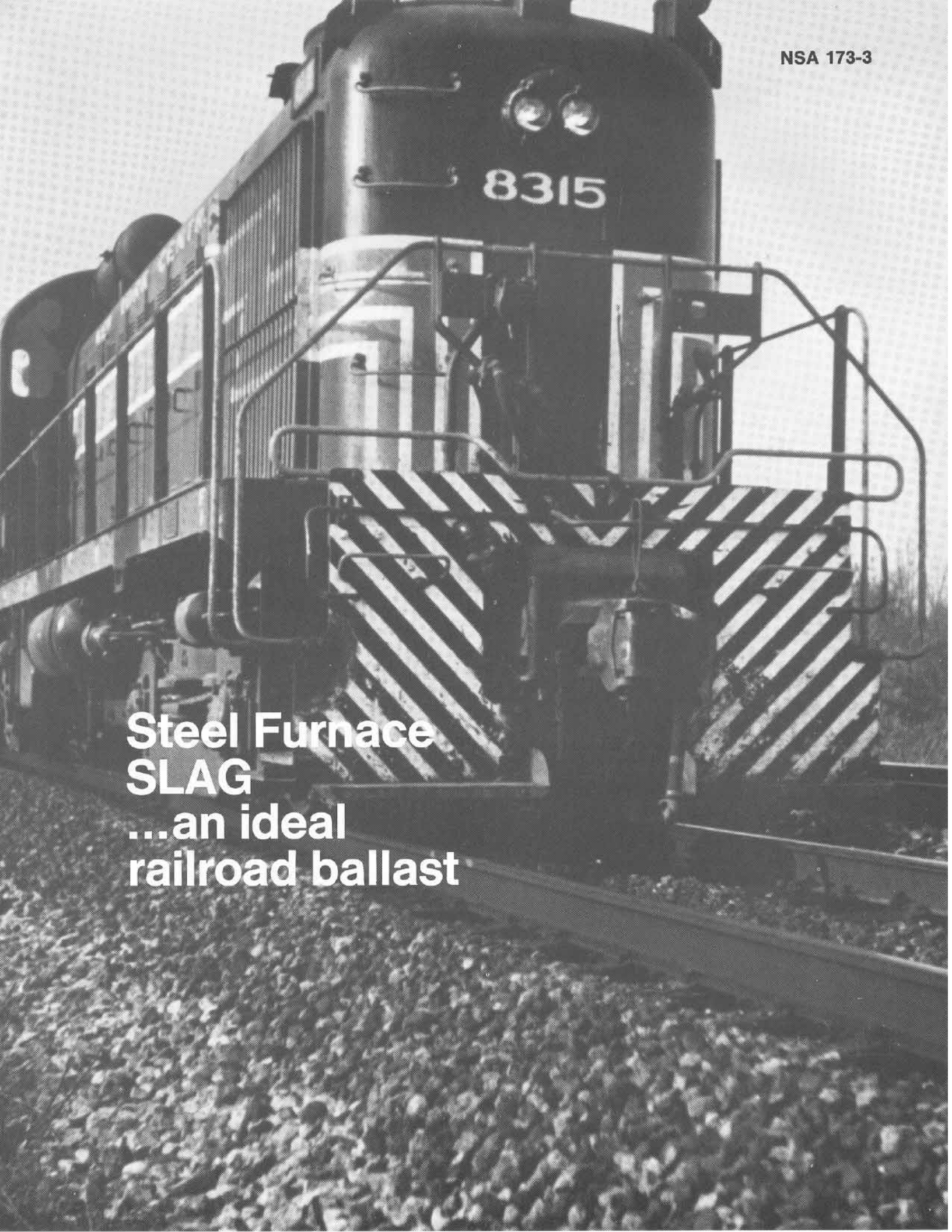


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**Steel Furnace  
SLAG  
...an ideal  
railroad ballast**



# Steel Furnace SLAG

## is stable, economical and clean

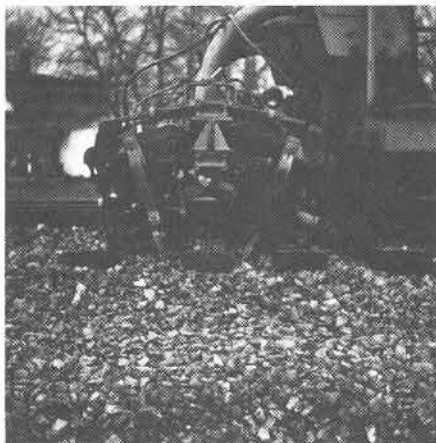
Many thousands of tons of steel slag, and blends of blast furnace and steel slag are sold each year for ballast on all types of track from high-speed, heavy-traffic main lines to light-traffic spurs and yards.

Extensive field testing conducted by eight of the nation's major railroads and several independent testing laboratories has proven that steel furnace slag is an excellent material for railroad ballast. Steel slag is included in the specifications of the American Railway Engineering Association (AREA).

### What is Steel Furnace Slag?

Steel slag consists essentially of a fused mixture of oxides and silicates. It is formed simultaneously with the production and refining of steel.

Steel slag ballast is efficiently tamped using mechanical equipment.



### Physical Characteristics

Steel slag is rough textured, cubical and angular in exterior appearance. Internally, each particle is vesicular in nature with many non-interconnected cells. The cellular structure is formed by the gases entrapped in the hot slag at the time of cooling and solidification. Since these cells do not form connecting passages, the term "cellular" or "vesicular" is more applicable to steel slag than the term "porous." When these cells are exposed in the crushing process, cubical fragments are produced containing a minimum

of flat or elongated pieces. This angularity, combined with its rough texture and weight, makes steel slag an ideal material for railroad ballast.

### Sizes and Properties

Processed steel furnace slag meets requirements specified by the American Railway Association (AREA). The most commonly utilized slag ballast gradations in the United States are indicated in the tabulation below. Other gradations specified by the AREA are available, or can be crushed and screened on special order.

### Normal Sizes

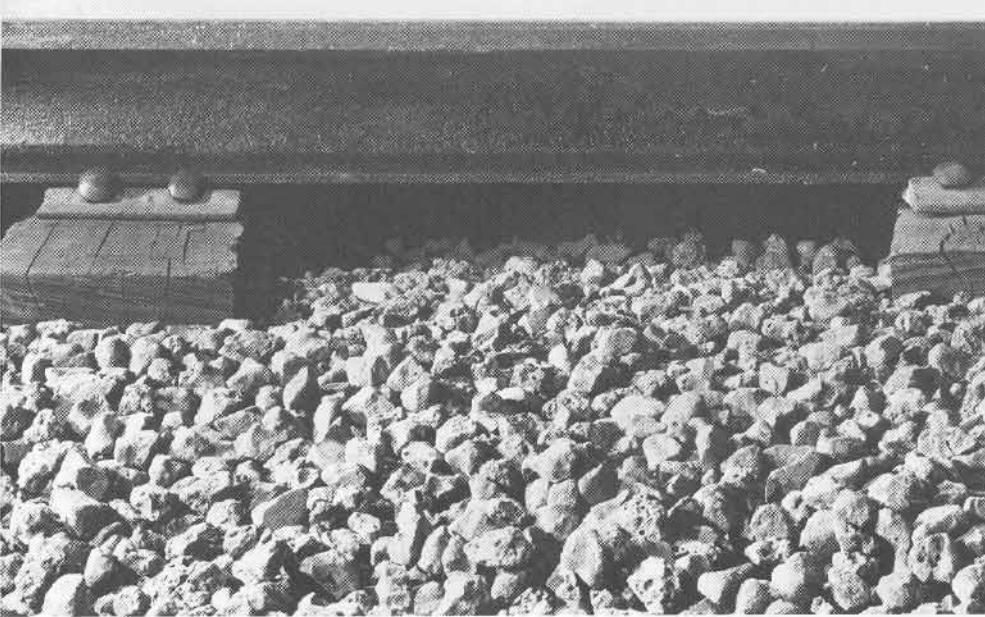
Size No.	Screen Size Nominal, In.	Percents By Weight Passing Screens							
		2"	1½"	1"	¾"	½"	⅜"	#4	#8
4	1½"-¾"	100	90-100	20-55	0-15	..	0-5	..	..
5	1"-⅜"	..	100	90-100	40-75	15-35	0-15	0-5	..
57	1"-#4	..	100	95-100	..	25-60	..	0-10	0-5

### Physical Properties

Property	Steel Slag	AREA Specifications
Weight per cubic foot	125 lb. (avg.)	100 lb. min
Clay Lumps	None	0.5% max
Soft and Friable Pieces	Negligible	5.0% max
Material Finer than 200 Sieve	Less than 0.5%	1.0% max
Los Angeles Abrasion Loss	Usually less than 30%	40% max
Sodium Sulfate Soundness Loss	Less than 5%	10% max (5 cycles)
Electrical Resistance	More than 15.0 ohms	2.0 ohms min per 1000 lineal ft. of track (AAR)

Processed steel furnace slag also meets all other AREA specifications and AAR recommendations as indicated in this tabulation.





*Top:* Trackside close-up reveals the rough, angular texture of steel slag.

*Center:* Blended slag ballast gives stability to main line of major road.

*Lower left:* Clean steel slag surface ballast is ready for final placing.

*Lower right:* Steel slag is excellent sub-ballast for high-load roadbeds.



## Advantages of Steel Slag Ballast

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- Its heavy weight provides a high resistance to lateral movement on curves, and washout protection in areas subject to flooding.

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- Steel slag provides better drainage because of its high percentage of void space, its cleanliness and high resistance to degradation.

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- Its rough, angular pieces provide an interlocking, stable roadbed. Its sharp corners and rough, pitted surfaces grip the ties firmly and prevent shifting of the track on curves.

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- Steel slag has high electrical resistance; it does not interfere with the conductivity of the rails when used with interlocking signal systems.

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- It contains no organic substances and is an exceptionally clean ballasting material that will not support the growth of unwanted vegetation.

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- Steel slag has high resistance to wear and abrasion, minimizing degradation from heavy traffic.

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- Steel slag is highly resistant to change by wetting and drying, freezing and thawing, extreme changes in temperature and chemical attack.

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Docksides, yards, other areas subject to heavy loads use steel slag for both surface and sub-ballast.



Steel slag is used for dressing and for raising rails on major Western main line near California-Nevada border.

Produced  
in cooperation  
with the



**NATIONAL SLAG  
ASSOCIATION**

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