



Additional Chemical Analysis of Garnet, Sand, Glass and Aluminum Oxide Abrasive Blast Material

Chemical analysis of garnet, sand, glass and aluminum oxide products of the major manufacturers and distributors in the industry demonstrate that these materials contain many of the same metals associated with slag abrasives, including beryllium.¹ Additionally, products contained measureable amounts of arsenic, cadmium, and lead.

Study Methods

Exponent, an engineering and scientific consulting firm, facilitated the collection and analysis of abrasive products noted on Table 1 from various producers and locations. The sampling is not intended to be all inclusive, but rather represents random products from various locations. Samples were packaged, sealed, and sent to an accredited laboratory for analysis under standard Chain of Custody procedures. Samples were prepared and analyzed at the laboratory in accordance with EPA Method 3052M-HF//6020A [Inductively coupled plasma-mass spectrometry (ICP-MS)] for beryllium, arsenic, cadmium, and lead.

Results

Table 1 summarizes the results. Detected beryllium in garnet samples ranged from 0.231 to 1.66 milligrams per kilogram (mg/kg). Beryllium was detected in sand, glass and aluminum oxide samples ranging from 0.431 to 13.6 mg/kg.

¹ Results from nine glass abrasive samples were previously provided (Exponent January 10, 2018).

Table 1: Summary of Garnet, Sand, Aluminum Oxide and Glass Abrasive Blast Materials Sample Results (in mg/kg)

Prod Name/ Manufacturer	Source Location	Lab²	Beryllium	Arsenic	Cadmium	Lead
Garnet USA – GMX Garnet 80	Alder, MT	K Prime	0.311	79.4	0.180	3.10
GMA – Garnet 30/60	Fairless Hill, PA	K Prime	0.500	181	0.572	7.25
Barton – Garnet 30/60 Plus™	Glen Falls, NY	K Prime	0.231	70.9	0.681	4.75
Barton – Garnet 80 HPA®	Glen Falls, NY	K Prime	1.66	116	1.00	11.8
Barton –Garnet 36CG	Glen Falls, NY	K Prime	0.417	190	3.76	3.73
Chemours – StarBlast® – Staurolite Sand	Starke, FL	K prime	13.6	158	0.465	12.3
NC Minerals –R21 glass	Lakeville, MN	K Prime	0.431	18.3	0.574	350
GMA Industries –Brown Virgin Aluminum Oxide 36	Detroit MI	K Prime	5.16	272	3.56	5.24



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February 16, 2018

² K Prime refers to K Prime, Inc., 3621 Westwind Blvd., Santa Rosa, California 95403