

# PRODUCT DEVELOPMENT SERVICES

Developing partnerships through new products

WASHINGTON MILLS

## YOU CHOOSE IT. WE FUSE IT.

At Washington Mills, we offer a unique Product Development Service to companies looking to experiment with ideas for new material formulations. We specialize in creating sample-size custom fusions through our pilot-scale furnace. Our fully equipped pilot processing plant is designed to create experimental lots of various mineral types. We've invested in equipment specially engineered for small-scale product development work so that you can test and produce sample-sized quantities of your new product idea without costly capital investments.

### Custom Fusions

You choose the material, and we'll fuse it for you. We offer:

- Electric arc furnaces specially designed for fusing small quantities
- Custom fusions as small as five pounds or as large as 300 tons
- Over 100 combined years of electric arc fusion and materials expertise

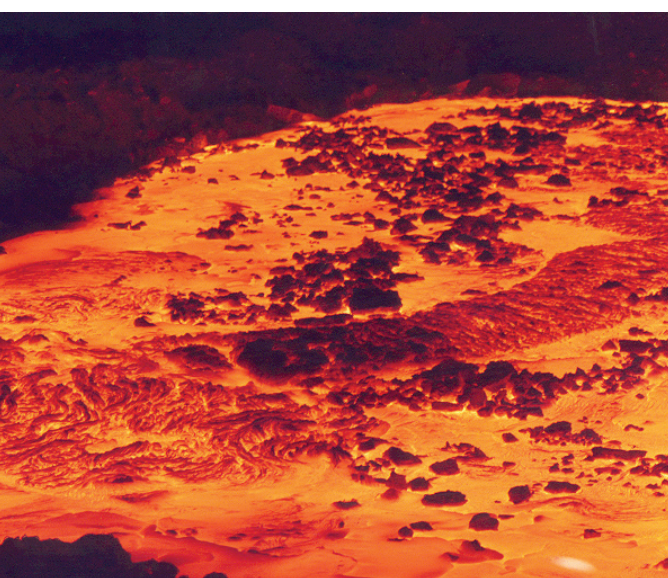
### Pilot Processing Plant

With our fully equipped pilot processing plant, we offer partners the ability to:

- Crush, grind and magnetically separate materials
- Heat treat and surface treat new product compositions

and provide partners access to:

- Integrated resources for engineering, manufacturing and research
- Extensive know-how on scaling up from lab to production



## Turn Your Ideas into Reality

Washington Mills' Research and Development engineers have created an impressive range of new exotic fused minerals for customers looking to test fused mineral formulations or improve the performance of existing materials. We can co-fuse varying percentages of several oxides together according to your preferences. The following is a list of just some of the materials we have custom fused:

### EXAMPLES OF MATERIALS FUSED IN OUR EXPERIMENTAL FURNACES

ALUMINA-ZIRCONIA 80% – 20% / 60% – 40%	CERIUM OXIDE
ALUMINA-ZIRCONIA-MAGNESIA 57% – 10% – 32%	ERBIUM OXIDE
ALUMINA-ZIRCONIA-TITANIA 72% – 26% – 2%	LANTHANUM OXIDE
ALUMINA-CHROME OXIDE $Cr_2O_3$ VARIED BY 0.3% – 99%	LIME-MAGNESIA-ALUMINA-SILICA 37% – 7% – 12% – 48%
ALUMINA-NICKEL OXIDE 56% – 44%	MAGNESIA-CHROME OXIDE 20% – 80%
ALUMINA-TITANIA-YTTRIA 94% – 3% – 3%	MAGNESIA-ALUMINA-ZIRCONIA 82% – 13% – 5%
ALUMINUM-TITANIA 98% – 2% / 87% – 13% / 60% – 40%	MAGNESIA-CHROME-ALUMINA-IRON OXIDE 64% – 19% – 6% – 11%
ALUMINA-SILICA-ZIRCONIA-TITANIA 70% – 20% – 5% – 2%	MAGNESIA-SILICA 55% – 45% (FORSTERITE)
ALUMINA-MAGNESIA-SILICA 14% – 35% – 51% (CORDIERITE)	PRASEODYMIUM OXIDE
CALCIA STABILIZED ZIRCONIA	TiO <sub>2</sub> (FUSED TITANIA)
CALCIA-SILICA 64% – 34% (LARNITE)	ZIRCONIA-DYSPROSIUM OXIDE
CALCIA-YTTRIA-MANGANESE OXIDE 26% – 25% – 49%	ZIRCONIUM-DYPROSIUM-INDIUM OXIDE
CALCIUM OXIDE (FUSED LIME)	ZIRCONIA-YTTERBIUM OXIDE

## Developing Partnerships

Take advantage of our expertise by working directly with our fusion and ceramic specialists. Washington Mills' skilled engineers have over 100 combined years of electric arc fusion and materials experience and are ready to work with your R&D personnel to turn your new product idea into a reality. All product development services are provided in complete confidence.

**Contact us today and discover how our Product Development Team can help you reach your goals.**

### General Inquiries, Sales and Customer Service

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