

Experiments with Ballast

I have been looking at ballast for my N gauge layout and there is quite a range of materials, colours and sizes. Woodland Scenics seems to be the only company that gives the actual size of their ballast and they have a good colour range.

Ballast Scale Reference Chart			
SCALE			
	FINE <i>Particle size: 0.0103"-0.033" (0.26 mm-0.83 mm)</i>	MEDIUM <i>Particle size: 0.033"-0.049" (0.83 mm-1.24 mm)</i>	COARSE <i>Particle size: 0.05"-0.082" (1.27 mm-2.08 mm)</i>
Z	2.2"-7.3" (5.58 cm - 18.5 cm)	7.3"-11" (18.5 cm - 27.9 cm)	11"-18.3" (27.9 cm - 46.4 cm)
N	1.6"- 5.3" (4.06 cm - 13.4 cm)	5.3"- 8" (13.4 cm - 20.3 cm)	8"-13.3" (20.3 cm - 33.7 cm)
HO	0.9"- 2.9" (2.28 cm - 7.36 cm)	2.9"-4.3" (7.36 cm - 10.9 cm)	4.4"- 7.2" (11.1 cm - 18.2 cm)
S	0.6"- 2.1" (1.52 cm - 5.33 cm)	2.1"-3.2" (5.33 cm - 8.12 cm)	3.2"- 5.3" (8.12 cm - 13.4 cm)
O	0.5"-1.6" (1.27 cm - 4.06 cm)	1.6"-2.4" (4.06 cm - 6.09 cm)	2.4"- 3.9" (6.09 cm - 9.9 cm)
G	0.24"-0.8" (6mm - 2.03 cm)	0.8"-1.2" (2.03 cm - 3.04 cm)	1.2"-1.9" (3.04 cm - 4.82 cm)

The fine ballast is still too large for N at 0.83mm so I have been sieving some to see if I can get the size I want. They claim the size is 0.26 to 0.83mm so I got a set of sieves from Rapid Electronics with 0.5, 0.25, 0.125 and 0.063mm meshes plus a base and top (£20 plus delivery and VAT). A bag of ballast was selected at random and found to weigh 236g. When sieved I got the following:

Mesh size	weight/g	percentage/%
>0.5mm	approx. 3	1.5
0.25-0.50mm	180	76.5
0.125-0.250mm	48	20.5
0.063-0.125mm	approx. 2	1
<0.063mm	approx. 1	0.5

The approx. readings are due to the limitation of the kitchen scales. I have now sieved a couple more bags with wastage of 3.6 and 1.4% of the bag.

Real modern ballast (it may have varied in different eras) is <63mm and ideally not less than 14mm so at 1:160 that is approx. 0.1 to 0.4mm.

Passing	%	1:160/mm	1:148/mm
63mm	100	0.394	0.426
50mm	97-100	0.313	0.338
37.5mm	35-65	0.234	0.253
28mm	0-20	0.175	0.190
14mm	0-2	0.088	0.095
1.18mm	0-0.8	0.007	0.008

So taking everything above 0.5mm and below 0.125mm out of the Woodland Scenics ballast should be just about OK and that only removes about 3% of the product. Taking the <0.25mm portion only might be better but wasteful.

Woodland Scenics have done a good job of sizing their ballast. Ideally a sieve at 0.4mm and another at 0.1mm would be needed to get it exactly right but that is probably not practical or cost effective. Take a look at the photos on page 16 and see which you prefer.

Test laying.

My ballast spreading device is made by Digitalzentrale.de and has 2 brushes built into it. There are currently 11 different versions for N to suit different track! It is made of laser cut Perspex so you could make your own unit with the club's laser cutter! Green Scene make a similar device but without brushes and that would be much easier to obtain. Assembly is easy and the parts are a good tight fit which is fixed with a little Plastic Weld. All these spreaders work in the same way, place on the track, fill with ballast and move along the track. It



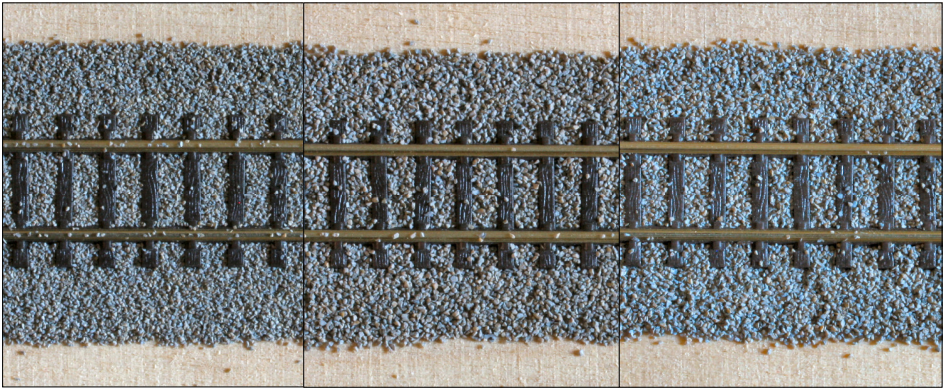


seems to do a good job with minimal cleaning up with a paint brush needed afterwards.

Colour of the ballast varies quite a lot so I have light grey, grey, brown and dark brown to mix as required (there is also iron ore and cinders (black) in the range). The light grey will be used on the section of track that is newly laid with concrete sleepers, the browns will be the base for the colour through the station. So a variety of mixes will be required and that will take more experimenting.

Below: real ballast on the Thameslink line north of St Pancras.





Above left to right: 0.125-0.25mm ballast, 0.25-0.50mm ballast and a mix of the 2. The difference is subtle and it may be the colour that gives the realistic effect with the texture not so important in this small scale. I think I prefer the mix rather than the larger size on its own.

Paul