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Leetonia Railway Tanbark/Pulpwood Car (On30 Scale)

INTRODUCTION

This car is designed in Solidworks and printed using a FormLabs' "Form 4" resin printer at 50-micron (.002") layer thickness. It is considered an entry-level "craftsman kit". Only patience and basic hobby tools are needed to produce a top-quality model. Tools you'll need include a flat working surface, hobby knife with #11 and #17 blades, assorted jeweler's files (preferably diamond coated), needle nose pliers, 9/64" drill, "gap filling" CA glue, Philip's head jeweler's screw driver, artist's oils, powders, thinner, and small paint brushes. 60-grit sandpaper is used to scratch in wood "grain".

WARRANTY: SMMW will replace any part(s) found to be defective due to manufacturing or shipping. Send the damaged part(s) to us for replacement and include \$10.00 shipping to cover USPS 1st Class mail return in the Lower 48 states only.

LIABILITY: SMMW, Inc. will not be held liable for personal injury or health problems, short term or long term, resulting from the use and/or misuse of tools, adhesives, material, castings, resin-printed parts, paints, or any other product(s) used to construct this kit. This kit is recommended for builders over age 15.

WARNING: This kit contains resin-printed parts that have been washed in 99% Isopropyl Alcohol during the post-printing process. The Bachmann log car (supplied by the modeler) may contain materials during filing and sanding that may cause temporary respiratory problems if air circulation or ventilation is not provided. Be sure to work in a well-ventilated area. Wear a dust mask or respirator and safety glasses for maximum protection. Wash hands when finished, especially before eating.

COMMENTS ON THE PROTOTYPE

Inspiration for this car came from photos in a long-out-of-print series called "Logging Railroad Era of Lumbering in Pennsylvania", published in 1973, of Leetonia Railway's Hemlock logging operations dating to circa 1900-1920. Logs were harvested in a seven-toeight-month period during the year. When logging was done, the log cars were outfitted with removable, slatted bodies to haul bark to local tanneries. There are no photos showing these cars hauling pulpwood but it's a "logical" application.

The Russel ad below shows a "bare bones" skeleton log car circa 1890. Leetonia's cars may have looked like this in their early years but photos from the book (see next page) clearly show hand-cranked brakes (outside hung shoes) and knuckle couplers. Other logging outfits in the area upgraded their equipment as larger steam engines arrived, often with knuckle couplers and air brakes. Leetonia used Barnhart log loaders which rolled across a string of log cars on rails ... these rails are clearly shown in the bottom (wreck) photo and ends of two rails are visible in the tanbark unloading photo. These rails are reproduced in model form for you.





Cars of bark are being unloaded onto the giant bark pile that stretched in front of the school. Because the bark season was only four or five months, log cars were used for hauling the bark. A frame was placed on the car to hold the bark. Ten men appear to be involved with the unloading. Each piece, cut in four foot lengths, was handled individually, being given from one man to the next until it reached its storage place on the pile. Originally the bark was stored under great open sheds; but when these decayed, the bark was stacked with a peak so that water would run off.



CONSTRUCTION

- Bachmann On30 log car: Remove trucks, couplers, and (4) brake hanger beams. Use needle nose pliers to pull off the wire loops holding the chain to each log bunk. Remove wheelsets from truck sideframes.
- **Remove diecast features:** Using a Dremel or similar motor tool on a stand, grind off the pyramid-shaped log stops from each log bunk. Some of the raised strap next to the pyramid will, inevitably, be removed but these are hidden from view when the body is attached. Flip the underframe over and use the same grinding technique to remove bolster pads and most of the round boss. You can remove the boss flush with the underframe or leave a little above as shown in the photos. This only affects the coupler height. Use a flat file to dress the ground surfaces to create a flat surface (the grinding wheel tends to round the surfaces). Refer to photos below (top-right shows ground off pyramids).



- Crossbeams: CA (3) printed crossbeams centered across the "spine".
- Add printed details: CA (2) printed rails to these crossbeams and across the log bunk straps close to the edges to clear the inner floor runners.
- **Trucks:** My Russel archbar truck sideframes are included with this kit to replace the incorrect Bachmann sideframes (these are commonly used for "Maine 2-foot" prototype cars). Bachmann's truck screws require enlarging my sideframe bolsters using a 9/64" bit. It's best to do this manually either in a twist drill holder or, if using a bit from a larger drill set, you can twist the drill between your thumb and forefinger using the hex shaft. DO NOT try this using a drill motor ... you WILL break the printed bolster using a powered tool! Frequently check the depth of the enlarged hole using the Bachmann screw. Once sufficient depth is achieved, the truck can be attached to the underframe easily. Replace the couplers. The underframe modification is finished.
- Deck weathering: Use 60-grit sandpaper to create distressed wood grain in the deck boards by dragging the paper from edge to edge parallel to the joints. The boards are different heights so individual boards should be distressed. The same sandpaper can be used to lightly scratch the sides and on the end slats but since these are surfaces that didn't see a lot of distress, just a few light passes will suffice.
- **Diagonal braces:** Slatted ends are held in place with diagonal braces. It's best to cut each styrene strip a little long before mitering (1) end to 45°. Cut (4) of each length: 2.300", 1.750", and 1.300".

Make a pencil mark on each side sill at the halfway point. Building the pilot model, I found it best to first attach the longest board inside a corner post where it intersects the 2nd-from-top horizontal board. As the CA cures, position the other end near the pencil mark, add a drop of CA behind the strip, and attach to the side sill. Repeat this for the shortest board, then add the middle board. When all glue joints are cured, use a #17 "chisel blade" to cut off the excess parallel and about .020" from the bottom surface of the side sill.







Painting/weathering: Read through the "Painting/weathering" paragraphs before applying any paint. Non-wood surfaces (plastic) can be to look like wood using spray paints ("rattle cans"), oils, and powders. New wood would have a yellowish-tan tint (oak and pine) that quickly began weathering to a grey caused by rain, grime, and sun bleaching. Paints used on this project are shown below (Rust-Oleum "Lemongrass" and "Frosted Glass" dull coat, Krylon "Ruddy Brown", Dupli-Color Grey "Scratch Filler Primer", and "Payne's Gray" oil). Log cars were rarely painted so be sure to cover the Bachmann paint with a color that matches the body. The grey primer is a great base coat that provides a dull surface for additional weathering. Truck sideframes and metal parts, like the Barnhart loader rails and square bolt heads under the end posts, should be "rusty and crusty", using a base color of grey primer, then Ruddy Brown overspray, followed by black and dark brown powders.

There are numerous on-line and printed resources describing how to weather non-wood surfaces to look like wood. Most start with a light grey base as noted above, then add VERY thin layers of artist's oils and powders to depict shading, etc. Weathering plastic and diecast metal to look like wood requires working in thin layers and a LOT of patience. Artist's oils and lacquer sprays (when applied with a brush) are thinned with "Turpenoid", an odorless alternative to traditional turpentine. Using too much thinner greatly lengthens drying time. Powders can be added to the tacky oil surface to bond in place.

If you added split wood, grain, and/or damaged spots with the #11 blade and 60-grit paper, the thinned oil will migrate to those areas.

The "Lemongrass" comes out of the can with very dense, opaque coverage so be sure there is at least 12" between the can and what you're painting. You're trying to get a VERY thin coat to lighten the grey printed resin.

The photos show Winton artist's oils and Alphacolor powders I use to weather everything ... steel or wood. Orange, red, and browns simulate rust. The oils are (left to right): Soft Mixing White (to lighten other colors), Payne's Gray (black), Raw Sienna (fresh rust), Raw Umber (aged rust). Burnt Sienna also works well for "aged" metal base coat. White is rarely used.



"Pan Pastels" powders can be substituted for Alphacolor.

This is the order used to paint the pilot model:

- 1. Body: Spray Grey Primer to completely cover entire underside including some overspray on side sills, followed by Lemongrass over the Grey on the deck, side sills, end slats (inside and out), followed by a light overspray of Grey to blend the Lemongrass.
- 2. Underframe: Spray Lemongrass over entire part thick enough to cover most of the "Bachmann brown", Grey overspray to blend the yellow. Ruddy Brown was sprayed unto a scrap of styrene and brush-painted on the rails and other "metal" parts like coupler box straps, log bunk straps, and stake pockets. "Turpenoid" was used to thin the Ruddy Brown for brushing. Use a Number 10/0 artist's brush for the Ruddy Brown.

Paynes Gray artist's oil was brushed full-strength on the deck, especially in corners, and wiped off with paper towel, leaving the corners alone (to represent dirt accumulation). This highlights the scratched wood grain and different board thicknesses. Use a Number 8 artist's brush for this.

3. Trucks: Spray Grey Primer base coat, followed by Ruddy Brown, then dark weathering powders (or oils, if you prefer). Use a Number "10 Fine" for powders.

Wheel faces and axles should be grimy from many years of accumulated dirt due to oil leaking from the journal boxes. A "gritty", textured wheel face is completely prototypical so use your imagination. They should be between dark brown and dark grey. Paint the axles the same way. Nothing should be shiny on this car except the wheel treads. Use painter's tape to cover wheel treads, then apply Ruddy Brown to axles and wheels, followed by powders on the face.





After the oil has dried overnight and you've added powders (optional), spray another light coat of "Frosted Glass" to seal everything (body, underframe, trucks, and wheels. Oils and powders will rub off when handled if left unsealed.

• **Tea leaves:** No piece of logging equipment was ever "clean". Mark chips from loading/unloading operations piled up in corners and places. Depending on the type of load you want to "haul", chips would vary in color. A reddish-brown color is a good choice for Pine. Less red, more brown, matches Oak and Hemlock. Bark chips would turn grey over time. The tea leaves below are a good choice because they are coarse compared to "American" brands which tend to be fine and have less red tint. "Numi Honeybush" and an American brand were used on the pilot model.

Apply Canopy 560 in small puddles around the corners and behind the diagonal braces. Use a toothpick to spread into a thin layer then and sprinkle tea leaves on top. Gently press leaves into the glue with your finger and let set. Turn the car upside down and tap the body to release loose pieces that can be reused.







You can view these instructions in color on my website. Thank you for purchasing this kit.