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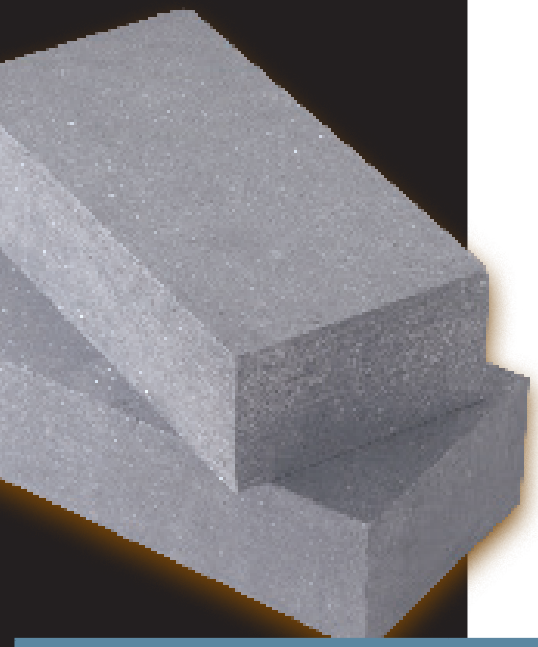
UCAR® Refractory Systems



RP4™ Ram

Single component, carbonaceous ram for filling in contained areas behind forms or between carbon structural shapes and furnace shells. Thermal conductivity after ramming is comparable to GradeD™ Carbon Blocks. Ram must be at room temperature (20°C/70°F) before use.

EZRam™ RP10 Ramming Paste

EZRAM™ RP10 ramming paste is a highly thermal conductive graphitic ram, primarily used in sub-hearth, cooling pipe, and annulus between steel work and refractories. Ram must be at room temperature (20°C/70°F) before use.

EZRAM™ RP10 ramming paste is available in bulk (loose) form or as pre-rammed briquettes. The pre-rammed briquettes are easily cut to shape and can be molded to fit when installed at room temperature. The bulk (loose) form is used in the same manner as other ramming materials. One advantage of the loose form is that it can be molded on site to form unique shapes as the application requires.

Smart Ram® RP20 Ramming Paste

Smart Ram® RP20 ramming paste is a ram with specially treated graphite flake. This ram is designed to provide excellent thermal conductivity, ease of installation and a unique expanding characteristic which can "self-correct" in case refractory movement or voids due to improper installation result in loss of cooling contact. Ram must be at room temperature (20°C/70°F) before use.

This self-correcting feature is activated by a temperature increase, such as would occur if a gap formed between the cooling pipe and the ram or if the ram was not properly installed. Once the ram temperature exceeded 200°C the specially treated graphite would increase in volume by "puffing" (thus also lower density). However, since this puffing material is graphite, the void which was originally filled with air would now be filled with graphite. This unique "self-correcting" feature provides a ram material that is smart enough to realize that correction action is required if heat transfer is lost. Thus, no longer will heat transfer capability be dependent upon ramming technique or field supervision quality. Smart Ram® RP20 ramming paste will not shrink up to a temperature of 700°C during use, so thermal contact with the cooling pipes is never lost. RP20 ramming paste is supplied in loose form or as 6" x 9" briquettes in various thicknesses.

Properties listed are typical and cannot be used as accept/reject specifications.

RP4™ KEY PROPERTIES	Typical Average
Bulk Density (loose) (g/cm^3)	0.80
Thermal Conductivity (W/mK) (WG)	7.6
Bulk Density (Rammed) (gm/cc) (Depends on Ramming technique)	1.62

RP10™ KEY PROPERTIES	Typical Average
Bulk Density (loose) (g/cm^3)	0.78
Thermal Conductivity (W/mK) (WG)	
Bulk Density (Rammed) (gm/cc) (Depends on Ramming technique)	1.70

RP20™ KEY PROPERTIES	Typical Average
Bulk Density (loose) (g/cm^3)	0.80
Thermal Conductivity (W/mK) (WG)	
Bulk Density (Rammed) (gm/cc) (Depends on Ramming technique)	1.70

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