

OCEAN CLEAN WASH

PLASTIC SOUP FOUNDATION CHARTER TO STOP PLASTIC MICROFIBER RELEASE FROM LAUNDRY IN WASHING MACHINES

The Charter is a commitment of industrial corporations, among which from the fashion industry, with the Plastic Soup Foundation to realize within a set timeline a significant mitigation of microplastic fiber release during the washing of synthetic clothes in washing machines.

Washing machines and clothing made with synthetic fibers have changed the world in the past decades. The washing machine has brought us clean laundry without intensive labor and increased our personal hygiene. Synthetic textiles have brought a diverse range of attractive and affordable clothing. Recent new insights show that the combination of both contributes to one of the biggest environmental problems of our time: the Plastic Soup.

For the first time, reliable scientific research on different types of synthetic clothing shows the amount of plastic fibers that are released in washing processes (life-mermaids.eu/en/about/this-project).

During washing and centrifuging garments, microplastic fibers are released and end up in rivers, seas and oceans as washing machines and water treatment plants are not (yet) equipped to filter these microfibers out of the wastewater. Without intervention the amount of fibers that are released via the sewer into our waterways will increase significantly in the near future: 30% of the world population is already doing the laundry with a washing machine, the remaining 70% will buy one as soon as they have the chance.

2010: 2 out of 7 billion people use a washing machine
2050: 5 out of 9 billion people will use a washing machine

Source, Hans Rosling and the magic washing machine
<http://youtu.be/6sqnptxlCcw>

See Annex 1

Recent research in the framework of EU funded Life+ Project 'Mermaids, ocean clean wash', on mitigation of microplastics caused by textile washing processes, shows that much more fibers are being released than previous research from 2011 suggested.

The amount of plastic fibers released per wash according to the Mermaids project in 2015 compared to the amount of fibers according to the research of dr. M.A. Browne in 2011.

Browne demonstrated in 2011 that a single garment can produce >1900 fibers per wash ¹.

Mermaids (2015) counted: 228 – 4,566 fibers/gramme per wash. In one sample (#3 in table below) the amount of fibers collected on the filter couldn't be determined due to the high quantity of fibers released. A fleece jacket of 500g releases between 114,000 and 2,283,000 fibers (depending on composition and washing conditions).

Recent research strongly suggests that a large proportion of microplastic fibers found in the marine environment may be derived from sewage as a consequence of washing of clothes.

¹ Accumulation of Microplastics on Shorelines Worldwide: Sources and Sinks, Browne, M.A., et al., *Environmental Science & Technology* 45, 2011, pp 9175–9179

As the human population grows and people use more washing machines and synthetic textiles, contamination of habitats and animals by microplastics is likely to increase.

<u>Composition</u>	<u>Washing Conditions</u>	<u>Conc. _{av} [fibers/g]</u>
<u>PES #1: Polyester raw textured yarn</u>	Detergent solution	423
	Water only	130
<u>PES #2: Polyester dope dyed textured yarn</u>	Detergent solution	228
	Water only	100
<u>PES #3: Polyester cone dyed textured yarn</u>	Detergent solution	n.d.*
	Water only	800
<u>PES #4: Polyester air textured yarn</u>	Detergent solution	4566
	Water only	468
<u>PES #5: Polyester microfiber textured yarn</u>	Detergent solution	2444
	Water only	197
<u>PES #6: Polyester short staple textured yarn</u>	Detergent solution	2839
	Water only	310

The plastic fibers are ingested in a wide range of marine biota and enter food chains. Leading scientists like Vethaak, Leslie and Thompson are warning about the potential harmful effects of this insidious process for ecosystems and human health.

The issue demands a solution-oriented collaborative effort from industry — including fashion companies and producers of washing machines, detergents and yarns — to find sustainable long term solutions **to stop the release of microplastic fibers into the ocean from laundry in washing machines.**

See Annex 2 for a roadmap explaining the steps to solve this urgent issue.

THE COMMITMENT OF THE OCEAN CLEAN WASH CHARTER TO STOP PLASTIC MICROFIBER RELEASE FROM LAUNDRY IN WASHING MACHINES

The signatories to this Charter will collaborate to support the realization of solutions to the issue of plastic microfiber pollution of waterways, such as:

- 1) Development of a mechanical internal and/or external washing machine filter to catch the micro fibers;
- 2) Development of synthetic fabrics that do not release plastic fibers during washing;
- 3) Development of environmental-friendly impregnation of clothing to prevent the release of microfibers;
- 4) Development of other technological solutions to this issue.

More specifically the signatories to this Charter will:

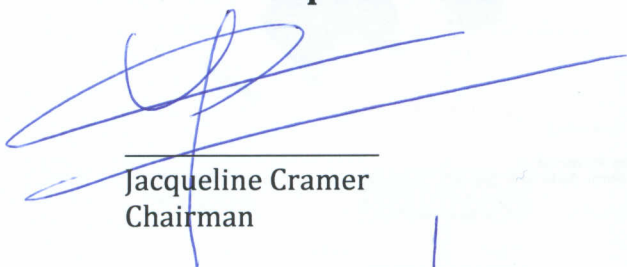
- actively contribute resources to the development and implementation of any solution on the short term to the problem;
- support and activate a worldwide innovation challenge together with the Plastic Soup Foundation aiming at realizing solutions to the issue of plastic microfibers. The Spanish research institute LEITAT will be leading this innovation challenge;
- test plastic fiber release of their clothing containing synthetic material by LEITAT laboratories for unambiguous results, and transparently report about the results;
- actively work to reduce the world's plastic footprint, primarily to do all possible to contribute to the avoidance of plastic fibers release from clothing via waste water into the seas and oceans;

- support communication of the Mermaids - Ocean Clean Wash collaboration about the issue as well as about the joint efforts to stop the microplastic fiber release during laundry in washing machines via the 'Good Practices Guidelines handbook from the Life+ project Mermaids, Ocean Clean Wash'.

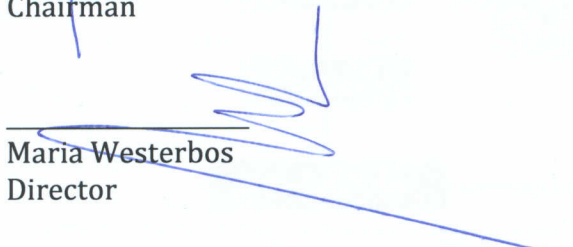
Date: April 15, 2016

Signed by:

Plastic Soup Foundation

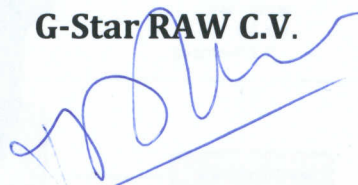


Jacqueline Cramer
Chairman



Maria Westerbos
Director

G-Star RAW C.V.



Thecla Schaeffer
CMO

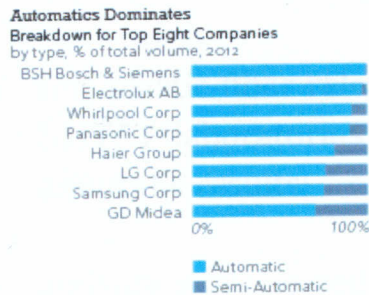
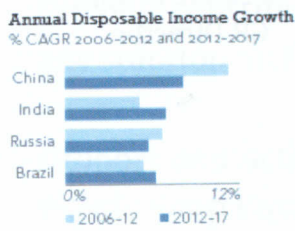
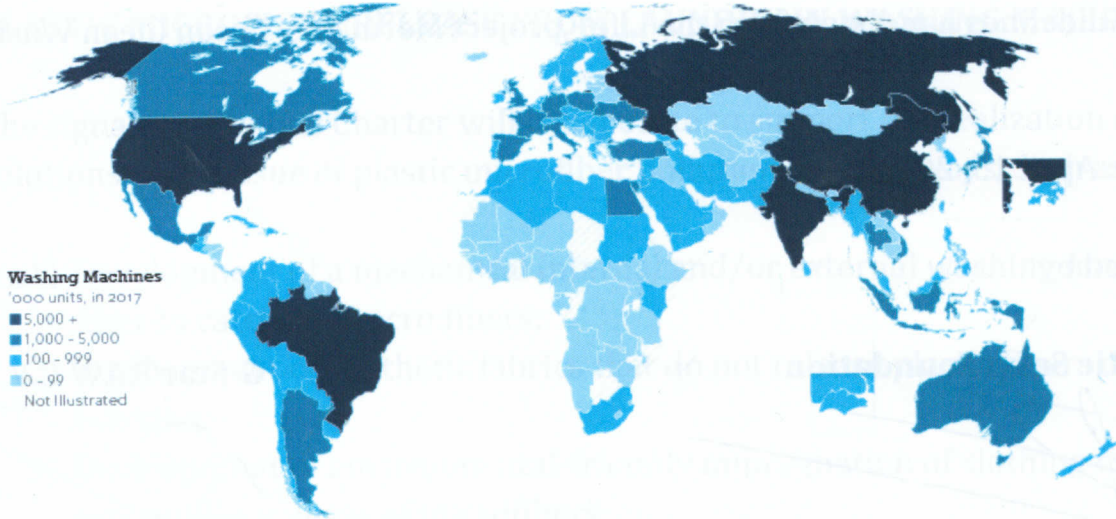


Frouke Bruinsma
CR Director

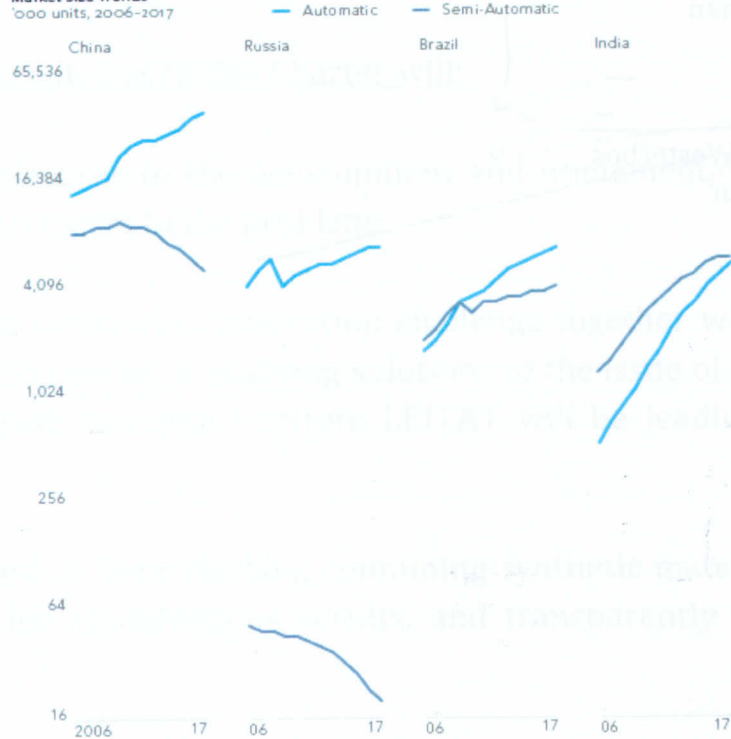
Annex 1

DATAGRAPHIC CONSUMER APPLIANCES

BRIC Leads Volume Sales of Washing Machines in 2017



Automatics Shine, with China Being the Rising Star, but Brazil and India Hold Promise for Semi-Automatics
Market Size Trends



Note: This line chart uses a logarithmic scale with a base of 2.

Annex 2: Roadmap Ocean Clean Wash

ROADMAP OF CHARTER

