

*Perma-Flex**

PRICE & INFORMATION BULLETIN

KOROSEAL® FMC

Reference
PF-Kor-1
Rev. 12-60

Koroseal® Flexible Molding Compounds

Lots of	5 to	24 lbs., inclusive	.....	\$1.20 lb.
Lots of	25 to	49 lbs., inclusive	.....	1.10 lb.
Lots of	50 to	99 lbs., inclusive	.....	1.00 lb.
Lots of	100 to	249 lbs., inclusive	.....	.95 lb.
Lots of	250 to	999 lbs., inclusive	.....	.85 lb.
Lots of	1,000 to	4,999 lbs., inclusive	.....	.80 lb.
Lots of	5,000 lbs. or over	.....		.78 lb.

MINIMUM SHIPMENT — 5 lbs.

No. 6 KOROSEAL FMC

The standard, proved, professional mold material for plaster, Hydrocal, artificial marble, etc., casting. Extremely tough, semi-rigid, lasts indefinitely in hard casting shop service. Used for Perma-Flex molds unless other grades are specified. Remeltable 3 to 5 times, depending on care used in melting.

No. 15 KOROSEAL FMC

Medium soft, easily melted, useful where only a few casts are wanted, in gypsum plaster and similar materials. Reusable many times with care.

No. 74-N-2 and No. 74-N-3 KOROSEAL FMC

These products discontinued as of July 1, 1959.

PERMA-FLEX® TYPE R VINYL FMC

Type R Vinyl is designed to replace the No. 74 series Koroseal molding compounds, for the casting of Marblette and similar phenolic resins, polyester resins, and white plasters, concrete mixtures, and investment compounds, where non-sticking and non-staining are essential requirements. May be handled in the same manner as the standard No. 6 Koroseal FMC and, on careful melting, develops an extremely tough, opaque white mold.

PERMA-FLEX® INSTRUCTION MANUAL

"Application of Koroseal Flexible Molding Compounds on Gypsum Models"

Due to the presence of water and air in all plaster models, it will be found that when KOROSEAL FMC is poured over plaster models, the heat of the KOROSEAL FMC will cause many bubbles to form in the mold. The Perma-Flex process overcomes this difficulty. We have published a complete Manual on the pouring of KOROSEAL FMC over gypsum models. In order to adapt KOROSEAL FMC readily

to small as well as large users, we feel that this Manual (preferably with shop instruction) is necessary to teach the user the method of vacuum forming, which develops perfect mould surfaces. Manual is furnished at no charge to purchasers of KOROSEAL FMC (minimum order 5 lbs.); price to non-users of KOROSEAL FMC \$5.00.

The Perma-Flex Mold Co.
1919 E. LIVINGSTON AVENUE
COLUMBUS 9, OHIO

Koroseal*** FMC

General Direction Bulletin

DIRECTIONS — MOLD FABRICATION, SHOP TRAINING AND CONSULTING SERVICE

KOROSEAL FMC is a synthetic flexible, accurate, permanent mold material, comprised essentially of polyvinyl chloride, plasticized to varying degrees of hardness. It is a thermoplastic material, which is melted and poured to develop flexible molds and shapes. Molds made from it are used for the forming of all liquid materials which harden by setting or by cooling at or below 200 deg. F. KOROSEAL FMC has many of the properties of glue gelatin when properly formed. It does not, however, harden with age or shrink appreciably. It is unaffected by water, the setting heat or alkali of plaster or concrete, or the acid action of melted alum. It is available in No. 15 (soft) and No. 6 (stiff and tough). Where circumstances warrant it, special modifications of hardness will be made available.

KOROSEAL FMC requires no lubrication or parting compounds. To prepare it for casting, a simple rinsing in PERMA-FLEX Mold Dressing suffices. This rinsing reduces pinholes and air-bubble defects to a minimum, and allows the reproduction of the finest detail in finished casts. For casting concrete, no painting or surface treatment for protection against melting is needed. KOROSEAL FMC saves stearine, brushes, ice water, and time in the plaster shop. KOROSEAL FMC molds have many of the properties of vulcanized rubber. They do not, however, stiffen or crack with age. They are not affected by mineral oils or grease. Plaster does not stick to KOROSEAL FMC after setting as it tends to do with rubber. KOROSEAL FMC is not as tough as rubber, but has all the toughness needed for most casting operations.

PERMA-FLEX MOLD SERVICE

FABRICATED MOLDS

To serve the needs of those mold users who do not care to set up to produce their own molds, PERMA-FLEX fabricated mold service from customers' plaster and similar models is offered. Since its inception, THE PERMA-FLEX MOLD COMPANY has fabricated many thousands of pounds of KOROSEAL FMC to most exacting requirements in our several fabricating shops. The experience and skill so gained make these shops outstanding in their capacity to serve the consuming field with first-class flexible molds.

We will gladly quote on fabricated molds from your models, preferably models developed in bare plaster or other gypsum cements. In order to secure perfection, models of wood, painted china, or other materials than plaster, are developed into plaster models by our process, and on this type of model an

extra duplication charge is involved. (See page 4 on use of PERMA-FLEX CMC and LATEX.)

It has been our experience in a number of cases that because of the volume of our production, the fabricated molds for some operations can be made at less cost than it takes for our customers to produce them, particularly on special designs and large molds. Also, where the shop mold requirement is of such a nature that a full time moldmaker is not needed and shop space and time can more profitably be devoted to other duties.

Our fabrication shops are at the service of every KOROSEAL FMC purchaser and instructee, and it is our desire that every user know the fundamentals of its fabrication. A knowledge of these fundamentals has a direct effect on the preparation of models for the process, since the process permits of the transmission of the most minute detail from the model, through the molding and into the resultant casting. An understanding of the perfection required in the finished *cast product* is of great help, since it results in *models* free from blemishes of all sorts, from which we can produce blemish free molds. "THE BETTER THE MODEL—THE BETTER THE MOLD."

MOLD MAKING MANUAL INSTRUCTION SERVICE

In addition to specialized shop instruction in the fabrication of KOROSEAL FMC against uncalcined gypsum models, we have available the PERMA-FLEX Instruction Manual on the application of KOROSEAL FMC to gypsum models, including forty photographs, and describing in detail the melting and forming of KOROSEAL FMC, so prepared that professional plaster shop operators with some experience in gelatin, rubber, or plaster molds, can immediately adapt their experience to the forming operation.

This Manual has been prepared to meet the heavy demand for instruction from potential users who are unable to take advantage of our shop training facilities. It must be borne in mind that the preparation of a first-class flexible mold in this or any other mold-making material is an art in which perfection is not reached overnight. While we maintain the finest of craftsmanship in our own and affiliated shops, it is our feeling that other fine craftsmen can add to their skill the details of this process method without great difficulty, thereby eliminating the need for travel, time, and expense. We feel our process is a worthwhile contribution to the art of molding and, as such, will eventually become one of the skills at the command of the master operator in plaster and allied materials.

DIRECTIONS FOR USE OF KOROSEAL FMC

KOROSEAL FMC is formed as a hot liquid, which flows at temperatures between 260 and 350 deg. F. In its liquid state it attacks the common metals, and must be melted in enameled iron, glass (PYREX), vitreous china, or stainless steel containers. The high melting temperature, above the boiling point of water, requires special precautions in melting and forming to insure perfection in molds made from it. It may be remelted a number of times, depending on the temperature used and the care used in melting. If overheated, it will decompose rapidly. We recommend that it always be melted under a hood, with positive ventilating fans to remove fumes that develop in the melting operation. THIS IS IMPORTANT.

In the cooled state, KOROSEAL FMC is almost chemically inert, as previously described, being water insoluble, stable with age, permanently flexible and compatible with all plasters.

MELTING EQUIPMENT

We recommend radiant heat melting, with thermostatically controlled bottom heat on the melting vessel. Bottom heat may be supplied from oil-bath, sand-bath, or asbestos pads, or from electrically heated coils. For most uses, standard electric roasters, enamel lined and with polished metal tops, meet all requirements except the radiant heat. This may be supplied with electric heat lamps or coils, or strip heaters, radiating down into the melting material.

For small melts up to four or five pounds, a 375 watt infra red lamp directed into the top of a stainless steel or enameled dipper containing the KOROSEAL FMC serves as a rapid and efficient melter. The pan should be placed on a mineral wool or other similar insulating pad to prevent heat loss from the bottom. The use of top heat alone in this fashion eliminates the possibility of scorching the melt on the bottom and greatly speeds the melting time. After melting to a fluid, with occasional stirring, permit the radiant heat source to continue long enough to clear the included gas bubbles from the melt before pouring.

If no melting equipment of these types is available, melting in standard thermostatically controlled kitchen ovens may be done readily. In this case, covered PYREX or other heat resisting containers is desirable. In all cases, temperatures must be kept as low as possible consistent with a fluid melt. Oven or bottom temperatures of up to 400 deg. F. may be used, but with caution, to speed up the melting. Any KOROSEAL FMC charred by overheating must be discarded or it will spoil the entire melt. During the melting, the compound should be stirred frequently to expose unmelted portions to the action of radiant heat. After melting, the liquid should be held at constant temperature with top heat to allow bubbles to clear. USE A THERMOMETER until you are familiar with the characteristics of KOROSEAL FMC. When remelting, do not mix different types, or different melts, without experimenting to determine compatibility.

PREPARATION OF MODELS

NON-POROUS MODELS

Glass, metal, china, marble, or other non-porous models should be heated gradually to 200 deg. F. or

slightly higher, greased lightly with mineral oil (10-W, 3-in-1, Finol), and cased in a metal shell or other non-porous container, and the liquid KOROSEAL FMC poured over the model in any convenient manner. The KOROSEAL FMC, after cooling, may be peeled off the model, or cut in any convenient manner to permit of ready removal from the model. Care must be taken in cutting to do the least possible damage to important surfaces to be cast. Air pockets must be vented to prevent bubbling into the Koroseal FMC.

PLASTER MODELS (UNCALCINED)

Plaster models of molding, art, statuary, pottery, dental, casting, HYDROCAL, in fact of all gypsum plasters not formulated to withstand heat, all begin to calcine or lose chemically bound water at temperatures as low as 150 deg. F. Heat treatment, while desirable, must be kept below 150 deg. F. or there is danger of cracking, softening, and disintegration of the model.

Plaster models that have not been heat treated are not completely satisfactory for forming KOROSEAL FMC *without special processing methods*. The method used by PERMA-FLEX has been eminently successful. It is covered by U. S. Patent No. 2,434,780, owned by United States Gypsum Company. In order to extend the usefulness of KOROSEAL FMC, PERMA-FLEX is authorized to instruct in this process application and to certify instructees for royalty free Use License of the process, covering molds for the customer's own consumption, but not for resale. We will gladly furnish further details on the method of acquiring this Use License privilege.

The process used by PERMA-FLEX permits the forming of KOROSEAL FMC directly against bare, uncalcined plaster models—without bubbles, wrinkles, or other surface imperfections.

PLASTER MODELS (CALCINED)

KOROSEAL FMC may be formed directly against heat treated investment plaster, metal casting plaster, or other plaster compositions, which will successfully withstand baking out at 275 to 350 deg. F. to remove the free and most of the chemically bound water. In using these materials we recommend that the models be prepared with a surface treatment of PERMA-FLEX Parting Compound after the burn-out and cool-down of the model. The manufacturer's directions as to mixing water ratio and mixing conditions should be followed in preparing plasters of this type to receive KOROSEAL FMC, *except* that the burn-out temperature should not exceed 350 deg. F., or the maximum melting temperature of the molding compound. Models so prepared may be used in the PERMA-FLEX process, but are only good for one mold.

We do not recommend any sealing, surfacing, or impregnating method on plaster or other porous models, excepting surface treatment with PERMA-FLEX Parting Compound. Any surfacing coat such as shellac, wax, etc., tends to fill up fine detail, thereby preventing exact definition in the finished mold. Surfacing treatments must be removed down to bare plaster to secure true impression in the mold.

PAINTED MODELS

DO NOT attempt to pour KOROSEAL FMC over painted models. It will soften and remove almost all types of decoration, except fired-on china colors. Models for use in the PERMA-FLEX process must be bare plaster, HYDROCAL, HYDROSTONE, or gypsum cement. Plasters containing dextrine (Art, Statuary, Casting, etc.), are *not* desirable, since the dextrine "skin" comes to the surface irregularly in drying, and dextrine burns to caramel at about 300 deg. F.

CLAY AND PLASTILENE MODELS

Hot KOROSEAL FMC will melt some modeling clays of the wax base type, and this type of model is unsatisfactory. With care KOROSEAL FMC can be poured over models of the "water-clay" type, provided these are greased lightly, and massive enough to chill KOROSEAL FMC quickly so that steam bubbles do not develop.

PERMA-FLEX CMC*** DUPLICATION

We recommend development of ALL models in gypsum cement before attempting to form perfect KOROSEAL FMC molds. We form a temporary or waste mold of CMC from which a duplicate cost can be made, properly dressed and finished for the vacuum forming operation.

PERMA-FLEX CMC makes it possible to copy such fragile models as modeling clay, wax, soap, fine wood carvings, highly engraved metal surfaces, china, etc., without danger of damage from heat or water.

COOLING OF KOROSEAL FMC

After pouring, KOROSEAL FMC must be allowed to cool out slowly until it is cold, before removal from the model. We recommend that it be allowed to stand overnight. In warm weather, it may be necessary to cool it out in the refrigerator. Complete gelling is necessary, in all cases, especially where dimension tolerances are close.

There is a contraction during cooling, and it is desirable always to maintain the KOROSEAL FMC fluid with external heat at the point or points of the mold, such as pouring gates, etc., where this contraction will do no harm. The KOROSEAL FMC must congeal directionally away from all surfaces being reproduced in order to prevent contraction away from these surfaces during the cooling period.

Complete instructions as to cooling, using the PERMA-FLEX process of forming, are given in the PERMA-FLEX INSTRUCTION MANUAL.

With this product, (which "sets" at room temperature to synthetic rubber) it is possible to obtain precision duplicates of original models for short-run casts. Development of the hot poured or hot formed molds is unnecessary.

While KOROSEAL FMC has no peer for long time service, the frequent need for rapid duplication which does not permit of expensive setups, makes our CMC*** the most desirable material for short-run casting operations.