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SERVICE INSTRUCTION no. 2020/03
Guidance on Balloon Cleaning and Disinfection

Cause: To prevent damage of Kubicek Balloons products caused by the use of disinfection
With reference to: All Kubicek Balloons equipment
Action: None (informative only)

Background:

- Increased requirements for disinfection lead to need of verifying which disinfection products and methods are safe for use with balloon-specific materials.
- Kubicek Balloons has tested effect of some of the most common disinfection products on all main materials used for balloon manufacturing, resulting in issuance of this Service Instruction.
- This Service Instruction does not examine effectiveness nor suitability of disinfection methods. It only provides information on effects of such products/methods on balloon materials.

NOTE:	*This Service Instruction does NOT replace the steps of normal maintenance of the balloon or its routine cleaning. It only provides additional steps to prevent damaging of the balloon materials (what could result in potentially dangerous situation).* *Any disinfection technique used must not conflict with the latest approved revision of the Balloon Flight and/or Maintenance Manuals. If in doubt, contact Kubicek Balloons.*

Instructions:

Always wear appropriate personal protective equipment (PPE) to avoid chemical exposure. Instructions for safe using (suitable materials, donning, doffing and disposal) of the PPE is available on webpage of ECDC[5].
Follow the manufacturer's instructions to ensure that disinfectants are prepared, handled and applied safely and effectively.
Leave the product on surface for recommended contact time to ensure effectiveness of disinfection process.
Rinse any residual product with water and wipe the surface dry.
In case of doubt about any possible corrosive/aggressive effects, the product must not be used.
Before storing the balloon, always ensure all parts are dry.
If the basket is fitted with padded floor and/or walls, it is recommended to remove it from the basket for cleaning (to simplify the disinfection process and to shorten the drying time). Reinstall the padding when the basket and the padding are completely dry.
In order to minimize the exposure of seals and watertight parts of the fuel circuit, it is always preferable to apply the products first on a cloth or rag, rather than spray or rinse directly on the equipment.
Do not apply disinfection directly on the envelope fabric as that may damage the fabric coating (thus the air tightness of the envelope). Some types of disinfection could also cause weakening of the textile fibres (thus its strength) and/or colour changes of the fabric.
Do not apply disinfection directly on flame-affected parts of the burner.

NOTE:	*Frequent application of disinfectants can lead to changes in appearance of the products.*

WARNING:	*Disinfectant solutions should always be prepared in well ventilated areas.* *Avoid combining disinfectants, both during preparation and usage, as such mixtures often cause respiratory irritation and can release harmful (potentially fatal) gases.* ***ALWAYS read the instructions for use of the disinfection product!***

WARNING:	***Most of the disinfection products are flammable!*** *- do NOT expose to flames* *- do NOT apply on hot surfaces* *- always allow the disinfection to ventilate from the area before lighting burner*

Kubicek Balloons has tested effect of following common disinfection products on all main materials used for balloon manufacturing.

Products tested:	**Biocidal substance:**	**Concentration:**
Anti-COVID	ethanol (ethyl-alcohol)	796 ml/l
	hydrogen peroxide (3,5%)	36 ml/l
Savo Original (bleach)	hypochlorite	47 ml/l
Virkon S	didecyl-dimethyl-ammonium chloride (DDAC)	5 ml/l
Hydrogen peroxide 3% (common wound disinfection)	hydrogen peroxide	30 ml/l
Hydrogen peroxide 0.5%	hydrogen peroxide	5 ml/l
Sanytol multi-purpose disinfection spray	didecyl-dimethyl-ammonium chloride (DDAC)	5-10 ml/l
Denatured alcohol	ethanol (ethyl-alcohol)	940 ml/l
	isopropanol (propan-2-ol)	27 ml/l

NOTE:	*Because of the increase need of disinfection products during current pandemic, many products available in EU were approved following requirements of BPR[6] for accelerated technical equivalence applications for biocidal products. These products are approved for local markets following the local legislative requirements, until the international evaluation is finished.* ***ALWAYS check the current requirements and approvals applicable for your region!***

NOTE:	***Hand sanitizers can cause colour changes and stains on many different surfaces.***

Based on the testing of the previously listed disinfection agents, the list of possible damage was compiled (non-exhaustive summary):

	effect on metals (aluminium, stainless-steel, brass)	effect on leather	effect on other non-metallic materials
Anti-COVID	none	It is safe to gently wipe the leather surface with cloth soaked in Anti-COVID. **Do NOT use on suede leather as it will cause stains and stiffness of the material.**	Safe for use on fuel hoses, rattan wicker, synthetic wicker, basket wire polymer cover, fuel tank upper rim cover and control lines. **Do NOT use on floor padding foam material as it will cause stains.**
Savo Original (bleach)	none	**Do NOT use on any leather surface as it will cause serious damage to it.**	Safe for use on fuel hoses, rattan wicker, synthetic wicker, basket wire polymer cover, fuel tank upper rim cover and control lines. **Do NOT use on floor padding foam material as it will cause stains.**
Virkon S	none	It is safe to gently wipe the leather surface with cloth soaked in Virkon S solution.	Safe for use on fuel hoses, rattan wicker, synthetic wicker, basket wire polymer cover, fuel tank upper rim cover and control lines. **Do NOT use on floor padding foam material as it will cause stains.**
Hydrogen peroxide 3% (common wound disinfection)	none	It is safe to gently wipe the leather surface with cloth soaked in hydrogen peroxide solution. **Do NOT use on suede leather as it may cause stains and stiffness of the material.**	Safe for use on fuel hoses, rattan wicker, synthetic wicker, basket wire polymer cover, fuel tank upper rim cover and control lines. **Do NOT use on floor padding foam material as it will cause stains.**
Hydrogen peroxide 0.5%	none	It is safe to gently wipe the leather surface with cloth soaked in hydrogen peroxide solution.	Safe for use on fuel hoses, rattan wicker, synthetic wicker, basket wire polymer cover, fuel tank upper rim cover and control lines. **Do NOT use on floor padding foam material as it will cause stains.**
Sanytol multi-purpose disinfection spray	none	It is safe to gently wipe the leather surface with cloth soaked in Sanytol. **Do NOT use on suede leather as it may cause stains and stiffness of the material.**	Safe for use on fuel hoses, rattan wicker, synthetic wicker, basket wire polymer cover, fuel tank upper rim cover and control lines. **Do NOT use on floor padding foam material as it will cause stains.**
Denatured alcohol	none	It is safe to gently wipe the leather surface with cloth soaked in denatured alcohol. **Do NOT use on suede leather as it will cause stains and stiffness of the material.**	Safe for use on fuel hoses, rattan wicker, synthetic wicker, basket wire polymer cover, fuel tank upper rim cover and control lines.

Abbreviations:

EASA	European Union Aviation Safety Agency
WHO	World Health Organization
EPA US	United States Environmental Protection Agency
ECHA	European Chemicals Agency
ECDC	European Centre for Disease Prevention and Control
BPR	Biocidal Products Regulation (Regulation (EU) No 528/2012 of the European Parliament[6])

Refference:

1. https://www.easa.europa.eu/document-library/general-publications/interim-guidance-aircraft-cleaning-and-disinfection
2. https://www.who.int/publications-detail/cleaning-and-disinfection-of-environmental-surfaces-inthe-context-of-covid-19
3. https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2
4. https://echa.europa.eu/covid-19
5. https://www.ecdc.europa.eu/sites/default/files/media/en/publications/Publications/safe-use-of-ppe.pdf
6. https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1590647654355&uri=CELEX:32012R0528

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On behalf of BALÓNY KUBÍČEK spol. s r.o.

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