

PRODUCT BULLETIN

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**ALLIED
MINERAL**
PRODUCTS, INC.

MATRIPUMP 70ACX

General Information

MATRIPUMP 70ACX is part of a complete family of products that offer a wide range of installation methods: pumping, pouring, shotcreting or vibrating. This product is a high alumina, low cement castable designed for more severe environments in molten aluminum and heat containment applications. MATRIPUMP 70ACX offers the following benefits and features:

- Excellent aluminum non-wetting characteristics
- Excellent value
- Abrasion resistant
- Good self leveling properties
- Excellent thermal shock resistance

Technical Data

Chemical Analysis*

(Major Components)

| | | | |
|--------------------------------|-------|---|---|
| Al ₂ O ₃ | 73.3% | Material Required, vibration cast | 2.74 g/cm ³ (171 lb./ft ³) |
| SiO ₂ | 20.5% | Material Required, pour cast | 2.63 g/cm ³ (164 lb/ft ³) |
| CaO | 2.0% | Grain Size..... | 7 mm (.265 mesh) and finer |
| TiO ₂ | 2.6% | Maximum Use Temperature..... | 1482°C (2700°F) |
| Fe ₂ O ₃ | 0.9% | Installation Method | Self flow, Pumpable or Vibrated |

*Proprietary ingredients not included in chemistry.

Packaged in 25 kg (55-lb.) multi-wall paper bags. Also available in bulk packaging. Storage beyond 6 months not recommended. Store in a dry location to avoid moisture pickup.

Hydraulic Set and Water Requirements

MATRIPUMP 70ACX has a unique design, enabling the installer to adjust water levels for optimum casting behavior. This product can be installed at a water level between 5.0% and 6.25%.

| | <u>Vibrated</u> | <u>Poured/Pumped</u> |
|-----------------|-----------------|----------------------|
| Water Required: | 5.0% | 6.2% |
| Working Time: | 1.5 hours | 2 hours |
| Initial Set: | 2-6 hours | 3-8 hours |
| Final Set: | 8-16 hours | 10-24 hours |

Allied Mineral Products, Inc. supplies a complete line of monolithic refractories for the metals industry. For more information or a complete evaluation of your refractory requirements, please contact your local Allied representative.

Warning: Contains aluminum oxide, calcium aluminate cement, aluminosilicates, and silica. The International Agency for Research on Cancer (IARC) has classified crystalline silica inhaled in the form of quartz or cristobalite carcinogenic to humans. Refer to Material Safety Data Sheet for additional information and disposal instructions. Avoid breathing dust. Wear NIOSH approved respirator during installation, removal, and disposal of product to prevent inhalation of dust. Avoid contact with skin and eyes. Cement powder or freshly mixed castable may cause eye and skin irritation. Steam spalling, which can lead to personal injury, may result from improper drying and firing procedures. In case of eye contact, flush immediately and repeatedly with water and consult a physician. Hydrogen gas may be generated when product is exposed to water. Ignition of hydrogen gas in an enclosed area can lead to personal injury. Proper ventilation should be supplied to avoid gas buildup. For safest use and optimum performance, proper practices must be followed.

(MXMP70ACX)

12/15/11

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LABORATORY TEST BAR DATA

MATRIPUMP 70ACX

| | Self-flow | | | Vibrated | | |
|--|--------------------------------|---------------------------------|-------------------|--------------------------------|---------------------------------|-------------------|
| Casting Consistency | 6.5% | | | 5.0% | | |
| Casting Water | 6.5% | | | 5.0% | | |
| <u>Density</u> | <u>g/cm³</u> | <u>kg/m³</u> | <u>pcf</u> | <u>g/cm³</u> | <u>kg/m³</u> | <u>pcf</u> |
| After firing to: | | | | | | |
| 110°C (230°F) | 2.67 | 2671 | 166.7 | 2.76 | 2762 | 172.4 |
| 815°C (1500°F) | 2.63 | 2627 | 164.0 | 2.74 | 2743 | 171.2 |
| 1090°C (2000°F) | 2.52 | 2520 | 157.3 | 2.57 | 2571 | 160.5 |
| 1230°C (2250°F) | 2.53 | 2534 | 158.2 | 2.57 | 2571 | 160.5 |
| 1400°C (2550°F) | 2.52 | 2522 | 157.4 | 2.50 | 2496 | 155.8 |
| <u>Modulus Of Rupture</u> | <u>MPa</u> | <u>kg/cm²</u> | <u>psi</u> | <u>MPa</u> | <u>kg/cm²</u> | <u>psi</u> |
| After firing to: | | | | | | |
| 110°C (230°F) | 12.2 | 123 | 1755 | 18.5 | 186 | 2645 |
| 815°C (1500°F) | 11.8 | 119 | 1695 | 15.5 | 157 | 2225 |
| 1090°C (2000°F) | 11.4 | 115 | 1640 | 13.7 | 138 | 1965 |
| 1230°C (2250°F) | 16.3 | 164 | 2335 | 18.1 | 182 | 2585 |
| 1370°C (2500°F) | 17.4 | 175 | 2495 | 20.5 | 206 | 2935 |
| <u>Hot Modulus Of Rupture</u> | <u>MPa</u> | <u>kg/cm²</u> | <u>psi</u> | <u>MPa</u> | <u>kg/cm²</u> | <u>psi</u> |
| At: 815°C (1500°F) | 37.0 | 373 | 5300 | 51.7 | 520 | 7400 |
| <u>Cold Crushing Strength</u> | <u>MPa</u> | <u>kg/cm²</u> | <u>psi</u> | <u>MPa</u> | <u>kg/cm²</u> | <u>psi</u> |
| After firing to: | | | | | | |
| 110°C (230°F) | 56.2 | 567 | 8060 | 92.5 | 931 | 13250 |
| 815°C (1500°F) | 64.7 | 652 | 9275 | 76.0 | 765 | 10885 |
| 1090°C (2000°F) | 58.4 | 588 | 8365 | 77.7 | 782 | 11130 |
| 1230°C (2250°F) | 56.2 | 567 | 8060 | 91.6 | 923 | 13130 |
| 1370°C (2500°F) | 74.6 | 751 | 10690 | 87.1 | 877 | 12475 |
| <u>Permanent Linear Change</u> | <u>%</u> | | | <u>%</u> | | |
| After firing to: | | | | | | |
| 815°C (1500°F) | -0.07 | | | -0.07 | | |
| 1090°C (2000°F) | 1.02 | | | 0.99 | | |
| 1230°C (2250°F) | 0.87 | | | 0.83 | | |
| 1370°C (2500°F) | 0.66 | | | 0.74 | | |
| <u>Apparent Porosity</u> | <u>%</u> | | | <u>%</u> | | |
| After firing to: | | | | | | |
| 110°C (230°F) | 15.6 | | | 12.1 | | |
| 815°C (1500°F) | 18.5 | | | 15.0 | | |
| 1090°C (2000°F) | 21.8 | | | 17.8 | | |
| 1230°C (2250°F) | 20.6 | | | 16.6 | | |
| 1370°C (2500°F) | 18.7 | | | 14.7 | | |
| <u>Abrasion Loss</u> | <u>cm³</u> | | | <u>cm³</u> | | |
| After firing to: | | | | | | |
| 110°C (230°F) | 8-12 | | | 4-6 | | |
| 815°C (1500°F) | 8-12 | | | 4-8 | | |
| <u>Thermal Shock Resistance</u> | Casting Water 6.0% | | | Strength Retained | | |
| Prefire: 982°C/1800°F | <u>MPa</u> | <u>kg/cm²</u> | <u>psi</u> | 98% | | |
| 10 cycles to 982°C/1800°F | | | | | | |
| MOR unshocked | 13.2 | 134 | 1910 | | | |
| MOR shocked | 12.9 | 131 | 1870 | | | |



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