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Dear Addressee,

This document is intended to share some information on properties and behavior of housing produced with natural Nylon.

The world demand for major household appliances, or white goods, is forecasted to rise annually exceeding 450 million units, according to the Freedonia Group. As consumers increasingly prefer “green” appliances with high functionality, appliance manufacturers must choose the high safety performance material to sustain market share in this competitive market. This creates challenges for appliances parts suppliers who face the material selection.

Nylon is a thermoplastic material, that has good wear resistance, is light and non-flammable.

Nylon is widely used in appliances product as it has a good plasticity, to improve the nylon melt performance, nylon manufacturers add some additive agent in their resin formula, and this additive agent will cause color change in different environment.

Some customers have concerns about a discoloration/ appearance issue on the naturel nylon housing. This paper explores the discoloration phenomenon and further explains performance impact to the customers.

TE Connectivity (TE) has more than 70 years of experience in connector design and manufacturing experience. By conducting extensive discussions with nylon manufacturers, TE engineers were able to summarize a detailed color change range to ensure product is in normal status.

The natural nylon displays white color in most case (different supplier's resin may have a little difference, white or dark white). As there is some heat stabilizer which contain Cu ion, it is a natural phenomenon that the nylon change to green color after absorbing moisture. And another natural phenomenon is the store condition and store period will affect the housing change to yellow.

The discoloration issue is reflected in green, yellow or a dark white as shown on the below picture. See Fig.1

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Sistema di Qualità certificato ISO 9001 – ISO/TS 16949

Sistema di Gestione Sicurezza e Ambiente  
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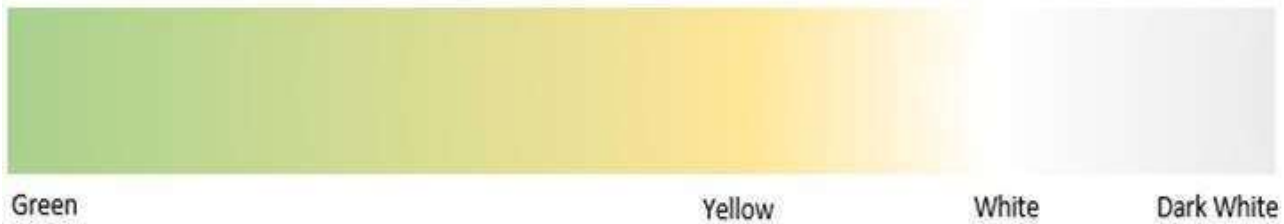
Green



Yellow



Dark White



Green

Yellow

White

Dark White

**Fig. 1**

Color of housings may range from clear to green or yellow due to hygroscopic nature of resin. However, it doesn't affect the Form, Fit and Function of the product as guaranteed by resin supplier and endorsed by our validation. See Fig.2

Test Items	Test Group (a)						
	1	2	3	4	5	6	7
	Test Sequence(b)						
Visual examination	1	1	1	1	1	1	1
Contact Retention Force	2						
Insulation Resistance		2					
Dielectric Withstanding Voltage		3					
Thermal Cycling			3				
Accelerated Aging				3			
Millivolt Drop			2,4	2,4			
Electrical Requirement							2,4
Mechanical requirement ( Retention force)					2		
Durability						2	
Humidity							3

Refer to 502-139001

**Fig. 2**

The discoloration is natural phenomenon of nylon resin and it doesn't affect the Form, Fit and Function of the product.

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