90 calories per shake.
- Suggested Use: Add 1 (25g) scoop to cold water, after shaking wait about 15 seconds for the natural foaming to settle and the drink clears

Ingredients (Tropical Dragonfruit Version):

Whey Protein Hydrolysate (Milk) (89%), Flavouring, Acid (Citric Acid), Colour (Beetroot Red), Acidity Regulator (Phosphoric Acid), Sweetener (Sucralose), Anti-foaming Agents (Dimethyl Polysiloxane, Silicon Dioxide).



	Per 100 g	Per Serving (25 g)
Energy	1497 kJ/352 kcal	374 kJ/88 kcal
Fat	0.5 g	0.1 g
of which saturates	0.2 g	0.1 g
Carbohydrate	10 g	2.5 g
of which sugars	2.0 g	0.5 g
Protein	77 g	19 g
Salt	0.09 g	0.02 g



The Protein Works

Clear Diet Whey

- Available flavours – Cranberry & Peach Woo Woo, Pina Colada, Strawberry Mojito, Tropical Fruit Punch
- Available formats – 1kg Tub
- 16g protein, zero sugar drink that's light, refreshing & thirst quenching, less than 85 calories/serving, no milky texture/taste, contains zero sugar and zero fat, loaded with B vitamins
- Suggested Use: Add 3/4 (20g) scoop to cold water and shake for 10 seconds, after shaking wait about 15 seconds for the natural foaming to settle.

Ingredients (Peach & Cranberry Woo Woo Version):

Whey Protein Isolate (Milk), Citric Acid, Flavouring, Natural Colouring (beetroot powder, curcumin), Acetyl-L-Carnitine, Emulsifier (Monosodium Phosphate), Green Tea Extract, Sweetener (Sucralose), Vitamin B5 (Calcium D-Pantothenate), Vitamin B6 (Pyridoxine Hydrochloride), Chromium Picolinate, Vitamin B12 (Methylcobalamin)



Values based on:	per 100ml	per 300ml serving
Energy (kJ)	490	1628
Energy (kcal)	21	64
Fat (g)	0	0
Of Which Saturates (g)	0	0
Carbohydrates (g)	0	0
of which Sugars (g)	0	0
Protein (g)	5	16
Salt (g)	0	0



BULK

Clear Whey Isolate

- Available flavors – Strawberry & Watermelon, Blue Raspberry, Pink Lemonade, Apple & Blackcurrant, Cherry Bomb, Passionfruit
- Available formats – 500g/1kg Bag
- light, refreshing alternative to your everyday protein shake, 20g of high-quality protein per serving, low in fat and sugar, easy mixing.
- Suggested Use: Add 1 (25g) scoop to cold water and shake, after shaking wait about 30 seconds for the natural foaming to settle.

Ingredients (Strawberry & Watermelon Version):

Whey Protein Hydrolysate (Milk), Flavouring, Colour (Beetroot Red), Acid (Citric Acid), Anti-Foaming Agents (Polydimethylsiloxane, Silicon Dioxide), Sweetener (Sucralose).

	per 100g	per 25g serving
Energy kJ/kcal	1455/343	364/86
Fat of which saturates	0.7g 0.4g	0.2g 0.1g
Carbohydrates of which sugars	4.6g 0.4g	1.2g 0.1g
Fibre	1.4g	0.4g
Protein	80g	20g
Salt	0.04g	0.01g





APPLIED NUTRITION

CLEAR WHEY PROTEIN

- Available flavors – Strawberry & Raspberry, Cherry & Apple, Cranberry & Pomegranate, Grapefruit, Orange Squash, Strawberry & Lime, Twirler Ice Cream, Watermelon
- Available formats – 425g/875g Bag
- Contains ultra hydrolyzed whey protein isolate, 21g of protein with 5g BCAAs, 1g of carbs per serving, 90 calories & low in sugar
- Suggested Use: Add 1 (25g) scoop to cold water and shake, after shaking wait about 60 seconds for the natural foaming to settle.

Ingredients (Strawberry & Watermelon Version):

Hydrolysed Whey Protein (Milk) (95%), Acids (Citric Acid, Malic Acid), Natural Flavours, Sweeteners (Sucralose, Stevia), Antifoam Agent (Silicon Dioxide), Sodium Chloride, Natural Colour.

NUTRITIONAL INFORMATION

Serving Size: 1 Scoop (25 g)

Typical Values	Per (100 g)	Per (25 g) serving
Energy	1509 kJ / 361 kcal	377 kJ / 90 kcal
Fat	0.47 g	0.12 g
of which Saturates	0.19 g	0.05 g
Carbohydrates	4.04 g	1.01 g
of which Sugars	0.95 g	0.24 g
Fibre	0 g	0 g
Protein	85.06 g	21.27 g
Salt	0.27 g	0.07 g

Also Provides	per (100 g)	per (25 g) serving
BCAAs	19496 mg	4874 mg





ISOPURE

ISOPURE INFUSIONS

- Available flavors – Mixed Berry, Citrus Lemonade, Mango Lime, Pineapple Orange Banana, Tropical Punch
- Available formats – 900g/400g Tub
- 20 grams of 100% whey protein isolate, 5 ingredients, no fat or added sugars, and only 90 calories per scoop. No artificial flavors or colors and sweetened only with stevia leaf extract.
- Suggested Use: Add 1 (25g) scoop to 295-475ml cold water and shake, After shaking wait about a minute for the natural foam to settle.

Ingredients:

Whey Protein Isolate, Natural Flavor, Citric Acid, Fruit and Vegetable Juice, Stevia Leaf Extract.



Amount per 25g serving	
Calories	90 kcal
Total Fat	0 g
Cholesterol	10 mg
Sodium	15 mg
Total Carbohydrate	2 g
Total Sugars	1 g
Protein	20 g



BioTech USA

Iso Whey Zero Clear

- Available flavors – Tropical Fruit, Lime, Watermelon, Peach Ice Tea
- Available formats – 25g sachet, 454g/1362g Tub
- 21g grams of 100% whey protein isolate, 5 ingredients, no fat or added sugars, and only 90 calories per scoop. No artificial flavors or colors and sweetened only with stevia leaf extract.
- Suggested Use: Mix 1 scoop (25 g) with 300 ml water in a shake. Shake well and let the product rest for a minute, until its foam settles.

Ingredients (Tropical Fruit Version):

whey protein isolate 96%, flavourings, defoamer [anti-foaming agents (dimethyl polysiloxane, silicon dioxide), emulsifiers (E 471, E 435), preservative (potassium sorbate), acid (citric acid), acidity regulator (E 507)], sweetener (sucralose), colours (tartrazine, Allura Red AC)1. 1 Tartrazine, Allura Red AC



	100 g	25 g
Energy	1493 kJ/351 kcal	373 kJ/88 kcal
Fat	<0,5 g	<0,5 g
-of which saturated fatty acids	0,1 g	<0,1 g
Carbohydrate	2,7 g	0,7 g
-of which sugars	0,6 g	<0,5 g
Protein	84 g	21 g
Salt	<0,01 g	<0,01 g



PROTEIN20

Whey Protein Isolate

- Available flavors – Orange Mango
- Available formats – on the go 32g powder packs
- 20g whey protein isolate, electrolyte blend, 90 calories, 0g sugar
- Suggested Use: Mix 1 pack (32 g) with water. Shake “aggressively” until fully dissolved.

Ingredients:

Whey Protein Isolate (Milk), Erythritol, Natural Flavors, Silicon Dioxide, Antifoam Powder (Maltodextrin, Canola Oil, Emulsifier, Carnauba Wax, Mixed Tocopherols), Electrolyte Blend (Magnesium Citrate, Sodium Citrate, Monopotassium Phosphate, Salt) Reb A (Stevia Leaf Extract), Beta Carotene (Color). Contains Milk.



Amount Per Serving	
Calories 90	Calories from Fat 0
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 135mg	6%
Total Carbohydrate 7g	2%
Dietary Fiber 0g	0%
Sugars 0g	
Protein 20g	40%
Calcium 0g	0%
Potassium 61g	2%
Erythritol 4g	



MUSCLETECH

ISO WHEY CLEAR

- Available flavors – Artic Cherry Blast, Lemon Berry Blizzard, Orange Dreamsicle, Pink Tropical Punch
- Available formats – 500g Tub
- 0g of sugar or fat, <1g of carbs, 90 calories and 22g of whey protein isolate per scoop, 20% better amino absorption, **less foamy build up vs. competitors**
- Suggested Use: Mix 1 scoop (27g) in water in a shaker cup. Shake vigorously and let rest for 30 to 60 seconds, as the powder transforms into a translucent protein beverage.

Ingredients:

ProHydrolase, Bromelain, Whey Protein Isolate, Natural and Artificial Flavors, Sucralose, Acesulfame-Potassium, Anti-Foam (Polydimethylsiloxane, Methylated Silica), Beta-Carotene (Color).

Supplement Facts		
Serving Size: 1 Scoop (27g)		
Servings Per Container: Approx. 19		
Amount Per Serving	% Daily Value	
Calories	90	
Total Fat	0g	0%*
Cholesterol	5mg	2%
Total Carbohydrate	<1g	<1%*
Total Sugars	0g	†
Includes 0g of Added Sugars		0%*
Protein	22g	37%*
Sodium	10mg	<1%
ProHydrolase®	220mg	†
Protease (as <i>Bacillus subtilis</i>) (whole cell)		†
Bromelain (as <i>Ananas comosus</i>) (stem)		†

