

PROQUIP IN THE MIX

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How Paint is Made

ProQuip Tank Agitators with ProQuip Axial Pitched Blade Turbine Impellers Used in Many Paint Manufacturing Processes



Summer is just past the half-way point and many of us still have a long list of house projects to complete before cold weather returns.

Windows may still need to be cleaned, garden beds may still need to be weeded, and the deck may still need to be power washed.

In this blog, we focus on another common summer house project – painting. We look at a few paint industry facts and figures as well as how commercial and DIY paint is made. Finally, we provide common mixing parameters for many modern paint manufacturing processes including tank size, tank geometry and impeller type.



Paint Industry Facts & Figures

Paint has been used as a protective and decorative topical agent on walls for thousands of years. Although ingredients and manufacturing processes were primitive for early paints, on-going improvements over the years (especially in the last century) have created a robust \$30 billion commercial paint industry in the United States alone (IBIS World). More than 1.6 billion gallons of paint are sold in the U.S. each year.

It is safe to say paint is now a critical component of modern life. Did you know:

- There are more shades of green commercially sold per year than any other available color. This is because the human eye can distinguish more variations of green than any other color.
- Paint will dry the fastest at 70 degrees Fahrenheit (although some newer exterior paints will dry even when temperatures are in the 30s)
- Paint colors often evoke specific emotions. Cool tones generate feelings of relief, calmness and peace. Vibrant colors can make you feel energetic, agitated, or even angry.
- The White House is white because the lime-based whitewash was originally used to protect its porous stone surface from freezing.
- Another historic U.S. landmark, the Golden Gate Bridge, is painted continuously throughout the year.

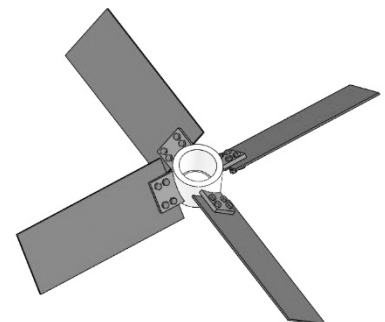
How Commercial Paint is Made

The manufacturing process for making commercial paint is fairly straightforward. First, solvent is added to the other three primary components of modern paint: pigments (color), resins (binding, drying and surface adhesion) and various additives (for specific properties – e.g., mold resistance). The solvent acts as a carrier for the pigments and resin. A common solvent used in paint manufacturing is mineral spirits.

The resulting paste is sent to a sand mill (most industrial paints) or dispersion tank (most residential paints), additives are added, and all ingredients are agitated to thoroughly mix and disperse them. Finally, the paint mixture is transferred to large kettles, thinned with the proper amount of solvent for the type of paint desired, and agitated again. The paint is now ready to can and ship to a store near you.

ProQuip Agitators Used in Commercial Paint Manufacturing

Modern paint manufacturing processes vary based on the components and properties of the formulation. Many formulations are used for the production of latex based paints. A common process example uses a non-baffled process tank with mixer designs incorporating axial pitched blade turbines. This impeller design is selected to provide the necessary shear and flow in the high viscosity, non-Newtonian slurry.



ProQuip tank agitators with ProQuip axial pitched blade turbine impellers are used in many commercial paint manufacturing processes.



Common Mixing Parameters for Many Paint Modern Manufacturing Processes	
Tank Size (gal)	500-2,000
Tank Material	Stainless Steel
Tank Geometry	Square with well rounded corners
Baffled Tank	No
Steady Bearing	No
Impeller Design	Axial Pitched Blade Turbine Impeller
Impeller Material	Stainless Steel
Number of Impellers	Multiple (varies based on tank height; three impellers are typical)

How Paint is Made at Home

DIY paint can be a fun and inexpensive alternative to commercial paints for light-duty projects like your second grader's birdhouse. Commercial paint is likely still the better choice for your dining room.

You likely have the equipment and many of the ingredients already on hand to make paint at home. Here's a simple recipe from [Mother Earth News](#).

Ingredients

- 1 cup flour
- 5 1/2 cups cold water
- 1 cup screened clay filler (purchase or even dig from the ground)
- 1/2 cup additional powder filler, such as mica

Directions

1. Mix flour with 2 cups cold water, whisking to remove lumps.
2. Bring 1 1/2 cups water to boil, then add the flour water from Step 1.
3. Turn heat to low, stirring until thick paste develops. Remove from heat.
4. Dilute the paste with 2 cups water, a little at a time.
5. In a separate work bowl, combine clay with powder filler.
6. Add filler mixture to diluted flour paste until desired consistency is achieved. Yields 1.5 quarts.

For More Information

For additional information on how paint is made, go to [How Products are Made](#). For help with industrial tank agitator design for your paint manufacturing process, email applications@proquipinc.com or call us at 330-468-1850.

