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# Technical

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## Specifications

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### Industrial Plasters and Gypsum Cements for Tooling Applications

#### ULTRACAL 30 Gypsum Cement

Super-strength gypsum cement recommended where extreme accuracy and greater surface hardness are required, as in duplicator models. Harder and stronger than HYDROCAL A-11 and HYDROCAL B-11 cements, ULTRACAL 30 cement has the lowest expansion of any rapid-setting gypsum cement available. Has a gradual set and long period of plasticity. Ideal for splash-casting molds and models for phenolic, polyester and epoxy resins. It was designed to give the patternmaking industry the ultimate in a gypsum cement tooling medium.

#### ULTRACAL 60 Gypsum Cement

Similar in all respects to ULTRACAL 30 cement except that it sets in about one hour. Designed for very large models where additional working time and highest possible degree of accuracy are required.

#### HYDROCAL A-11 Gypsum Cement

A high-strength gypsum cement with a low setting expansion. Adaptable to the productions of hard, strong, tough patterns, and duplicator models. Has a shorter period of plasticity, stiffens more rapidly than B-11, sets in about 15-20 minutes after mixing.

#### ULTRACAL B-11 Gypsum Cement

A gypsum cement with low setting expansion, a high degree of plasticity and gradual setting action. Specifically designed for making die-sinking patterns by the splash-cast technique and original loft template models. Sets in approximately 30 minutes after mixing, which provides ample time for built-up work.

#### Medium High-Expansion HYDROCAL Gypsum Cement

A product formulated to give a uniform expansion of a pattern in all directions equal to shrinkage of aluminum or zinc alloy metals (Kirksite, Zamac, etc.). Normal range is  $\frac{1}{16}$ -in. to  $\frac{3}{16}$ -in. growth per foot. Colored yellow for identification.

#### HYDRO-STONE Gypsum Cement

One of the hardest and strongest of all gypsum cements. When mixed properly, has a heavy, syrupy consistency ideal for pouring solid models or patterns. Recommended for stretch-press dies where extreme surface hardness is required; also used successfully for making cope-and-drag equipment. Expansion is greater than HYDROCAL A-11 or B-11 cements.

#### HYDROCAL White Gypsum Cement

A neutral gypsum cement having a normal set of 25 minutes. When formed under a template it is slightly on "short side" and has a tendency to tear. The setting expansion is somewhat greater than with A-11 or B-11 cements, but higher wet and dry strength is provided.

#### Moulding Plaster

Often referred to as "plaster of Paris" or soft plaster. Used for waste molds or temporary patterns where surface hardness and strength are not important. Screeds well under a template but is not as hard or strong as HYDROCAL cement. The expansion is greater than with A-11 or B-11 cements.

Typical Physical Properties

Product	Use Consistency (lb. water per 100 lb . gypsum cement)	Setting Range min. (Vicat)	% Setting Expansion final	Minimum Compressive Strength (lb. per sq. in., dry <sup>(1)</sup> )	pH Reaction
ULTRACAL 30 Gypsum Cement	38	25-35	0.080	6,000	Alkaline
ULTRACAL 60 Gypsum Cement	39	75-90	0.065	5,000	Alkaline
HYDROCAL A-11 Gypsum Cement	42	16-20	0.080	5,500	Alkaline
HYDROCAL B-11 Gypsum Cement	44	25-35	0.080	4,500	Alkaline
Medium High-Expansion HYRDOCAL Gypsum Cement	48-50 44-45	25-35	1/8"/ft. 3/8"/ft.	—	Slightly acid
HYDRO-STONE Cement	32	17-20	0.240 (maximum)	10,000	Alkaline
Industrial White HYDROCAL Cement	45	25-35	0.390 (maximum)	5,000	Neutral
Industrial Moulding Plaster	70	27-37	0.200 (maximum)	2,000	Neutral

(1) Wet strength is about half that for dry strength.

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