



Cleaning 9V Lego Track

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Why Clean Track?

9V Lego track is very robust and easy to use, but it can benefit from periodic maintenance in the form of cleaning. The three reasons to clean track are aesthetics, traction, and power transmission. Dirty track can look bad. Dirty rails can make it difficult for motors to get the traction to pull trains. Dirty rails can inhibit electricity flowing from the rails to the metal wheels, so trains stop or slow.

General Cleaning

Keeping the plastic part of 9V track clean is the same as for normal non-electronic Lego. Routine cleaning with canned air, soft brushes, and possibly cleaning slime can keep the dust off. Every several years, or in dirty environments or where there has not been routine cleaning, active washing may be necessary. Washing Lego requires three plastic bins deep enough to immerse the parts in water and a soft brush (a makeup brush designed to apply foundation is ideal). One bin should have a solution of a few drops of



dish detergent in water at about 105° F sufficient to cover, with two containers of rinse water. Note: water is heavy. Even a few inches of water in a container that can hold 48x48 stud baseplates is a lot of weight. Plan ahead so that the bins can be safely carried to dump the water when finished, and be sure the bins have sides high enough above the waterline to handle the sloshing of water while washing parts or carrying the bins.

The track should be soaked in the detergent solution for 20 minutes and then each piece lightly scrubbed on dirty surfaces with the brush under water and then transferred to the first rinse. After immersion in the first rinse, parts can be dropped into the second

rinse, immersed, shaken off, and then spread out in a single layer on towels or racks on towels on a nonporous table. The metal racks may be blotted; the plastic should be left to air-dry over a few days.

Cleaning Rails

Unless the rails have an excessive buildup of rust, tarnish, or dirt that the general cleaning did not dislodge, the main target of routine cleaning is “black gunk.” Black gunk is the material that leaves a gray streak on a finger or clean cloth rubbed along the top of a rail. It is reported to consist primarily of nickel-silver oxide dust, household dust, and oil (e.g., from manual handling). Routine cleaning consists of wiping away the black gunk using a solvent. The preferred solvents are 99% isopropyl alcohol or low-odor mineral spirits.

Warning: isopropyl alcohol and mineral spirits are volatile and flammable. Use only in a well-ventilated space and dispose of towels soaked in solvent in a metal container, preferable outside.



99% isopropyl alcohol can be obtained from larger drugstores, but should not be confused with the 70% isopropyl alcohol available from grocery stores. “Odorless” mineral spirits can be found in the paint section of any big box store. Both are harmless to ABS plastic and should be transferred to smaller bottles or misters (available in the cosmetics section of, e.g., Daiso) for ease of use. Remember to always label containers holding chemicals. Note that according to some research (see article by Joe Fugate in references) mineral spirits significantly reduce the production of nickel-silver oxide compared to many other solvents, including isopropyl alcohol, and thus reduce the frequency of cleaning needed.

The contact point between the rails and the wheels for power pickup is the top inside corner of the rail. To clean the rail, therefore, place the track on a firm surface, dampen a piece of paper towel with solvent, and wipe the rail along the top edge and that corner. The result will be a dark streak on the towel. Adjust to a clean section of damp towel and wipe again. Repeat until there is no streak or it is satisfactorily faint. Any solvent remaining on the rails will evaporate harmlessly.



Bright is Not Clean

When the rails have significant rust, pitting, oxidation, or buildup that cannot be addressed with only solvent and paper towels, more aggressive measures may be necessary. The first choice should be a common and cheap eraser. Firm strokes along the rail can pull off buildup, and if the eraser becomes fouled it can be cut down and used again. This will generate considerable debris, so canned air is a must. If the eraser is insufficient, toothpaste or sandpapers with grits of 1000 or more may be the best choice. Michael Gale's article in the references goes into more detail on wet sanding. The primary concerns with abrasives are that Lego rails are thin metal, so abrading the rail frequently will eventually wear through it, and that irregularities on the rail surface (such as microscopic scratches from abrasives) cause more arcing during power transmission, so black gunk will be generated more quickly. An additional consideration with dry sanding is illustrated by this track, which left only light residue on a mineral spirit-dampened towel (basically clean):



After light treatment of surface stains on the rail with 1000-grit dry sanding to bring the rail to a mirror finish, the same wiping picked up a dark stain of black gunk. The dry sanding had generated additional need for cleaning and would have spread black gunk to previously-cleaned track had a train run on it.



Further Areas of Investigation

The field of track cleaning is ripe for more rigorous exploration. Most data reported is anecdotal. It would be an accessible field for even undergraduates to set up new loops of track in controlled conditions, set data loggers to report observed voltages across track and loops travelled, and let them run for a few days, then repeat with different track cleaning methods.

The effect of abrasives on track is under-documented. Even the grit rating of the common Bright Boy abrasive track eraser is not available. HO modelers who would not let an abrasive near their track recommend using the smooth side of washer to “burnish” clean track, but there is no available comparison of such tools to the 5,000 or higher grit sanding cloths used to detail automobiles; do all sandpapers have the same effects?

There does not seem to be data on the need for or effectiveness of methods to clean the connections between Lego 9V track pieces. In other scales, rail joiners as conductors are routinely dismissed with the recommendation to wire every piece of track to the power bus regardless, but Lego track just works with a simple connection and no one reports improved power transmission between tracks from different track cleaning regimens.

Generally speaking, model railroading writers are eager to offer advice on how to clean the power-transmitting wheels on motive power, but suddenly fall silent when the topic of how to clean the plastic wheels on unpowered rolling stock is raised. There is no data reported on how to clean plastic Lego train wheels, whether dirty wheels spread black gunk to clean track, or what test would be appropriate to assess whether rolling stock has wheels that should be cleaned before running on a layout.



References

Fugate, Joe D. "Keeping your track and wheels clean longer - a look at polar vs non-polar solvents." *Model Railroad Hobbyist*. May 2019: 9-21. <https://s3-us-west-2.amazonaws.com/mrhpub.com/2019-05-may/111.MRH19-05-May2019-P.pdf>

Gale, Michael. "This Old Track: Maintaining and Restoring Metal 9V Track." *BrickNerd*. November 21, 2021. <https://bricknerd.com/home/this-old-track-maintaining-and-restoring-your-metal-9v-track-11-2-21>.