Addressing the lack of affordable and reliable roofing options in Ahmedabad, specifically for low-income, illegal/informal settlements in high-density, urban areas, and questioning the use of conventional building materials in the US, this project works to develop a composite material of repurposed paper and cardboard—plentiful waste materials in Ahmedabad and most urban areas worldwide—for use in housing construction, while assessing appropriate applications of the material, in terms of structure, sheathing, and insulation. In order to provide individuals with agency in the formation and aesthetics of their dwellings, they can produce the composite panels using a press, form, and instruction manual, and configure them according to their needs. The texture and quality of the material provide further opportunities for customization through embedded patterns or surface design.
Tools and Implements
Soak newspaper 12 hours
Add tea tree oil to prevent mildew
50 small papers (1347 g newspaper) = 15 panels
Use paint mixer attachment for a drill to agitate paper, breaking it into small pieces. Add water to help mix. Less powerful drills will benefit from longer soak time.
For finer pulp, blend paper, using soak water to ease blending. Squeeze out water in strainer until pulp is wet, but not dripping. The more water is left in pulp, the more glue will be lost during compression.

To avoid excess water use, cycle the squeezed-out water through the blending process.
Glue:
1 part cold water
1.5 parts starch

1. Mix by hand or with hard spatula until starch is dissolved
2. Stir over medium-high heat, scraping the bottom, until mixture begins to solidify
3. Turn down heat to low, stir until half is still liquid, and half is solid, and sticks to spatula
4. Remove from heat, stir until even consistency. Return to heat if necessary.

Store in sealed container in refrigerator for up to 1 week. Add tea tree oil to prevent mold.
Thoroughly mix glue into paper pulp. Use more glue for stiffer panel.

For smoother panel, use plastic as non-stick layer between base plate and paper mixture. For better compression or textured panel, use fabric as non-stick layer.

Place mixture evenly into formwork, pushing down with backs of fingers. Add more mixture, filling in open or thin spaces until entirely in formwork.

Push mixture to edges of formwork, ensuring an even level. Smooth it out as much as possible, and place second non-stick layer, then top plate.
Compress using vertical car jack between two concrete or metal surfaces, like in a doorframe. Protect floor if inside, as water will drip down.

Line up jack foot in the center of the formwork. Use bubble level to make sure it is perpendicular to the floor.

Turn jack slowly, compressing until water stops dripping out. Leave for 15 minutes and compress a little more. Leave compressed for 15 more minutes, then remove carefully.
1. Remove top and bottom plates and panel from formwork frame.

2. Remove top plate and non-stick layer.

3. Place drying rack on top of panel.

4. Holding drying rack flat with one hand, lift panel and flip bottom plate, panel, rack over.

5. Remove bottom plate (now on top) and let dry for 1-3 days, depending on weather, drying location. Drying locations: on balcony, in hot car, on pavement, in well-ventilated room.