STULV20AA1474-1	**Measurement of antiviral activity of Honeycomb treated surface after activation by means of visible light**		
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REFERENCE TEST METHOD	ISO 21702:2019 - Measurement of antiviral activity on plastics and other non-porous surfaces (method modified for the specific type and size of surface and process)		
TEST ITEM			
PRODUCT NAME	HONEYCOMB Visible light		
MATRIX OF THE PRODUCT	treated ceramic surface		
BATCH	Not applicable	CODE	MTNT000012
MANUFACTURING DATE	Not applicable	EXPIRY DATE	Not applicable
MANUFACTURER	COLOROBBIA Consulting Srl		
ACTIVE INGREDIENT	TiO2@N		
MATERIAL ITEM ALIQUOT	LV-MAT-FOV7-20-101-0877:a		
PARCEL REGISTRATION N.	IP-LV-2020101-AEJ	RECEIVING DATE	April 10th 2020
STORAGE CONDITIONS	Room temperature		
ANALYSIS STARTING DATE	May 27th 2020	**ANALYSIS ENDING DATE**	June 01st 2020
EXPERIMENTAL CONDITIONS			
TEST TEMPERATURE	Room temperature (25±1°C) at ≥90%RH		
SPECIMEN DESCRIPTION	2x6 cm specimen		
VIRAL INOCULUM	400 µl of viral inoculum with known viral titre - were applied onto each specimen evenly distributed. The inoculum was left adsorbing and drying onto the porous ceramic specimen at room temperature and under biosafety hood.		
PRODUCT APPLICATION	Visibile light LEDs are switched on in order to activate the treated surface in the spectra range of wave length from 400 to 600nm		
VOLUME APPLIED	NA		
CONTACT TIME	4 hours (±5 minutes)		
INACTIVATION OF PRODUCT RESIDUES	Dilution-neutralization in cell culture medium (no detoxification needed)		
INCUBATION TEMPERATURE	37°C ± 1°C (with 5% CO_2)		

TEST VIRUS	*Bovine Coronavirus (BCoV)* - strain S379 Riems
CELL LINE	PT cells (*Ovis aries*). Code: CCLV-RIE 11
VALIDITY AND EFFICACY CRITERIA	***Check of cytotoxicity of the test item*** The test item was not cytotoxic, i.e. its contribution in terms of CPE was not visible in the test. ***Assay of viral infectivity (virus titration)*** The minimum titre of the starting viral suspension was sufficiently high to at least enable a theoretical viral titre reduction of 4 $LogTCID_{50}$. ***Check of viral recovery (untreated and treated surface)*** The dose of infectious particles recovered immediately after inoculation from the untreated test specimens was within the range of 5 to $6LogTCID_{50}$. The dose of infectious particles recovered from each untreated test specimen after contacting for 24 h wasnot higher than $3LogTCID_{50}$. ***Check of host cells susceptibility to virus and suppression of antiviral activity (neutralization)*** The difference of the average value of $TCID_{50}$ among the cellular cultures treated with the treated samples or untreated samples and then with the viral inoculum and the ones treated only with the viral inoculum (negative control) was ≤ 0.5 $LogTCID_{50}$. ***Accuracy of virus control among the three replicas*** The maximum difference of the value of $TCID_{50}$ among the cellular cultures treated with the viral inoculum recovered from the 3 different untreated specimen was ≤ 0.5 Log. ***Antiviral efficacy*** The $LogTCID_{50}$ reduction factor (R) was calculated as per ISO 21702 :2019 standard, i.e. subtracting the average $LogTCID_{50}$ of treated specimen (At) from the average $LogTCID_{50}$ of untreated specimen (U_t) at the chosen contact time (4 hours). The $LogTCID_{50}$ was calculated by the Spearman-Karber method.
	Bovine coronavirus is used as a surrogate virus for SARS-related viruses as it belongs to the same Betacoronavirus 1 genus and showed similar susceptibility to WHO formulations in published studies.

Cytotoxicity		
RESULTS	PT cells (*Ovis aries*) cell destruction	≤0.50 (Log)
	Log reductions at the different contact times	
	Bovine coronavirus (Betacoronavirus 1)	**4 hours**
		Average
		≥3.22±0.200 (Log)
		≥99.9%
	See Annex N.1 for the detail of the test results	
CONCLUSIONS	**The antiviral treatment causes a complete viral titre reduction after 4 hours of contact time in the adopted test conditions.**	
ANNEX	N. 1: RAW DATA ELABORATION	
TEST FACILITY MANAGER	M Cavalli 16/06/20	