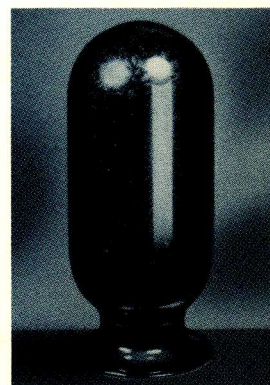


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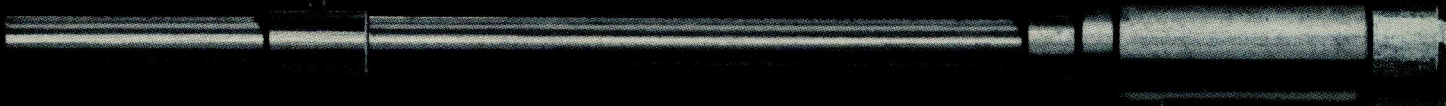
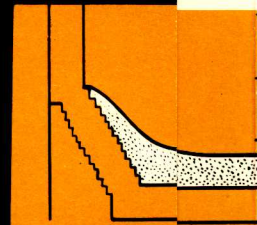
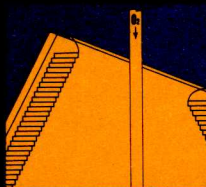
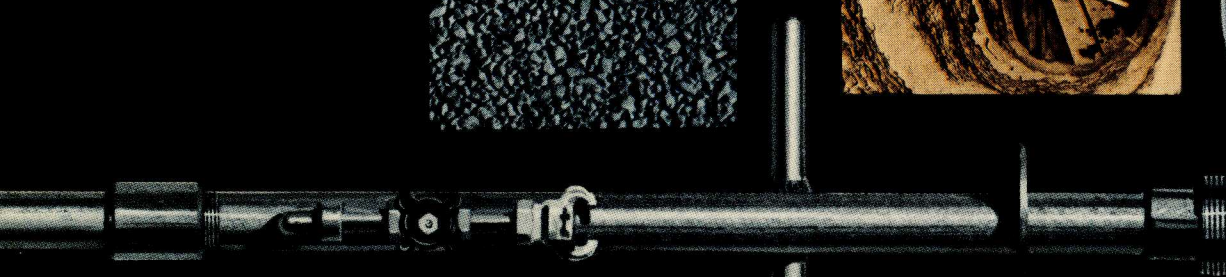
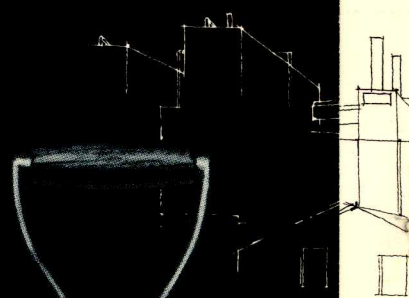
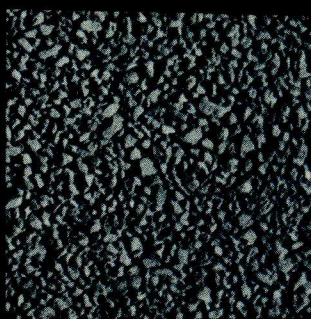


PRODUCTS OF BASIC INCORPORATED

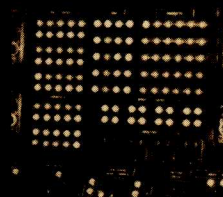
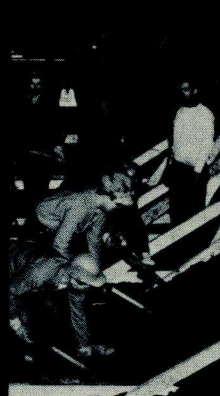


APPLICATION

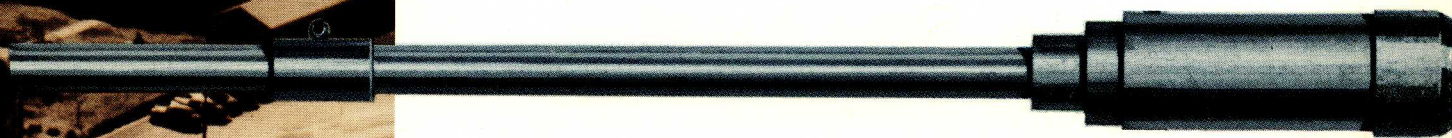
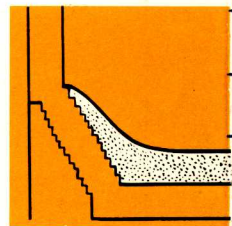
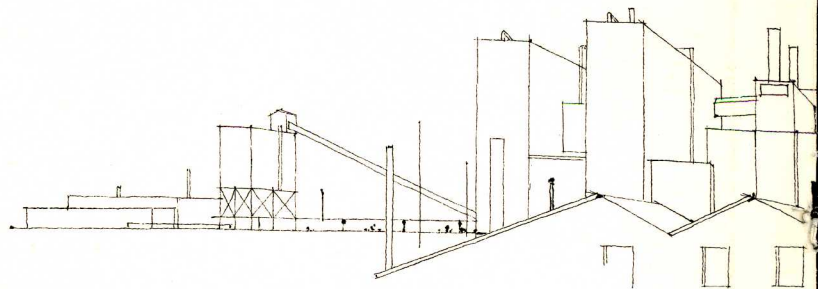
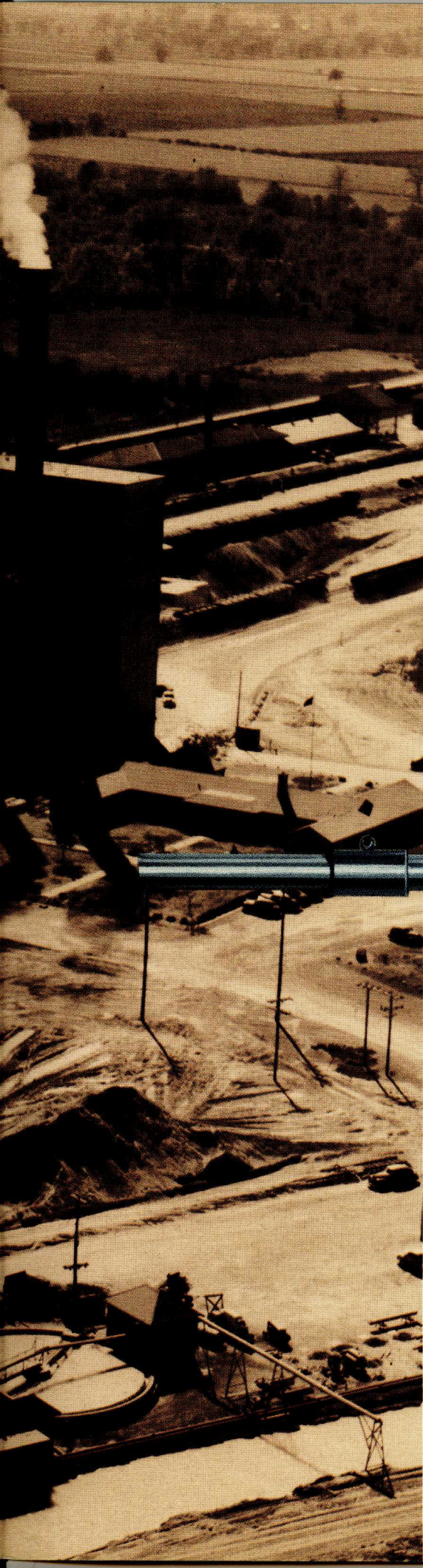
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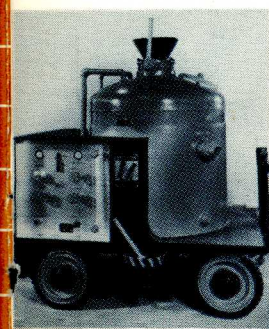
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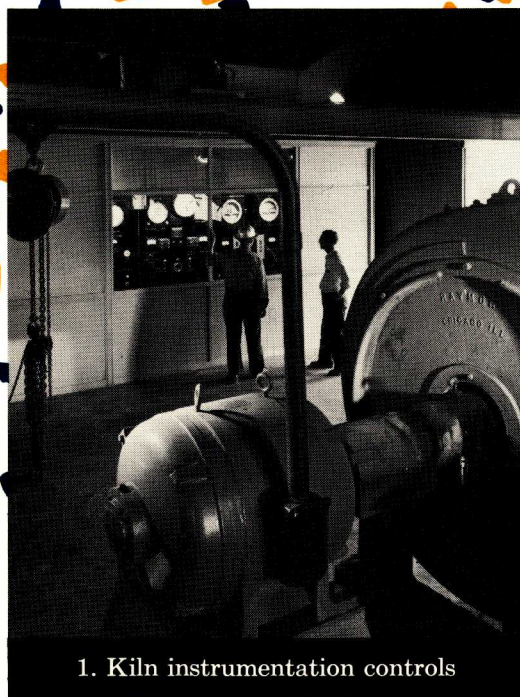


Basic's Maple Grove, Ohio works, with adjacent dolomite resources, is located almost exactly in the geographical center of steel production in the United States. Capacity of this facility is approximately one million tons of refractories per year.

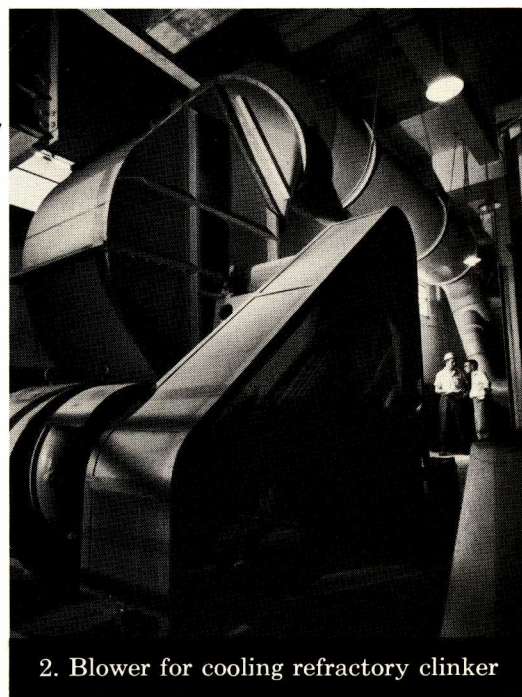


Basic Incorporated obtains dolomite from its extensive quarries in northwest-

[illegible]



1. Kiln instrumentation controls



2. Blower for cooling refractory clinker

ern Ohio. Here, reserves are sufficient to satisfy requirements at present rates of operation for well over one hundred years. The location of these dolomite resources, and the company's adjoining manufacturing plants, coincides almost exactly with the geographical center of steel production in the United States.

Basic's magnesite resources are located in the Paradise Mountains of west central Nevada. These deposits comprise the major part of one of the only two large known occurrences of the kind in the United States. Refractories produced adjacent to these mines deliver at competitive prices to all domestic steelmaking centers and are also shipped to foreign markets.

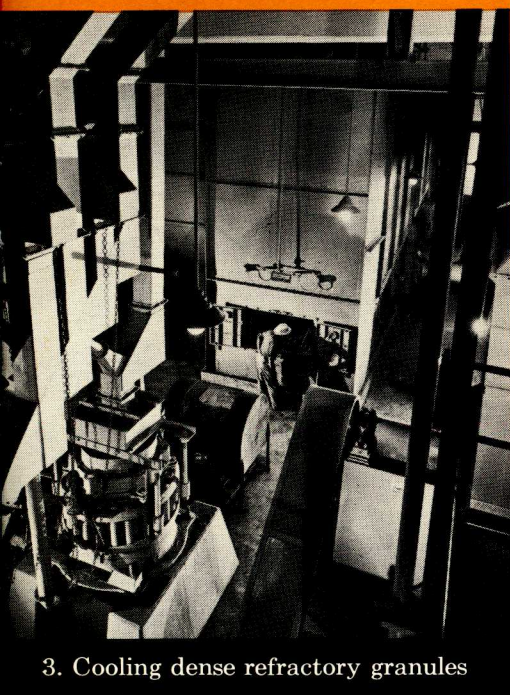
Chromite is obtained from the company's Cuban deposits which round out its independent position in respect to all the raw materials essential to the manufacture of basic refractories.

In addition to refractories, Basic supplies to the steel industry a variety of chemical and metallurgical lime products. High calcium quicklime from the Buffalo plant is used as a flux for open hearth and electric furnace slags. Dolomite fluxstone from the Maple Grove (Narło)* and Gibsonburg, Ohio plants is employed in the manufacture of blast furnace and cupola iron.

The company's field operations typify modern, large-scale open pit mining procedures. Production of ore is at a rate of more than two-and-a-half million tons per year.

The sized ores, beneficiated when necessary, are fired in rotary kilns at high temperatures in the presence of mineralizing agents. The resulting products are dead-burned magnesite or dead-burned dolomite granules.

To produce dead-burned dolomite the company operates eleven kilns at its Ohio



3. Cooling dense refractory granules



4. Sizing burned refractories



5. Automatic feeding and loading-out

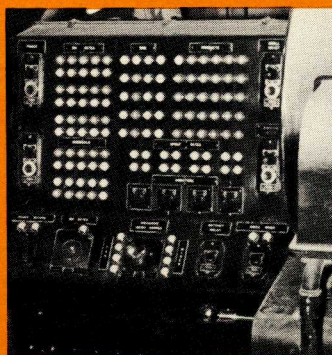
works. Two kilns at Ohio and one at Nevada produce dead-burned magnesite. Two additional kilns are used for research, developmental work and for pilot plant production. These facilities make the company the world's largest single producer of dead-burned granular refractories.

From primary crushing to finished product storage Basic's plants are fully mechanized for continuous-flow production. The company combines this efficient production with maximum control over the quality and uniformity of its products through extensive instrumentation, and chemical and physical analyses at every stage of manufacture.

As the variety of products attest, the development and use of basic refractories is a highly specialized activity. Basic's large staff of ceramic, metallurgical and chemical engineers, are constantly in touch with practical refractory problems. The solution of

these in its new Bettsville, Ohio laboratories provides the company with a basis for its continuing progress and growth as a major supplier of basic grain refractories.

*Maple Grove, formerly the post office address of the company's principal Ohio plant, is the freight address on the Pennsylvania Railroad and the origin point for most truck shipments. Narlo, Ohio is the freight address on the Nickel Plate Railroad.



On this electronic control panel in the Special Products Plant, the formulations for special refractories are set up. Automatic processing minimizes the possibility of deviation or error.



DEAD-BURNED and RAW DOLOMITE



DEAD-BURNED DOLOMITE is the most widely used hearth maintenance refractory in the western hemisphere. This broad acceptance results from its quick-setting properties, its high order of resistance to basic steelmaking slags and its low cost.

Dead-burned dolomite consists of dense, hard-burned granules containing principally the oxides of magnesium and calcium, with small controlled amounts of iron oxide. The magnesium oxide is present as periclase and the calcium oxide principally as calcia. A small amount of the calcium oxide is in combination with iron oxide to form low melting point minerals which impart quick-setting properties to the product.

The superiority of Basic's dead-burned dolomite is the result of rigid quality control

at every manufacturing stage from quarry to loading. Dolomitic limestone obtained from the company's deposits in Ohio contains less than 1% silica and less than 0.5% alumina. In mining, great care is taken in removal of overburden to avoid silica and alumina. As a further safeguard, all dolomite is thoroughly washed. Finally, the iron oxide used in burning is carefully selected to avoid therein undesirable quantities of silica and alumina both of which are harmful to the refractory properties of dead-burned dolomite. It is also important that copper, nickel and chromium not be present as these elements are unwanted residuals in the steel bath.

Formation of calcium ferrite during burning promotes more than 50% shrinkage in volume, yielding a product with porosity of

DEAD BURNED DOLOMITE

TYPICAL CHEMICAL ANALYSES							TYPICAL SCREEN ANALYSES					TYPICAL PHYSICAL PROPERTIES				
	Loss on Ignition	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	CaO	MgO	Passing					Unit Weight (lbs. per cu. ft.)	True Specific Gravity	Apparent Specific Gravity	Porosity of Grains	Angle of Repose
							3/8" Mesh	4 Mesh	10 Mesh	20 Mesh	40 Mesh					
MAGNEFER	0.4%	1.2%	7.4%	0.5%	53.2%	37.2%	99%	50%	5%	1%	—	121	3.53	3.13	10.1%	32°
SYNDOLAG	0.4	1.2	4.2	0.5	55.2	38.4	—	100	64	16	Trace	116	3.51	3.10	10.6%	32°

STORAGE: Should be stored under cover and used promptly.

PACKAGING & SHIPPING: Shipped bulk or in 100 lb. capacity multiwall paper bags from Nardo, Ohio or Hammond, Indiana.

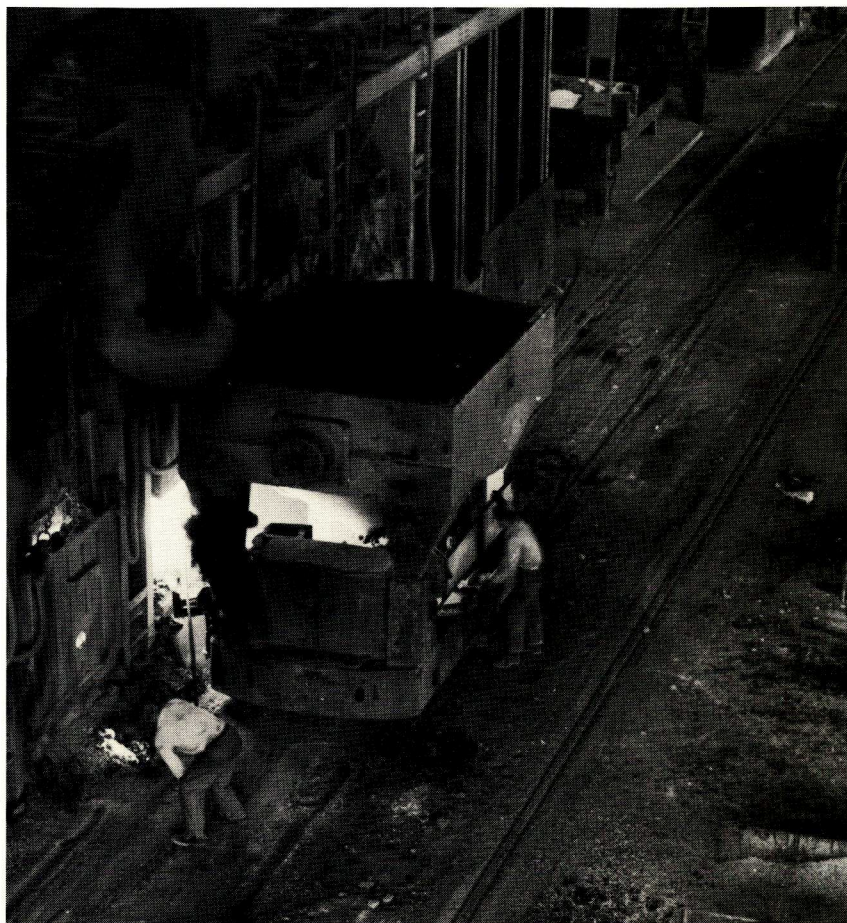
RAW DOLOMITE

TYPICAL CHEMICAL ANALYSES		TYPICAL SCREEN ANALYSES																TYPICAL PHYSICAL PROPERTIES	
		Passing Mesh	4"	3 1/2"	3"	2 1/2"	2"	3/4"	1/2"	3/8"	4	8	14	20	28	48	60	100	Unit Weight (lbs. per cu. ft.)
Loss on Ignition	47.20%	BLAST FURNACE STONE	100%	92%	63%	17%	2%												90
SiO ₂	0.25	OPEN HEARTH STONE #5						100%	70%	3%									96
Fe ₂ O ₃	0.04	OPEN HEARTH STONE #6							100	78	20%			1%					95
Al ₂ O ₃	0.06	SINTER STONE	GRADE #8								100	97	66		33%	15%		8	95
CaO	30.60		GRADE #8-11									100		83			62%	48	97
MgO	21.60		GRADE #11									100		99			83	65	94
S	0.02																		
P	0.003																		

less than 11%. High density of individual grains plus controlled sizing results in a maximum concentration of refractory in each furnace repair. Most of the calcium ferrite takes the form of a film over each refractory grain. At steelmaking temperatures, this film bonds individual grains into a dense, monolithic mass. This film also serves to inhibit penetration of atmospheric moisture. As an additional safeguard against hydration, dead-burned dolomite is oil-sealed unless otherwise specified.

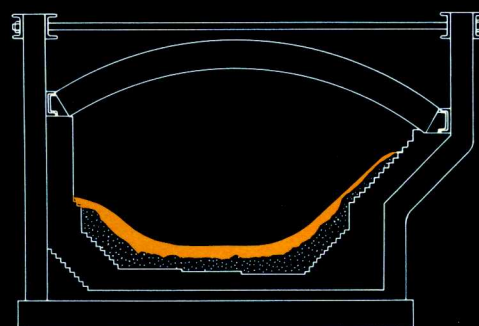
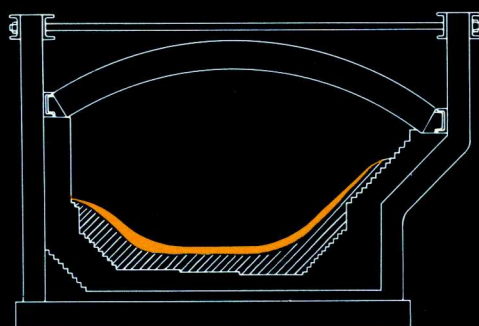
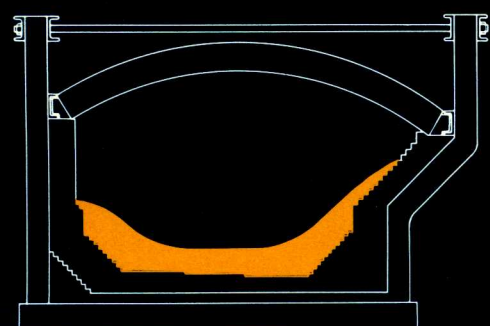
Basic produces two dead-burned dolomites, *Magnefer* and *Syndolag*. *Magnefer* has a top grain size of 3/8". *Syndolag*'s top size is 6 mesh. *Magnefer* is used primarily for fettling of basic open hearth furnaces and, to a lesser extent, large electric furnaces. *Syndolag* is designed especially for maintenance of electric furnaces.

Basic's *Open Hearth Raw Dolomite* is chemically identical to the dolomite used for dead-burning. It is employed in open hearth shops for banking doors, routine bottom drying, filling tap holes and occasionally for fettling basic hearths.





DEAD-BURNED MAGNESITE



1. Fully sintered Basifrit hearth.

2. Basifrit working hearth on rammed sub-hearth.

3. Basifrit resurfacing of magnesite hearth.

Magnesia has long been recognized by the steel industry as a valuable component of hearth refractories. Periclase—the crystalline form of magnesia—has a melting point over 5000°F. It possesses excellent physical and chemical stability and does not react readily with basic open hearth slags. In addition, it has the unique ability to absorb large quantities of iron oxide without serious loss of refractoriness.

Magnesia—in the form of periclase—is the principal constituent of dead-burned grain magnesite. The manufacturing process for dead-burned magnesite is similar to that used in the production of dead-burned dolomite. However, the raw materials—mined and processed at Basic's Gabbs*, Nevada works—are magnesite and brucite rather than dolomite. Two magnesite products, *Basic Magnesite* and *Basifrit* are supplied directly to the steel industry. Dead-burned magnesia grains

—with special chemical, mineralogical and physical properties—are shipped in considerable tonnages to the company's Ohio Works for further processing into special refractories. These refractories are discussed in the following sections.

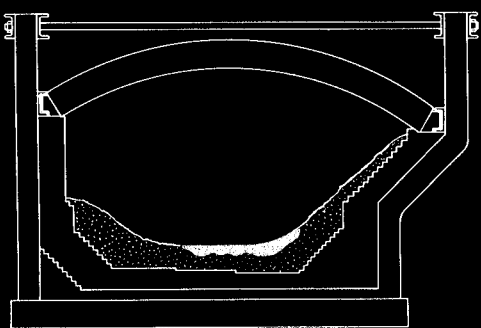
Basic Magnesite has a typical magnesia content of 85% and is available in $\frac{3}{8}$ "; 4, 8, 20 and 65 mesh sizes. The $\frac{3}{8}$ " grains are used in open hearth furnaces for general maintenance, resurfacing hearths, hearth construction and facing tap holes. Basic Magnesite usually requires the addition of open hearth slag, mill scale or other sources of iron oxide so that the grains will sinter readily into a dense monolithic structure. The smaller sizes of Basic Magnesite are employed in the ferroalloy and foundry industries for ladle and furnace linings. For these uses, fireclay or chemical bonds are generally added by the user.

TYPICAL CHEMICAL ANALYSES					
	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	CaO	MgO
BASIC MAGNESITE	5.0%	4.5%	1.0%	4.4%	85.0%
BASIFRIT	5.5	6.8	1.3	15.0	71.4

TYPICAL SCREEN ANALYSES BASIC MAGNESITE & BASIFRIT			
3/8 INCH	Passing	3/8" Mesh	99%
	Passing	3 Mesh	92%
	Passing	4 Mesh	58%
	Passing	20 Mesh	2%
4 MESH	Passing	4 Mesh	99%
	Passing	8 Mesh	61%
	Passing	20 Mesh	16%
	Passing	100 Mesh	6%
8 MESH	Passing	4 Mesh	100%
	Passing	10 Mesh	83%
	Passing	20 Mesh	63%
	Passing	35 Mesh	42%
20 MESH	Passing	4 Mesh	100%
	Passing	10 Mesh	83%
	Passing	20 Mesh	63%
	Passing	35 Mesh	42%
65 MESH	Passing	48 Mesh	99%
	Passing	100 Mesh	95%
	Passing	150 Mesh	85%
	Passing	200 Mesh	67%

TYPICAL PHYSICAL PROPERTIES						
Unit Weight (lbs. per cu.ft.)						Grain Porosity
	3/8"	4 Mesh	8 Mesh	20 Mesh	65 Mesh	
BASIC MAGNESITE	110	130	138	139	145	17%
BASIFRIT	120	.....	.....	.....	.....	14%

STORAGE: Indefinitely if protected.
 PACKAGING & SHIPPING: Shipped bulk or in 100 lb. capacity multiwall paper bags from Narlo, Ohio, Hammond, Ind., or Luning, Nev.



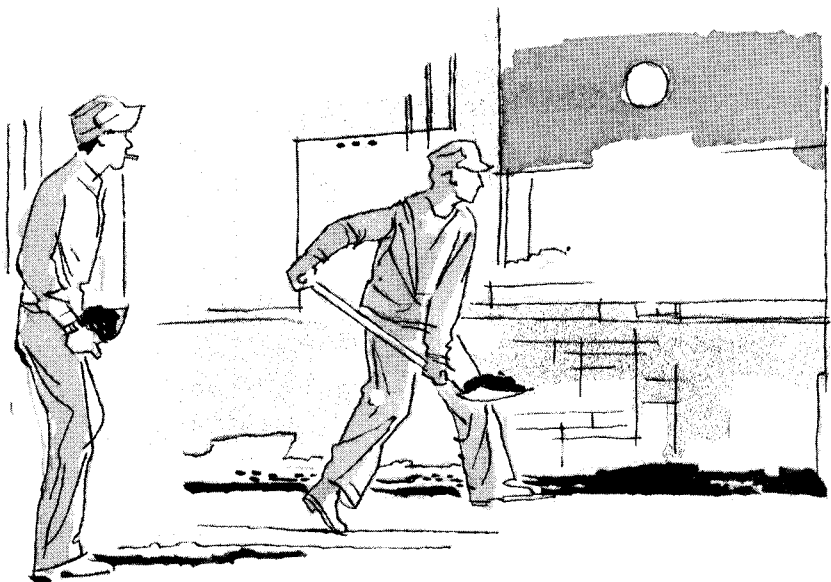
4. Basifrit shallow hole repair in flat.

Basifrit, the original quick-setting magnesite, largely eliminates the deficiencies of a conventional grain magnesite. Calcium ferrite, formed during the refractory's manufacture, permits Basifrit to set or sinter rapidly at normal furnace operating temperatures with minimum additions of slag or iron oxide to the refractory. Basifrit is excellent for:

- 1) Resurfacing old hearths
- 2) Hot repairing bottoms and banks
- 3) Surfacing rammed or brick sub-hearths.

Resurfacing an open hearth bottom with Basifrit at the close of each campaign will result in a decrease in delay time. The procedure is to wash down the old banks and bottom using mill scale additions directly on the hearth. Then layers of Basifrit are burned in until the hearth has a smooth surface and the desired contours.

*Railhead for Gabbs is situated at Luning, some 30 miles distant.





1. Beginning rammed hearth installation.



2. First section of flat rammed to a thickness of 17".

MAGNESIA RAMMING

For many years individual steelmakers made and used their own refractory ramming and plastic mixtures with varying degrees of success. However, serious problems such as hydration, strength, density and workability were frequently encountered. After considerable research and development, Basic introduced in this country in 1939 a magnesia ramming refractory. Today, use of this type of refractory is routine practice throughout the steel industry because of these outstanding advantages:

1 EASE OF INSTALLATION—relatively unskilled labor can install rammed hearths or make bottom and bank repairs.

2 CONTROLLED CONTOURS—desired shape of the finished hearth or repair can be obtained with precision.

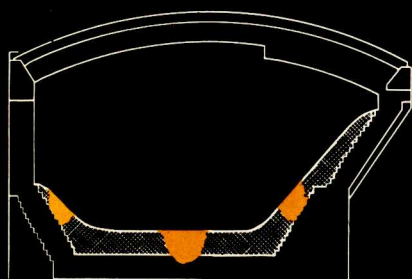
3 CONTROLLED HEARTH COMPOSITION—no slag or other diluting agent is required. As a consequence, the hearth or repair has the same high magnesia content as the ramming mix.

4 ECONOMICAL INSTALLATION—time required to install a rammed hearth or repair is far less than that necessary to burn in grain magnesite. Less fuel is consumed and shortened burning-in time reduces damage to roof, sidewalls and other refractories.

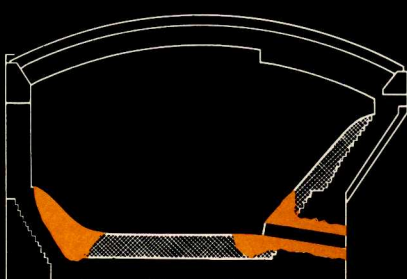
TYPICAL CHEMICAL ANALYSES								TYPICAL SCREEN ANALYSES		TYPICAL PHYSICAL PROPERTIES			
	Loss on Ignition	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	Cr ₂ O ₃	CaO	MgO				Unit Weight (lbs. per cu. ft.)	Bulk Density* (lbs. per cu. ft.)	
											Rammed & Dried	Fired to 2900 ° F	
RAMSET	0.7%	8.6%	2.9%	1.7%	3.2%	13.6%	67.5%	Passing 4 Mesh 99%	RAMSET	150	164	177	
RAMICLASE	0.5	6.9	2.5	1.6	2.5	3.8	80.2	Passing 10 Mesh 60%	RAMICLASE	148	165	184	
RAMICLASE V	0.3	6.8	2.5	1.6	2.6	4.0	80.8	Passing 20 Mesh 44%	RAMICLASE V	148	165	185	

STORAGE: Should be stored under cover and used within 6 months.
*Rammed

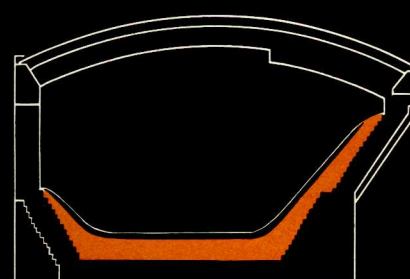
PACKAGING & SHIPPING: Shipped in 100 lb. capacity multiwall paper bags from Nardo, Ohio or Hammond, Indiana.



1. Hot Ramset repairs in open hearth.



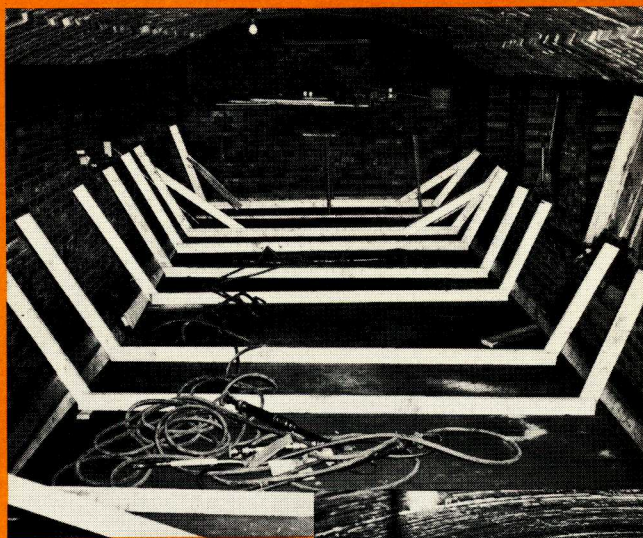
2. Cold Ramset repairs during rebuild.



3. Ramset sub-hearth in open hearth.



3. Completing ramming of flat.



4. Forms in place.

REFRACTORIES

To serve the needs of steel producers, Basic markets two ramming mixes, *Ramset* and *Ramiclase*. In addition, Basic has trained engineers available for supervision of hearth installation and repair. These engineers insure that steelmakers obtain the best possible job. Basic furnishes special mixers, conveyors, rammers and other equipment to speed-up the installation, thus saving considerably on labor costs.

When used for hearth construction or major cold repairs, *Ramset* and *Ramiclase* are rammed behind forms, using pneumatic tampers.

The largest use of *Ramset* and *Ramiclase* is for hot repair of furnace bottoms and banks and for piping tap holes. In these applications, more water is required than is needed for cold ramming.

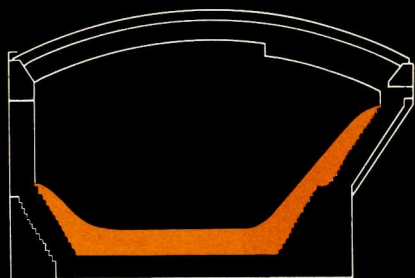
No other refractory development has contributed so much to decreased furnace down-time than the advent of magnesia ramming mixes.



5. Ramming the banks.

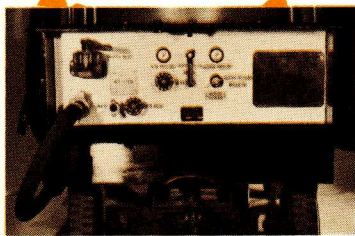


6. Fully rammed hearth after removing forms.



4. Full Ramset hearth in open hearth.

GUNNING REFRACTORIES



Basic produces seven different gunning refractories for the repair of open hearth furnaces, electric furnaces, soaking pits, reverberatory furnaces and cupolas.

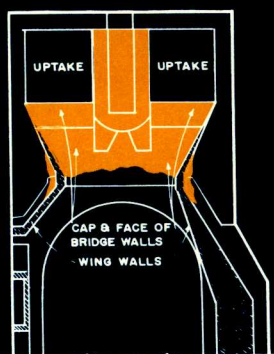
In most cases the furnace is hot when these refractories are gunned in place. This practice can save hours of down-time. Basic's gunning refractories may be emplaced upon cold structures as well. The addition of water to the refractory, shortly before discharge from the shooting pipe, enables the material to adhere to vertical walls and to eroded spots in furnace linings. At furnace operating temperatures, strong bonds develop within the refractory and between the refractory and original furnace lining.

Basic's gun refractories may be classified into three general groups: magnesia, chrome-magnesia and dolomitic, according to the major constituents of each. *Gunmag* and *Gunmag V* are magnesia gun refractories. *Gunchrome-M* is a chrome-magnesia refractory. *Basimix*, *Gunmix*, *Gunmix 2* and *Gundol* are dolomitic gun refractories. All are manufactured in Basic's Special Products Plant at Maple Grove, Ohio from selected raw materials and carefully prepared refractory grains. With the exception of *Basimix*, these refractories contain controlled amounts of chemical bonds and plasticizing agents which enable them to adhere to vertical walls

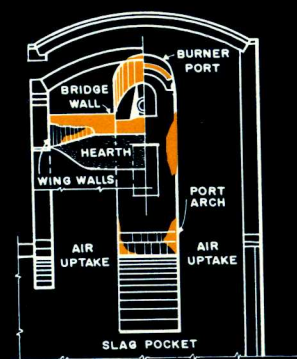
TYPICAL CHEMICAL ANALYSES								TYPICAL SCREEN ANALYSES						TYPICAL UNIT WEIGHT (lbs. per cu.ft.)
	Loss on Ignition	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	Cr ₂ O ₃	CaO	MgO	Passing						
								5 Mesh	6 Mesh	10 Mesh	12 Mesh	20 Mesh	100 Mesh	
BASIMIX	0.6%	3.9%	5.3%	0.9%	0.4%	38.0%	51.0%	.....	.....	97%	.....	56%	25%	150
GUNDOL	0.9	6.4	4.3	1.0	0.4	36.6	48.9	.....	99%	.....	.....	40	30	150
GUNMIX	1.1	6.5	4.1	1.1	0.5	36.0	49.2	.....	.....	97	.....	54	31	150
GUNMIX 2	1.6	6.6	3.9	1.0	0.5	36.4	48.8	.....	.....	97	.....	54	31	150
GUNMAG	0.6	7.0	2.5	1.6	2.5	4.0	81.8	.....	.....	.....	97%	75	21	140
GUNMAG V	0.6	7.0	2.5	1.6	2.5	4.0	81.8	99%	.....	55	.....	.....	33	145
GUNCHROME-M	1.1	7.7	10.7	19.4	21.4	1.4	37.2	98	.....	68	.....	.....	38	150
STORAGE: Should be stored under cover. Gundol, Gunmix and Gunmix 2 should be used within 3 months; others within 6 months.								PACKAGING & SHIPPING: Shipped in 100 lb. capacity multiwall paper bags — except Gunchrome-M which is shipped in 50 lb. bags — from Nardo, Ohio or Hammond, Indiana.						

STORAGE: Should be stored under cover. Gundol, Gunmix and Gunmix 2 should be used within 3 months; others within 6 months.

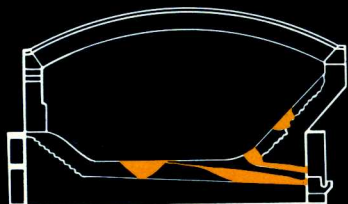
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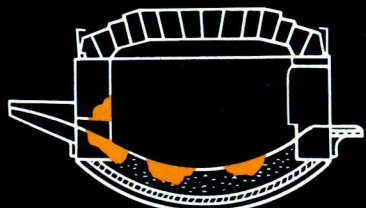
1. Bridgwall gun maintenance.



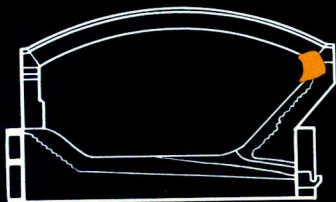
2. Up-take gun maintenance.



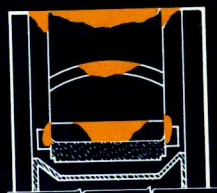
3. Backwall and hearth emplacement.



4. Hearth and backwall maintenance.



5. Skewback emplacement.

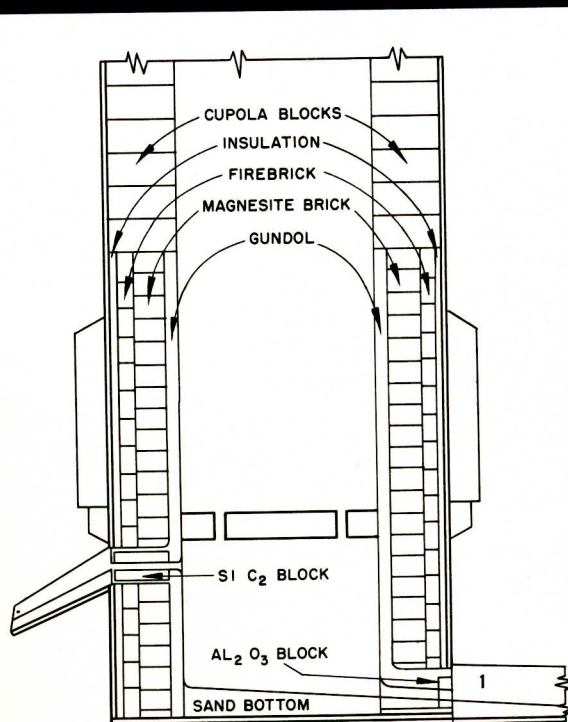


6. Soaking pit maintenance.

and harden after being emplaced by a refractory gun. In the case of Basimix, the chemical bonds, when needed, are added by the user.

Furnace maintenance through the use of gun refractories results in many substantial cost savings. For example, electric furnace operators report that routine maintenance of basic brick sidewalls, using relatively very small amounts of Gundol, Gunmix or Gunmag V, has extended lining life 100 per cent or more. Open hearth furnace operators using Gunchrome-M report similar results in such critical areas as backwalls, front walls and skewbacks. Longer, better-balanced furnace life has been made possible through the maintenance of these critical areas. Masonry labor hours are reduced on hot repairs, which can easily be made without the necessity of furnace shut-down. Gundol may be used to shoot open hearth furnace slag lines and other deeply eroded spots on banks and bottom. It is used also to make hot repairs on linings of basic oxygen steelmaking furnaces. Virtually all parts of most furnaces are accessible to gunning—a unique advantage for this type of maintenance.

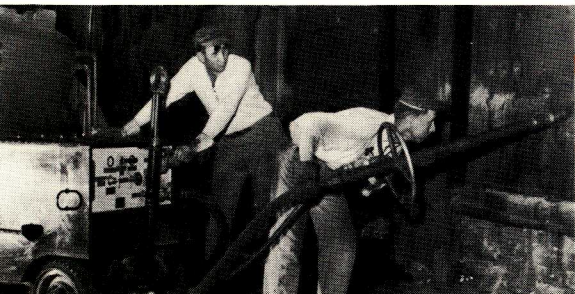
Similar improvements in increased lining life and lowered operating costs have been obtained by using Gunchrome-M to repair basic portions of soaking pits. Gundol and Gunmix are uniquely suitable for gun maintenance of cupolas operating on the basic practice. Gunchrome-M, Gundol and Gunmix are used extensively to repair basic-lined furnaces for melting or smelting non-ferrous metals. Gunmag V is used to repair ferroalloy furnaces and ladles.



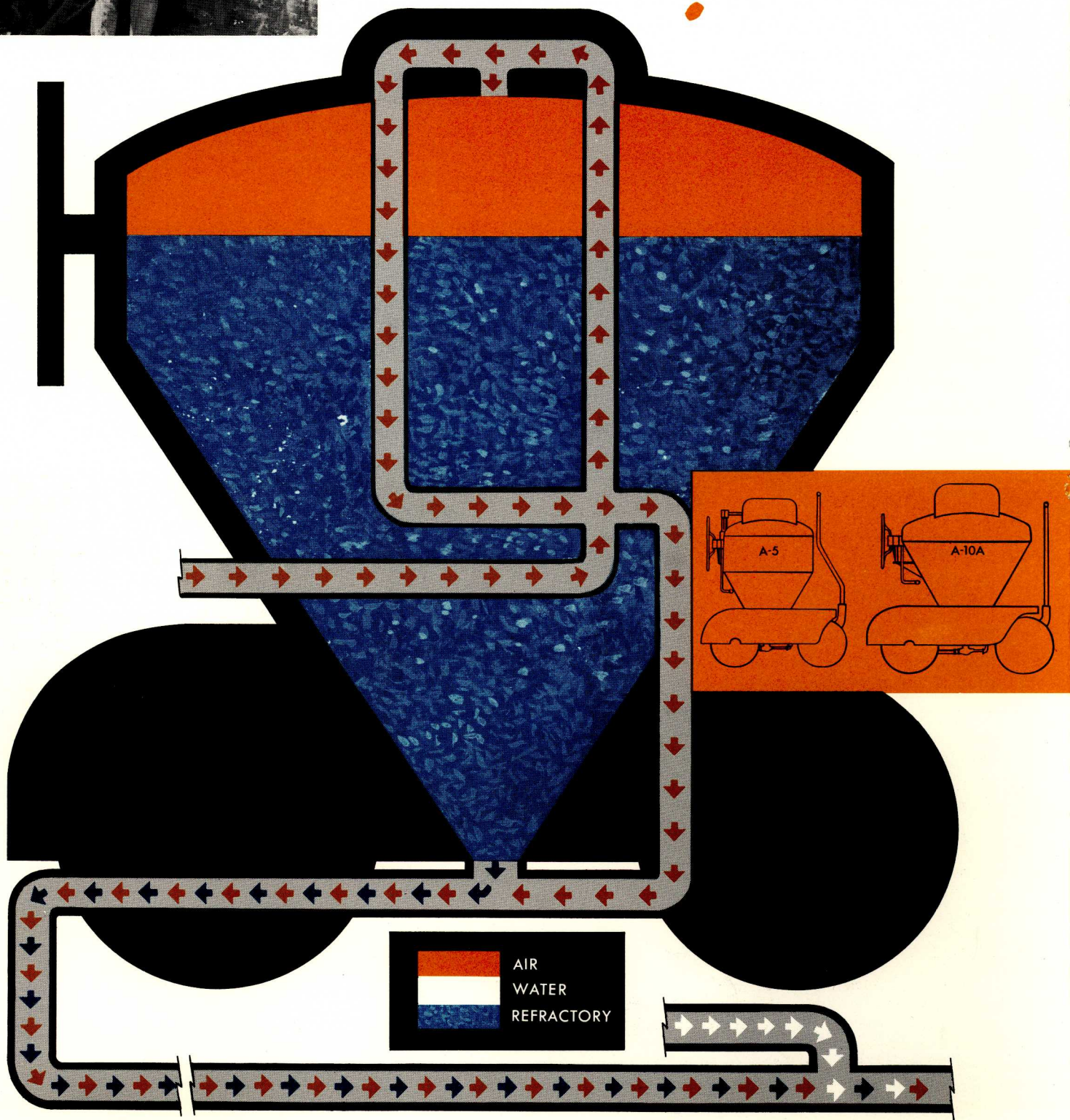
Typical hot zone lining of a basic cupola.



Gunning a basic cupola.



BRI GUNS

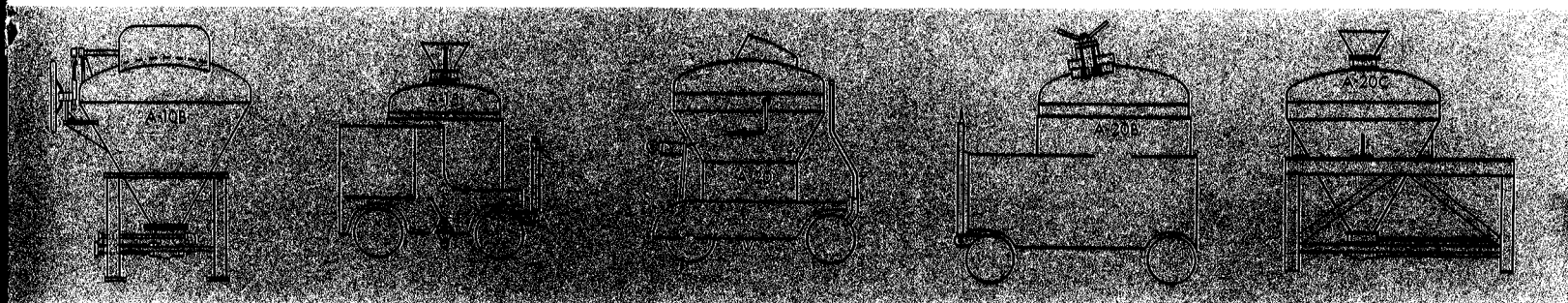


During the late 1930's a few enterprising furnace operators began to experiment with the air-emplacement of granular refractories. However, most refractories, and the variety of devices used for applying them, were not suited for the job. Against this background, Basic Incorporated undertook to eliminate shortcomings of existing equipment and refractories. New air-emplacement appliances and specialized refractories were scientifically designed for the job. Following two years of research and development, the first BRI Gun was shipped to an electric furnace steel producer in December, 1943. Thus, for the first time, operators could realize the great benefits of air-emplacement of refractories.

Since then, continued study of gunning methods—combined with extensive field service—has resulted in seven models of the *BRI Gun*. All BRI Guns are rugged, easy to operate and maintain. They may be used to make repairs to hot or cold furnaces of many types including soaking pits, copper reverberatory furnaces and cupolas as well as electric, open hearth and oxygen steelmaking furnaces.

Using curved pipes the guns can shoot around corners to make repairs on hard-to-get-at surfaces. Almost any dry, solid, granular material whose top size is one-half inch or less may be shot through these guns.

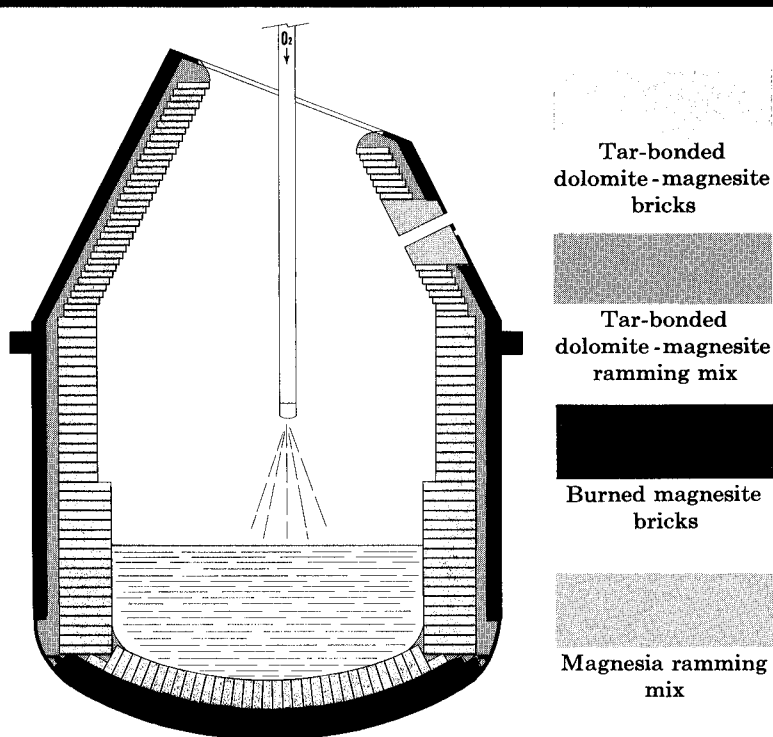
Basic's Guns are all of the "dry mix" or "nozzle mix" type (see diagram). Dry, granular refractories are loaded into the conical hopper. Compressed air is introduced above the refractory in the hopper through a regulating valve. A material valve, located at the hopper's apex is then opened to allow refractory to fall into a shooting chamber directly below. In the shooting chamber an air jet picks up the falling refractory and blows it through a shooting hose and then through a nozzle. At the nozzle, water is mixed with the refractory before it leaves the gun. The wet refractory travels across the hearth. Here it sticks, dries and hardens to become an integral part of the furnace structure. Some BRI Guns are provided with equipment to pressurize the water supply so that smooth shooting may be obtained at delivery rates in excess of 400 pounds of refractory per minute.



Model No.	Capacity	Chassis	Height	Width	Length	Weight
A-5	5 cu. ft.	3 wheeled chassis	57"	38"	49"	800 #
A-10A	10 cu. ft.	3 wheeled chassis	54½"	36¼"	52"	950 #
A-10B	10 cu. ft.	Stationary	54½"	37"	50"	900 #
A-15	15 cu. ft.	4 wheeled chassis Air-operated water pump	65½"	43"	61"	2400 #
A-20	20 cu. ft.	3 wheeled chassis	72"	48"	64½"	1600 #
A-20B	20 cu. ft.	4 wheeled chassis	86"	51"	78"	4500 #
A-20C	20 cu. ft.	Stationary Air operated water pump or pressure water tank optional	76"	48"	72"	1800 #

BRI Guns sold f.o.b. Cleveland or Nardo, Ohio.

BASIC OXYGEN FURNACE REFRACTORIES



Tarblok and *Tarmix*, Basic's tar-bonded brick and ramming mixes, are used for the working linings and hearths of oxygen steel-making furnaces. These are produced in four types — "D", "M", "DM" and "DMX" (Dolomite, Magnesite and Dolomite/Magnesite compositions).

Tarbloks are tar-bonded unburned refractory bricks made of specially sized fractions of dead-burned dolomite and/or dead-burned magnesite. Bonding is accomplished by the addition of a coal tar pitch which, when heated rapidly to a high temperature, "cokes" to form a carbon bond.

Tarmixes are ramming refractories made from specially sized dead-burned dolomite and/or dead-burned magnesite. As in the case of Tarblok, coal tar pitch is added during manufacture. Tarmixes can be rammed to high densities at normal temperatures without any further additions by the user.

The "M" products — containing dead-burned magnesite as their principal constituent — are resistant to hydration.

TYPICAL CHEMICAL ANALYSIS (Tar-free basis)							TYPICAL SCREEN ANALYSES					
	Loss on Ignition	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	CaO	MgO	Passing					
TARBLOK M	Neg.	5.5%	6.2%	1.5%	15.5%	70.9%		3/8" Mesh	8 Mesh	20 Mesh	100 Mesh	200 Mesh
TARMIX M	Neg.	5.5	6.2	1.5	15.5	70.9						
TARBLOK DM	0.4%	2.5	4.0	0.8	33.2	60.1	TARMIX M	100%	63%	47%	33%	24%
TARMIX DM	0.4	2.6	4.7	0.9	33.0	58.0	TARMIX DM	100	63	51	35	26

STORAGE:
Tarblok M and Tarmix M should be stored under cool, dry conditions. Tarblok DM and Tarmix DM are stored in Basic's Dry Rooms. Should be used promptly when received.

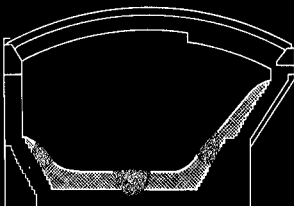
PACKAGING & SHIPPING:
Tarblok, shipped on standard brick pallets protected by moisture-resistant coverings. Tarmixes, shipped in multiwall paper bags containing 100 lbs. from Narlo, Ohio.

DRY DEEP HOLE PATCHING REFRACTORIES

Basic manufactures three dry deep hole patching refractories: *Dri-Set*, made from dolomite and magnesite, contains about 45% MgO; *Hearth Patch*, made from quick-setting magnesite, contains about 68% MgO; and *Basic Magnesite 211*, with a magnesia

content of about 85%. Used dry, these refractories are designed to do one particular job well—to make fast, easy repairs of deep holes in open hearth furnaces.

Drawing below illustrates a few applications of these dry deep hole patching refractories.



TYPICAL CHEMICAL ANALYSES								TYPICAL SCREEN ANALYSES				TYPICAL UNIT WEIGHT (lbs. per cu. ft.)
	Loss on Ignition	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	Cr ₂ O ₃	CaO	MgO	Passing				
								4 Mesh	10 Mesh	20 Mesh	100 Mesh	
HEARTH PATCH	0.5%	4.8%	5.7%	1.8%	0.3%	18.8%	67.8%	100%	42%	23%	9%	140
DRISSET	0.5	6.7	5.0	1.0	....	41.1	44.7	100	68	38	11	145
BASIC MAGNESITE 211	Trace	5.0	4.5	1.0	....	4.4	85.0	100	62	51	27	150
STORAGE: Should be stored under cover and used within 6 months.								PACKAGING & SHIPPING: Shipped bulk or in 100 lb. capacity multiwall paper bags from Nardo, Ohio or Hammond, Indiana.				

STORAGE: Should be stored under cover and used within 6 months.

PACKAGING & SHIPPING: Shipped bulk or in 100 lb. capacity multiwall paper bags from Narlo, Ohio or Hammond, Indiana.

MAGNESIA, LIME AND FLUXSTONE

From the raw materials used to produce refractories, Basic also manufactures the following magnesia and lime products that have wide industrial application.

BLAST FURNACE RAW DOLOMITE is used as a flux in the blast furnace burden.

Typical Chemical Analysis

Ignition Loss	47.20%
SiO ₂	.25
Fe ₂ O ₃	.04
Al ₂ O ₃	.06
CaO	30.60
MgO	21.60
S.	.02
P	.003

Typical Screen Analysis

	+ 4"	4%
- 4	+ 3½"	8.0
- 3½"	+ 3"	29.0
- 3"	+ 2½"	46.0
- 2½"	+ 2"	15.0
- 2"		2.0

HIGH-CALCIUM QUICKLIME is used in the steel and ferro alloy industry as a flux. It is also used by chemical and paper producers.

Typical Chemical Analysis

Ignition Loss	2.5%
SiO ₂	1.1
Fe ₂ O ₃	.4
Al ₂ O ₃	.3
CaO	93.6
MgO	2.0

Typical Screen Analysis

	+ 1"	10.5%
- 1"	+ ½"	42.0
- ½"	+ 4 Mesh	28.6
- 4"	+ 8"	4.4
- 8"	+ 20"	2.8
- 20"		11.7

The typical unit weight per cubic foot of this product is 59 lbs.

DOLOMITIC HYDRATED LIME—"KELLEYCHEM" is used in the metallurgical, chemical and paper industries.

Typical Chemical Analysis

Ignition Loss	17.5%
SiO ₂	0.15
Fe ₂ O ₃	0.06
Al ₂ O ₃	0.06
CaO	47.9
MgO	33.9
S.	0.08
P	0.001

Typical Screen Analysis

Normal	
Passing 100 Mesh	94%
Passing 200 Mesh	87
Superfine	
Passing 100 Mesh	99
Passing 200 Mesh	96

Kelleychem is packaged in multiwall paper bags containing about 50 lbs.

MAGOX is Basic's trade name for magnesium oxide produced by light burning magnesite ore which is obtained by selective open pit mining. Light burning (1400°F.) produces a product that is very reactive chemically and has the qualities of adsorption and flocculation. As a flocculent it causes chemically precipitated compounds to form which are granular and

easily filtered. For example, in uranium mills Magox is used to neutralize acids, to adsorb unwanted organic oils and to flocculate uranium rich precipitates.

Other uses for Basic's magnesia are in the manufacture of magnesium oxysulfate cement bonded boards, mixed fertilizers and for the "deironing" of caustic soda.

Typical Chemical Analysis

Loss on Ignition as shipped	3.0%
SiO ₂ (On ignited basis)	3.9
CaO (On ignited basis)	3.7
Al ₂ D ₃ (On ignited basis)	0.6
Fe ₂ O ₃ (On ignited basis)	0.5
MgO (On ignited basis)	91.0
Cl (On ignited basis)	0.01
S (On ignited basis)	0.1
B (On ignited basis)	0.004

Typical Screen Analysis

Pebble				
	+ 4	Mesh	.	11.0%
- 4	+ 8	.	.	10.7
- 8	+ 10	.	.	4.5
- 10	+ 20	.	.	6.4
- 20	.	.	.	67.4
Ground				
- 200	.	.	.	98.4%

Typical bulk density of Magox is; Pebble—70 lbs./cu. ft., Ground—50 lbs./cu. ft.

BASIC GUIDE FOR REFRACTORY SELECTION

This chart has been prepared to answer many questions concerning the use of Basic's products. The preparation of such a chart inevitably involves some compromise, so there will probably be instances in which our product recommendations are not exactly consistent with your maintenance practice.

We hope that where problems arise concerning use of the chart you will consult with our sales and service personnel. These men are constantly in touch with practical refractory problems and will be glad to help in any way possible.

BASIC MAGNESITE

BASIFRIT

BASIMIX

DOLOMITE, RAW

DRI-SET

GUNCHROME — M

GUNDOL

GUNMAG

GUNMAG V

GUNMIX

GUNMIX 2

HEARTH PATCH

MAGNEFER

RAMICLASE

RAMICLASE V

RAMSET

SYNDOLAG

TARBLOK M

TARBLOK DM

TARMIX M

TARMIX DM

[illegible]

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■ CLEVELAND, OHIO

■ HAMMOND, INDIANA

■ PITTSBURGH, PENNSYLVANIA**■ HAVERTOWN, PHILADELPHIA, PENNSYLVANIA****CLAYTON, ST. LOUIS, MISSOURI****■ LOS ANGELES, CALIFORNIA**

845 Hanna Building
Cleveland 15, Ohio

ELECTROREFRACTOMETRY

(h) Basif

OTHER REFRACTORY APPLICATIONS

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