



## **Australasian (iron and steel) Slag Association Inc.**

### **Membership Annual Survey Results**

**January to December 2013**

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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 2014 reports on industry member and non-member production, importation and sales results for the calendar period 2013.

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 2013, some 2.88 million tonnes (Mt) ISS was generated by major steel makers nationally or imported from overseas sources and used within various industry sectors. Compared with 2012, there was second year decrease of approximately 150,000 metric tonnes.

This decrease in volume of ISS correlates well with current depressed domestic demand for steel, in particular in the steams of steel production within the BOS and EAF processes. Conversely the high demand for granulated blast furnace slag (GBFS) continues within the cement and concrete sectors again increasing some 300,000 tonnes over the period. For the reported period 38% of GBFS was from domestic sources vis 62% of GBFS from imported Japan.

From the 2.88 Mt available, 2.5 Mt or 86% 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 data<sup>1</sup> and other secondary data<sup>2</sup> sources for accuracy purposes.

The key results for the calendar period 2013 survey were:

- Approximately 2.88 Mt (million tonnes) of iron and steel slag products were produced within Australasia (Australia and New Zealand).
- From the ISS produced, some 2.5 Mt or 86% has been effectively utilised [sold or reused for some beneficial use].
- On per capita basis, this equates to 113 kgs per person recycled or reused for 2013
- 59% or 1.49 Mt was used in cementitious applications - "high value add" [HVA]<sup>3</sup> Note: approx 0.82 Mt of GBFS was imported.
- 29% or 0.72 Mt was used in non-cementitious or road construction applications - medium value add [MVA]<sup>4</sup>.
- 12% or 0.26 Mt was in general civil or fill applications – low value add [LVA]<sup>5</sup>.

<sup>1</sup> ABS [Auststat] based on import tariff code for Granulated Blast Furnace Slag (GBFS) on 01/01/2013 to 31/12/2013. <sup>2</sup> Data provided by the Australian Bureau of Statistics (ABS) for the period 2013/2014.

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In summary the longer-term trend of ISS materials continues moving towards HVA away from LVA applications. To this end, the active recovery and use of ISS continues to provide significant positive environmental impacts, including resource conservation and in this case, the reduction of greenhouse gas emissions from the processing of virgin resources.

Table 1 provides more detail for individual category sales of ISS for the period 2013 with comparisons against 2012, 2011, 2010<sup>6</sup>, 2009 and 2008.

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

Australasian (iron & steel) Slag Association												
2013 Slag Production & Sales Survey												
SECTION A Slag Beneficial Use Calculations (mt)	BFS	GBFS	SFS	EAFS	KOBM	Other	2013 Combined	2012 Combined	2011 Combined	2010 Combined	2009 Combined	2008 Combined
A1. Total Produced in 2013 (Jan-Dec)	1,014,672	503,000	497,700	92,449	50,000	271,329	2,429,150	2,529,541	2,861,918	2,399,883	2,941,079	3,157,222
A2. Total imported in 2013 (Jan-Dec)		820,049					820,049	684,033	612,662	449,129	384,250	249,100
A3. Total Stored [not used]	242,814	0	141,260	27,638	0	9,329	421,041	617,707	235,547	470,472	843,438	695,766
A4. Total Removed from Storage during 2011	38,000	0	0	0	0	13,933	51,933	426,349	167,879	295,814	0	0
SECTION B Auto Calculations							Combined	Combined	Combined	Combined	Combined	Combined
B2. Total Used in 2013 (Auto calc)	809,858	1,323,049	356,440	64,811	50,000	275,933	2,880,090	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	Combined
C1. Cement or Binder products	38,891	1,452,845	0	0	0	0	1,491,736	1,135,569	1,055,662	871,394	561,529	671,153
C2. Feed stock for Clinker/Glass products	8,671	17,165	88,269	0	0	0	114,105	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	0
C2. Structural Fills/Embankments	0	0	0	0	0	0	0	689,215	524,242	22,119	388,443	14,443
C2. Road Base/Sub-base	64,776	12,548	89,737	36,184	0	0	203,245	241,475	409,822	405,636	522,967	604,421
C2. Rockwool products	0	0	0	0	0	0	0	1,430	3,505	2,766	2,000	11,719
C2. Mineral Fillers (e.g Asphalt)	0	0	0	0	0	0	0	4,291	22,012	28,199	38,730	31,182
C2. Agricultural applications	0	0	421	0	0	0	421	0	115	0	611	611
C2. Water treatment/filtration products	0	0	0	0	0	0	0	56	29,317	29,205	25,643	25,793
C2. Asphalt & Concrete Aggregates	300,646	0	87,906	19,224	0	0	407,776	428,385	630,277	710,014	677,585	887,092
C3. Mining Applications	0	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	0	3,758	3,758	7,137	7,137
C3. Miscellaneous/Other	53,760	61,223	121,332	3,452	0	19,933	259,700	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	Combined
D1. Total of all sold in 2013 (Auto calc)	466,745	1,543,781	387,666	58,859	0	19,933	2,476,983	2,789,080	3,184,195	2,346,451	2,570,669	2,710,556
	57.63%	116.68%	108.76%	90.82%	0.00%	7.22%	86.00%	92.29%	93.46%	87.74%	75.30%	79.57%

Table 1 - 2013 Slag Sales and Production Survey