Table Name	Normal Form	Reasoning
User	BCNF	user_id is PK; all attributes depend fully on it. No transitive dependencies.
Category	BCNF	category_id is PK. name is unique and functionally equivalent. No partial or transitive dependencies.
Ingredient	BCNF	ingredient_id is the primary key. ingredient_name and ingredient_type depend only on it. No non-key FDs.
Manufacturer	BCNF	manufacturer_id is both PK and FK to User. All attributes depend on it. No transitive dependencies.
Supplier	BCNF	supplier_id is both PK and FK to User. All attributes depend on it. No transitive dependencies.
Product	BCNF	product_id is the primary key. manufacturer_id, category_id, and standard_batch_units depend only on product_id. No transitive dependencies.
IngredientConsumption	BCNF	Key = (parent_ingredient_id, child_ingredient_id). quantity depends on full key. No extra dependencies.
RecipePlan	3NF	product_id → manufacturer_id creates a transitive dependency. Still 3NF because manufacturer_id is part of a candidate key.
RecipeIngredient	BCNF	PK is (plan_id, ingredient_id). quantity depends on the full key; no other nontrivial FDs.
ProductBatch	3NF	PK = batch_id. manufacturer_id is

		functionally determined by product_id, causing a transitive dependency. If manufacturer_id is removed, becomes BCNF.
IngredientBatch	BCNF	PK = batch_id. All other attributes depend on the key. lot_number is a candidate key. No transitive dependencies.
SupplierFormulation	BCNF	PK = formulation_id and unique (supplier_id,ingredient_id,version_no). All attributes depend on keys. No transitive dependencies.
SupplierFormulationMaterials	BCNF	Key = (formulation_id, ingredient_id). qty depends on the key. No other dependencies.
BatchConsumption	BCNF	Key = (product_lot_number,ingredient_lot_number). Attributes depend on key. No extra dependencies.
DoNotCombine	BCNF	Key = (ingredientA_id,ingredientB_id). No non-key attributes. No partial/transitive dependencies.