June 2024

Dear Customer,

Re: Revolve N-272 antibacterial protection

The Covid-19 pandemic has brought into sharp focus the importance of hygiene and how vulnerable we all are to the dangers of viruses, bacteria and microbes. The world has seen a massive upturn in demand for hand sanitisers, anti-bacterial wipes and personal protective equipment.

In these challenging times there has been a growing demand for rotomoulded products in the healthcare industry which can meet the stringent requirements demanded. Antibacterial rotational moulding grades were designed many years ago to provide rotational moulders a new material solution. Revolve N-272 inhibits the growth of MRSA (Methicillin-Resistant Staphylococcus Aureus), S.Aureus and E.Coli some of which most common group of bacteria found in hospitals, by up to 99.9%.

This grade is made with an inorganic silver based additive and is also food contact approved. Table 1 shows a direct comparison of inorganic vs organic antimicrobial additives making it evident that Revolve N-272 offers better performance than the organic version, especially on the longer lasting antimicrobial effect due to the slow migration, absence of toxicity, FDA approval and higher heat resistance.

Table 1. *Comparison of inorganic and organic properties for antibacterial additives*

INORGANIC	***ORGANIC***
The specific structure controls slow release of Silver ions: • Non – toxic • Long life • Slow migration	Highly volatile: • Toxic (can cause irritation to eyes and skin) • Short life • Fast migration
High heat resistant – up to 800º C	Low heat resistant – less than 300º C
Prevents discoloration	High Yellowness Index
Highly effective & stable – Does not vaporize nor decompose	Thermal degradation may occur during moulding
FDA approved	Not FDA approved
Bactericide – kills bacteria	Bacteriostatic – inhibits growth of bacteria
Improved colour stabilization	

What applications can Revolve N-272 be used in?

Customers have already experimented the benefits of Revolve N-272 in applications such as:

- Filter
- Toys
- Water tanks
- Waste bins
- Hospitals supplies
- Sanitary accessories – toilet seats

How effective is Revolve N-272?

Table 2 demonstrates the reduction in the bacteria population compared to the control sample following contact with the surface for 24 hours at 35°C under a relative humidity of >95% per ISO 22196 protocol. It is considered statically significant if it achieves at least 90% reduction or 1 log.

Table 2. *Revolve N-272 performance in ISO 22196 test*

	Bacteria					
Sample Description	E. coli		S.aureus		MRSA	
	Percent Reduction	Log Reduction	Percent Reduction	Log Reduction	Percent Reduction	Log Reduction
Revolve N-272	≥ 99.99%	≥ 5.46	≥ 99.99%	≥ 4.26	≥ 99.99%	≥ 4.05

Test Method: ISO 22196:2011

ISO 22196:2011 is a measurement of antibacterial activity on plastics and other non – porous surfaces such as polymers, foam, coatings and non – absorbent textiles. In this test, Escherichia coli (Ec) – AATCC 8739 and Staphylococcus aureus (Sa) – AATCC 6538 have been used.

Antimicrobial effectiveness is measured by comparing the difference in the number of surviving bacteria recovered from the treated sample against the surviving bacteria recovered from an appropriate reference material (an untreated control sample).

For more information on Revolve N-272 or any other Matrix products, please contact your regional account manager or visit www.matrixpolymers.com

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