

WHO International Scheme to Evaluate Household Water Treatment Technologies

P&G Purifier of Water

Product evaluation report

WHO performance classification	Comprehensive Gamble protection Two-star (★★)
Manufacturer	The Procter & Company 1 P&G Plaza Cincinnati, OH 452020 United States www.pg.com
Evaluation procedure	Desk review of existing data
WHO report issue date	Round I, 2015
WHO reference number	12/03/2014-R1-23

Summary of evaluation

This report summarizes the evaluation results of a coagulant/flocculant-disinfectant known by the tradename 'P&G Purifier of Water' under Round I of the World Health Organization (WHO) International Scheme to Evaluate Household Water Treatment Technologies (the Scheme). Evaluation followed the requirements of the WHO protocol for coagulation/flocculation-disinfection technologies, and comprised a desk review of existing laboratory data on the product's performance against bacteria, viruses and protozoa. Based on the review of existing data, the product meets WHO performance criteria and is classified as providing *Comprehensive protection* (★★).

Background

Evaluation under the Scheme is based on performance criteria set out in *Evaluating Household Water Treatment Options: Health-based targets and microbiological performance specifications* (WHO, 2011). The criteria were determined by applying quantitative microbial risk assessment methods outlined in the WHO *Guidelines for Drinking-water Quality* (2011) and set out log₁₀ reduction targets against bacteria, viruses and protozoa (Table).

WHO performance criteria for household water treatment technologies

Performance classification	Bacteria (log ₁₀ reduction required)	Viruses (log ₁₀ reduction required)	Protozoa (log ₁₀ reduction required)	Interpretation (with correct and consistent use)
★ ★ ★	≥ 4	≥ 5	≥ 4	Comprehensive protection
★ ★	≥ 2	≥ 3	≥ 2	
★	Meets at least 2-star (★ ★) criteria for two classes of pathogens			Targeted protection
—	Fails to meet criteria for 1-star (★)			Little or no protection

Product description

The P&G Purifier of Water is a sachet containing powdered ferric sulfate and calcium hypochlorite. The ferric sulfate acts as a coagulant and aggregates suspended particulates and larger microbes. The resulting flocules then settle to the bottom of the water container. The calcium hypochlorite acts as a disinfectant. The product is available in 4g sachets that can each treat 10 L of water. The full product description, illustrations and use instructions can be found at: www.pg.com.

Evaluation approach

The laboratory data reviewed for the product were for performance against bacteria (*Escherichia coli*, *Salmonella enterica*, *Vibrio cholerae* and *Raoultella terrigena*), viruses (Poliovirus and Rotavirus) and protozoa (*Giardia muris* cysts and *Cryptosporidium parvum* oocysts), based on the United States Environmental Protection Agency (US EPA) Guide Standard for Microbiological Water Purifiers (1987). The submitted data were reviewed against the technology test protocol for Chlorine Disinfection Technologies V 1.0 (2015).

Results

The test organisms and test procedure applied to generate the existing laboratory data were deemed comparable to those of the Scheme and sufficient to determine the performance of the product. Based on the review, the P&G Purifier of Water meets or exceeds the minimum performance targets for bacteria, viruses and protozoa.




Interpretation and application of results

Performance is classified in three ascending tiers: ★ (one-star), ★★ (two-star) and ★★★ (three-star), as shown in the table. Both three- and two-star products provide *Comprehensive protection* against all three microbial groups. One-star products meet performance targets for only two of the three microbial groups, providing *Targeted protection*.

Performance classification

Based on the review of the laboratory data submitted, the P&G Purifier of Water meets or exceeds minimum performance targets for bacteria, viruses and protozoa. As such, it is classified as providing *Comprehensive protection* (★★★).

Considerations for product selection

	Microbial conditions	Effective against bacteria, viruses and protozoa; can be used under all microbial water quality conditions
	Physicochemical water characteristics	Can be used in both turbid and non-turbid water
	Product information and labelling	Check that the device is appropriately labelled and has clear instructions for use

References

Report of Task Force: Guide standard and protocol for testing microbiological water purifiers. Washington (DC): U.S. Environmental Protection Agency: Office of Pesticide Programs and Office of Drinking Water; 1987 (www.nepis.epa.gov).

Evaluating household water treatment options: health-based targets and microbiological performance specifications. Geneva: World Health Organization; 2011 (http://www.who.int/water_sanitation_health/publications/household_water/en/).

Guidelines for drinking-water quality, fourth edition. Geneva: World Health Organization; 2011 (https://www.who.int/water_sanitation_health/publications/dwq-guidelines-4/en/).

Harmonized Testing Protocol: Technology non-specific version 2.0. Geneva: World Health Organization; 2015 (http://www.who.int/water_sanitation_health/water-quality/household/household-water-treatment-scheme-resources/en/).

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