Environmental Product Declaration for Tork® and Handee® Paper Towels

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EPD® AUSTRALASIA INTERNATIONAL EPD SYSTEM

EPD INTERNATIONAL EPD SYSTEM

essity

Essity

Essity is a leading global hygiene and health company, dedicated to improving well-being through innovative and sustainable products, shaping a healthier future for people, business and society. We create everyday essentials that empower people to live with confidence and dignity at every stage of life. Our focus is on improving people's well-being, caring for the environment and driving strong business performance. By balancing these priorities, we aim to make a positive impact on daily life, ensure sustainable resource use and deliver lasting value for the future.

With sales in approximately 150 countries and around 36,000 employees worldwide, Essity's diverse portfolio of trusted brands helps millions of people every day. Headquartered in Stockholm, Sweden, Essity is listed on NASDAQ Stockholm and is committed to breaking barriers to well-being for everybody and every body.

Our portfolio supports people, businesses and societies across a broad spectrum, from managing everyday hygiene routines to supporting the care of a variety of medical conditions. Locally, Essity manufactures, markets, distributes and sells consumer products and professional hygiene solutions in Australia, New Zealand and Fiji, employing approximately 700 people. For more than 65 years our locally manufactured brands have been supporting homes, workplaces and public facilities across Australia and New Zealand. These include leading brands such as TENA, Libra, TOM Organic and Modibodi, as well as Purex, Sorbent and Handee in New Zealand.

Through innovation, expertise and our portfolio of established brands, Essity delivers quality, comfort and care while helping to improve health, hygiene and well-being for people across all stages of life.

For more information, visit www.essity.com.

Brands in this Environmental Product Declaration

Tork

For more than half a century, Tork has been the market shaper and innovation leader in professional hygiene across the globe. From washrooms and healthcare facilities to industrial environments, kitchens and dining areas, Tork helps organisations stay ready for business through solutions that improve efficiency, support well-being and drive sustainability.

Tork inspires and supports organisations to think ahead and stay ready for business. From enhancing the guest experience and improving cleaning efficiencies to finding new ways to become more sustainable, Tork's sustainability commitment focuses on three key areas: well-being, more from less, and circularity.

Tork helps businesses reduce consumption, improve hygiene standards and enhance the user experience through high-quality products, dispensing systems and services. By thinking ahead, Tork supports organisations in creating cleaner, safer and more sustainable environments.

Tork is a registered trademark of Essity, licensed exclusively to Essity for use in Australia, New Zealand and countries in the Pacific region. To learn more about Tork, please visit www.torkglobal.com

Handee

In the late 1960s our Kawerau factory was making paper towels for hospitals when it was recognised that there was a need for a similar product in the home and Handee paper towel was born. Since production in the early 1970s it has become a household name and is market leader in grocery. Handee Ultra, made to cope with anything you can throw at it!

Handee is a registered trademark of Essity for use in New Zealand, to learn more about Handee visit www.handee.co.nz

Sustainability – a core part of how we do business

Sustainability is built into Tork and Handee paper towel products from the start:

We begin with 100% certified sustainable pulp. We are committed to purchase pulp and paper reels consistent with No Deforestation, No Peat, No Exploitation (NDPE) policies adopted by the forestry and palm oil industries. All the wood fiber we source and use must come from suppliers that are certified according to the Forest Stewardship Council® (FSC®) or Program for the Endorsement of Forest Certification (PEFC™). Our demand is that the fiber at a minimum will always meet the FSC Controlled Wood standard, which means that the origin of the fiber has been verified by an independent third party. 100% of the pulp that enters our Kawerau paper machines is from suppliers that are certified to FSC standards, with a minimum of 70% FSC Mix sourced fiber and a maximum of 30% FSC Controlled Wood sources. To learn more about FSC standards and labels, please visit: www.fsc.org

We then manufacture paper locally, using a large share of renewable energy. We are proud to manufacture the products in this Environmental Product Declaration in Kawerau, New Zealand. Our Kawerau operation is certified to ISO 9001, ISO 14001, ISO 45001 and FSC chain of custody. Since 2010, we've invested heavily in new technologies to replaced most of our natural gas consumption with geothermal steam in an ongoing partnership with Ngāti Tūwharetoa Geothermal Assets. In 2024, we invested over NZD$20 million in building the world's only tissue machine to use 100% geothermal steam in place of natural gas. As a result of our work to minimise our impact, since 2009 we have reduced the greenhouse gas emissions generated at our Kawerau plant by more than 70%.

We help our customers to reduce their environmental footprint through their use of our unique consumption-reducing dispensers, composting certification and recyclable packaging, both of which are all innovations designed to reduce waste. We continue to lead with our investments in recycled content soft plastic packaging that reduces waste and emissions from virgin plastic.

This EPD helps to demonstrate Essity's commitment to sustainability and complements our work with eco-label and sustainability organisations such as FSC, Eco Choice Aotearoa, and Sedex.

Environmental Product Declaration (EPD)

An Environmental Product Declaration, or EPD, is a standardised and verified way of quantifying the environmental impacts of a product based on a consistent set of rules known as a PCR (Product Category Rules). Environmental Product Declarations within the same product category from different EPD programmes may not be comparable.

Products covered by this EPD

All products in this EPD are covered by the following industry classifications: ANZSIC v1.0 C152400 “Sanitary Paper Product Manufacturing” and UN CPC v2 32131 “Toilet or facial tissue stock, towel or napkin stock and similar paper, cellulose wadding and webs of cellulose fibres”.

Tork Hand Towels

The Tork Xpress® Multifold Hand Towel is the most popular format in the Tork range based on its unrivalled value. The Tork Ultraslim Multifold Hand Towel offers similar benefits in an even slimmer dispenser. These soft and absorbent towels are packed in the innovative Tork Easy Handling Carry Packs that make it easier to carry, use and dispose of. Available in a wide range of quality levels, tailored for specific needs (Premium, Advanced and Universal).

Tork Matic® Soft Hand Towel Roll Advanced H1 (SKU: 290067)

- 2 ply, white tissue paper
- FSC Mix certified
- Dimensions: 150m (L) x 21cm (W)
- Net weight: 1307g

Tork Xpress® Multifold Hand Towel / Slimline Advanced H2 (SKU: 148430)

- 1 ply, white tissue paper
- FSC Mix 70% certified
- Unfolded sheet dimensions: 24cm (L) x 21cm (W)
- Folded sheet dimensions: 8cm (L) x 21cm (W)
- Net weight per pack of 185 sheets: 394g
- Tork Easy Handling packaging

Tork Xpress® Multifold Hand Towel / Slimline Universal H2 (SKU: 184987)

- 1 ply, white tissue paper
- FSC Mix 70% certified
- Unfolded sheet dimensions: 24cm (L) x 21cm (W)
- Folded sheet dimensions: 8cm (L) x 21cm (W)
- Net weight per pack of 230 sheets: 466g
- Tork Easy Handling packaging

Tork Xpress® Low-Lint Multifold Hand Towel / Slimline Advanced H2 (SKU: 306120)

- 1 ply, white tissue paper
- FSC Mix 70% certified
- Unfolded sheet dimensions: 24cm (L) x 21cm (W)
- Folded sheet dimensions: 8cm (L) x 21cm (W)
- Net weight per pack of 209 sheets: 443g
- Tork Easy Handling packaging

Tork Xpress® Multifold Hand Towel Advanced H2 (SKU: 120398)

- 2 ply, white tissue paper
- FSC Mix certified
- Unfolded sheet dimensions: 25.5cm (L) x 21.2cm (W)
- Folded sheet dimensions: 8.5cm (L) x 21.2cm (W)
- Net weight per pack of 180 sheets: 443g
- Tork Easy Handling packaging

Tork Ultraslim Multifold Hand Towel / Advanced H4 (SKU: 170370)

- 1 ply, white tissue paper
- FSC Mix 70% certified
- Unfolded sheet dimensions: 24cm (L) x 21cm (W)
- Folded sheet dimensions: 6cm (L) x 21cm (W)
- Net weight per pack of 150 sheets: 319g
- Tork Easy Handling packaging

Tork PeakServe® Continuous™ Hand Towel Universal H5 (SKU: 100585)

- 2 ply, white tissue paper
- FSC Mix certified
- Unfolded sheet dimensions: 22.5cm (L) x 20.1cm (W)
- Folded sheet dimensions: 8cm (L) x 20.1cm (W)
- Net weight per pack of 410 sheets: 519g
- Tork Easy Handling packaging

Tork Wiping Paper

Tork Basic Paper, Tork Roll Towel and Tork Ultra Long Kitchen Towel are designed for basic wiping tasks such as mopping up spills, soaking up liquids and picking up dust and dirt with paper.

Tork Basic Paper Centrefeed Roll Perforated M2 (SKU: 120155)

- 1 ply, white tissue paper
- FSC Mix 70% certified
- Dimensions: 300m (L) x 20cm (W)
- Net weight: 1260g

Tork Basic Paper Blue Centrefeed Roll Perforated M2 (SKU: 2198859)

- 1 ply, white tissue paper
- FSC Mix 70% certified
- Dimensions: 300m (L) x 20cm (W)
- Net weight: 1260g

Tork Roll Towel Universal (SKU: 2187951)

- 1 ply, white tissue paper
- FSC Mix 70% certified
- Dimensions: 90m (L) x 18cm (W)
- Net weight: 505g

Tork Ultra Long Paper Towel - Triple Length (SKU: 2327073), NZ Only

- 2 ply, white tissue paper
- FSC Mix 70% certified
- Sheet dimensions: 26cm (L) x 27cm (W)
- Net weight per pack of 2 x 156 sheets: 883g

Tork Ultra Long Paper Towel – Triple Length (SKU: 2328833), AU Only

- 2 ply, white tissue paper
- FSC Mix 70% certified
- Sheet dimensions: 26cm (L) x 20.4cm (W)
- Net weight per pack of 2 x 156 sheets: 662g

Handee Paper Towels

Handee paper towels are designed for use in and around the home across a range of formats:

Handee standard-length roll (available as 2s & 4s)

- 2 ply, white or printed tissue paper
- FSC Mix 70% certified
- Dimensions: 22.5 x 27cm (60 sheets per roll)
- Net weight per roll: 184g
- SKU: 2169509 White 2s
- SKU: 2323054 White 4s

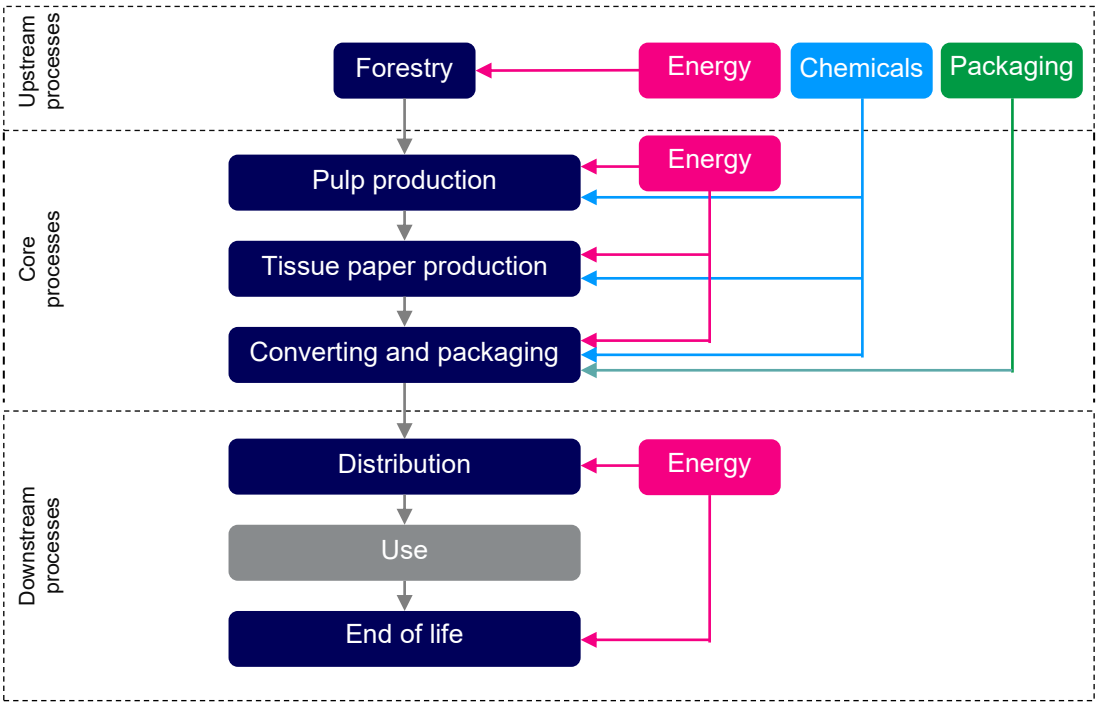
Handee double-length roll (available as 1, 2s, 3s)

- 2 ply, white tissue paper
- FSC Mix 70% certified
- Dimensions: 22.5 x 27cm (120 sheets per roll)
- Net weight per roll: 367 g
- SKU: 2329558
- SKU: 2343890
- SKU: 2351710

Handee double-length roll ‘print’ (2-pack)

- 2 ply, white tissue paper with printed designs
- FSC Mix 70% certified
- Dimensions: 22.5 x 27cm (120 sheets per roll)
- Net weight per roll: 367 g
- Article number: 2342122

Life cycle of Tork® and Handee paper products



This EPD covers the full life cycle of paper towel products from cradle-to-grave.

The life cycle starts with (1) forestry to grow wood fibre, (2) production of the chemicals needed to make paper from wood fibre, (3) production of packaging materials, and (4) production of energy for these process steps. These are the **upstream processes**.

Wood chips/residues, chemicals and fuels are transported to pulp mills, where wood pulp is made from wood fibre. This pulp is then transported to Essity Australasia's paper mill where it is formed into paper, cut to size ('converted'), packaged and then warehoused. These steps also require energy to be produced, and for both solid waste and wastewater to be treated. These are the **core processes**.

Finally, finished paper towel products are transported to customers. As the use of a paper towel has no direct environmental impacts, use is not included in this EPD. The final step is end-of-life, where the paper towel and its packaging are disposed. These are the **downstream processes**.

Key parameters and assumptions for the LCA

- **Declared unit:** 1 tonne (1000 kg) of tissue paper, plus packaging.
- **Manufacturing site:** All products are manufactured in Kawerau, New Zealand.
- **Distribution to customer:** Distribution from the manufacturing plant to customer via Essity's warehouses is based on a sales-weighted average of the distances travelled in each transport mode (truck and container ship).
- **End of life:** Two options are provided for product end-of-life: landfill and composting. Results are declared separately for each option in the results tables that follow. 100% of polyethylene film packaging is assumed to go to landfill (conservative approach). 71% of paper packaging is assumed to be recovered for recycling, with the remainder landfilled (APCO 2019). Recovery and recycling rates in New Zealand are likely to be similar but are not available due to uncertainties in waste statistics (PCNZ 2015). No credits are applied for recycling paper in line with the PCR 2011:05 (IEPDS 2022).
  All waste treatment assumes truck transport of 50 km outbound with an empty backhaul.
- **Biogenic carbon emissions from landfill:** From every kilogram of paper, 22% of the mass is biogenic carbon that is converted to landfill gas. From every kilogram of carbon converted to landfill gas, 71.2% is released as carbon dioxide and 28.8% is released as methane. These percentages represent Australian and New Zealand conditions where data quality is best.
    - 0.45 kg/kg = degradable organic carbon in paper at 10% water content (ECN 2012)
    - 0.49 kg/kg = fraction of carbon that degrades (Australian Government 2018)
    - Of the landfill gas formed, 50% is CO2 and 50% is CH4 (ibid)
    - 68% of the CH4 is captured, of which 75% is used for energy recovery and 25% is flared (Carre 2011, based on Hyder Consulting 2007)
    - 32% of the CH4 is not captured, of which 90% is released to the atmosphere as CH4 and 10% is oxidised to CO2 in the landfill's surface (Australian Government 2018)
- **Biogenic carbon emissions from composting:** Windrow composting is assumed using operational inputs from UNSW (2003). 92% of cellulose (Venelampi et al. 2003) and 23% of lignin (Tuomela et al. 2000) is assumed to break down, with 9 kg methane released per tonne of paper (IPCC 2006) and the remainder as carbon dioxide.
- **Data for core processes:** Primary (specific) data were collected from Essity Australasia and our pulp suppliers as per the PCR 2011:05 (IEPDS 2022). Data are an annual average for the 2021 calendar year.
    - Data for new products and energy updates were based on the 2025 calendar year.
    - Production data for all products has also been updated to 2025 for consistency. This ensures the same production data period was used for weighted average calculation.
    - Mono-nitrogen oxides (NOx) have been modelled as nitrogen dioxide (NO2) and Total Reduced Sulfur (TRS) has been modelled as hydrogen sulfide (H2S).

- **Data for upstream and downstream processes:** Secondary (generic) data were used for forestry, chemical production, packaging materials and electricity, as allowed under the PCR 2011:05 (IEPDS 2022). Sphera's Managed LCA Content (MLC) database CUP2022.2, formerly known as GaBi LCI database, and are typically representative of the years 2018 to 2021, depending on the dataset (Sphera 2022).
- **Electricity mixes:** All electricity is based on New Zealand's national electricity production mix for 2018 from the Sphera's MLC database CUP2022.2 (Sphera 2022).
- **Allocation:** Where required, co-product allocation using the most relevant physical quantity (mass, energy or exergy) was applied for core processes. Allocation rules for secondary data (upstream/downstream processes) are documented on the Sphera website (Sphera 2022). Recycling allocation follows the polluter pays principle in line with IEPDS (2017).
- **Cut-off criteria:** Environmental impacts relating to personnel, infrastructure, and production equipment not directly consumed in the process are excluded from the system boundary as per the PCR 2011:05 (IEPDS 2022). All other reported data were incorporated and modelled using the best available life cycle inventory data.

Environmental indicators

Indicator	Description
Climate change Total (GWP-total) Fossil (GWP-fossil) Biogenic (GWP-biogenic) Land use and Land use change (GWP-luluc)	A measure of greenhouse gas emissions, such as CO_2 and methane. These emissions are causing an increase in the absorption of radiation emitted by the earth, increasing the natural greenhouse effect. This may in turn have adverse impacts on ecosystem health, human health and material welfare
Ozone Depletion (ODP)	A measure of air emissions that contribute to the depletion of the stratospheric ozone layer. Depletion of the ozone leads to higher levels of UVB ultraviolet rays reaching the earth's surface with detrimental effects on humans and plants
Acidification Potential (AP)	The potential of emissions to cause acidifying effects in the environment, typically due to acid rain. Potential downstream effects include fish mortality, forest decline and the deterioration of building materials.
Eutrophication Freshwater (EP-fw) Aquatic marine (EP-fm) Terrestrial (EP-tr)	Eutrophication covers all potential impacts of excessively high levels of macronutrients, the most important of which nitrogen (N) and phosphorus (P). Nutrient enrichment may cause an undesirable shift in species composition and elevated biomass production in both aquatic and terrestrial ecosystems. In aquatic ecosystems increased biomass production may lead to depressed oxygen levels, because of the additional consumption of oxygen in biomass decomposition.
Photochemical Ozone Creation Potential (POCP)	A measure of emissions of precursors that contribute to ground-level smog formation (mainly ozone, O_3). Ground-level ozone can be harmful to human and ecosystem health and can also damage crops.
Depletion of abiotic resources – minerals and metals (ADP-mm)	The consumption of non-renewable resources leads to a decrease in the future availability of the functions supplied by these resources. Depletion of mineral resources is assessed based on ultimate reserves
Depletion of abiotic resources (ADP-fossil)	The consumption of non-renewable resources leads to a decrease in the future availability of the functions supplied by these resources.
Water use (WDP)	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)

Tork Matic® Soft Hand Towel Roll Advanced H1

Article number(s): 290067

1,000 kg air-dry tissue + 98 kg paper packaging + 32 kg plastic packaging = 1,131 kg total.

Content declaration: Paper >38% virgin kraft pulp. Bleaching agent: sodium chlorate and chlorine dioxide.

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-2,240	2,260	29.8	3,080	3,110	2,370	2,400	-23%
Climate change, fossil	kg CO_2-eq.	410	1,270	1,680	647	2,320	603	2,280	-2%
Climate change, biogenic	kg CO_2-eq.	-2,650	998	-1,650	2,440	788	1,760	116	-85%
Climate change, land use and land use change	kg CO_2-eq.	0.871	0.319	1.19	0.0167	1.21	0.00442	1.19	-2%
Ozone depletion	kg CFC11-eq.	3.95E-06	1.33E-08	3.97E-06	1.44E-10	3.97E-06	4.69E-11	3.97E-06	0%
Acidification	Mole of H^+ eq.	2.54	2.74	5.28	20.5	25.8	19.8	25.1	-3%
Eutrophication, freshwater	kg P eq.	0.0258	0.00724	0.0330	5.56E-04	0.0336	1.00E-04	0.0331	-1%
Eutrophication, marine	kg N eq.	0.867	0.489	1.36	5.60	6.95	5.20	6.55	-6%
Eutrophication, terrestrial	Mole of N eq.	8.36	4.98	13.3	60.2	73.5	56.9	70.2	-4%
Photochemical ozone formation, human health	kg NMVOC eq.	2.09	1.26	3.35	15.6	18.9	14.4	17.7	-6%
Resource use, mineral and metals	kg Sb-eq.	3.15E-04	1.28E-04	4.42E-04	1.20E-05	4.54E-04	7.43E-06	4.50E-04	-1%
Resource use, fossils	MJ	9,380	17,500	26,900	8,040	34,900	7,400	34,300	-2%
Water use	m^3 world equiv.	187	37.4	224	28.4	253	4.08	228	-10%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	2,200	7,160	9,360	104	9,460	27.0	9,390	-1%
Primary energy resources used as raw materials	MJ	15,600	0	15,600	0	15,600	0	15,600	0%
Total use of renewable primary energy resources	MJ	17,800	7,160	24,900	104	25,100	27.0	25,000	0%
Use of non-renewable primary energy	MJ	9,380	17,500	26,900	8,040	34,900	7,400	34,300	-2%
Non-renewable primary energy resources used as raw materials	MJ	1,440	0	1,440	0	1,440	0	1,440	0%
Total use of non-renewable primary energy resources	MJ	10,800	17,500	28,300	8,040	36,400	7,400	35,700	-2%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	4.95	3.23	8.18	0.676	8.86	0.0653	8.25	-7%
Total use of non-renewable & renewable primary energy resources	MJ	28,613	24,653	53,266	8,148	61,414	7,420	60,700	-1%
% Total use of renewable primary energy resources	MJ	62.2%	29.0%	46.8%	1.3%	40.8%	3.63E-03	4.12E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	0.0292	7.41E-06	0.0292	6.22E-08	0.0292	8.95E-09	0.0292	0%
Non-hazardous waste disposed	kg	16.8	10.1	26.9	251	278	0.120	27.1	-90%
Radioactive waste disposed	kg	0.359	0.836	1.19	0.00519	1.20	3.59E-04	1.20	0%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Tork Xpress® Multifold Hand Towel / Slimline Advanced H2

Article number(s): 148430

1,000 kg air-dry tissue + 0 kg paper packaging + 24 kg plastic packaging = 1,024 kg total.

Content declaration: Paper >97% virgin CTMP pulp. Bleaching agent: hydrogen peroxide (totally chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-1,570	1,040	-525	2,380	1,850	1,640	1,120	-39%
Climate change, fossil	kg CO_2-eq.	322	799	1,120	122	1,240	82.1	1,200	-3%
Climate change, biogenic	kg CO_2-eq.	-1,890	245	-1,650	2,260	609	1,560	-85.2	-114%
Climate change, land use and land use change	kg CO_2-eq.	0.926	0.414	1.34	0.0123	1.35	0.00143	1.34	-1%
Ozone depletion	kg CFC11-eq.	4.34E-09	1.06E-09	5.40E-09	1.00E-10	5.50E-09	8.88E-12	5.41E-09	-2%
Acidification	Mole of H^+ eq.	1.93	5.66	7.60	2.10	9.69	1.43	9.02	-7%
Eutrophication, freshwater	kg P eq.	0.00758	0.0513	0.0589	3.40E-04	0.0592	3.10E-04	0.0592	0%
Eutrophication, marine	kg N eq.	0.585	1.63	2.22	0.785	3.00	0.397	2.62	-13%
Eutrophication, terrestrial	Mole of N eq.	6.21	19.1	25.3	7.51	32.8	4.35	29.7	-9%
Photochemical ozone formation, human health	kg NMVOC eq.	1.68	3.97	5.65	2.27	7.91	1.15	6.79	-14%
Resource use, mineral and metals	kg Sb-eq.	5.02E-05	1.34E-04	1.84E-04	5.51E-06	1.90E-04	1.21E-06	1.85E-04	-3%
Resource use, fossils	MJ	5,800	9,900	15,700	1,540	17,200	951	16,700	-3%
Water use	m^3 world equiv.	28.1	461	489	24.2	513	0.499	490	-4%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	20,200	23,000	43,200	78.4	43,300	6.25	43,200	0%
Primary energy resources used as raw materials	MJ	14,200	0	14,200	0	14,200	0	14,200	0%
Total use of renewable primary energy resources	MJ	34,400	23,000	57,400	78.4	57,500	6.25	57,400	0%
Use of non-renewable primary energy	MJ	5,830	9,960	15,800	1,540	17,300	952	16,700	-3%
Non-renewable primary energy resources used as raw materials	MJ	1,010	0	1,010	0	1,010	0	1,010	0%
Total use of non-renewable primary energy resources	MJ	6,840	9,960	16,800	1,540	18,300	952	17,800	-3%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	1.89	41.8	43.7	0.602	44.3	0.00994	43.7	-1%
Total use of non-renewable & renewable primary energy resources	MJ	41,226	32,961	74,187	1,622	75,808	958	75,100	-1%
% Total use of renewable primary energy resources	MJ	83.4%	69.8%	77.4%	4.8%	75.8%	6.52E-03	7.64E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	7.29E-07	5.01E-07	1.23E-06	5.18E-08	1.28E-06	4.83E-09	1.23E-06	-4%
Non-hazardous waste disposed	kg	4.54	25.4	29.9	235	265	22.5	52.4	-80%
Radioactive waste disposed	kg	0.0938	0.547	0.641	0.00470	0.646	3.88E-04	0.641	-1%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Tork Xpress® Multifold Hand Towel / Slimline Universal H2

Article number(s): 184987

1,000 kg air-dry tissue + 0 kg paper packaging + 21 kg plastic packaging = 1,021 kg total.

Content declaration: Paper >97% virgin CTMP pulp. Bleaching agent: hydrogen peroxide (totally chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-1,580	1,090	-489	2,370	1,880	1,640	1,150	-39%
Climate change, fossil	kg CO_2-eq.	314	844	1,160	115	1,270	75.9	1,230	-3%
Climate change, biogenic	kg CO_2-eq.	-1,890	245	-1,650	2,260	609	1,560	-85.1	-114%
Climate change, land use and land use change	kg CO_2-eq.	0.924	0.421	1.35	0.0122	1.36	0.00130	1.35	-1%
Ozone depletion	kg CFC11-eq.	4.32E-09	1.11E-09	5.43E-09	9.55E-11	5.53E-09	8.04E-12	5.44E-09	-2%
Acidification	Mole of H^+ eq.	1.93	5.86	7.79	1.91	9.70	1.25	9.03	-7%
Eutrophication, freshwater	kg P eq.	0.00756	0.0514	0.0589	3.07E-04	0.0592	2.77E-04	0.0592	0%
Eutrophication, marine	kg N eq.	0.580	1.66	2.24	0.736	2.98	0.349	2.59	-13%
Eutrophication, terrestrial	Mole of N eq.	6.16	19.9	26.1	6.97	33.1	3.82	29.9	-10%
Photochemical ozone formation, human health	kg NMVOC eq.	1.66	4.04	5.70	2.13	7.84	1.01	6.72	-14%
Resource use, mineral and metals	kg Sb-eq.	4.69E-05	1.39E-04	1.86E-04	4.92E-06	1.91E-04	1.11E-06	1.87E-04	-2%
Resource use, fossils	MJ	5,610	10,200	15,800	1,450	17,200	874	16,700	-3%
Water use	m^3 world equiv.	27.0	505	532	24.0	556	0.456	532	-4%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	20,200	26,100	46,300	83.1	46,400	5.92	46,300	0%
Primary energy resources used as raw materials	MJ	14,200	0	14,200	0	14,200	0	14,200	0%
Total use of renewable primary energy resources	MJ	34,400	26,100	60,500	83.1	60,600	5.92	60,500	0%
Use of non-renewable primary energy	MJ	5,630	10,200	15,900	1,450	17,300	874	16,700	-3%
Non-renewable primary energy resources used as raw materials	MJ	903	0	903	0	903	0	903	0%
Total use of non-renewable primary energy resources	MJ	6,540	10,200	16,800	1,450	18,200	874	17,600	-3%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	1.85	45.3	47.2	0.616	47.8	0.00966	47.2	-1%
Total use of non-renewable & renewable primary energy resources	MJ	40,896	36,339	77,234	1,528	78,763	880	78,100	-1%
% Total use of renewable primary energy resources	MJ	84.0%	71.9%	78.3%	5.4%	76.9%	6.73E-03	7.74E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	7.16E-07	5.20E-07	1.24E-06	5.07E-08	1.29E-06	4.35E-09	1.24E-06	-4%
Non-hazardous waste disposed	kg	4.57	25.6	30.1	233	263	20.1	50.2	-81%
Radioactive waste disposed	kg	0.0909	0.547	0.638	0.00467	0.643	3.54E-04	0.638	-1%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Tork Xpress® Low-Lint Multifold Hand Towel / Slimline Advanced H2

Article number(s): 306120

1,000 kg air-dry tissue + 0 kg paper packaging + 20 kg plastic packaging = 1,020 kg total.

Content declaration: Paper >99% virgin kraft pulp. Bleaching agent: chlorine dioxide (elemental chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,370	2,750	-611	2,380	1,760	1,900	1,280	-27%
Climate change, fossil	kg CO_2-eq.	249	784	1,030	119	1,150	81.6	1,110	-3%
Climate change, biogenic	kg CO_2-eq.	-3,610	1,970	-1,650	2,260	608	1,810	166	-73%
Climate change, land use and land use change	kg CO_2-eq.	0.133	3.84	3.97	0.0122	3.99	0.00132	3.98	0%
Ozone depletion	kg CFC11-eq.	3.55E-09	5.73E-10	4.12E-09	9.00E-11	4.21E-09	8.26E-12	4.13E-09	-2%
Acidification	Mole of H^+ eq.	1.45	8.81	10.3	2.08	12.3	1.42	11.7	-5%
Eutrophication, freshwater	kg P eq.	0.00676	0.0431	0.0499	2.98E-04	0.0502	2.68E-04	0.0502	0%
Eutrophication, marine	kg N eq.	0.501	2.54	3.04	0.781	3.82	0.396	3.44	-10%
Eutrophication, terrestrial	Mole of N eq.	5.46	29.2	34.7	7.47	42.2	4.33	39.0	-8%
Photochemical ozone formation, human health	kg NMVOC eq.	1.43	6.91	8.34	2.26	10.6	1.14	9.48	-11%
Resource use, mineral and metals	kg Sb-eq.	4.25E-05	6.34E-05	1.06E-04	4.30E-06	1.10E-04	1.18E-06	1.07E-04	-3%
Resource use, fossils	MJ	4,160	7,690	11,900	1,490	13,300	945	12,800	-4%
Water use	m^3 world equiv.	32.5	379	411	23.8	435	0.489	412	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	40,800	21,000	61,800	90.5	61,900	6.34	61,800	0%
Primary energy resources used as raw materials	MJ	14,200	0	14,200	0	14,200	0	14,200	0%
Total use of renewable primary energy resources	MJ	55,000	21,000	76,000	90.5	76,100	6.34	76,000	0%
Use of non-renewable primary energy	MJ	4,190	7,700	11,900	1,490	13,400	945	12,800	-4%
Non-renewable primary energy resources used as raw materials	MJ	868	0	868	0	868	0	868	0%
Total use of non-renewable primary energy resources	MJ	5,050	7,700	12,800	1,490	14,200	945	13,700	-4%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	1.21	39.2	40.4	0.635	41.0	0.0109	40.4	-2%
Total use of non-renewable & renewable primary energy resources	MJ	60,087	28,667	88,754	1,579	90,333	952	89,700	-1%
% Total use of renewable primary energy resources	MJ	91.6%	73.1%	85.6%	5.7%	84.2%	6.66E-03	8.47E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	8.54E-07	1.03E-06	1.89E-06	4.97E-08	1.94E-06	4.31E-09	1.89E-06	-3%
Non-hazardous waste disposed	kg	2.95	40.2	43.1	232	275	19.3	62.4	-77%
Radioactive waste disposed	kg	0.107	0.0551	0.162	0.00466	0.167	3.49E-04	0.162	-3%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Tork Xpress® Multifold Hand Towel Advanced H2

Article number(s): 120398

1,000 kg air-dry tissue + 73 kg paper packaging + 22 kg plastic packaging = 1,095 kg total.

Content declaration: Paper >76% virgin kraft pulp. Bleaching agent: sodium chlorate and chlorine dioxide.

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-2,630	2,480	-143	3,020	2,880	2,430	2,280	-21%
Climate change, fossil	kg CO_2-eq.	491	973	1,460	628	2,090	586	2,050	-2%
Climate change, biogenic	kg CO_2-eq.	-3,120	1,510	-1,610	2,390	781	1,840	233	-70%
Climate change, land use and land use change	kg CO_2-eq.	1.61	0.125	1.74	0.0162	1.75	0.00429	1.74	-1%
Ozone depletion	kg CFC11-eq.	3.09E-06	1.03E-08	3.10E-06	1.38E-10	3.10E-06	4.54E-11	3.10E-06	0%
Acidification	Mole of H^+ eq.	3.96	3.58	7.54	19.9	27.5	19.2	26.8	-3%
Eutrophication, freshwater	kg P eq.	0.0340	0.00472	0.0388	4.23E-04	0.0392	9.73E-05	0.0388	-1%
Eutrophication, marine	kg N eq.	1.39	0.390	1.78	5.43	7.22	5.04	6.82	-6%
Eutrophication, terrestrial	Mole of N eq.	14.1	3.98	18.1	58.4	76.5	55.2	73.2	-4%
Photochemical ozone formation, human health	kg NMVOC eq.	3.54	1.14	4.67	15.1	19.8	14.0	18.6	-6%
Resource use, mineral and metals	kg Sb-eq.	5.82E-04	9.41E-05	6.76E-04	1.14E-05	6.88E-04	7.21E-06	6.84E-04	-1%
Resource use, fossils	MJ	8,510	14,700	23,200	7,790	31,000	7,180	30,400	-2%
Water use	m^3 world equiv.	202	28.3	230	28.1	258	3.95	234	-9%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	2,040	5,850	7,900	105	8,000	26.3	7,920	-1%
Primary energy resources used as raw materials	MJ	15,200	0	15,200	0	15,200	0	15,200	0%
Total use of renewable primary energy resources	MJ	17,300	5,850	23,100	105	23,200	26.3	23,100	0%
Use of non-renewable primary energy	MJ	8,510	14,700	23,200	7,800	31,000	7,180	30,400	-2%
Non-renewable primary energy resources used as raw materials	MJ	1,030	0	1,030	0	1,030	0	1,030	0%
Total use of non-renewable primary energy resources	MJ	9,530	14,700	24,300	7,800	32,100	7,180	31,400	-2%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	7.44	2.67	10.1	0.679	10.8	0.0637	10.2	-6%
Total use of non-renewable & renewable primary energy resources	MJ	26,797	20,594	47,391	7,901	55,292	7,200	54,600	-1%
% Total use of renewable primary energy resources	MJ	64.4%	28.4%	48.8%	1.3%	42.0%	3.65E-03	4.24E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	0.0138	3.18E-07	0.0138	5.97E-08	0.0138	8.69E-09	0.0138	0%
Non-hazardous waste disposed	kg	14.9	8.98	23.9	240	264	0.117	24.0	-91%
Radioactive waste disposed	kg	0.350	0.734	1.08	0.00503	1.09	3.49E-04	1.08	-1%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Tork Ultraslim Multifold Hand Towel / Advanced H4

Article number(s): 170370

1,000 kg air-dry tissue + 16 kg paper packaging + 18 kg plastic packaging = 1,033 kg total.

Content declaration: Paper >98% virgin CTMP pulp. Bleaching agent: hydrogen peroxide (totally chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-1,760	1,230	-526	2,430	1,900	1,700	1,180	-38%
Climate change, fossil	kg CO_2-eq.	311	835	1,150	140	1,290	99.2	1,250	-3%
Climate change, biogenic	kg CO_2-eq.	-2,070	397	-1,670	2,290	613	1,600	-70.2	-111%
Climate change, land use and land use change	kg CO_2-eq.	0.172	0.741	0.913	0.0123	0.925	0.00133	0.914	-1%
Ozone depletion	kg CFC11-eq.	4.48E-09	1.05E-09	5.53E-09	1.07E-10	5.63E-09	9.73E-12	5.53E-09	-2%
Acidification	Mole of H^+ eq.	1.95	6.15	8.11	2.78	10.9	2.11	10.2	-6%
Eutrophication, freshwater	kg P eq.	0.00625	0.0518	0.0581	2.60E-04	0.0583	2.30E-04	0.0583	0%
Eutrophication, marine	kg N eq.	0.584	1.78	2.36	0.962	3.32	0.571	2.93	-12%
Eutrophication, terrestrial	Mole of N eq.	6.36	20.8	27.1	9.44	36.6	6.25	33.4	-9%
Photochemical ozone formation, human health	kg NMVOC eq.	1.72	4.38	6.10	2.76	8.86	1.63	7.73	-13%
Resource use, mineral and metals	kg Sb-eq.	4.37E-05	1.31E-04	1.75E-04	6.35E-06	1.81E-04	1.38E-06	1.76E-04	-3%
Resource use, fossils	MJ	5,450	10,100	15,500	1,780	17,300	1,160	16,700	-3%
Water use	m^3 world equiv.	24.8	473	497	24.7	522	0.629	498	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	22,700	23,900	46,600	72.1	46,700	6.24	46,600	0%
Primary energy resources used as raw materials	MJ	14,400	0	14,400	0	14,400	0	14,400	0%
Total use of renewable primary energy resources	MJ	37,200	23,900	61,000	72.1	61,100	6.24	61,000	0%
Use of non-renewable primary energy	MJ	5,470	10,200	15,600	1,780	17,400	1,160	16,800	-4%
Non-renewable primary energy resources used as raw materials	MJ	756	0	756	0	756	0	756	0%
Total use of non-renewable primary energy resources	MJ	6,220	10,200	16,400	1,780	18,200	1,160	17,500	-3%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	1.42	43.2	44.6	0.589	45.2	0.0112	44.6	-1%
Total use of non-renewable & renewable primary energy resources	MJ	43,375	34,010	77,385	1,855	79,239	1,170	78,600	-1%
% Total use of renewable primary energy resources	MJ	85.7%	70.1%	78.8%	3.9%	77.1%	5.35E-03	7.77E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	4.23E-06	5.74E-07	4.81E-06	5.22E-08	4.86E-06	4.11E-09	4.81E-06	-1%
Non-hazardous waste disposed	kg	4.66	28.1	32.8	230	263	16.2	49.0	-81%
Radioactive waste disposed	kg	0.0944	0.513	0.608	0.00465	0.612	3.15E-04	0.608	-1%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Tork PeakServe® Continuous™ Hand Towel Universal H5

Article number(s): 100585

1,000 kg air-dry tissue + 21 kg paper packaging + 12 kg plastic packaging = 1,033 kg total.

Content declaration: Paper >100% virgin kraft pulp. Bleaching agent: sodium chlorate and chlorine dioxide.

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,010	3,400	390	2,890	3,280	2,410	2,800	-15%
Climate change, fossil	kg CO_2-eq.	510	1,410	1,920	597	2,520	555	2,480	-2%
Climate change, biogenic	kg CO_2-eq.	-3,520	1,990	-1,530	2,300	766	1,850	319	-58%
Climate change, land use and land use change	kg CO_2-eq.	0.839	0.172	1.01	0.0154	1.03	0.00406	1.01	-2%
Ozone depletion	kg CFC11-eq.	2.24E-06	1.81E-08	2.26E-06	1.42E-10	2.26E-06	4.33E-11	2.26E-06	0%
Acidification	Mole of H^+ eq.	4.70	6.08	10.8	18.9	29.6	18.2	29.0	-2%
Eutrophication, freshwater	kg P eq.	0.0352	0.00491	0.0401	2.85E-04	0.0404	9.21E-05	0.0402	0%
Eutrophication, marine	kg N eq.	1.66	0.531	2.19	5.15	7.34	4.76	6.95	-5%
Eutrophication, terrestrial	Mole of N eq.	16.9	5.54	22.5	55.3	77.8	52.1	74.6	-4%
Photochemical ozone formation, human health	kg NMVOC eq.	4.25	1.66	5.90	14.3	20.2	13.2	19.1	-5%
Resource use, mineral and metals	kg Sb-eq.	2.81E-04	1.37E-04	4.19E-04	1.19E-05	4.31E-04	6.83E-06	4.26E-04	-1%
Resource use, fossils	MJ	6,940	21,900	28,900	7,430	36,300	6,790	35,600	-2%
Water use	m^3 world equiv.	205	27.8	233	27.8	261	3.75	236	-10%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	1,080	8,430	9,510	91.9	9,600	24.6	9,530	-1%
Primary energy resources used as raw materials	MJ	14,500	0	14,500	0	14,500	0	14,500	0%
Total use of renewable primary energy resources	MJ	15,600	8,430	24,000	91.9	24,100	24.6	24,000	0%
Use of non-renewable primary energy	MJ	6,940	21,900	28,900	7,430	36,300	6,790	35,700	-2%
Non-renewable primary energy resources used as raw materials	MJ	578	0	578	0	578	0	578	0%
Total use of non-renewable primary energy resources	MJ	7,520	21,900	29,400	7,430	36,900	6,790	36,200	-2%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	4.38	3.23	7.61	0.639	8.25	0.0596	7.67	-7%
Total use of non-renewable & renewable primary energy resources	MJ	23,089	30,343	53,433	7,521	60,954	6,820	60,300	-1%
% Total use of renewable primary energy resources	MJ	67.4%	27.8%	44.9%	1.2%	39.5%	3.61E-03	3.99E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	0.00310	-1.12E-06	0.00310	5.83E-08	0.00310	8.24E-09	0.00310	0%
Non-hazardous waste disposed	kg	9.55	10.5	20.0	227	247	0.111	20.1	-92%
Radioactive waste disposed	kg	0.167	0.898	1.06	0.00483	1.07	3.33E-04	1.06	-1%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Tork Basic Paper Centrefeed Roll Perforated M2

Article number(s): 120155

1,000 kg air-dry tissue + 29 kg paper packaging + 13 kg plastic packaging = 1,042 kg total.

Content declaration: Paper >98% virgin kraft pulp. Bleaching agent: chlorine dioxide (elemental chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,390	2,750	-641	2,450	1,810	1,940	1,300	-28%
Climate change, fossil	kg CO_2-eq.	252	799	1,050	138	1,190	96.8	1,150	-3%
Climate change, biogenic	kg CO_2-eq.	-3,640	1,940	-1,700	2,310	614	1,850	150	-76%
Climate change, land use and land use change	kg CO_2-eq.	0.185	3.83	4.02	0.0121	4.03	0.00116	4.02	0%
Ozone depletion	kg CFC11-eq.	3.92E-09	6.10E-10	4.53E-09	1.06E-10	4.63E-09	9.12E-12	4.54E-09	-2%
Acidification	Mole of H^+ eq.	1.57	8.86	10.4	2.74	13.2	2.06	12.5	-5%
Eutrophication, freshwater	kg P eq.	0.00739	0.0436	0.0510	2.02E-04	0.0512	1.71E-04	0.0511	0%
Eutrophication, marine	kg N eq.	0.542	2.58	3.12	0.950	4.07	0.557	3.67	-10%
Eutrophication, terrestrial	Mole of N eq.	5.86	29.4	35.3	9.31	44.6	6.11	41.4	-7%
Photochemical ozone formation, human health	kg NMVOC eq.	1.55	6.99	8.54	2.73	11.3	1.60	10.1	-11%
Resource use, mineral and metals	kg Sb-eq.	3.79E-05	6.76E-05	1.05E-04	6.28E-06	1.12E-04	1.32E-06	1.07E-04	-4%
Resource use, fossils	MJ	4,010	7,980	12,000	1,750	13,700	1,130	13,100	-4%
Water use	m^3 world equiv.	32.9	410	443	24.7	468	0.618	443	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	41,900	20,800	62,700	72.4	62,800	5.78	62,700	0%
Primary energy resources used as raw materials	MJ	14,600	0	14,600	0	14,600	0	14,600	0%
Total use of renewable primary energy resources	MJ	56,500	20,800	77,300	72.4	77,400	5.78	77,300	0%
Use of non-renewable primary energy	MJ	4,030	7,990	12,000	1,750	13,800	1,130	13,100	-5%
Non-renewable primary energy resources used as raw materials	MJ	553	0	553	0	553	0	553	0%
Total use of non-renewable primary energy resources	MJ	4,580	7,990	12,600	1,750	14,300	1,130	13,700	-4%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	1.34	41.8	43.1	0.592	43.7	0.0109	43.1	-1%
Total use of non-renewable & renewable primary energy resources	MJ	61,061	28,831	89,892	1,825	91,717	1,130	91,000	-1%
% Total use of renewable primary energy resources	MJ	92.5%	72.3%	86.0%	4.0%	84.4%	5.09E-03	8.50E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	7.13E-06	1.05E-06	8.18E-06	5.16E-08	8.23E-06	3.38E-09	8.18E-06	-1%
Non-hazardous waste disposed	kg	3.99	40.7	44.7	227	271	11.8	56.5	-79%
Radioactive waste disposed	kg	0.110	0.0588	0.169	0.00461	0.174	2.57E-04	0.169	-3%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Tork Basic Paper Blue Centrefeed Roll Perforated M2

Article number(s): 2198859

1,000 kg air-dry tissue + 26 kg paper packaging + 12 kg plastic packaging = 1,038 kg total.

Content declaration: Paper >98% virgin kraft pulp. Bleaching agent: chlorine dioxide (elemental chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,420	2,760	-662	2,420	1,750	1,920	1,260	-28%
Climate change, fossil	kg CO_2-eq.	247	779	1,030	110	1,140	70.3	1,100	-4%
Climate change, biogenic	kg CO_2-eq.	-3,670	1,970	-1,690	2,310	614	1,850	155	-75%
Climate change, land use and land use change	kg CO_2-eq.	0.146	3.83	3.98	0.0119	3.99	9.55E-04	3.98	0%
Ozone depletion	kg CFC11-eq.	3.89E-09	5.90E-10	4.48E-09	9.86E-11	4.57E-09	6.96E-12	4.48E-09	-2%
Acidification	Mole of H^+ eq.	1.55	8.79	10.3	1.66	12.0	0.983	11.3	-6%
Eutrophication, freshwater	kg P eq.	0.00738	0.0427	0.0501	1.84E-04	0.0503	1.54E-04	0.0503	0%
Eutrophication, marine	kg N eq.	0.535	2.55	3.09	0.676	3.77	0.284	3.37	-11%
Eutrophication, terrestrial	Mole of N eq.	5.80	29.2	35.0	6.30	41.3	3.12	38.1	-8%
Photochemical ozone formation, human health	kg NMVOC eq.	1.53	6.95	8.48	1.96	10.4	0.830	9.31	-10%
Resource use, mineral and metals	kg Sb-eq.	3.98E-05	6.50E-05	1.05E-04	5.30E-06	1.10E-04	1.03E-06	1.06E-04	-4%
Resource use, fossils	MJ	3,890	7,760	11,700	1,400	13,100	807	12,500	-5%
Water use	m^3 world equiv.	32.0	395	427	24.3	452	0.431	428	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	42,100	20,300	62,400	78.2	62,500	4.88	62,400	0%
Primary energy resources used as raw materials	MJ	14,600	0	14,600	0	14,600	0	14,600	0%
Total use of renewable primary energy resources	MJ	56,700	20,300	76,900	78.2	77,000	4.88	77,000	0%
Use of non-renewable primary energy	MJ	3,910	7,770	11,700	1,400	13,100	807	12,500	-5%
Non-renewable primary energy resources used as raw materials	MJ	509	0	509	0	509	0	509	0%
Total use of non-renewable primary energy resources	MJ	4,420	7,770	12,200	1,400	13,600	807	13,000	-4%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	1.28	40.5	41.8	0.608	42.4	0.00873	41.8	-1%
Total use of non-renewable & renewable primary energy resources	MJ	61,099	28,036	89,134	1,481	90,615	812	89,900	-1%
% Total use of renewable primary energy resources	MJ	92.8%	72.3%	86.3%	5.3%	85.0%	6.01E-03	8.56E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	6.61E-06	1.04E-06	7.65E-06	5.01E-08	7.70E-06	2.87E-09	7.65E-06	-1%
Non-hazardous waste disposed	kg	3.58	40.0	43.6	225	269	10.8	54.4	-80%
Radioactive waste disposed	kg	0.108	0.0529	0.161	0.00459	0.165	2.43E-04	0.161	-2%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Tork Roll Towel Universal

Article number(s): 2187951

1,000 kg air-dry tissue + 23 kg paper packaging + 9 kg plastic packaging = 1,032 kg total.

Content declaration: Paper >98% virgin CTMP pulp. Bleaching agent: hydrogen peroxide (totally chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-2,600	1,770	-831	2,460	1,630	1,810	976	-40%
Climate change, fossil	kg CO_2-eq.	237	616	852	159	1,010	118	970	-4%
Climate change, biogenic	kg CO_2-eq.	-2,840	1,160	-1,690	2,300	614	1,690	4.33	-99%
Climate change, land use and land use change	kg CO_2-eq.	0.947	0.403	1.35	0.0121	1.36	0.00120	1.35	-1%
Ozone depletion	kg CFC11-eq.	4.26E-09	5.33E-10	4.79E-09	1.09E-10	4.90E-09	1.05E-11	4.81E-09	-2%
Acidification	Mole of H^+ eq.	1.41	4.41	5.82	3.39	9.21	2.71	8.53	-7%
Eutrophication, freshwater	kg P eq.	0.0129	0.0205	0.0334	1.57E-04	0.0336	1.27E-04	0.0335	0%
Eutrophication, marine	kg N eq.	0.478	1.41	1.89	1.12	3.01	0.731	2.62	-13%
Eutrophication, terrestrial	Mole of N eq.	5.01	17.3	22.3	11.2	33.5	8.01	30.3	-10%
Photochemical ozone formation, human health	kg NMVOC eq.	1.33	3.71	5.05	3.20	8.25	2.07	7.11	-14%
Resource use, mineral and metals	kg Sb-eq.	3.02E-05	6.10E-05	9.12E-05	6.66E-06	9.78E-05	1.59E-06	9.28E-05	-5%
Resource use, fossils	MJ	3,710	5,820	9,530	2,020	11,500	1,390	10,900	-5%
Water use	m^3 world equiv.	23.4	488	512	24.9	536	0.766	512	-4%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	31,500	22,300	53,900	71.6	53,900	6.44	53,900	0%
Primary energy resources used as raw materials	MJ	14,500	0	14,500	0	14,500	0	14,500	0%
Total use of renewable primary energy resources	MJ	46,000	22,300	68,400	71.6	68,400	6.44	68,400	0%
Use of non-renewable primary energy	MJ	3,720	5,820	9,540	2,020	11,600	1,390	10,900	-5%
Non-renewable primary energy resources used as raw materials	MJ	399	0	399	0	399	0	399	0%
Total use of non-renewable primary energy resources	MJ	4,120	5,820	9,940	2,020	12,000	1,390	11,300	-5%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	1.53	41.1	42.6	0.590	43.2	0.0131	42.6	-1%
Total use of non-renewable & renewable primary energy resources	MJ	50,148	28,160	78,308	2,092	80,400	1,400	79,700	-1%
% Total use of renewable primary energy resources	MJ	91.8%	79.3%	87.3%	3.4%	85.1%	4.60E-03	8.58E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	6.17E-06	3.85E-07	6.55E-06	5.15E-08	6.60E-06	3.16E-09	6.56E-06	-1%
Non-hazardous waste disposed	kg	3.53	33.5	37.0	223	260	8.21	45.2	-83%
Radioactive waste disposed	kg	0.0630	0.0154	0.0784	0.00458	0.0829	2.30E-04	0.0786	-5%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Tork Ultra Long Paper Towel - Triple Length, NZ Only

Article number(s): 2327073

1,000 kg air-dry tissue + 29 kg paper packaging + 12 kg plastic packaging = 1,041 kg total.

Content declaration: Paper >98% virgin kraft pulp. Bleaching agent: chlorine dioxide (elemental chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,370	2,720	-644	2,420	1,780	1,920	1,270	-29%
Climate change, fossil	kg CO_2-eq.	263	786	1,050	107	1,160	69.0	1,120	-3%
Climate change, biogenic	kg CO_2-eq.	-3,630	1,930	-1,700	2,310	615	1,850	150	-76%
Climate change, land use and land use change	kg CO_2-eq.	0.185	3.81	4.00	0.0120	4.01	9.83E-04	4.00	0%
Ozone depletion	kg CFC11-eq.	3.92E-09	6.00E-10	4.52E-09	8.93E-11	4.61E-09	6.86E-12	4.53E-09	-2%
Acidification	Mole of H^+ eq.	1.56	8.78	10.3	1.25	11.6	0.582	10.9	-6%
Eutrophication, freshwater	kg P eq.	0.00739	0.0433	0.0507	1.81E-04	0.0509	1.50E-04	0.0509	0%
Eutrophication, marine	kg N eq.	0.543	2.56	3.10	0.588	3.69	0.199	3.30	-11%
Eutrophication, terrestrial	Mole of N eq.	5.87	29.1	35.0	5.34	40.3	2.18	37.2	-8%
Photochemical ozone formation, human health	kg NMVOC eq.	1.57	6.95	8.52	1.69	10.2	0.560	9.08	-11%
Resource use, mineral and metals	kg Sb-eq.	3.84E-05	6.64E-05	1.05E-04	4.23E-06	1.09E-04	1.08E-06	1.06E-04	-3%
Resource use, fossils	MJ	4,330	7,900	12,200	1,350	13,600	803	13,000	-4%
Water use	m^3 world equiv.	32.5	402	434	24.0	458	0.407	435	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	41,600	20,100	61,700	90.4	61,800	5.42	61,700	0%
Primary energy resources used as raw materials	MJ	14,600	0	14,600	0	14,600	0	14,600	0%
Total use of renewable primary energy resources	MJ	56,300	20,100	76,400	90.4	76,400	5.42	76,400	0%
Use of non-renewable primary energy	MJ	4,350	7,910	12,300	1,350	13,600	803	13,100	-4%
Non-renewable primary energy resources used as raw materials	MJ	519	0	519	0	519	0	519	0%
Total use of non-renewable primary energy resources	MJ	4,860	7,910	12,800	1,350	14,100	803	13,600	-4%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	1.52	41.1	42.6	0.640	43.2	0.00976	42.6	-1%
Total use of non-renewable & renewable primary energy resources	MJ	61,118	28,011	89,129	1,442	90,571	808	89,900	-1%
% Total use of renewable primary energy resources	MJ	92.0%	71.8%	85.7%	6.3%	84.4%	6.71E-03	8.49E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	7.17E-06	1.04E-06	8.21E-06	4.86E-08	8.26E-06	2.88E-09	8.21E-06	-1%
Non-hazardous waste disposed	kg	3.77	40.5	44.3	225	270	10.6	54.8	-80%
Radioactive waste disposed	kg	0.110	0.0584	0.168	0.00461	0.173	2.66E-04	0.169	-2%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Tork Ultra Long Paper Towel – Triple Length, AU Only

Article number(s): 2328833

1,000 kg air-dry tissue + 30 kg paper packaging + 26 kg plastic packaging = 1,056 kg total.

Content declaration: Paper >98% virgin kraft pulp. Bleaching agent: chlorine dioxide (elemental chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,340	2,720	-614	2,420	1,810	1,920	1,300	-28%
Climate change, fossil	kg CO_2-eq.	293	787	1,080	112	1,190	70.6	1,150	-3%
Climate change, biogenic	kg CO_2-eq.	-3,630	1,930	-1,700	2,310	615	1,850	150	-76%
Climate change, land use and land use change	kg CO_2-eq.	0.189	3.81	4.00	0.0124	4.01	0.00147	4.00	0%
Ozone depletion	kg CFC11-eq.	3.97E-09	6.00E-10	4.57E-09	1.06E-10	4.67E-09	8.68E-12	4.58E-09	-2%
Acidification	Mole of H^+ eq.	1.62	8.78	10.4	1.27	11.7	0.593	11.0	-6%
Eutrophication, freshwater	kg P eq.	0.00743	0.0434	0.0508	3.65E-04	0.0512	3.34E-04	0.0511	0%
Eutrophication, marine	kg N eq.	0.562	2.56	3.12	0.595	3.72	0.202	3.33	-10%
Eutrophication, terrestrial	Mole of N eq.	6.08	29.1	35.2	5.42	40.6	2.22	37.4	-8%
Photochemical ozone formation, human health	kg NMVOC eq.	1.63	6.96	8.58	1.70	10.3	0.569	9.15	-11%
Resource use, mineral and metals	kg Sb-eq.	5.60E-05	6.64E-05	1.22E-04	6.11E-06	1.29E-04	1.17E-06	1.24E-04	-4%
Resource use, fossils	MJ	5,160	7,910	13,100	1,450	14,500	826	13,900	-4%
Water use	m^3 world equiv.	38.3	402	440	24.5	465	0.418	441	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	41,700	20,100	61,800	72.7	61,900	6.06	61,800	0%
Primary energy resources used as raw materials	MJ	14,600	0	14,600	0	14,600	0	14,600	0%
Total use of renewable primary energy resources	MJ	56,300	20,100	76,400	72.7	76,500	6.06	76,400	0%
Use of non-renewable primary energy	MJ	5,190	7,920	13,100	1,450	14,600	826	13,900	-4%
Non-renewable primary energy resources used as raw materials	MJ	1,120	0	1,120	0	1,120	0	1,120	0%
Total use of non-renewable primary energy resources	MJ	6,310	7,920	14,200	1,450	15,700	826	15,100	-4%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	1.69	41.1	42.8	0.590	43.4	0.00856	42.8	-1%
Total use of non-renewable & renewable primary energy resources	MJ	62,624	28,018	90,642	1,522	92,164	832	91,500	-1%
% Total use of renewable primary energy resources	MJ	89.9%	71.7%	84.3%	4.8%	83.0%	7.28E-03	8.35E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	7.26E-06	1.04E-06	8.30E-06	5.33E-08	8.35E-06	5.08E-09	8.30E-06	-1%
Non-hazardous waste disposed	kg	5.16	40.5	45.7	239	285	24.4	70.1	-75%
Radioactive waste disposed	kg	0.122	0.0584	0.180	0.00479	0.185	4.39E-04	0.180	-3%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Handee Standard Roll 2

Article number(s): 2169509

1,000kg air-dry tissue + 72kg paper packaging + 90kg plastic packaging = 1,162kg total

Content declaration: Paper >98% virgin kraft pulp. Bleaching agent: chlorine dioxide (elemental chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,230	2,710	-516	2,520	2,010	1,990	1,480	-26%
Climate change, fossil	kg CO_2-eq.	463	785	1,250	131	1,380	91.7	1,340	-3%
Climate change, biogenic	kg CO_2-eq.	-3,690	1,920	-1,770	2,390	626	1,900	131	-79%
Climate change, land use and land use change	kg CO_2-eq.	0.252	3.79	4.04	0.0149	4.05	0.00378	4.04	0%
Ozone depletion	kg CFC11-eq.	4.73E-09	5.83E-10	5.32E-09	9.92E-11	5.42E-09	1.58E-11	5.33E-09	-2%
Acidification	Mole of H^+ eq.	2.09	8.81	10.9	1.43	12.3	0.755	11.7	-5%
Eutrophication, freshwater	kg P eq.	0.00857	0.0431	0.0517	0.00119	0.0529	0.00116	0.0528	0%
Eutrophication, marine	kg N eq.	0.725	2.57	3.30	0.661	3.96	0.267	3.56	-10%
Eutrophication, terrestrial	Mole of N eq.	7.81	29.3	37.1	6.13	43.3	2.92	40.1	-7%
Photochemical ozone formation, human health	kg NMVOC eq.	2.11	6.97	9.09	1.85	10.9	0.709	9.79	-10%
Resource use, mineral and metals	kg Sb-eq.	1.43E-04	6.46E-05	2.08E-04	4.93E-06	2.13E-04	1.76E-06	2.10E-04	-1%
Resource use, fossils	MJ	9,550	7,850	17,400	1,670	19,100	1,110	18,500	-3%
Water use	m^3 world equiv.	69.3	387	457	24.3	481	0.466	457	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	43,600	20,100	63,700	99.1	63,800	12.8	63,700	0%
Primary energy resources used as raw materials	MJ	15,200	0	15,200	0	15,200	0	15,200	0%
Total use of renewable primary energy resources	MJ	58,800	20,100	78,900	99.1	79,000	12.8	79,000	0%
Use of non-renewable primary energy	MJ	9,650	7,860	17,500	1,670	19,200	1,110	18,600	-3%
Non-renewable primary energy resources used as raw materials	MJ	3,870	0	3,870	0	3,870	0	3,870	0%
Total use of non-renewable primary energy resources	MJ	13,500	7,860	21,400	1,670	23,000	1,110	22,500	-2%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	2.87	39.8	42.7	0.652	43.3	0.0129	42.7	-1%
Total use of non-renewable & renewable primary energy resources	MJ	72,343	27,974	1.00E+05	1,767	1.02E+05	1,120	1.01E+05	-1%
% Total use of renewable primary energy resources	MJ	81.3%	71.9%	78.7%	5.6%	77.4%	1.14E-02	7.78E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	1.66E-05	1.03E-06	1.77E-05	6.13E-08	1.77E-05	1.50E-08	1.77E-05	0%
Non-hazardous waste disposed	kg	13.5	40.3	53.8	304	357	86.1	140	-61%
Radioactive waste disposed	kg	0.188	0.0580	0.246	0.00565	0.252	0.00124	0.247	-2%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Handee Standard Roll 4

Article number(s): 2323054

1,000 kg air-dry tissue + 72 kg paper packaging + 41 kg plastic packaging = 1,113 kg total.

Content declaration: Paper >97% virgin kraft pulp. Bleaching agent: chlorine dioxide (elemental chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,330	2,710	-619	2,520	1,900	1,980	1,360	-28%
Climate change, fossil	kg CO_2-eq.	361	784	1,140	122	1,270	83.3	1,230	-3%
Climate change, biogenic	kg CO_2-eq.	-3,690	1,920	-1,770	2,390	626	1,900	132	-79%
Climate change, land use and land use change	kg CO_2-eq.	0.239	3.79	4.03	0.0132	4.04	0.00206	4.03	0%
Ozone depletion	kg CFC11-eq.	4.59E-09	5.83E-10	5.18E-09	9.41E-11	5.27E-09	1.07E-11	5.19E-09	-2%
Acidification	Mole of H^+ eq.	1.89	8.80	10.7	1.31	12.0	0.633	11.3	-6%
Eutrophication, freshwater	kg P eq.	0.00845	0.0431	0.0516	5.41E-04	0.0521	5.10E-04	0.0521	0%
Eutrophication, marine	kg N eq.	0.658	2.57	3.23	0.628	3.85	0.233	3.46	-10%
Eutrophication, terrestrial	Mole of N eq.	7.08	29.3	36.4	5.77	42.1	2.56	38.9	-8%
Photochemical ozone formation, human health	kg NMVOC eq.	1.92	6.97	8.88	1.76	10.6	0.618	9.50	-10%
Resource use, mineral and metals	kg Sb-eq.	8.17E-05	6.46E-05	1.46E-04	4.62E-06	1.51E-04	1.45E-06	1.48E-04	-2%
Resource use, fossils	MJ	6,670	7,840	14,500	1,560	16,100	998	15,500	-4%
Water use	m^3 world equiv.	49.0	387	436	24.3	461	0.467	437	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	43,500	20,100	63,600	94.8	63,700	8.51	63,600	0%
Primary energy resources used as raw materials	MJ	15,200	0	15,200	0	15,200	0	15,200	0%
Total use of renewable primary energy resources	MJ	58,700	20,100	78,800	94.8	78,900	8.51	78,800	0%
Use of non-renewable primary energy	MJ	6,710	7,840	14,600	1,560	16,100	998	15,600	-3%
Non-renewable primary energy resources used as raw materials	MJ	1,780	0	1,780	0	1,780	0	1,780	0%
Total use of non-renewable primary energy resources	MJ	8,490	7,840	16,300	1,560	17,900	998	17,300	-3%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	2.28	39.8	42.1	0.651	42.8	0.0118	42.1	-1%
Total use of non-renewable & renewable primary energy resources	MJ	67,193	27,962	95,155	1,652	96,806	1,010	96,200	-1%
% Total use of renewable primary energy resources	MJ	87.4%	71.9%	82.8%	5.7%	81.5%	8.45E-03	8.20E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	1.65E-05	1.03E-06	1.75E-05	5.37E-08	1.76E-05	7.35E-09	1.75E-05	-1%
Non-hazardous waste disposed	kg	8.72	40.3	49.0	255	304	37.5	86.5	-72%
Radioactive waste disposed	kg	0.147	0.0580	0.205	0.00504	0.210	6.35E-04	0.206	-2%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Handee Double-length Roll-1

Article number(s): 2351710

1,000 kg air-dry tissue + 38 kg paper packaging + 67 kg plastic packaging = 1,105 kg total.

Content declaration: Paper >97% virgin kraft pulp. Bleaching agent: chlorine dioxide (elemental chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,240	2,710	-534	2,450	1,920	1,940	1,410	-27%
Climate change, fossil	kg CO_2-eq.	393	782	1,180	126	1,300	84.0	1,260	-3%
Climate change, biogenic	kg CO_2-eq.	-3,630	1,920	-1,710	2,330	615	1,860	145	-76%
Climate change, land use and land use change	kg CO_2-eq.	0.209	3.78	3.99	0.0140	4.01	0.00299	4.00	0%
Ozone depletion	kg CFC11-eq.	4.20E-09	5.83E-10	4.78E-09	1.12E-10	4.90E-09	1.36E-11	4.80E-09	-2%
Acidification	Mole of H^+ eq.	1.84	8.77	10.6	1.40	12.0	0.721	11.3	-6%
Eutrophication, freshwater	kg P eq.	0.00771	0.0431	0.0508	9.07E-04	0.0517	8.77E-04	0.0517	0%
Eutrophication, marine	kg N eq.	0.634	2.55	3.19	0.642	3.83	0.248	3.44	-10%
Eutrophication, terrestrial	Mole of N eq.	6.86	29.1	36.0	5.93	41.9	2.72	38.7	-8%
Photochemical ozone formation, human health	kg NMVOC eq.	1.85	6.93	8.78	1.81	10.6	0.674	9.45	-11%
Resource use, mineral and metals	kg Sb-eq.	1.11E-04	6.46E-05	1.75E-04	6.64E-06	1.82E-04	1.55E-06	1.77E-04	-3%
Resource use, fossils	MJ	7,900	7,810	15,700	1,640	17,300	1,010	16,700	-3%
Water use	m^3 world equiv.	56.4	387	444	24.7	468	0.458	444	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	41,900	20,100	62,000	75.5	62,100	10.0	62,000	0%
Primary energy resources used as raw materials	MJ	14,700	0	14,700	0	14,700	0	14,700	0%
Total use of renewable primary energy resources	MJ	56,700	20,100	76,800	75.5	76,800	10.0	76,800	0%
Use of non-renewable primary energy	MJ	7,980	7,820	15,800	1,640	17,400	1,010	16,800	-4%
Non-renewable primary energy resources used as raw materials	MJ	2,890	0	2,890	0	2,890	0	2,890	0%
Total use of non-renewable primary energy resources	MJ	10,900	7,820	18,700	1,640	20,300	1,010	19,700	-3%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	2.34	39.8	42.2	0.590	42.7	0.0103	42.2	-1%
Total use of non-renewable & renewable primary energy resources	MJ	67,520	27,933	95,453	1,712	97,165	1,020	96,500	-1%
% Total use of renewable primary energy resources	MJ	83.9%	72.0%	80.4%	4.4%	79.1%	9.89E-03	7.96E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	9.15E-06	1.03E-06	1.02E-05	6.02E-08	1.02E-05	1.16E-08	1.02E-05	0%
Non-hazardous waste disposed	kg	9.97	40.3	50.2	281	331	65.1	115	-65%
Radioactive waste disposed	kg	0.160	0.0580	0.218	0.00533	0.223	9.67E-04	0.219	-2%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Handee Double-length Roll-2

Article number(s): 2329558

1,000 kg air-dry tissue + 34 kg paper packaging + 45 kg plastic packaging = 1,078 kg total.

Content declaration: Paper >98% virgin kraft pulp. Bleaching agent: chlorine dioxide (elemental chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,290	2,710	-579	2,440	1,860	1,940	1,360	-27%
Climate change, fossil	kg CO_2-eq.	341	782	1,120	122	1,240	83.3	1,210	-2%
Climate change, biogenic	kg CO_2-eq.	-3,630	1,920	-1,710	2,320	615	1,850	147	-76%
Climate change, land use and land use change	kg CO_2-eq.	0.199	3.79	3.99	0.0132	4.00	0.00222	3.99	0%
Ozone depletion	kg CFC11-eq.	4.08E-09	5.83E-10	4.66E-09	9.35E-11	4.76E-09	1.11E-11	4.68E-09	-2%
Acidification	Mole of H^+ eq.	1.73	8.77	10.5	1.40	11.9	0.733	11.2	-6%
Eutrophication, freshwater	kg P eq.	0.00756	0.0431	0.0507	6.10E-04	0.0513	5.80E-04	0.0513	0%
Eutrophication, marine	kg N eq.	0.596	2.55	3.15	0.642	3.79	0.252	3.40	-10%
Eutrophication, terrestrial	Mole of N eq.	6.45	29.1	35.6	5.94	41.5	2.77	38.3	-8%
Photochemical ozone formation, human health	kg NMVOC eq.	1.73	6.93	8.66	1.81	10.5	0.684	9.34	-11%
Resource use, mineral and metals	kg Sb-eq.	8.11E-05	6.46E-05	1.46E-04	4.57E-06	1.50E-04	1.45E-06	1.47E-04	-2%
Resource use, fossils	MJ	6,470	7,810	14,300	1,540	15,800	994	15,300	-3%
Water use	m^3 world equiv.	46.6	387	434	24.0	458	0.462	435	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	41,700	20,100	61,900	94.1	62,000	8.84	61,900	0%
Primary energy resources used as raw materials	MJ	14,700	0	14,700	0	14,700	0	14,700	0%
Total use of renewable primary energy resources	MJ	56,400	20,100	76,500	94.1	76,600	8.84	76,500	0%
Use of non-renewable primary energy	MJ	6,520	7,820	14,300	1,540	15,900	994	15,300	-3%
Non-renewable primary energy resources used as raw materials	MJ	1,920	0	1,920	0	1,920	0	1,920	0%
Total use of non-renewable primary energy resources	MJ	8,430	7,820	16,300	1,540	17,800	994	17,200	-3%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	2.01	39.8	41.9	0.643	42.5	0.0117	41.9	-1%
Total use of non-renewable & renewable primary energy resources	MJ	64,843	27,938	92,780	1,638	94,419	1,000	93,800	-1%
% Total use of renewable primary energy resources	MJ	87.0%	72.0%	82.5%	5.7%	81.2%	8.81E-03	8.16E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	8.22E-06	1.03E-06	9.25E-06	5.39E-08	9.31E-06	8.15E-09	9.26E-06	-1%
Non-hazardous waste disposed	kg	7.54	40.3	47.8	258	306	42.8	90.6	-70%
Radioactive waste disposed	kg	0.140	0.0581	0.198	0.00504	0.203	6.92E-04	0.198	-2%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Handee Double-length Roll-3

Article number(s): 2343890

1,000 kg air-dry tissue + 38 kg paper packaging + 49 kg plastic packaging = 1,087 kg total.

Content declaration: Paper >97% virgin kraft pulp. Bleaching agent: chlorine dioxide (elemental chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,280	2,700	-571	2,450	1,880	1,940	1,370	-27%
Climate change, fossil	kg CO_2-eq.	356	781	1,140	124	1,260	81.9	1,220	-3%
Climate change, biogenic	kg CO_2-eq.	-3,630	1,920	-1,710	2,330	615	1,860	145	-76%
Climate change, land use and land use change	kg CO_2-eq.	0.204	3.78	3.99	0.0134	4.00	0.00237	3.99	0%
Ozone depletion	kg CFC11-eq.	4.15E-09	5.83E-10	4.73E-09	1.10E-10	4.85E-09	1.19E-11	4.75E-09	-2%
Acidification	Mole of H^+ eq.	1.77	8.76	10.5	1.39	11.9	0.706	11.2	-6%
Eutrophication, freshwater	kg P eq.	0.00767	0.0431	0.0508	6.72E-04	0.0514	6.42E-04	0.0514	0%
Eutrophication, marine	kg N eq.	0.610	2.55	3.16	0.638	3.80	0.243	3.41	-10%
Eutrophication, terrestrial	Mole of N eq.	6.60	29.1	35.7	5.88	41.6	2.67	38.4	-8%
Photochemical ozone formation, human health	kg NMVOC eq.	1.78	6.93	8.70	1.80	10.5	0.663	9.37	-11%
Resource use, mineral and metals	kg Sb-eq.	8.81E-05	6.46E-05	1.53E-04	6.54E-06	1.59E-04	1.45E-06	1.54E-04	-3%
Resource use, fossils	MJ	6,860	7,810	14,700	1,610	16,300	976	15,600	-4%
Water use	m^3 world equiv.	49.1	387	436	24.7	461	0.465	437	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	41,900	20,100	62,000	74.0	62,100	8.52	62,000	0%
Primary energy resources used as raw materials	MJ	14,700	0	14,700	0	14,700	0	14,700	0%
Total use of renewable primary energy resources	MJ	56,600	20,100	76,700	74.0	76,800	8.52	76,700	0%
Use of non-renewable primary energy	MJ	6,910	7,810	14,700	1,610	16,300	976	15,700	-4%
Non-renewable primary energy resources used as raw materials	MJ	2,130	0	2,130	0	2,130	0	2,130	0%
Total use of non-renewable primary energy resources	MJ	9,040	7,810	16,900	1,610	18,500	976	17,800	-3%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	2.13	39.8	41.9	0.589	42.5	0.00994	42.0	-1%
Total use of non-renewable & renewable primary energy resources	MJ	65,658	27,929	93,587	1,681	95,268	985	94,600	-1%
% Total use of renewable primary energy resources	MJ	86.2%	72.0%	82.0%	4.4%	80.6%	8.66E-03	8.11E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	9.13E-06	1.03E-06	1.02E-05	5.74E-08	1.02E-05	8.87E-09	1.02E-05	0%
Non-hazardous waste disposed	kg	8.22	40.3	48.5	263	311	47.5	95.9	-69%
Radioactive waste disposed	kg	0.145	0.0580	0.203	0.00511	0.208	7.46E-04	0.204	-2%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Handee Double-length Roll ‘Print’

Article number(s): 2342122

1,000 kg air-dry tissue + 38 kg paper packaging + 59 kg plastic packaging = 1,097 kg total.

Content declaration: Paper >97% virgin kraft pulp. Bleaching agent: chlorine dioxide (elemental chlorine free).

Potential Environmental Impacts		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Climate change, total	kg CO_2-eq.	-3,250	2,710	-548	2,450	1,900	1,940	1,390	-27%
Climate change, fossil	kg CO_2-eq.	379	782	1,160	125	1,290	83.0	1,240	-4%
Climate change, biogenic	kg CO_2-eq.	-3,630	1,920	-1,710	2,330	615	1,860	145	-76%
Climate change, land use and land use change	kg CO_2-eq.	0.207	3.78	3.99	0.0137	4.00	0.00269	3.99	0%
Ozone depletion	kg CFC11-eq.	4.18E-09	5.83E-10	4.77E-09	1.11E-10	4.88E-09	1.28E-11	4.78E-09	-2%
Acidification	Mole of H^+ eq.	1.81	8.77	10.6	1.40	12.0	0.714	11.3	-6%
Eutrophication, freshwater	kg P eq.	0.00769	0.0431	0.0508	7.94E-04	0.0516	7.64E-04	0.0515	0%
Eutrophication, marine	kg N eq.	0.624	2.55	3.18	0.640	3.82	0.246	3.42	-10%
Eutrophication, terrestrial	Mole of N eq.	6.75	29.1	35.9	5.91	41.8	2.70	38.6	-8%
Photochemical ozone formation, human health	kg NMVOC eq.	1.82	6.93	8.75	1.81	10.6	0.669	9.42	-11%
Resource use, mineral and metals	kg Sb-eq.	1.53E-04	6.46E-05	2.18E-04	6.59E-06	2.24E-04	1.50E-06	2.19E-04	-2%
Resource use, fossils	MJ	7,480	7,810	15,300	1,620	16,900	991	16,300	-4%
Water use	m^3 world equiv.	53.1	387	440	24.7	465	0.461	441	-5%

Primary Energy Demand (PED)		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	**Unit**	**Upstream**	**Core**	**To Gate**	**Downstream**	**Total**	**Downstream**	**Total**	**Reduction**
Use of renewable primary energy	MJ	41,900	20,100	62,000	74.8	62,100	9.31	62,000	0%
Primary energy resources used as raw materials	MJ	14,700	0	14,700	0	14,700	0	14,700	0%
Total use of renewable primary energy resources	MJ	56,600	20,100	76,800	74.8	76,800	9.31	76,800	0%
Use of non-renewable primary energy	MJ	7,550	7,820	15,400	1,620	17,000	991	16,400	-4%
Non-renewable primary energy resources used as raw materials	MJ	2,520	0	2,520	0	2,520	0	2,520	0%
Total use of non-renewable primary energy resources	MJ	10,100	7,820	17,900	1,620	19,500	991	18,900	-3%
Input of secondary material	kg	0	0	0	0	0	0	0	0%
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0	0%
Use of net fresh water	m^3	2.27	39.8	42.1	0.589	42.7	0.0101	42.1	-1%
Total use of non-renewable & renewable primary energy resources	MJ	66,713	27,931	94,645	1,698	96,342	1,000	95,600	-1%
% Total use of renewable primary energy resources	MJ	84.9%	72.0%	81.1%	4.4%	79.7%	9.31E-03	8.03E-01	0%

Waste indicators		Manufacture			Transport + Landfill		Transport + Compost		
Indicator	Unit	Upstream	Core	To Gate	Downstream	Total	Downstream	Total	Reduction
Hazardous waste disposed	kg	9.16E-06	1.03E-06	1.02E-05	5.89E-08	1.03E-05	1.03E-08	1.02E-05	-1%
Non-hazardous waste disposed	kg	9.31	40.3	49.6	272	322	56.6	106	-67%
Radioactive waste disposed	kg	0.153	0.0580	0.211	0.00523	0.216	8.61E-04	0.212	-2%
Components for re-use	kg	0	0	0	0	0	0	0	0%
Materials for recycling	kg	0	0	0	0	0	0	0	0%
Material for energy recovery	kg	0	0	0	0	0	0	0	0%
Exported electrical energy	MJ	0	0	0	0	0	0	0	0%
Exported thermal energy	MJ	0	0	0	0	0	0	0	0%

Material Circularity Indicators (MCIs)

Material Circularity Indicator (MCI) is a method for measuring how well a product performs in the context of a circular economy and aligns with ISO 59020 (ISO, 2024). It measures the degree to which a product system keeps materials in circulation at their highest form of value. It provides a common metric that applies to all of the different circular economy strategies including avoidance, durability, reuse, remanufacturing, recycling, regenerative sourcing, composting and energy recovery. The MCI can be reported as an MCI Score or as a percentage circularity (% MCI).

MCI Score: a value between 0 and 1 in which a score of 0.1 represents a linear system that uses only virgin, non-renewable materials and produces only non-recoverable waste and a score of 1 represents a perfectly circular system that uses only non-virgin or renewable materials and produces only recoverable waste. Values between 0 and 0.1 are reserved for products that consume more material, typically due to a lower utility than an average product. %MCI: is calculated using the same methodology and assumptions as the MCI Score but reports circularity on a scale from 0% (Linear) to 100% (Perfectly Circular) that is easier to understand and communicate.

The MCI has been reported as both an MCI Score and a percentage circularity (% MCI) in this EPD to support comparability. Although the methodology for MCI Score and %MCI is the same, the score cannot be directly transposed but needs to be converted per the methodology described by the Ellen MacArthur Foundation (Ellen MacArthur Foundation, 2019/2024).

The MCI results are based on material flows from the papermaking process onwards; the pulping process is excluded from the MCI material-flow analysis. Accordingly, all pulp inputs used in the papermaking process have been classified as “sustainably sourced biological material” as the pulp is Forestry Stewardship Council (FSC) certified.

A higher proportion of sustainably sourced biological inputs, such as pulp, and a greater proportion of material recovered through composting result in a higher MCI. These circularity results should be considered alongside the broader environmental-performance data presented in this EPD.

	Landfill		Compost	
Product	**MCI Score**	**% MCI**	**MCI Score**	**% MCI**
Tork Matic® Soft Hand Towel Roll Advanced H1	0.55	50%	0.98	98%
Tork Xpress® Multifold Hand Towel / Slimline Advanced H2	0.54	49%	0.98	98%
Tork Xpress® Multifold Hand Towel / Slimline Universal H2	0.54	49%	0.98	98%
Tork Xpress® Low-Lint Multifold Hand Towel / Slimline Advanced H2	0.55	49%	0.98	98%
Tork Xpress® Multifold Hand Towel Advanced H2	0.54	49%	0.98	98%
Tork Ultraslim Multifold Hand Towel / Advanced H4	0.55	50%	0.98	98%
Tork PeakServe® Continuous™ Hand Towel Universal H5	0.54	49%	0.98	98%
Tork Basic Paper Centrefeed Roll Perforated M2	0.55	50%	0.99	99%
Tork Basic Paper Blue Centrefeed Roll Perforated M2	0.55	50%	0.99	99%
Tork Roll Towel Universal	0.55	50%	0.99	99%
Tork Ultra Long Paper Towel – Triple Length, NZ Only	0.55	50%	0.99	99%
Tork Ultra Long Paper Towel – Triple Length, AU Only	0.55	50%	0.98	97%
Handee Standard Roll 2	0.54	49%	0.94	93%
Handee Standard Roll 4	0.55	50%	0.97	96%
Handee Double-length Roll-1	0.54	48%	0.95	94%
Handee Double-length Roll-2	0.54	49%	0.96	96%
Handee Double-length Roll-3	0.54	49%	0.96	95%
Handee Double-length Roll ‘Print’	0.54	48%	0.95	95%

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EPD registration and verification

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Product Category Rules (PCR):	PCR 2011:05 Tissue Products, Version 3.0.1, 2022-04-20
ANZSIC v1.0 classification:	C152400: “Sanitary Paper Product Manufacturing”
UN CPC v2 classification:	32131: “Toilet or facial tissue stock, towel or napkin stock and similar paper, cellulose wadding and webs of cellulose fibres”
PCR review was conducted by:	The Technical Committee of the International EPD® System. Chair: Massimo Marino. Contact via info@environdec.com.
Independent verification of the declaration and data, according to ISO 14025:2006:	☐ EPD process certification (Internal) ☑ EPD verification (External)
Third party verifier:	**Andrew D Moore, Life Cycle Logic** Web: http://www.lifecyclelogic.com.au Email: info@lifecyclelogic.com.au Post: PO Box 571, Fremantle WA 6959, Australia
Approved by:	**EPD Australasia Ltd** Procedure for follow-up of data during EPD validity involves third party verifier: ☑ Y ☐ N

Version history	v1.0 Initial release v1.1 Correction to POCP results v1.2 Addition of articles 170370 and 2187951 v2.0 Revision of all data. Addition of Handee brand and new products. v3.0 Revision of all data from 2018 to 2022. Revision of impact indicators in line with EN15804+ A2. Addition of the following products to EPD: • Tork Ultra Long Paper Towel (Short)-2 • Tork Basic Paper 1ply Centerfeed Roll Blue-1 • Tork H2 Xpress Low Lint Multifold Hand Towel-21 Removal of the following from EPD: • HANDEE,TWL;TALL,WHT,3Sx6 • HANDEE,TWL;WHT,LONGROLL,2Sx6 v3.1 Images for Handee Ultra and Handee Ultra Double were updated. Handee prints image was removed and article number 483 (Handee prints- 2) was added to Handee Ultra list as its specification is the same. No changed to any data in the file. v4.0 Correction of data error for affected products. Updated key parameters and assumptions: • Energy data for all products (new and previously published) • Data collection period for new products and energy update. • Production data for all products has also been updated to 2025 for consistency. • Parameter for landfill methane capture rate (increased to 68%). Included MCI results. Addition of Handee and Tork hand towel products as follows: • Tork Xpress Multifold Hand Towel / H2 Advanced • Tork PeakServe Continuous Hand Towel / H5 Universal • Tork Matic Hand Towel Roll / H1 Advanced • Handee double-length roll ‘print’ • Handee double-length roll-1 • Handee double-length roll-3

The EPD owner has the sole ownership, liability and responsibility for the EPD.