



# Varistem® Stemming Plugs

**Direct Cost Saving Iron Ore  
Waste**



## CASE STUDY | PATTERN SPREAD FOR DIRECT COST SAVINGS

- The table on the right indicates the impact on direct costs for waste blasts when the pattern is expanded by 5% and 171mm Varistem® blast stemming plugs are used at this iron ore mine.
- The table excludes the additional savings on labour and equipment costs, and only focuses on explosives, drilling and accessory costs.
- The overall direct saving is **\$ 1.94M per annum**.
- Factoring in the additional cost of the Varistem® blast stemming plugs of **\$ 0.5M per annum**, the nett saving that realised from this pattern spread is **\$ 1.45M per annum**.

Note that the costs were originally in South African rand (R). We used a USDZAR rate of 14.5 to express the calculation in US Dollars.

	Baseline Waste Design	Pattern Spread using Varistem® Blast Stemming Plugs
<i>Percentage expansion on burden and spacing</i>		<b>5%</b>
Hole Diameter (mm)	171	171
Number of holes	71 534	64 884
Burden (m)	4,70	<b>4,94</b>
Spacing (m)	5,40	<b>5,67</b>
Hole depth (m)	10,00	10,00
Subdrill (m)	1,50	1,50
Stemming (m)	4,00	4,00
Explosives per hole (kg)	206,73	206,73
BCMs	18 155 329	18 155 329
Meters drilled (m)	822 641	746 166
Explosives used (kg)	14 788 224	13 413 470
Powder Factor	0,81	0,74
Emulsion cost (\$/kg)	\$ 0,57	\$ 0,57
Drilling cost (\$/m)	\$ 13,94	\$ 13,94
Accessories Cost (\$/hole)	\$ 13,65	\$ 13,65
Plugs Cost (\$/unit)	\$ -	<b>\$ 7,67</b>
Explosives Total Cost	\$ 8 454 784,52	\$ 7 668 804,57
Drilling Total Cost	\$ 11 468 750,22	\$ 10 402 583,23
Accessories Total Cost	\$ 976 661,10	\$ 885 867,96
<b>Varistem Total Cost</b>	<b>\$ -</b>	<b>\$ 497 906,39</b>
Total Direct Costs	\$ 20 900 195,83	\$ 19 455 162,16
Net Saving per ANNUM (\$)		<b>\$ 1 445 033,67</b>
Net Saving per ANNUM (%)		<b>6,91%</b>



# THANK YOU

**Contact Us**

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