



Australasian (iron and steel) Slag Association Inc.

Membership Annual Survey Results

January to December 2012

Prepared by
HBM Group Pty Ltd

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The Australasian (iron & steel) Slag Association (ASA) conducts an annual survey for information regarding iron & steel slag (ISS) production and value added sold quantities by members and non-members for each calendar year. This report compiled during 2013 provides results for the 2012 calendar year.

Information provided by members and non-members is reviewed, compared, collated and aggregated into a national set of results and include ISS production levels, and nominated uses for all slag products.

For the calendar period January to December 2012, some 3.02 million tonnes (Mt) ISS was generated nationally or imported and used by various industry sectors. Compared with 2011, there was an decrease of approximately 400,000 tonnes. This decrease in volume of ISS was directly related to depressed domestic demand for steel. Conversely demand for granulated blast furnace slag (GBFS) continues for use by the cement and concrete industries increasing some 80,000 tonnes over the period.

From the 3.02 Mt available, 2.8 Mt or 92% of ISS produced was effectively utilised within various value added civil and construction material applications throughout Australasia.

The survey results include all generators, (iron & steel plants) marketers, (processing and marketing companies) and users for the total production and resulting sales by each end use. Where required, data is supplemented with importation data¹ and other secondary data² sources for accuracy purposes.

The key results for the calendar period 2012 survey were:

- Approximately 3.02 Mt (million tonnes) of iron and steel slag products were produced within Australasia (Australia and New Zealand).
- From the ISS produced, some 2.8 Mt or 92% has been effectively utilised [sold or reused for some beneficial use].
- On per capita basis, this equates to 137 kgs per person recycled or reused
- 37% or 1.14 Mt was used in cementitious applications - "high value add" [HVA]³ Note: approx 0.69 Mt of GBFS was imported.
- 47% or 1.4 Mt was used in non-cementitious or road construction applications - medium value add [MVA]⁴.
- 8% or 0.24 Mt was in general civil or fill applications – low value add [LVA]⁵.

In summary the longer term trend of ISS materials moving towards HVA from LVA applications continues. To this end, the recovery and reuse of ISS continues to provide significant positive environmental impacts, including resource conservation

¹ ABS [Austats] based on import tariff code for Granulated Blast Furnace Slag (GBFS).

² Company annual reports and other published data sources.

³ HVA – High Value Add – means where ISS materials are sold for > (more than) \$100/tonne.

⁴ MVA – Medium Value Add – means where ISS materials are sold for between \$10-\$100/tonne.

⁵ LVA – Low Value Add – means where ISS materials are sold for < (less than) \$10/tonne.

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and in this case, the reduction of greenhouse gas emissions from the processing of virgin resources.

The following table provides more detail for individual category sales of ISS for the period 2012 with comparisons against 2011, 2010⁶, 2009 and 2008.

Australasian (iron & steel) Slag Association											
2012 Slag Production & Sales Survey											
SECTION A Slag Beneficial Use Calculations (mt)	BFS	GBFS	SFS	EAFS	KOBM	Other	2012 Combined	2011 Combined	2010 Combined	2009 Combined	2008 Combined
A1. Total Produced in 2012 (Jan-Dec)	1,081,886	530,000	463,317	142,927	50,000	261,412	2,529,541	2,861,918	2,399,883	2,941,079	3,157,222
A2. Total Imported in 2012 (Jan-Dec)		684,033					684,033	612,662	449,129	384,250	249,100
A3. Total Stored [not used]	271,041	0	180,319	36,998	46,242	83,107	617,707	235,547	470,472	843,438	695,766
A4. Total Removed from Storage during 2011	335,000	0	55,000	30,784	0	5,565	426,349	167,879	295,814	0	0
SECTION B Auto Calculations							Combined	Combined	Combined	Combined	Combined
B2. Total Used in 2012 (Auto calc)	1,145,845	1,214,033	337,998	136,713	3,758	183,870	3,022,216	3,406,912	2,674,354	3,414,107	3,406,322
SECTION C Slag Use (mt)	BFS	GBFS	SFS	EAFS	KOBM	Other	Combined	Combined	Combined	Combined	Combined
C1. Cement or Binder products	38,891	1,096,678	0	0	0	0	1,135,569	1,055,662	871,394	561,529	671,153
C2. Feed stock for Clinker/Glass products	11,764	0	35,056	0	0	0	46,820	28,538	16,778	57,270	65,547
C2. Grit Blasting products	0	0	0	0	0	0	0	0	0	0	0
C2. Structural Fills/Embankments	649,818	26,587	0	12,810	0	0	689,215	524,242	22,119	388,443	14,443
C2. Road Base/Sub-base	9,543	1,650	107,439	111,713	0	11,130	241,475	409,822	405,636	522,967	604,421
C2. Rockwool products	1,245	0	0	185	0	0	1,430	3,505	2,766	2,000	11,719
C2. Mineral Fillers (e.g Asphalt)	0	0	0	4,291	0	0	4,291	22,012	28,199	38,730	31,182
C2. Agricultural applications	0	0	0	0	0	0	0	115	0	611	611
C2. Water treatment/filtration products	0	0	0	56	0	0	56	29,317	29,205	25,643	25,793
C2. Asphalt & Concrete Aggregates	338,169	0	90,216	0	0	0	428,385	630,277	710,014	677,585	887,092
C3. Mining Applications	0	0	0	0	0	0	0	0	22,484	53,384	35,493
C3. Waste Stabilisation/Solidification	0	0	0	0	0	0	0	3,758	3,758	7,137	7,137
C3. Miscellaneous/Other	65,082	96,058	80,572	127	0	0	241,838	476,947	234,097	235,370	355,965
SECTION D Summary Results	BFS	GBFS	SFS	EAFS	KOBM	Other	Combined	Combined	Combined	Combined	Combined
D1. Total of all sold in 2012 (Auto calc)	1,114,512	1,220,973	313,282	129,182	0	11,130	2,789,080	3,184,195	2,346,451	2,570,669	2,710,556
	97.27%	100.57%	92.69%	94.49%	0.00%	6.05%	92.29%	93.46%	87.74%	75.30%	79.57%

Table 1 - 2012 Slag Sales and Production Survey

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December, 2013

⁶ Generated volumes during 2010 were low due to closer of No 5 Blast Furnace for maintenance.