Australasian (iron and steel) Slag Association Inc.

Membership Annual Survey Results

January to December 2023

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Summary

For the calendar period January to December 2023, 3.569 million tonnes (Mt) of iron and steel slag (ISS) were generated within Australian and New Zealand steel operations and/or imported from overseas sources for Australian consumption. During this same period, 3.243 million tonnes or 90% of ISS was beneficially used within various value-added applications of the construction materials sector, resulting in the conservation of energy, finite natural resources, and the reduction of carbon emissions from these co-products.

Methodology

Annually, the Australasian (iron & steel) Slag Association (ASA) surveys its members[1] and non-members to capture data on ISS generation, recovery, importation, and sale into value-added applications for the calendar year. This report, compiled during 2025, reports on the aggregated volumes of (1) production, (2) importation and (3) sales for 2023.

The survey results include data from all iron and steel slags generators (iron & steel plants), marketers (processing and marketing companies) and captured users for the total production and sales by each reported end use. Data in the report is supplemented with secondary sources importation data[2] and other secondary data sources for accuracy purposes.

Information provided is reviewed, compared, collated before being aggregated into this national report by slag type; BFS; GBFS; SFS; EAFS; KOBM; Others[3] and by end uses for all slag products.

Discussion of results

During the period, the volume of ISS generated/imported increased slightly to 3.569 Mt from 3.374 Mt in the previous period. Production of domestic ISS was reasonably stable, except for domestic production and imports of GBFS which increased by ~ 200,000 tonnes, meaning almost 2 million tonnes of GBFS total. Overall demand for GGBFS use in the cement and concrete products continues to strengthen which is consistent with the longer term industry trends to reduce the carbon footprint for 1M3 of concrete. Utilisation across other categories correlates well with historical demand within the construction and infrastructure sectors, underpinned by major investments by State Governments within infrastructure. The trend and growth in iron and steel slags use in higher value-added applications continues.

Demand for fine and coarse aggregate use in structural/civil applications is closely tied to consumption or growth in the future development of infrastructure in both urban and

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[1] http://www.asa-inc.org.au/membership/members-and-affiliates
[2] ABS [Austats] based on import tariff code data for Granulated Blast Furnace Slag (GBFS).
[3] http://www.asa-inc.org.au/products

regional Australia – estimated to be in excess of 200 million tonnes annually[4]. Extractive resources are generally widespread and remain in adequate supply nationally, however, shortages in important large-scale markets (Sydney, Melbourne and Brisbane) continue to emerge, requiring additional logistics and associated handling costs not historically incurred. These are mainly attributed to unsuitable geology, conflicting or incompatible land uses and environmental problems caused by high rates of urban expansion. Natural sand and gravel resources are also being depleted leading to opportunities for substitution by manufactured sands from crushing operations.

Demand for granulated blast furnace slag (GBFS) within the cement and concrete sectors grew over the period. GBFS imports were 1.354 Mt. Overall from the combined 3.569 Mt generated and imported iron and steel slags, 3.243 Mt or 90% was effectively utilised within various value-added civil and construction material applications throughout Australasia.

The key results for the calendar period 2023 survey were:

- Approximately 3.569 Mt (million tonnes) of iron and steel slag was available for use within Australasia (Australia and New Zealand)
- From the ISS available, 2.243 Mt or 90 was effectively utilised [sold or reused for some beneficial use]
- On a per capita basis, this equates to approximately. ~100 kgs per person
- 1.99 Mt was used in cementitious applications - "high value add" [HVA][5] Note: approx. 1.354 Mt of GBFS was imported.
- 0.875 Mt was used in non-cementitious or road construction applications - medium value add [MVA][6].
- 0.368 Mt was in general civil or fill applications – low value add [LVA][7].

In summary, the longer-term trend of ISS materials end-use applications continues its movement from LVA to MVA and HVA applications. To these ends, the active use of these co-products 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 2023, with comparisons against 2023 to 2015.

Australasian (iron & steel) Slag Association
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[4] Quarrying Overview." Retrieved Sept, 2021, 2021, from https://www.ccaa.com.au/CCAA/Industry/Quarry/Overview/CCAA/Public_Content/INDUSTRY/Quarry/Quarry_Overview.aspx?hkey=03c6b3a0-5148-4ae4-b751-83dec0318519
[5] HVA – High Value Add – means where ISS materials are sold for > (more than) $100/tonne
[6] MVA – Medium Value Add – means where ISS materials are sold for between $10-$100/tonne
[7] LVA – Low Value Add – means where ISS materials are sold for < (less than) $10/tonne

Australasian (iron & steel) Slag Association

2023 Slag Production & Sales Survey

SECTION A Slag Production (tonnes)	BFS	GBFS	SFS	EAFS	KOBM	Other	2023 Combined	2022 Combined	2021 Combined	2020 Combined	2019 Combined	2018 Combined	2017 Combined	2016 Combined	2015 Combined
A1. Total Produced (Jan-Dec)	599,441	639,375	455,234	120,669	30,000	220,632	2,065,350	2,138,040	1,919,302	1,971,075	1,788,244	1,907,509	1,838,842	1,885,481	1,889,246
A2. Total imported (Jan-Dec)		1,354,499					1,354,499	1,236,295	1,204,127	1,266,075	1,066,244	1,107,098	918,630	1,047,918	1,006,980
A3. Total Stored [not used]	199,441	0	202,329	5,627	0	7,811	415,207	533,216	53,944	0	0	0	18,453	25,800	0
A4. Total Removed from Storage	50,000	0	100,000	0	0	0	150,000	0	602	0	0	55,000	4,794	25,800	0
SECTION B Auto Calculations							**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**
B2. Total for use (Auto calc)	649,441	1,993,874	555,234	120,669	30,000	220,632	3,569,850	3,374,334	3,177,975	3,237,150	2,854,488	3,069,606	2,762,266	2,959,199	2,896,226
SECTION C Slag Use (tonnes)	**BFS**	**GBFS**	**SFS**	**EAFS**	**KOBM**	**Other**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**
C1. Cement or Binder products	0	1,989,046	0	0	0	10,300	1,999,346	1,877,199	1,704,063	1,660,473	1,590,487	1,624,576	1,508,340	1,587,686	1,479,762
C2. Feed stock for Clinker/Glass products	45,939	45,939	69,363	0	0	0	161,241	135,753	107,916	86,970	115,714	88,362	94,878	88,919	126,645
C2. Grit Blasting products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2. Structural Fills/Embankments	0	0	190	34,406	0	0	34,596	13,474	0	739	3,726	12,502	12,646	14,317	13,260
C2. Road Base/Sub-base	171,698	27,047	0	102,130	0	1,297	302,173	123,333	296,697	415,120	204,382	192,901	321,309	219,432	122,728
C2. Rockwool products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2. Mineral Fillers (e.g Asphalt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2. Agricultural applications	0	0	0	0	0	0	0	0	0	0	0	0	0	0	275
C2. Water treatment/filtration products	0	0	0	20,802	0	0	20,802	3,351	0	0	0	0	0	0	0
C2. Asphalt & Concrete Aggregates	174,624	0	131,947	28,581	0	21,101	356,253	240,629	223,178	205,320	277,932	299,225	347,549	301,429	335,347
C3. Mining Applications	0	13,100	0	0	0	0	13,100	8,600	0	0	0	0	0	0	0
C3. Waste Stabilisation/Solidification	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C3. Miscellaneous/Other	45,973	7,343	302,510	0	0	0	355,826	242,458	157,236	125,916	119,604	154,446	236,523	236,198	294,965
SECTION D Summary Results	**BFS**	**GBFS**	**SFS**	**EAFS**	**KOBM**	**Other**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**	**Combined**
D1. Total of all sold (Auto calc)	438,235	2,082,474	504,009	185,919	0	32,698	3,243,335	2,644,797	2,489,090	2,494,538	2,311,844	2,372,012	2,521,245	2,447,981	2,372,982
	67.48%	104.44%	90.77%	154.07%	0.00%	14.82%	90.85%	78.38%	78.32%	77.06%	80.99%	77.27%	94.64%	94.64%	95.06%

Table 1 - 2023 Slag Sales and Production Survey