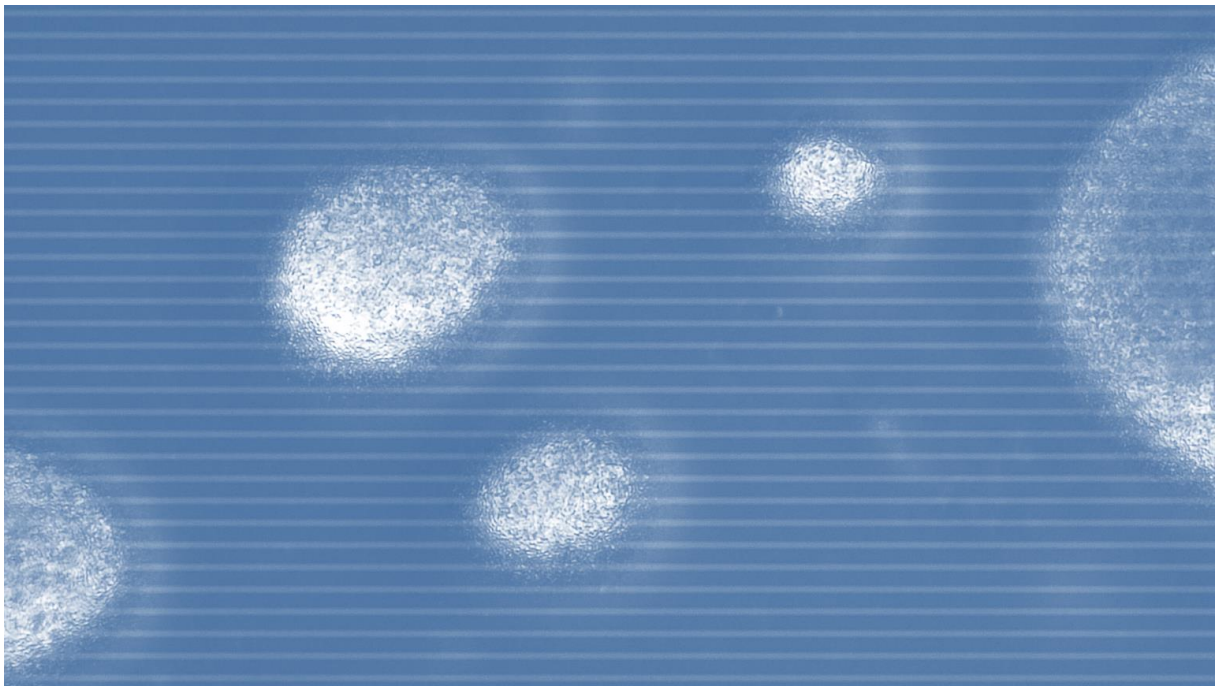


An assessment of the sale of microbeads and other non-soluble plastic polymers in personal care and cosmetic products currently available within the Australian retail (in store) market

Project report

Final report





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Project title:	An assessment of the sale of microbeads in personal care and cosmetic products currently available within the Australian retail (in store) market	
Cover image:	Envisage Works. Image: Polyethylene microbeads in a currently available facial scrub.	
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## EXECUTIVE SUMMARY

This report was commissioned to determine the types and number of products that contain microbeads or other non-soluble plastic polymers and identify companies that sell or distribute these products in the Australian personal care and cosmetics market. Between November 2017 and February 2018, an instore survey of 148 retail outlets across the Australian Capital Territory, New South Wales, Queensland and Victoria was completed. The retail outlet types targeted were; department stores, discount stores, skin care and cosmetics stores, supermarkets, pharmacies and some other store types (e.g. retail outlets selling workshop hand-cleaners and toy stores).

The scope of products and polymers surveyed for this report are broader than the scope of BeadRecede, the industry-led voluntary phase out of microbeads. BeadRecede is limited to microbeads personal care products that are intended to be rinsed off immediately, such as facial cleansers and body wash, that are reasonably capable of entering the marine environment. This assessment also includes cosmetics that may be wiped off, such as blush or eye make-up, and also included other non-soluble plastic polymers.

Approximately 4,400 products which potentially contained microbeads were inspected during the retail outlet surveys, **with 6% (267 products) identified as containing microbeads or other non-soluble plastic polymers.**

The 6% of products containing microbeads or other non-soluble plastic polymers were sold in 53 retail outlets and distributed by 55 companies. Of these products an aggregated total of 94% were in; foundations/blushes (38.2%), eye make-ups (14.2%), lip make-ups (12.0%), skin creams/moisturisers (19.1%), and facial scrubs (10.5%).

Results show 67% and 30% of products containing microbeads or other non-soluble plastic polymers were cosmetics and facial scrubs/skin creams respectively indicating these are areas in which further progress can be made.

No shampoos/conditioners, body washes and hand cleaners contained microbeads, demonstrating that the phase-out of microbeads in these products is largely complete.

Across the 267 products identified as containing microbeads and other non-soluble plastic polymers, 325 polymer types were identified, with 58 products containing two or more polymer types. Polyethylene was the most common polymer type observed in use (42.6%), followed by nylon-12 (28.4%) and PMMA (10.2%).



# 1 INTRODUCTION

This retail outlet survey was undertaken between November 2017 and February 2018 on behalf of the Department of the Environment and Energy to obtain information on the:

- types, number and proportion of products that contain microbeads and other non-soluble plastic polymers
- companies that sell or distribute these products .

In 2015 Environment Ministers agreed to the voluntary phase out of microbeads in a range of products including personal care products, cosmetics and some cleaning products.

ACCORD Australasia (a national industry association representing manufacturers and suppliers of hygiene and cosmetic products) is undertaking a voluntary initiative called BeadRecede, which is raising industry awareness and supporting companies in phasing out microbeads by July 2018.

The extensive and continuing work carried out by ACCORD and its members is acknowledged, however to provide a comprehensive picture of the status of products containing microbeads available on the Australian market at this point in time, both ACCORD and non-ACCORD member products have been surveyed.

## 1.1 Background

Microbeads are small, solid manufactured plastic particles with an upper size limit of 5 mm in diameter that are water insoluble and non-degradable, with typical diameters of around 100–300 µm. The use of microbeads and other non-soluble plastic polymers has been reported in personal care products such as deodorant, shampoo, conditioner, shower gel, toothpaste, hair colour, shaving cream, sunscreen, insect repellent, anti-wrinkle creams, moisturisers, hair spray, facial masks, baby care products and cosmetics. All these product types were reviewed for the presence of microbeads and other non-soluble plastic polymers during the retail outlet surveys.

Non-soluble plastic polymers including microbeads are used as ingredients in these products for a variety of purposes including as an abrasive, bulking agent, for controlled time release of active ingredients and to prolong shelf life. They are widely used due to their cheap cost.

Microbeads are not captured by most wastewater treatment systems in Australia, and are designed to be used once and then rinsed off or flushed down the drain. As they are not captured by waste water treatment systems they enter the waterways and have a damaging effect on marine life.

For the purpose of this report, personal care and cosmetic (PC&C) products are termed 'products'.

## 1.2 Scope

The Department of the Environment and Energy required an assessment of the sale of microbeads in products available within the Australian retail (in store) market at the end of 2017.

It is important to note that the scope of products covered by this assessment is broader than the scope of products targeted under the phase-out of microbeads. The voluntary phase-out is concerned with solid microbeads that could reasonably enter aquatic environments through normal use, that is, products that are intended to be rinsed off, such as facial scrubs and body wash. This



survey covers both an additional range of products – products that are removed by being wiped off such as eye make-up and blush – and a small number of other non-soluble plastic polymers.

The information provided in this report includes:

- Retail outlets that were identified as selling products containing microbeads or other non-soluble plastic polymers.
- The types and number of products which contain microbeads or other non-soluble plastic polymers.
- The brand, distributor, product name and purpose of each product containing microbeads or other non-soluble plastic polymers.
- Estimated quantities of the product sold in store.
- Quantity of the product in the Australian market.

### Data gaps and limitations

The selection of retail outlets was based upon an agreed number of retail outlets to survey, agreed retail outlet types to target, and geographic location (i.e. located in the capital city of the four selected jurisdictions) rather than a probability-based sampling approach, and therefore the level of any sampling bias or underestimation is unknown.

The identification of products containing microbeads or other non-soluble plastic polymers was constrained at some types of retail outlet, such as higher-end skincare and cosmetics outlets. This was due to high staff numbers and service attention resulting in a reduced ability to photograph or otherwise document product details. As such the numbers of observations of products containing microbeads or other non-soluble plastic polymers in these types of retail outlet are more likely to contain gaps, as in these retail situations a proportion of products potentially containing microbeads could not be identified and surveyed.

Sufficiently granular published data on the sales of each non-ACCORD product surveyed could not be obtained or reliably estimated, so comparative proportions of the surveyed products by weight of product type grouping have been provided, to give an indication of the relative proportions of each product type entering the market.

Exclusions from project are:

- Pumice and other silica (sand) based additives/abrasives microparticles.
- Direct online purchases by Australian consumers from overseas suppliers.
- Products registered with the Therapeutic Goods Administration (TGA), including sun screens, as TGA products are only required to list the active ingredients on packaging which excludes microbeads.



## 1.3 Method

The retail outlet stores have been categorised into the following sectors:

- Department
- Discount
- Skin care and cosmetics
- Supermarket
- Pharmacy
- Other

The field surveys used a 'shadow shopper' type approach, during which a project team member acted as an ordinary 'shopper' while reviewing the ingredients panels and other details of on-shelf products. There were typically 2–3 photos taken of the packaging of each product containing microbeads.

The presence of microbeads or other non-soluble plastic polymers was determined by examining the ingredient list for the following:

- Nylon-10/10
- Nylon-11
- Nylon-12
- Nylon-12/6/66 copolymer
- Nylon-5
- Nylon-6
- Nylon-6/11
- Nylon-6/12
- Nylon-66
- Polyethylene (PE)
- Polyethylene (PE) – oxidised
- Polyethylene terephthalate (PET)
- Polylactic acid (PLA)
- Polymethyl methacrylate (PMMA)
- Polypropylene (PP)
- Polytetrafluoroethylene (PTFE)
- Methyl methacrylate crosspolymer

Film forming synthetic polymers used in products such as hairsprays and nail polishes were excluded from the project scope. These include compounds such as polyvinylpyrrolidone vinylacetate copolymer (PVP/VA), polyurethane-11 and polyurethane-14.



## Retail outlet survey coverage

Department store survey coverage included visits to 6 major retailers, which make up 97.5% of the department store sector in Australia (IBISWorld, 2017a).

The discount store sector is highly diverse with the major chains surveyed. It was not possible to estimate the coverage of contact with the discount stores sector.

The skin care and cosmetics retail sector is highly diverse with low concentration of market share. Survey coverage included visits to 8 key cosmetic stores which in aggregate make up around 17% of the skin care and cosmetics store sector in Australia (IBISWorld, 2017b). In addition, another 15 smaller chain and independent skin care and cosmetic retail outlets were also visited.

Supermarket store survey coverage included visits to the 3 major chains which make up 76% of the supermarket store sector in Australia (IBISWorld, 2017c).

Pharmacy survey coverage included visits to the 6 major chemists, which make up 64.8% of the pharmacy store sector in Australia (IBISWorld, 2017d). In addition, nine independent pharmacies were surveyed.

Table 1 and Figure 1 show the number and types of retail outlets surveyed by jurisdiction. A total of 148 retail outlets were surveyed, with an average in-store time of 20 minutes.

**Table 1 – Completed retail outlet store surveys by jurisdiction (sites)**

Retail outlet types	ACT	NSW	QLD	VIC	Total
Department	5	3	5	0	13
Discount	4	3	3	7	17
Skin care and cosmetics	2	12	16	7	37
Supermarket	5	3	2	4	14
Pharmacy	6	8	8	3	25
Other <sup>1</sup>	3	10	6	23	42
<b>Totals</b>	<b>25</b>	<b>39</b>	<b>40</b>	<b>44</b>	<b>148</b>

1. Examples of “Other” retail outlet types are clothes and homewares outlets with a limited range of products, toy stores, and retail outlets selling workshop hand-cleaners (e.g. Autobarn and Bunnings).





**Figure 1 – Completed retail outlet store surveys by jurisdiction**





## 2 RESULTS

### 2.1 Products containing microbeads or other non-soluble plastic polymer containing products

Approximately 4,400 products which potentially contained microbeads were inspected during the retail outlet surveys, **with 6% (267 products) identified as containing microbeads** or other non-soluble plastic polymers. The following results show how the 6% of products containing microbeads or other non-soluble plastic polymers are distributed among product categories. Each retailer sells a small number of products containing microbeads or other non-soluble plastic polymers as the market for these products is highly diverse with a low concentration of market share.

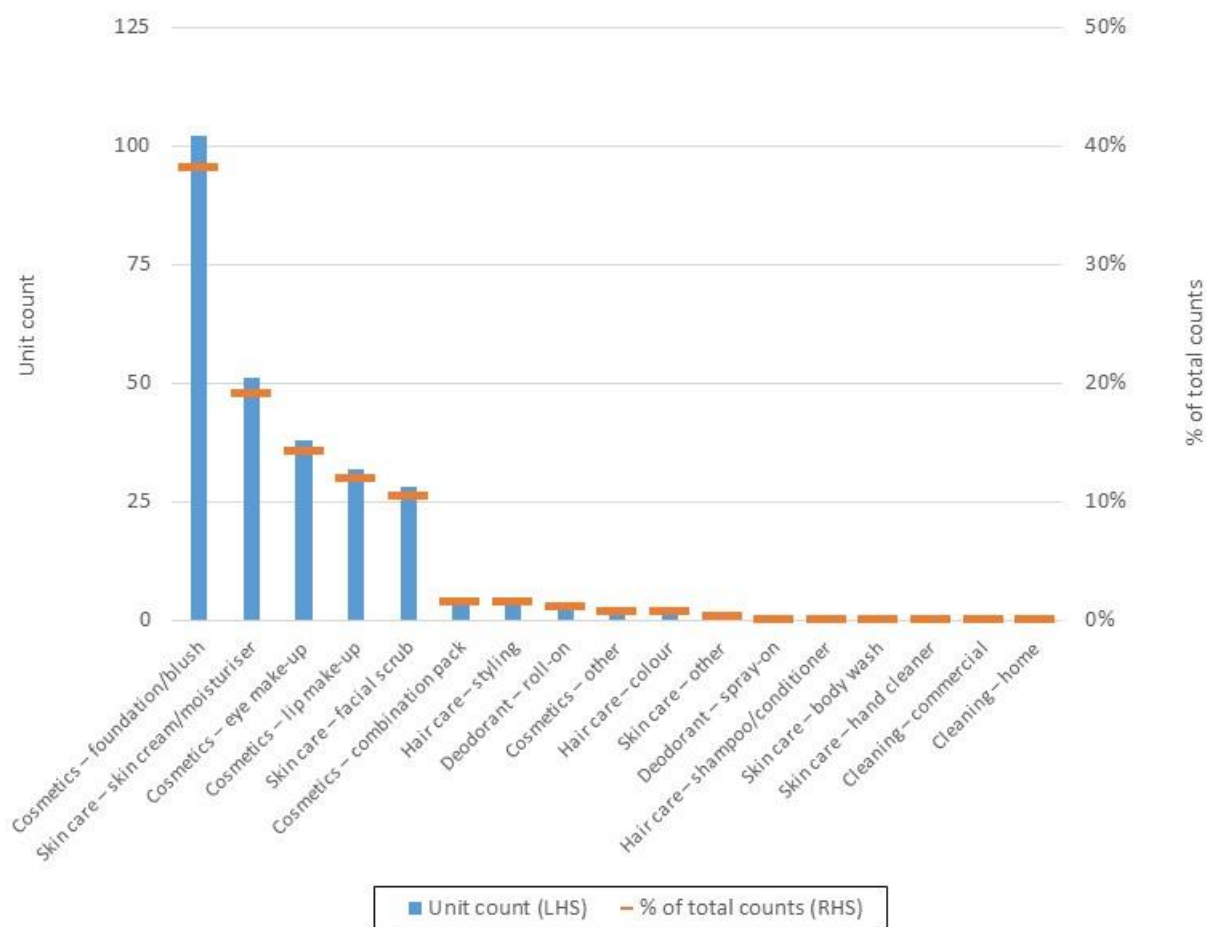
Table 2 and Figure 2 show the summary results for the number of products containing non-soluble plastic polymers, across both non-ACCORD and ACCORD members, by product type group.

**Table 2 – Total products identified as containing microbeads, by product type**

Product type	Non-ACCORD members	ACCORD members	Total	
	(unit count)	(unit count)	(unit count)	(%)
Cosmetics – combination pack	2	2	4	1.5%
Cosmetics – eye make-up	22	16	38	14.2%
Cosmetics – foundation/blush	54	48	102	38.2%
Cosmetics – lip make-up	18	14	32	12.0%
Cosmetics – other	0	2	2	0.7%
Deodorant – roll-on	0	3	3	1.1%
Deodorant – spray-on	0	0	0	0.0%
Hair care – colour	2	0	2	0.7%
Hair care – shampoo/conditioner	0	0	0	0.0%
Hair care – styling	3	1	4	1.5%
Skin care – body wash	0	0	0	0.0%
Skin care – facial scrub	8	20	28	10.5%
Skin care – hand cleaner	0	0	0	0.0%
Skin care – other	1	0	1	0.4%
Skin care – skin cream/moisturiser	16	35	51	19.1%
Cleaning – commercial	0	0	0	0.0%
Cleaning – home	0	0	0	0.0%
<b>Totals</b>	<b>126</b>	<b>141</b>	<b>267</b>	<b>100.0%</b>



**Figure 2 – Total products identified as containing microbeads, by product type (unit count)**



A total of 267 products contained microbeads, with 94.0% of the products containing microbeads in foundation/blush (38.2%), eye make-up (14.2%), lip make-up (12.0%), skin cream/moisturiser (19.1%) or facial scrubs (10.5%).

Table 2 and Figure 2 shows that the majority of remaining microbeads can be found in cosmetics products (67%) and facial scrubs and skin creams/moisturisers (30%). Alternatively no microbeads were found in shampoos/conditioners, body washes and hand cleaners which indicates that the phase-out of any uses of microbeads in these products is largely complete.



Table 3 and Figure 3 show the summary results for the number of products containing microbeads, across both non-ACCORD and ACCORD members, by polymer type.

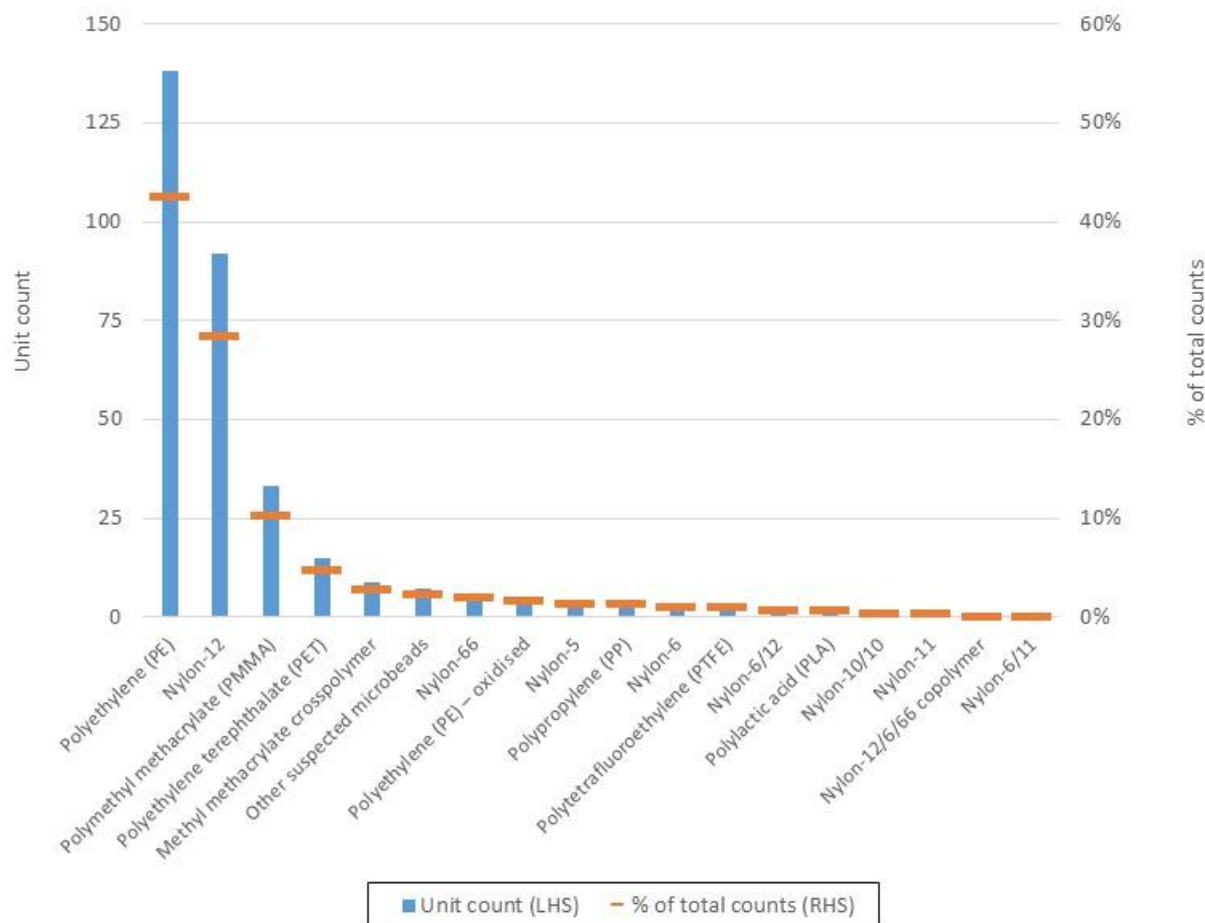
Across the 267 products identified as containing microbeads or other non-soluble plastic polymers, 325 polymer types were identified, with 58 products containing two or more polymer types. Polyethylene was the most common polymer type observed in use (42.6%), followed by nylon-12 (28.4%) and PMMA (10.2%).

**Table 3 – Number of products containing microbeads or other non-soluble plastic polymers by particular polymer type**

Product type	Non-ACCORD members	ACCORD members	Total	
	(unit count)	(unit count)	(unit count)	(%)
Nylon-10/10	1	0	1	0.3%
Nylon-11	0	1	1	0.3%
Nylon-12	51	41	92	28.4%
Nylon-12/6/66 copolymer	0	0	0	0.0%
Nylon-5	0	4	4	1.2%
Nylon-6	1	2	3	0.9%
Nylon-6/11	0	0	0	0.0%
Nylon-6/12	1	1	2	0.6%
Nylon-66	3	3	6	1.9%
Polyethylene (PE)	57	81	138	42.6%
Polyethylene (PE) – oxidised	0	5	5	1.5%
Polyethylene terephthalate (PET)	10	5	15	4.6%
Polylactic acid (PLA)	0	2	2	0.6%
Polymethyl methacrylate (PMMA)	21	12	33	10.2%
Polypropylene (PP)	0	4	4	1.2%
Polytetrafluoroethylene (PTFE)	0	3	3	0.9%
Methyl methacrylate crosspolymer	1	8	9	2.8%
Other suspected microbeads	7	0	7	2.2%
<b>Totals</b>	<b>153</b>	<b>172</b>	<b>325</b>	<b>100.0%</b>



**Figure 3 – Number of products containing microbeads or other non-soluble plastic polymers by particular polymer type**



## 2.2 Distributors selling microbead or other non-soluble plastic polymer containing products

The survey found 43 non-ACCORD member and 12 ACCORD member distributors that sell products containing microbeads or other non-soluble plastic polymers to retailers (Appendix B). A number of retailers are also the product distributors. The most significant of these are also included in Appendix B.

Key observations include:

- The use of fine microbeads of nylon-12 and PMMA in foundation/blush, is common in the survey sample.
- The use of fine microbeads of polyethylene in eye make-up, lip make-up and foundation/blush, is common in the survey sample.
- The use of fine microbeads in skin creams is fairly common in the survey sample.
- The use of polyethylene microbeads in facial scrubs is reasonably common in the survey sample.



## 2.3 Quantities of products containing microbeads or other non-soluble plastic polymers

Table 4 and Figure 4 show the quantities in percentage mass terms of surveyed products identified as containing microbeads or other non-soluble plastic polymers, grouped by product type. This data is provided as a proxy for actual total sales data into the Australian market to give an indication of the relative scale of the sales of products containing microbeads. Actual sales data for each of the products identified during the surveys is not available. Note that this percentage data is based on the total weight of the product and is not adjusted for the concentration of microbeads in the product, which has not been determined as part of the project.

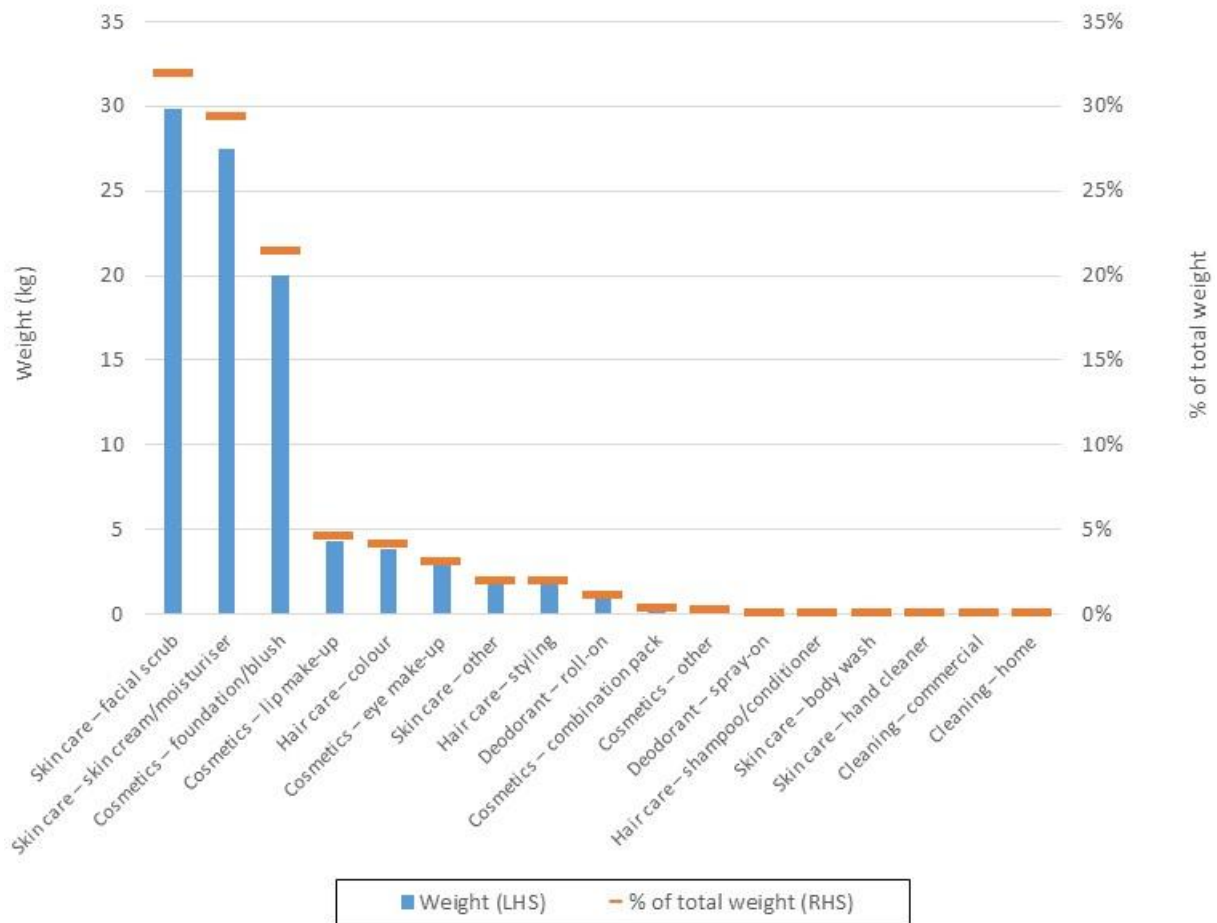
On a mass basis, facial scrubs (31.9%), skin cream/moisturiser (29.4%), and foundation/blush (21.4%) make up 82.7% of the surveyed products.

**Table 4 – Mass of products identified as containing microbeads, by product type (%)**

Product type	Non-ACCORD members	ACCORD members	Total
	(% mass)	(% mass)	(% mass)
Cosmetics – combination pack	0.5%	0.2%	0.3%
Cosmetics – eye make-up	6.2%	0.7%	3.1%
Cosmetics – foundation/blush	25.3%	18.5%	21.4%
Cosmetics – lip make-up	5.4%	4.0%	4.6%
Cosmetics – other	0.0%	0.5%	0.3%
Deodorant – roll-on	0.0%	1.9%	1.1%
Deodorant – spray-on	0.0%	0.0%	0.0%
Hair care – colour	9.6%	0.0%	4.1%
Hair care – shampoo/conditioner	0.0%	0.0%	0.0%
Hair care – styling	1.9%	2.0%	1.9%
Skin care – body wash	0.0%	0.0%	0.0%
Skin care – facial scrub	33.8%	30.6%	31.9%
Skin care – hand cleaner	0.0%	0.0%	0.0%
Skin care – other	4.5%	0.0%	1.9%
Skin care – skin cream/moisturiser	12.9%	41.7%	29.4%
Cleaning – commercial	0.0%	0.0%	0.0%
Cleaning – home	0.0%	0.0%	0.0%
<b>Totals</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>



**Figure 4 – Mass of products identified as containing microbeads or other non-soluble plastic polymers, by product type**





## 3 REFERENCES

IBISWorld, 2017a. *IBISWorld Industry Report G4260 - Department Stores in Australia*, Melbourne: IBISWorld.

IBISWorld, 2017b. *IBISWorld Industry Report G4271b - Cosmetic and Toiletry Retailing in Australia*, Melbourne: IBISWorld.

IBISWorld, 2017c. *IBISWorld Industry Report G4111 - Supermarkets and Grocery Stores in Australia*, Melbourne: IBISWorld.

IBISWorld, 2017d. *IBISWorld Industry Report G4271a - Pharmacies in Australia*, Melbourne: IBISWorld.

### [Accompanying workbook](#)

The retail outlet survey data and analysis undertaken for this report is provided in the accompanying MS Excel workbook to this report, filename: *C01-03-A21503 Microbeads in PC+C products - Retail surveys + analysis.xlsx*