

7 Supply and demand balances in the current VCB value chain

Since the usage of paper and cloth bags is minimal (less than 1%), the current supply and demand balance for VCB's exclude paper and cloth products.

The supply-and-demand balance for vest-type carrier bag industry can be determined from various angles. In theory they should result in similar answers, but due to differences in availability and accuracy of data this will not necessarily be the case. It must however still be done since the resultant triangulation is indicative of the magnitude of error. The following summarises the three approaches followed, and the level of accuracy expected based on the baseline data. The product mix is constant, as defined.

Approach	Baseline data	Accuracy of baseline data
Calculate the size of the VCB industry and retailer demand based on raw material (polymer) supply Adjust for export and import of both raw material, semi-processed goods, and finished products (VCB's)	Polymer supply to the VCB industry	Accurate – actual data available for complete polymer industry Accurate polymer export data Accurate polymer import data, but adjustments to actual bag numbers I (necessary because of the importation of VCB's) is uncertain
Calculate the raw material supply and retailer demand based on the size of the VCB conversion industry	VCB production	Not possible to do accurately unless data is available for a representative number of companies that produce VCB's. Research did not yield data from a representative number of companies.
Calculate the size of the VCB industry and polymer supply based on the demand of retailers	Retail demand	Accurate – representative data available. Uncertainty about imports and exports not relevant Only uncertain variable is the lack of representative data on very small informal retailers and hawkers

7.1 Supply and demand balance based on raw material volumes

7.1.1 Raw material and semi-processed polymer supply

Total polymer and semi-processed polymer supply to VCB industry:

Raw material supply to VCB industry ²⁰	Tonnages	Notes on values
Locally produced polymer <ul style="list-style-type: none"> • HD • LLD • Masterbatch 	37 000 4 760 1 740	Data supplied by polymer producers Combined LLD and Masterbatch is 15% of total, with Masterbatch being 4 ²¹ %
Total local polymer supply for local VCB industry	43 500	
Imported polymer and semi-processed ²² <ul style="list-style-type: none"> • Imported HD-PE • Imported HD -PE scrap and waste • Imported LLD-PE • Imported PE plates, film and foil 	400 0 100 0	Although 16 799 t of HD was imported in 2000, this research indicated that very little ²³ is consumed in the VCB industry Although approximately 23 000 t of LLD-PE was imported in 2000, research indicated that very little ²⁴ is consumed in the VCB industry. It is more cost effective to import bags than rolls of PE. The 7000 t of PE plate and film is therefore for applications other than VCB
Total imported polymer supply to VCB industry	500	
Total polymer supplied to the VCB industry	44 000	

Amounts of reprocessed material that is supplied for conversion is not shown separately in the above table. It does not mean that it has been neglected in the determination of the total material supply, and is included in the figures that represent “locally produced polymer”.

This is for the following reasons:

- Reprocessed HDPE is only first generation (in-house) reprocessed, and therefore included in the 37 000 tonnes
- It is estimated that less than 1%²⁵ of post-consumer reprocessed enters the recycle industry
- The figure for locally produced LLDPE is a calculated and would therefore include virgin, first generation as well as any post-consumer LLDPE.

²⁰ Data provided by the two polymer manufacturers in South Africa

²¹ The 4 % master batch figure supplied by polymer producers match the actual usage, as supplied by converters

²² DTI trade database, 2001

²³ The research into 30000 tonnages of HD consumed within the VCB industry indicated that only 100 t was imported material. A 1% imported HD assumption would therefore be realistic

²⁴ Imported LLD-PE is primarily specialised monomers, and the research indicated that only 20t was imported raw material.

²⁵ Estimate provided by plastic recyclers

7.1.2 Size of the VCB industry based on raw material supply

Due to the fact that no losses occur in the conversion of polymer into film and eventually bags (in-house waste is reprocessed, and material density stays constant), the size of the South African conversion industry can with confidence be estimated as being 44 000 tonnes.

7.1.3 Converting polymer volumes into units of bags produced

Using the weighted average weight of bags produced and consumed, as earlier calculated, the total number of bags consumed is calculated as follows:

Type of bags	% of bags	Polymer tonnes	Weighted avg weight per bag	Number of bags (millions)
Mini	7%	3080	3.11	990.354
Handi	17%	7480	4.35	1 719.540
Midi/Maxi	55%	24200	7.01	3 452.221
No data provided	21%	9240	5.87	1 574.107
Total				7 736.621

From the above it is concluded that the total number of bags locally produced is 7.736 billion

7.1.4 VCB imports and exports

To complete the supply-demand balance it is necessary to quantify the imports and exports of VCB's.

Exports: Exports of VCB's could be accurately quantified, as it is known that only one converter is currently exporting. The total export volume is 6000 tonnes and the number of bags (actual data provided by converter) is 560 million.

Imports: The quantity of bags being imported is a much more contentious issue. Industry sources estimate it to be approximately 1000 tonnes. The DTI indicated that the value of imported bags was R 64.2 million in 2000. This figure is a FOB value, and includes all bags and sacks made of PE, and not only VCB's. It can however be assumed that most of the imported bags would be VCB's since the market for LD bags in South Africa is relatively small and customised. Therefore assuming 70% of import is VCB's, and an FOB price of R 10 000/t, it equates to 4494 tonnes. Industry sources indicate that these bags are typically the Handi type, with a very low thickness of 10µ per bag. This calculates to a weight of 3.4 kg per 1000. The 4494 tonnes therefore equates to 1.32²⁶ billion bags imported.

²⁶ According to industry sources this figure could be on the high side. It is however impossible to research the exact number of bags being imported

7.1.5 Net VCB consumption based on polymer supply

Net VCB consumption, taking into account local production less exports and plus imports therefore equates to 8.496 billion bags per annum, or 42 500 tonnes

7.2 Supply and demand based on VCB industry conversion volumes

The research identified 42 companies that manufacture VCB's. Data was obtained from 10 companies, with a combined VCB production of 34 738 tonnes. Since the number of companies for whom data was collected cannot be considered to be representative of the industry, and considering that the nature of the companies are completely different in terms of technology, labour intensity, product mix, etc., it would not be prudent to estimate the supply and demand equation from this perspective.

The fact that the industry size could not be extrapolated is due to under-representation in the number of companies from which data was received. This should not distract from the fact that, from a product perspective (data received on 34 738 tonnes out of 44 000), the representation was found to be high (79%), and could successfully be interpreted for the industry as a whole.

7.3 Supply and demand based on formal and informal retailer demand

7.3.1 Demand volumes based on retailer data

The retailer market was segmented for research purposes as follows:

- Large retailer groups listed on the JSE
- Non listed smaller retailers segmented according to size (small, medium and large), as well as geographical location

Demand profile of large retailers

Although limited data was collected from large retailers, it confirmed the industry "rule of thumb", namely that spending on carrier bags is 0.45% of total turnover²⁷. Considering that the food and clothing sector of the JSE is R 48 Billion, the spending equates to R 202 million per annum. Since retailers also indicated that they get on average 11 bags for every Rand spend, the total bag consumption is 2.552 billion per annum

²⁷ This figure is commonly agreed by retailers and converters and was confirmed by the research.

Demand profile for non-listed smaller retailers

The demand profile of non-listed, smaller retailers is extensively described elsewhere in the report. It was found that there are 88 000 retailers. The research obtained data from a representative sample of 377 companies, representing 723 retail outlets. Of these a total of 451 used VCB's. The mean monthly consumption was found to be 8309 bags. Statistically it can therefore be calculated that the total consumption of the 88 000 retailers is 5. 473 billion bags per annum. Analysis of the data provided by smaller retailers indicated an average cost of R 78.26/1000 bags for printed bags, and R 59.66 for unprinted bags. The total spending by smaller retailers equates to R 370 million per annum

The total VCB consumption by retailers in South Africa is therefore estimated to be 8.026 billion bags and a backwards calculation based on this demand, cost per bag and cost per tonne gives a polymer consumption of 42 316 tonnes.

7.4 Summary of the current supply and demand balances

Having determined the number of bags being consumed independently from both a polymer supply and retail demand angle-produced results of the same magnitude, as follows

- Based on 42 500 tonnes polymer usage and the actual weight of bags, it was determined that 8.496 billion bags are annually consumed
- Based on the actual retail spending and bag consumption, it was determined that 8.026 billion bags are consumed.

With imports being the most uncertain factor, there is a possibility that the imported number of units could have been overstated, and the weight of the bags slightly understated. The demand figure is therefore based on the research into the retail market, and the polymer usage based on the 42 000 figures which correspond from both the retail and polymer production side.

This results in a balanced, with some slight adjustments, supply and demand equation as follows:

Retailer category	Spending on bags R million	Bags consumed (billion)	Conversion, exports and imports (units and tonnage)	Average weight per bag (g)	Polymer usage tonnes
Large retailer groups	202	2.552	Domestic 44000t (7.736 m bags)	5,87	14728
Smaller retailers Printed bags	181.09	2.314	Exports 6000t (560 m bags)	5.87	13740
Smaller retailers Unprinted	188.45	3.158	Imports 400t (848 m bags)	4.35	13587
Total	571.54	8.024			42055