

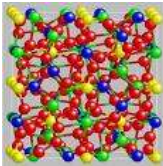


Approved By: EJ Wenger  
 Compiled By: D. Prevoo

Doc No. : DS 072  
 Rev No. : 02

Date: 04 April 2018  
 Page 1 of 2

**Data Sheet**



**Product: Garnet**  
**Grades: 0.6 – 1.0mm**  
**-150 Micron**  
**Special Sizes upon request**

**CHEMICAL ANALYSIS:**

<b>Typical:</b>	SiO <sub>2</sub>	28.56%	Al <sub>2</sub> O <sub>3</sub>	21.8%	CaO	3.2%	TiO <sub>2</sub>	2.44%
	Fe <sub>2</sub> O <sub>3</sub>	31.2%	MnO <sub>2</sub>	0.7%	MgO	3.57%		

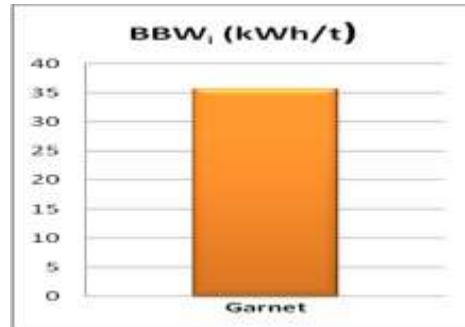
**PHYSICAL PROPERTIES:**

**Particle Size:**

- +0.5mm = 15% max
- +0.3mm = 75% min
- 0.3mm = 10% max

Garnet is a natural mineral reddish/pink in colour, predominantly almandite consisting of subangular particles mined from an alluvial resource.

<b>Hardness</b>	7.8 – 8 Moh
<b>Specific Weight</b>	approx. 4.1 g/cm <sup>3</sup>
<b>Dry Bulk Density</b>	approx. 2.3 kg/l
<b>Free Silica</b>	< 1%
<b>Chlorides</b>	<30ppm
<b>Conductivity</b>	<50mS/m ISO 11127
<b>Uniformity Coefficient</b>	1.41
<b>Effective Size</b>	0.43mm
<b>Bondwork Index</b>	17.9(kWh/mt) (imperial) 19.7(kWh/mt) (metric)



The Bond Work Index is measured in Kwh/hr per metric ton to indicate the materials resistance to being ground. Higher values will typically indicate the materials grinding resistance to a product size of 80% passing 100 microns. The test is undertaken using steel balls in a lab mill, size 305mmx305mm. As an indication TALC(very soft) has 1-5 Kw/mt and hard Gold Quartzite 20-22 Kw/mt. African Pegmatite's Garnet can, therefore, be regarded as very hard and durable as well as being chemically resistant.

**APPLICATION:**

Used in water filtration industry and solvent extraction. Non toxic and inert over wide pH range. Garnet is widely used as the bottom fraction of multimedia water filters. It has a wide pH range and good abrasion and chemical resistance. Apart from it entraps macro and micro filtrates with correct under-bedding parameters, it also has high adsorptive capacity to remove, such as copper cobalt salts in solvent extraction processes. Its Van Der Waal adsorptive capacity properties are well proven and can be considered for possible extraction of Lanthanides.

**PACKING:**

Packed in 40kg bags or 1 ton bulk bags. This is mined and processed in South Africa.

The information and recommendations in this product data sheet are based on data we believe to be reliable. They are offered in good faith, but do not imply any warranty or performance guarantee, as conditions and methods of use of our products are beyond our control. As such, African Pegmatite Company South Africa makes no express or implied warranties of any kind with respect to this product, including but not limited to any implied warranty of merchantability or fitness for a particular purpose.

We recommend that the user determine whether the products and the information given are appropriate, and that the suitability and performance of our products are appropriate by testing with its own equipment. Specifications are subject to change without notice.

The information and recommendations given in this product data sheet should not be understood as a recommendation for the use of our products in violation of any patent or as a license to use any patents of the African Pegmatite Company South Africa.

**Tel: +27 16 362-0600/4 Fax: +27 16 362-1239 Website: www.mineralmilling.com**





Approved By: EJ Wenger  
 Compiled By: D. Prevo

Doc No. : DS 072  
 Rev No. : 02

Date: 04 April 2018  
 Page 2 of 2

SGS Minerals Services							
Standard Bond Ball Mill Grindability Test							
Project No.:	18/121	Date:	4-Mar-18				
Sample:	Garnet						
Purpose:	To determine the ball mill grindability of the sample in terms of a Bond work index number.						
Procedure:	The equipment and procedure duplicate the Bond method for determining ball mill work indices.						
Test Conditions:	Feed 100% Passing	6 mesh					
	Mesh of grind:	150 mesh					
	Test feed weight (700 mL):	1 611 grams					
	Equivalent to:	2 301 kg/m <sup>3</sup> at Minus 6 mesh					
	Weight % of the undersize material in the ball mill feed:	0.8%					
	Weight of undersize product for 250% circulating load:	460 grams					
Results:	Gram per Rev Average for the Last Three Stages = .97 g						
	Circulation load = 247%						
CALCULATION OF A BOND WORK INDEX							
$BWI = \frac{44.5}{P_1^{0.23} \times G_p^{0.82} \times \left\{ \frac{10}{\sqrt{P}} - \frac{10}{\sqrt{F}} \right\}}$							
	P <sub>1</sub> = 100% passing size of the product	106 microns					
	G <sub>p</sub> = Grams per revolution	0.97 grams					
	P <sub>80</sub> = 80% passing size of product	88 microns					
	F <sub>80</sub> = 80% passing size of the feed	2 691 microns					
	BWI =	17.9 kWh/t (imperial)					
	BWI =	19.7 kWh/t (metric)					
Comments:							
Stage No.	# of Revs	New Feed (grams)	Product In Feed (grams)	Material to Be Ground (grams)	Material Passing 150 mesh in Product (grams)	Material Ground Per Mill Rev (grams)	
1	100	1 611	13	448	116	103	1.03
2	444	116	1	459	367	366	0.83
3	554	367	3	457	491	488	0.88
4	518	491	4	456	486	483	0.93
5	490	486	4	456	473	469	0.96
6	477	473	4	456	464	461	0.97
7	473	464	4	457	465	461	0.97
8	469	465	4	457	462	458	0.98
Average for Last Three Stages =							464 g .97 g

SGS Minerals Services							
Standard Bond Ball Mill Grindability Test							
Project No.:	18/121	Date:	4-Mar-18				
Sample:	Garnet						
Feed Particle Size Analysis							
Size Mesh	Weight μm	grams	% Retained Individual	% Retained Cumulative	% Passing Cumulative		
6	3 360	0.00	0.00	0.00	100.0		
7	2 800	250.6	15.6	15.6	84.4		
8	2 360	282.9	17.6	33.1	66.9		
10	1 700	444.7	27.6	60.7	39.3		
14	1 180	389.0	24.2	84.9	15.1		
20	850	198.8	12.3	97.2	2.78		
28	600	16.6	1.03	98.2	1.75		
35	425	3.35	0.21	98.5	1.54		
48	300	3.77	0.23	98.7	1.31		
65	212	3.21	0.20	98.9	1.11		
100	150	2.88	0.18	99.1	0.93		
150	106	2.28	0.14	99.2	0.79		
Product Particle Size Analysis							
Weight grams	% Retained Individual	% Retained Cumulative	% Passing Cumulative				
0.00	0.00	0.00	100.0				
0.00	0.00	0.00	100.0				
0.00	0.00	0.00	100.0				
0.00	0.00	0.00	100.0				
170	90	49.8	17.9	17.9	82.1		
200	75	46.8	16.9	34.8	65.2		
270	53	50.5	18.2	53.0	47.0		
400	38	35.3	12.7	65.7	34.3		
Pan	-	12.7	0.8	100.0	-	95.1	34.3
Total	-	1610.8	100.0	F <sub>80</sub> : 2 691	277.6	100.0	P <sub>80</sub> : 88