



# Whey Protein Concentrate (WPC) Standard

## Product Definition

Whey Protein Concentrate (WPC) is obtained by the removal of sufficient non-protein constituents from whey so that the finished dry product contains at least 25% protein. It is produced by physical separation techniques such as membrane filtration.

Whey Protein Concentrate complies with all provisions of the U.S. Federal Food, Drug, and Cosmetic Act.

## Composition

Whey Protein Concentrates may be produced at various protein concentrations at or above 25%, but the most common commercial products are WPC 34 and WPC 80, as follows:

Parameter	Units of Measure	WPC 34		WPC 80	
		Typical Values	Limits	Typical Values	Limits
Protein <sup>1</sup>	%	34.0 – 36.0	33.5 minimum	80.0 – 82.0	79.5 minimum
Lactose	%	48.0 – 55.0	-	4.0 – 10.0	-
Fat	%	3.0 – 4.5	5.0 maximum	4.0 – 8.0	10.0 maximum
Total moisture	%	3.0 – 5.0	6.0 maximum	3.5 – 5.0	6.0 maximum
Ash	%	6.5 – 8.0	-	3.0 – 5.0	-

1 - For WPC 80 the protein content, typical values, and limit are on the dry basis instead of the as-is basis. All other units in the table are on the as-is basis.

## Other Characteristics

Physico-chemical Properties		
Parameter	Units of Measure	Limits
Scorched particles	mg/25g	15.0 maximum
pH	-	6.0 – 6.7
Color	visual	white to cream
Flavor	sensory	bland, clean

Microbiological Analysis		
Parameter	Units of Measure	Limits
Standard plate count	CFU/g	30,000 maximum
Yeast & mold	CFU/g	100 maximum

Microbiological Analysis		
Parameter	Units of Measure	Limits
Coliforms <sup>2</sup>	CFU/g	10 maximum
<i>Enterobacteriaceae</i> <sup>2</sup>	CFU/g	10 maximum
<i>Salmonella</i> genus	CFU/sample <sup>3</sup>	not detected
<i>Staphylococcus</i> (coagulase positive)	CFU/g	not detected <sup>4</sup>
<i>Listeria</i> genus	CFU/g	not detected

- 2 - The food industry is trending toward *Enterobacteriaceae* ("EB") as the most commonly used category of indicator organisms for gauging general process sanitation. For compliance with this Standard, either coliforms and/or EB shall be utilized, at the discretion of the manufacturer.
- 3 - Typical minimum sample size for *Salmonella* testing is 25 g, but the exact sample size and methodology is left to the discretion of the manufacturer.
- 4 - Where the effective limit of quantitation for the test is 10 CFU/g (such as when a dilution factor of 10 is applied) then the test result must be not detected in order to comply with this Standard. Where the testing method is capable of quantifying microbial counts below 10 CFU/g, then a compliant result must be a value less than 10 CFU/g.

## Methods of Analysis

Parameter	Reference Method
Protein	AOAC 991.20 (N x 6.38)
Lactose	ISO 22662 / IDF 198
Fat	AOAC 989.05
Moisture	AOAC 925.45
Ash	AOAC 942.05
pH	USDA
Microbiological tests	FDA BAM

## Product Labeling

Recommended identifications: Whey Protein Concentrate (\_\_\_% protein)

where the % protein is either declared in 5% increments;  
or declared as the actual percentage, where the  
supporting analysis for the protein content must also be  
supplied.

## Typical Applications

Whey Protein Concentrates are typically used in dairy products, dry blends, wet blends, prepared dry mixes, soft drinks, special dietary foods, infant foods, bakery products, confections, frozen desserts, process cheese, and others.

## Typical Storage & Shipping

Product should be stored, shipped, and utilized according to the manufacturer's established recommendations. As guidance, product should be stored and shipped in a cool, dry environment with temperature below 80°F and relative humidity below 65%. Stocks should be rotated and utilized in accordance with the manufacturer's established date of expiration or retest.

## Typical Packaging

Multiwall kraft bags with polyolefin inner liner, or other suitable closed containers (e.g., totes) are typical.

## Revision History

This Standard is a legacy document and has been assigned prior version numbers on an *ex post facto* basis, according to its documented history of modifications, in order to comply with our new document control features and format. Full revision history is on file at ADPI and is available for query via [info@adpi.org](mailto:info@adpi.org) or by directly contacting the Vice President of Technical Services.

Current version details:

Current Version	Effective Date	Notes
4.0	07/04/2023	Migrated this Standard to the new modernized format as authorized by the ADPI Standards Committee. No previously established test parameters or limits were materially altered by this update, but this revision did require a footnote to clarify the restated units of measure for <i>Salmonella</i> and the restatement of the limit for coagulase positive <i>Staphylococcus</i> .