

FILE NAME: Owens Illinois (OWILL)

DATE: 1949 Apr

DOC#: OWILL025

DOCUMENT DESCRIPTION: Journal Article - New Thermal Insulating Material Combines Light Weight and High Strength

Materials & Methods

THE MAGAZINE OF MATERIALS ENGINEERING®

VOLUME 29, NUMBER 4 • APRIL, 1949

WILLIAM P. WINSOR Vice President and
Publishing Director
FRED P. PETERS Vice President and
Editorial Director

T. C. DU MOND Editor

H. R. CLAUSER Associate Editor
N. B. BAGGER Associate Editor
DORIS M. BARRY Assistant Editor
ELEANOR M. WOLFE Assistant Editor
GIL MILLER Art Director

KENNETH ROSE Western Editor
111 W. Washington St., Chicago 2, Illinois

FRANK J. ARMEIT Production Manager
JOHN N. CARLIN Circulation Manager
A. A. RAYMOND, JR. Promotion Manager
JOHN T. FOSDICK Research Director

DISTRICT MANAGERS

A. E. FOUNTAIN New York
FRANK J. MCKINLEY New York
330 W. 42nd Street
M. RANDOLPH LONG Chicago
111 W. Washington Street
BEVIN SMITH Philadelphia
12 So. 12th Street
D. W. HUETTNER Cleveland
1133 Leader Building

ROY M. McDONALD, Roy M. McDonald & Co.,
San Francisco
E. T. THOMPSON, Roy M. McDonald & Co.,
Los Angeles
HARRY ABNEY, Roy M. McDonald & Co.,
Seattle, Wash.



Published monthly by Reinhold Publishing Corporation, 330 West 42nd St., New York 18, N. Y., U. S. A. Ralph Reinhold, Chairman of the Board; Philip H. Hubbard, President; H. Burton Lowe, Executive Vice President; G. E. Cochran, Vice President and Secretary; W. P. Winsor, Vice President; F. P. Peters, Vice President; J. G. Belcher, Vice President; W. F. Traendly, Vice President; Francis M. Turner, Vice President. Price 50 cents a copy. Payable in advance, one year, \$2.00; two years, \$3.00; three years, \$4.00; five years, \$5.00 in U. S. and Possessions, Canada and Pan American Union, \$2.00 extra for each year in all other countries. (Remit by New York Draft.) Copyright, 1949, by Reinhold Publishing Corporation. Printed by Lotus Press, Inc., 508 West 26th St., New York 1, N. Y. All rights reserved. Reentered as second class matter Nov. 14, 1945, at the Post Office at New York, N. Y. under Act of March 3, 1879. Established in 1929 as Metals and Alloys.

FEATURE ARTICLES.

Advantages of Magnesium Die Castings 43
Magnesium compared with aluminum and zinc in typical case histories
R. C. Cornell

Automatic Flame Hardening Steps Up Production of Steel Cams 47
Results show advantages of local hardening by this technique
Herbert Chase

Forging Alloys for High Temperature Service 50
Exacting requirements demand high quality in alloys and forging practice
L. S. Fulton

Special Oxide Film on Steel Provides Electrical Insulation 54
Tenacious blue iron oxide produced by steam atmosphere treatment
P. L. Schmidt

Self-Heating Tape Simplifies Soldering Operations 57
Useful for a variety of assembly and repair jobs
Robert B. Stanton

Redesigning Metal Parts for Electric Furnace Brazing 58
Makes possible low cost fabrication of complex products
H. M. Webber

New Thermal Insulating Material 63
Suited for high temperature service and structural applications
New Materials Preview

Liquid Blasting of Metallic and Nonmetallic Surfaces 64
An economical method having a variety of cleaning and finishing uses
B. H. Marks

Materials at Work 68
Interesting examples of new materials applications

MATERIALS & METHODS MANUAL NO. 48

Gray Iron Castings 71
T. C. Du Mond

ENGINEERING FILE FACTS

No. 174—Measurement of Close Tolerance Parts 79

DEPARTMENTS

The Materials Outlook	3	Manufacturers' Literature	126
Editorial	41	Meetings and Expositions	144
Materials & Methods Digest	85	Book Reviews	146
New Materials & Equipment	93	Advertisers and Their Agencies	168
The Last Word		170	

NEXT MONTH: Nodular Graphite Irons . . . Fabricating Large Metal Forms by Welding . . . New Aluminum Extruding Alloy . . . Bright Nickel Plating . . . Improving Solder Flow . . . Steam Atmosphere Treatment of Ferrous and Nonferrous Metals . . . THERMO-SETTING PLASTICS (Materials & Methods Manual No. 49)

New Thermal Insulating Material Combines Light Weight and High Strength

— NEW MATERIALS PREVIEW

● WHEN ENGINEERING REQUIREMENTS dictate high thermal insulating properties along with fireproofness, light weight and structural strength, a new material now being offered by American Structural Products Co., an Owens-Illinois subsidiary, deserves consideration. It is a hydrous calcium silicate material sold in various forms and sizes under the brand name of Kaylo. It is manufactured in two densities—11 lb. per cu. ft. and 20 lb. per cu. ft. The lighter material is used principally for high temperature insulation. The heavier material is used for building purposes, as a tile to form structural roof decks. The 20-lb. material is also used as a core for fireproof doors, fabricated and marketed by U. S. Plywood Corp.

As a rigid heat insulation, the low-density block is suitable for use at service temperatures up to 1200 F. While not intended as a load-carrying member of any structural unit, the insulating block is reasonably strong. Following are some of its properties:

Density: about 11 lb. per cu. ft.

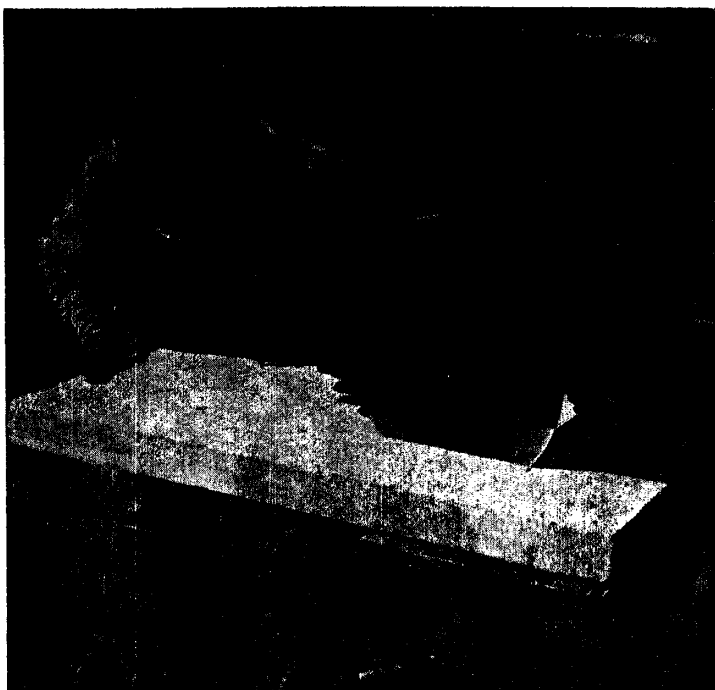
K factor, at 300 F mean: 0.475

Maximum service temp.: 1200 F

Standard sizes: Widths, 6 in. and 12 in.; length, 36 in. only; thicknesses, 1 in., 1½ in., 2 in., 2½ in., and 3 in.

The lighter weight is now available only as blocks in the above range of sizes, as lagging, and in some sectional pipe covering forms. Pipe covering is still in the developmental stage.

The more dense material is intended primarily for building construction. It is finding use as a fireproof roof tile, 2½ by 18 by 36 in. in size, where its effective resistance to passage of heat helps to conserve fuel in winter and to keep the building cooler in summer, and its light weight reduces design loads. For this purpose it is supplied with a reinforcing of steel wire mesh to give increased strength and stiffness. The wire is embedded in the block as a



The insulating material can be easily cut with hand or power tools.

wire basket, providing reinforcing in both directions. Its dimensional stability is another important consideration in building construction.

Some of its properties, and the available sizes, are as follows:

Density: about 20 lb. per cu. ft.

K factor, at 70 F mean: 0.65

Standard sizes: Widths, 12 in. and 18 in.; lengths, 18 in. and 36 in.; thicknesses, 1¼ in., 1¾ in., and 2¾ in.

Use of a block of the 20-lb. density insulation, faced on both sides with plywood, and with the edges covered with matching plywood, will create a flush door that can be finished to correspond with fine interiors, will be massive in appearance yet light in weight, and will effectively resist

fire. A door of this type has already passed the Fire Underwriters Laboratory tests for a "one-hour door," indicating that it will withstand flames for one hour without being consumed and without permitting spread of the flames through the door. Use of such doors in hotels has been suggested.

While the use of the new material in the building field is an obvious choice, the manufacturing industries will also be interested in the possibilities of a lightweight, fire-resistant insulation. The 11-lb. block has been taken up as a heat insulation for high-temperature service by industry, and the heavier material may be expected to fit into industrial production when its properties become more widely known.