STEPS TO PREPARE MILK REPLACER FORMULA FOR WILD MAMMALS

Recent research on the milk powders, formula recipes and preparation methods identified ways to improve nutritional benefits of formula fed to young wild mammals. **READ ALL INSTRUCTIONS FIRST**. Shortcuts/omissions compromise results.

Step 1: INITIAL PREPARATIONS

1) Wash hands. Generally declutter and clean the mixing area.
2) Remove dry ingredients from refrigerator or freezer and allow to reach room temperature. Inspect for color, contaminants, etc. Sniff powders for freshness or an off odor (i.e., rancidity, unexpected scents). Discard if concerned.
3) Assemble and organize mixing supplies on the counter (e.g., gram scale, measuring cups, powders, whisk, instant read thermometer, recipe ingredients). Include printed copy of the recipe with ingredient weights (don't rely on memory).
4) Organize ingredients in mixing area: water (e.g., tap, filtered, distilled), milk powders, fats (i.e., liquid or powder), etc.

Step 2: WEIGHING

1) Use the scale TARE feature for each container to 'zero' it out before weighing each separate ingredient.
2) When the milk powder is at room temperature, place the weighing container on the gram scale and then fill/weigh the needed amount as by the recipe.
3) Weigh each dry and liquid ingredient separately in individual containers.
4) Heat water to appropriate temperature (≈110-120°F or 43-49°C; not boiling). Check with instant read thermometer.

Step 3: MIXING

1) **Single milk replacer powder recipe:** Prepare the powder as described in steps 2-6 below. [**Note**: If the recipe calls for multiple powders, prepare each powder separately (steps 2-6; then combine all liquids later (step 7).]
2) Pour the weighed warm water into a formula mixing container (clear glass/plastic; wider diameter better than narrow). Sprinkle the weighed milk powder on the warm/hot water. Do not stir at this point. Set timer for 5 minutes.
3) After 5 minutes, the milk powder on the water in the container will start to wet and begin to sink. Hand whisk powder into water until the powder is completely dispersed (≈5 minutes) and until no dry clumps are visible. Follow the same steps when making a large batch. Avoid any use of countertop/immersion blender; electric mixer; or shaker bottle.
4) Cover container with air-tight lid to prevent evaporation and/or contamination. Label the container (formula recipe, date/time mixed). If making several formulas or dilutions, label each container (recipe/strength, date/time mixed).
5) When formula is slightly cooled, place in refrigerator (≈ 40°F or 4.5°C) to allow a resting time for the powder(s) to completely hydrate and fully reconstitute (8 hours minimum).
6) After the reconstitution time, remove formula(s) from the refrigerator. Stir lightly; small clumps will have dissipated.

7) **Blended recipes:** When mixing a recipe that incorporates two or more milk replacers (that were separately reconstituted into liquid form), pour those liquids into a single container. [If adding other liquids, such as extra fats (e.g., heavy whipping cream), weigh those cooled liquids and add them into formula.] Stir all liquids to fully mix. It is then ready to warm enough for immediate use or return unheated excess to the refrigerator or freezer.

Step 4: STORAGE

1) Dairy scientists advise mixed/prepared milk formula can be properly stored in the refrigerator up to 3 days (≈72 hrs).
2) For longer-term storage, divide into small portions (e.g., silicone ice cube trays), label with product/recipe and date and freeze. Transfer individual frozen cubes to airtight container to minimize air exposure. Frozen cubes may be kept similar to time for ice cream (preferably used in less than a month, but possibly up to 2 months). Remove enough individual cubes for use, slowly thaw in refrigerator, warm water bath or at room temperature (not microwave).

Step 5: FEEDING

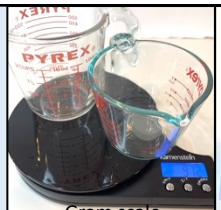
1) When ready to feed, lightly and briefly stir the formula liquid again to ensure formula is well mixed (but no bubbles).
2) Pour the estimated amount required for this feeding into a container(s) – and warm, such as in warm water bath or bottle warmer. Do not warm formula in microwave.
3) Keep the formula containers separate depending on recipe, dilution (e.g., full or half strength formula).
4) Follow standard practices to keep the formula containers separate for animals in quarantine.
5) Do NOT reuse heated formula; discard leftovers.

Rev. 2/23

Quick Guide - Formula Preparation Steps Using 2 Milk Replacer Powders

Set-up

Sanitize hands & workspace. Gather tools and recipe.



Gram scale, mixing containers

Whisks, timer, thermometer


Containers for dry measures

Your other tools:

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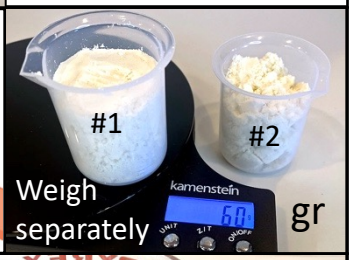
Weighing

Gather powders. Bring each to room temp for 5 min.

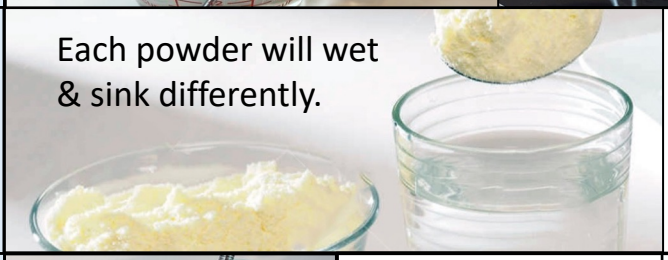


Water

Heat water to 110-120°F and weigh (grams).

Powders

Pour powder onto warm water. Wait 5 min. for wetting/sinking.

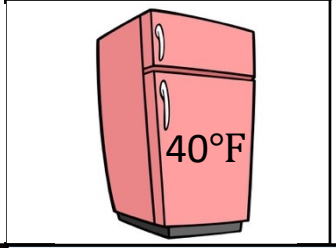


Whisking

Hand whisk for 5 min. Cover, let cool to room temp.

Resting

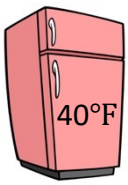
Label formula containers. Rest in fridge for 8 hours.



Combining

Combine formulas & add any additives. Ready to use.

Storage of combined leftovers *(unheated)*.



Up to 72 hrs

Up to 2 mos

Rev. 3/23

For reference only. See more complete detailed steps and instruction in the **Mixing Guide** on ewildagain.org