

Dairy Ingredients Functionality Guide



AMERICAN
Dairy Products
INSTITUTE™

Functional Properties of Dried Dairy Ingredients

	WHEY PROTEINS						MILK PROTEINS						CASEINS				CARBOHYDRATES	
	Whey	RM Whey	WPC34	WPC80	WPI	WPPC	WMP	NFDM/SMP	DBM	MPC70	MPC80	MPI	Micellar Casein	Acid Casein ²	Rennet Casein ²	Caseinates	Milk/Whey Permeate	Lactose
HYDRATION RATE	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●	●●	●●	●●	●	●	●●	●●	●●
EMULSIFICATION	●	●	●●	●●	●●	●●●	●●	●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●	●
GELATION ¹	●●	●	●●●	●●●	●●●	●●●												
WATER BINDING	●	●	●	●●	●●	●●	●●	●●	●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●	●
VISCOSITY	●	●	●	●	●	●●	●	●	●	●●	●●	●●	●●	●●	●●	●●●	●	●
WHIPPING	●●	●●	●●	●●	●●●	●	●	●	●	●	●	●	●			●●	●	●
BROWNING	●●●	●●●	●●	●	●	●	●●	●●	●●	●	●	●	●	●	●	●	●●●	●●●
HEAT STABILITY	●	●●	●	●	●	●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●	●●
ACID STABILITY	●●●	●●●	●●●	●●●	●●●	●●	●	●	●	●	●	●	●	●	●	●	●●●	●●●

Legend

●●● HIGH
●● MEDIUM
● LOW

DBMDry Buttermilk
MPCMilk Protein Concentrate
MPI.....Milk Protein Isolate
NFDM/SMPNonfat Dry Milk/Skimmed Milk Powder
RM Whey.....Reduced Minerals Whey

WMP.....Whole Milk Powder
WPCWhey Protein Concentrate
WPI.....Whey Protein Isolate
WPPCWhey Protein Phospholipid Concentrate

- (1) Heat induced gelation, milk proteins and caseins form acid gels ie. yogurt and cheese
(2) Acid and Rennet casein are not soluble in water and need emulsifying salts to improve their ability to bind water and emulsify