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Innovation in Hospital Cleaning & Disinfection

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Healthcare Facilities Management Conference 2025
9th September 2025, Birmingham, United Kingdom

Challenge

Hospital Acquired Infections (HAIs):*
- cost NHS England alone £2.7 billion per year,
- 28,500 patient deaths,
- 80,000 days of healthcare workers absence to illness

The direct cost of HAI in the US:**
- $30-45 billion/year
- one in 31 hospital patients has a HAI,
- than one in 17 patients with HAI dies as a direct result

Antibiotics (antimicrobial) resistance reduces the ability to tackle the issue;

Big Pharma have abandoned the new antibiotics development due to the shortened period for microbes to build resistance against new-coming antibiotics, that makes it economically difficult to justify;

A new approach is needed!!!
boost prevention, **improve disinfection**, that should significantly reduce the numbers of HAIs thus reducing the burden on NHS.

- *Guest JF, et al. BMJ Open 2020;10
- ** Klevens, RM et al. Public Health, 122(2), 160-166

What to expect from an ideal disinfectant?

- **Proven efficacy based on latest EN efficacy standards**
- Regulatory compliance
- **Good and broad material compatibility**
- Good cleaning properties
- **Good safety profile**

Importance of EN 14885 – overarching standard for efficacy testing

EN 14885:2022 Chemical disinfectants and antiseptics – Application of European Standards for chemical disinfectants and antiseptics'

EN 14885:2022 specifies the laboratory methods to be used for testing the activity of products in order to support claims that have specific properties appropriate to their intended application.

The test methods listed within EN 14885 cover bactericidal, yeasticidal, fungicidal, virucidal, mycobactericidal, and sporicidal claims.

It is applicable to products to be used in the areas of **human medicine**, the **veterinary area** and in **food, industrial, domestic and institutional areas**.

Tiered approach:

Phase 1 tests. Quantitative suspension tests.

Phase 2, step 1 tests (2,1). Quantitative suspension tests under simulated practical conditions.

Phase 2, step 2 tests (2,2). Quantitative surface test under simulated practical conditions.

Phase 3 tests. Field tests under practical conditions.

Standards to be passed

Surface disinfection with vs. without mechanical action

For the disinfectant to be used in healthcare space it is mandatory to prove efficacy at least against bacteria and yeasts according to phase 2 step 1 and phase 2 step 2 tests!!!

	Disinfection with mechanical action (wipes)	Disinfection without mechanical action (sprays)
Bactericidal	EN 13727 and EN 16615	EN 13727 + EN 17387
Yeasticidal	EN 13624 and EN 16615 (C. albicans)	EN 13624 + EN 17387 (C. albicans)
Fungicidal	EN 13624 (A. brasiliensis + C.albicans)	EN 13624 + EN 17387 (A. brasiliensis + C.albicans)
Virucidal against enveloped viruses	EN 14476 (MVA)	EN 14476 + EN 16777 (MVA)
Virucidal (limited)	EN 14476 (MVA, Adeno)	EN 14476 + EN 16777 (MVA, Adeno)
Virucidal	EN 14476 (Polio, Adeno)	EN 14476 + EN 16777 (Polio, Adeno)
Mycobactericidal	EN 14348 (M.terrae + M.avium)	EN 14348 (M.terrae + M.avium)
Tuberculocidal	EN 14348 (M.terrae)	EN 14348 (M.terrae)
Sporicidal	EN 17126 (Bacillus spizizenii – formerly subtilis + Bacillus cereus)	EN 17126 (Bacillus spizizenii – formerly subtilis + Bacillus cereus)
Sporicidal against C.diff spores	EN 17126 + EN 17846 (Clostridioides difficile)	EN 17126 (Clostridioides difficile)

Misleading claims

Which standards I should expect?

- **Missing EN 16615** for bactericidal efficacy (mandatory from 2017)
- Contact time **less than 1 min. not allowed for EN 16615!!!**

- **EN 13624** yeasticidal claim based on wrong strain (*C. albicans* mandatory reference strain)

- **EN 14348** based on wrong strain (*M. terrae* and *M.avium* are mandatory strains)

- **EN 14476** missing Polio to claim virucidal efficacy against non – enveloped viruses. Limited virucidal efficacy claim can be only made based on presented test strains

	Microorganism example	Contact time	EN test	Liquid sample	Conditions
Gram-negative bacteria	*Acinetobacter baumannii*	10 sec	EN13727	Wipe eluate	Dirty
	Escherichia coli	10 sec	EN13727	Wipe eluate	Dirty
	Klebsiella pneumoniae (CPE)	10 sec	EN13727	Wipe eluate	Dirty
	Pseudomonas aeruginosa	10 sec	EN13727	Wipe eluate	Dirty
Gram-positive bacteria	*Enterococcus hirae*	10 sec	EN13727	Wipe eluate	Dirty
	Staphylococcus aureus (MRSA)	10 sec	EN13727	Wipe eluate	Dirty
	Staphylococcus capitis	10 sec	EN13727	Wipe eluate	Dirty
	Enterococcus faecium (VRE)	10 sec	EN13727	Wipe eluate	Dirty
Mycobacteria	*Mycobacterium bovis*	2 min	EN14348	Wipe eluate	Dirty
Non-enveloped viruses	Adenovirus	1 min	EN14476	Wipe eluate	Dirty
	Norovirus	1 min	EN14476	Wipe eluate	Dirty
	Rotavirus	1 min	EN14476	Wipe eluate	Dirty
	HIV	30 sec	EN14476	Wipe eluate	Dirty
	Hepatitis C	1 min	EN14476	Wipe eluate	Dirty
	SARS-CoV-2	30 sec	EN14476	Wipe eluate	Dirty
	Vaccinia virus	15 sec	EN14476	Wipe eluate	Dirty
	Influenza (H5N1)	30 sec	EN14476	Wipe eluate	Dirty
	Influenza (H1N1, H3N2)	2 min	EN14476	Wipe eluate	Dirty
Yeast	*Candida albicans*	10 sec	EN16615	Wipe eluate	Dirty
	Candida auris	10 sec	EN13624	Wipe eluate	Dirty

What a proper claim set looks like

Which standards I should expect for hard surface disinfectant with mechanical action?

Detailed Efficacy Data NUGEN® Disinfectant Wipes-B and NUGEN® Disinfectant Wipes-S

Industrial & Institutional (I&I), Healthcare and Home Care aligned to Product Type 2
Tested According to European Norms (EN)

Claim	Relevant EN Norms	Contact Time	Soiling Conditions[iii]	Representative Organism(s)
Bactericidal	EN 13727[i] EN 16615[ii]	1 minute	Medical Dirty	*Staphylococcus aureus* *Enterococcus hirae* *Escherichia coli* *Pseudomonas aeruginosa*
Yeasticidal	EN 13624[i] EN 16615[ii]	1 minute	Medical Dirty	*Candida albicans*
Virucidal against Enveloped Viruses	EN 14476[i] EN 16615[ii], [iv]	1 minute	Medical Dirty	*Modified Vaccinia virus, strain Ankara (MVA)*

(i) Phase 2 Step 1 Suspension tests performed using disinfecting liquid extracted from the wipe

(ii) Data obtained when using the suggested wipe substrate impregnated with NUGEN® LLD-W Concentrate at a specified dilution and dose rate

(iii) Medical dirty soiling conditions refer to 3g/l BSA (albumin) + 3g/l sheep erythrocytes

(iv) Data generated according to a modified version of the EN Test Norm

Above claim set allows to use product as: bactericidal, yeasticidal and virucidal against enveloped viruses one step cleaner – disinfectant.

Regulatory compliance

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Medical Devices (MD)

Dual Use products (product with dual registration MD + Biocide)

Biocides

MD class I
Medical Device cleaners (detergents, enzymatic cleaners - without biocidal properties)

MD class IIA
Disinfectants/disinfectant cleaners for noncritical and semi critical devices

MD class IIB
Disinfectants/disinfectant cleaners for final disinfection of critical and semi critical devices

Dual Use

PT2
Hard surface disinfectants/disinfectant cleaners for use in healthcare

PT3
Used for veterinary hygiene purposes such as disinfectants, disinfecting soaps, oral or corporal hygiene products or with anti-microbial function.

Used to disinfect the materials and surfaces associated with the housing or transportation of animals.

PT4
Used for the disinfection of equipment, containers, consumption utensils, surfaces or pipework associated with the production, transport, storage or consumption of food or feed (including drinking water) for humans and animals.

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Material compatibility

9th September 2025, Birmingham, United Kingdom

Material compatibility

When choosing disinfectant for your facility, material compatibility with various materials should be confirmed:

- Metals
- Plastics
- Elastomers

Materials damage caused by chemical agents can be generally named corrosion , however, we can identify different mechanisms and agents which are

Corrosion

There are few different types of corrosion like among others:

- Electrochemical corrosion
- Biological corrosion
- Stress cracking corrosion

Electrochemical corrosion however is one of the most common type caused by disinfectants on metals and stress cracking corrosion on plastics.

Metal corrosion

Microscopic view

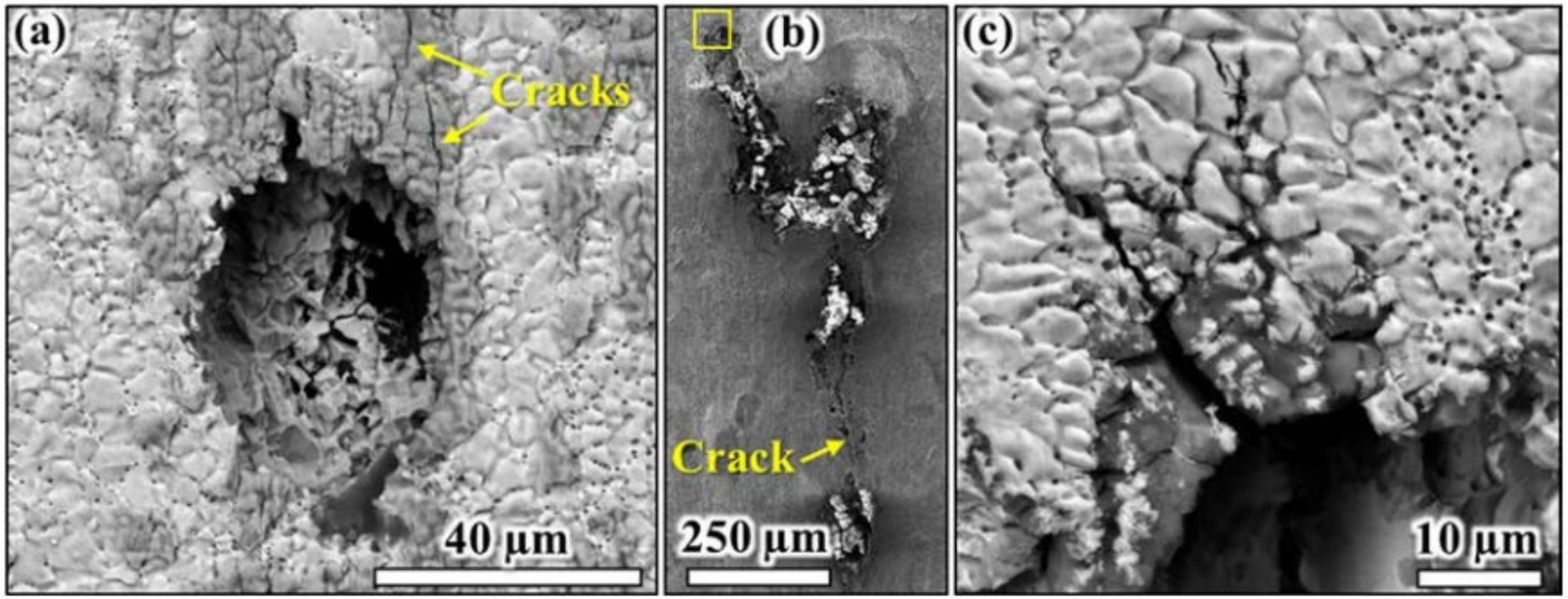

Fig. 7. SEM-images showing the effect of bending: (a) pitting corrosion with numerous superficial micro-cracks after 455 days of exposure to 286 µg/cm^2 chloride at 30% RH /50 °C, (b+c) severe stress corrosion cracks after 455 days of exposure to 571 µg/cm^2 chloride at 30% RH /50 °C, with (c) a magnified view of the highlighted region in (b) showing numerous localised corrosion events and stress corrosion initiation sites. Note that the stress axis is perpendicular to the images.

C. Ornek, D.L. Engelberg, Materials Science & Engineering A 666, 2016, 269 - 279

Pitting corrosion

A special case of electrochemical corrosion is **pitting corrosion:**

- occurs only at certain points
- bottom of the pit becomes the anode
- this type of corrosion is characterized by very deep penetration into the material,
- very minimal signs on its surface
- stainless steel and aluminum are particularly susceptible to this process, which normally passivate.

**

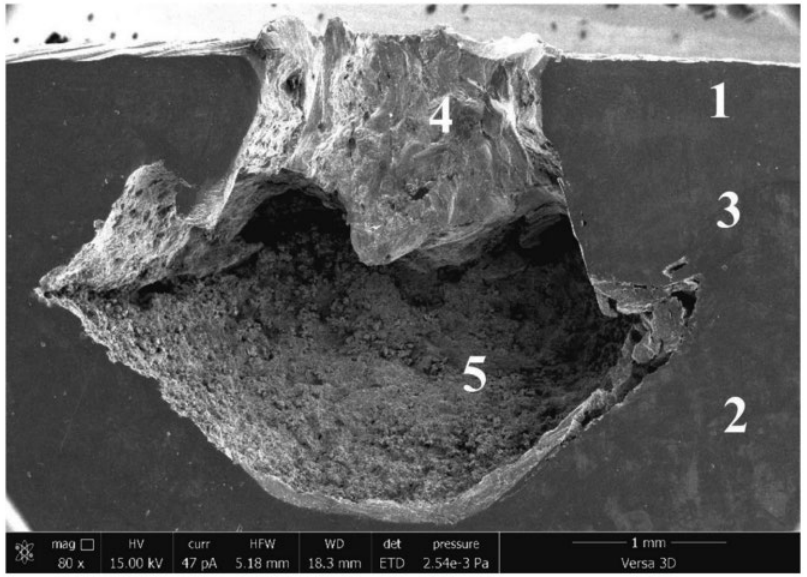

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Fig. 2. Cross section of natural pitting of a three-layer sample under conditions when the corrosion does not reach the third layer. 1 — external layer, 2 — internal protector, 3 — interlayer boundary, 4 — natural pitting, 5 — lens.

*Wikipedia: https://en.wikipedia.org/wiki/Pitting_corrosion

**Vladimir A. Grachev, Andrey E. Rozen, Yuri P. Perelygin, Sergey Yu. Kireev, Irina S. Los', Andrey A. Rozen. Measuring corrosion rate and protector effectiveness of advanced multilayer metallic materials by newly developed methods. Heliyon 4 (2018) e00731

Corrosion effects

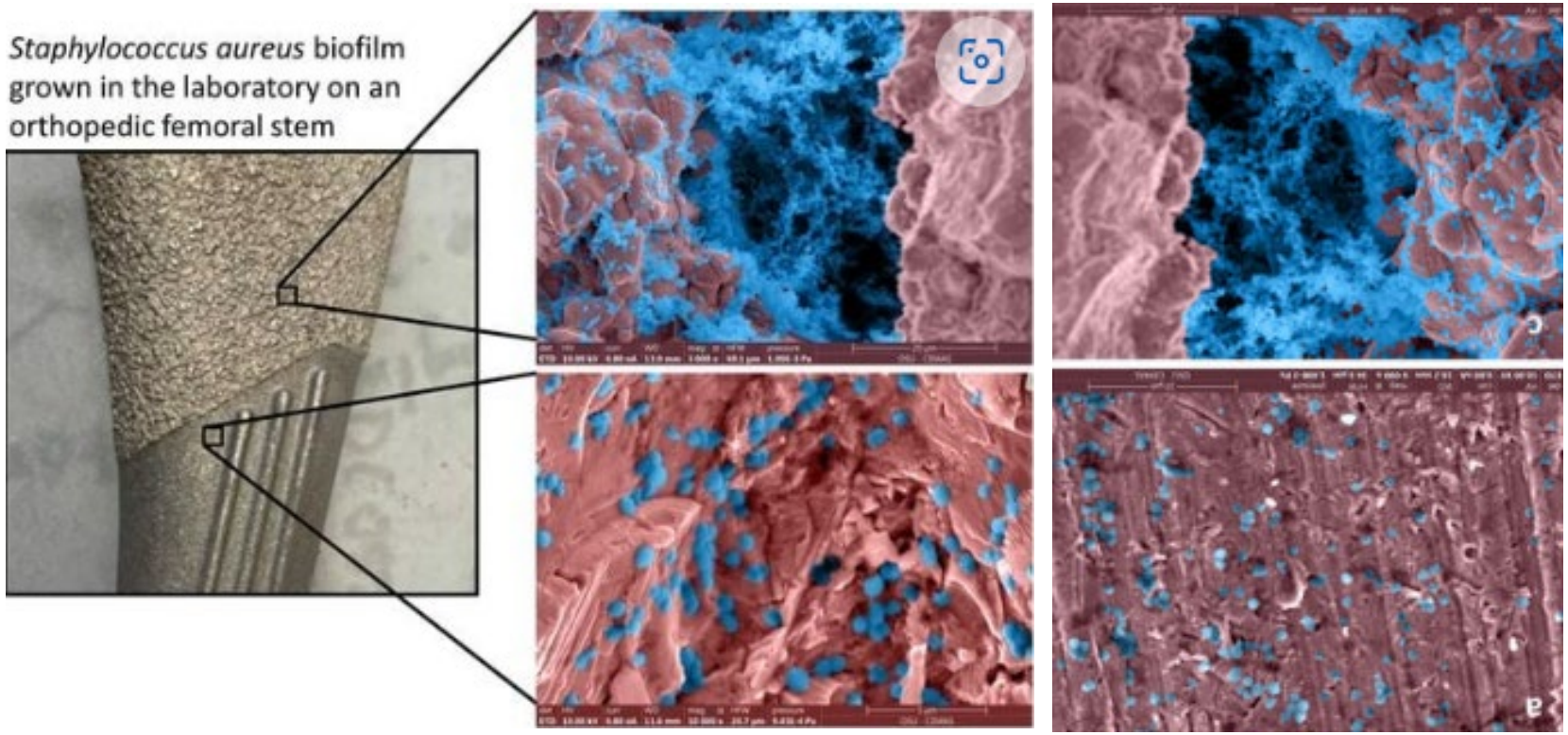
Metal corrosions leading to:

- Surface visual damage
- Structure weakness
- Equipment damage

Due to the very porous/rough surface of corroded areas there is **huge possibility of microorganism's colonization and biofilm formation**.

Therefore, **corroded places are very difficult to be properly disinfected** and due to this corroded equipment should be replaced.

Rough surfaces (by structure or corrosion) ease biofilm formation

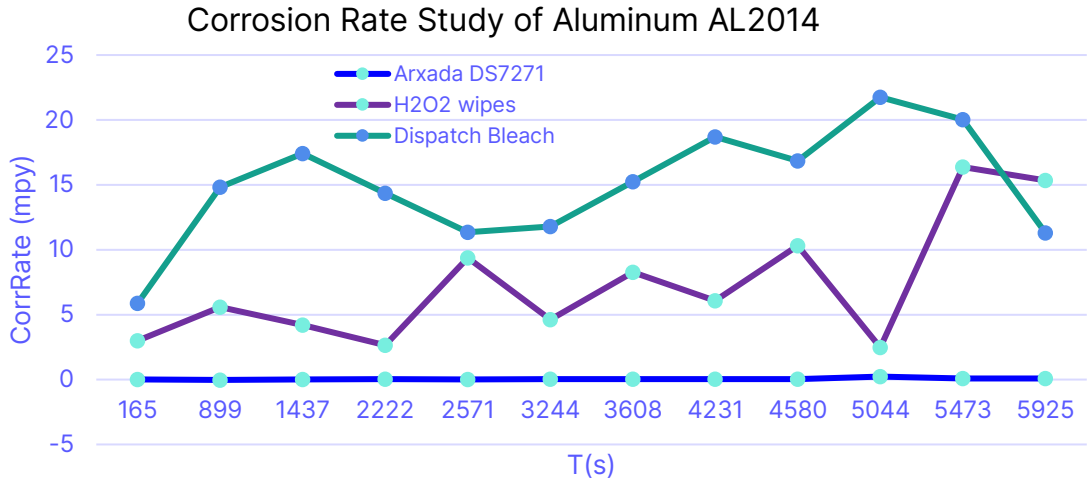


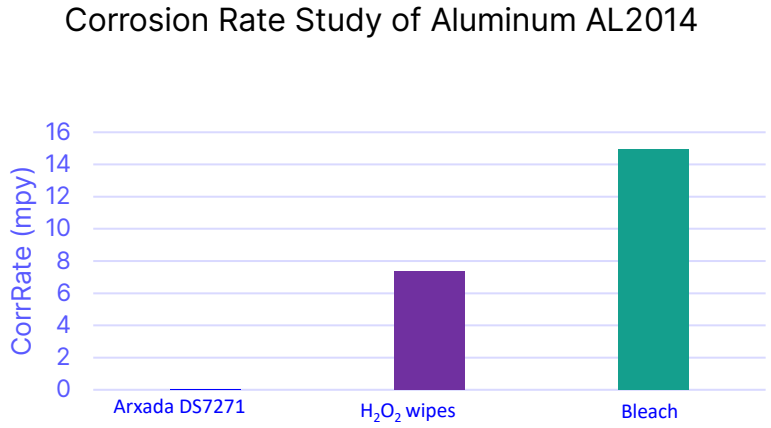
"We found that surface roughness is an important factor that favors bacterial attachment and biofilm growth" "…..through the attachment point theory, which describes how **increased contact points** result in a greater and stronger attachment, and additionally, **through the shelter effect** in which the bacteria are protected, such as a form of shelter in the valleys of the rough surface."

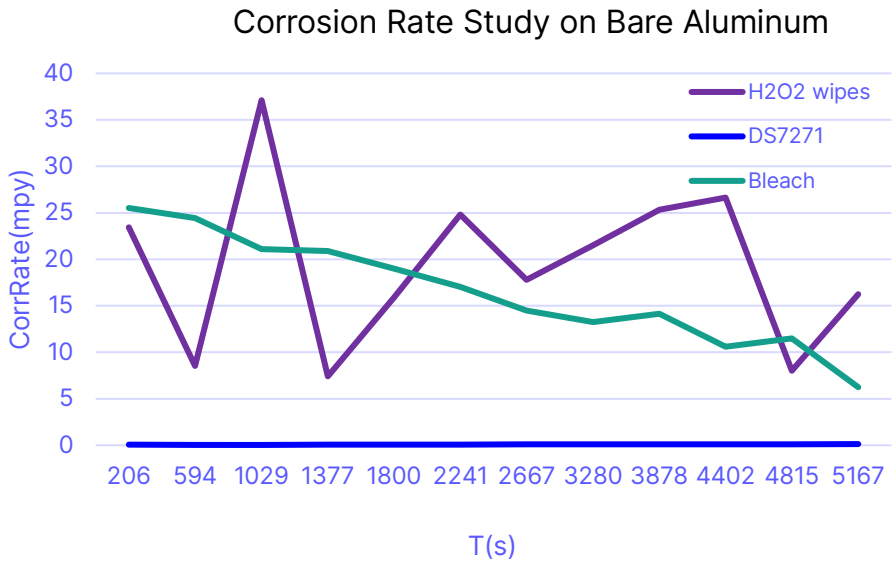
Source: Mapping Bacterial Biofilm on Features of Orthopedic Implants In Vitro
K. Moore et.al., Microorganisms 2022, 10(3), 586; https://doi.org/10.3390/microorganisms10030586
Department of Microbial Infection and Immunity, The Ohio State University, Columbus, OH 43210, USA

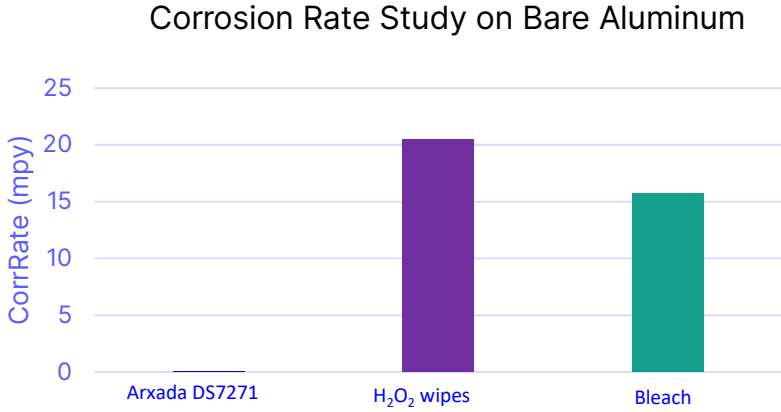
Material compatibility

Quantitative Corrosion Test on Aluminum









Healthcare – material compatibility

Key take aways

Material compatibility is one of critical factors when you are choosing healthcare disinfectant.

It need to be taken into consideration with expected efficacy spectrum, cleaning properties, contact time.

Damaged (corroded) surface cannot be properly disinfected anymore as microbes can adhere to small holes and create a protective biofilm.

Damaged equipment is a risk factor.

Replacing a caster bracket, depending on the size and load capacity, can range from approximately £5 to £25 per wheel, or even more for the entire unit if needed, The cost of replacing the wheel itself can vary from £5 per wheel.

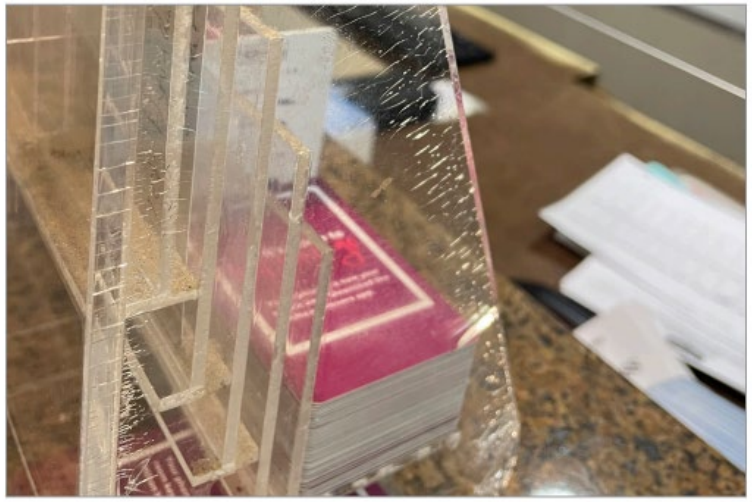
Damages caused by bleach (NaOCl)

Stress cracking corrosion on plastics

Microscopic view

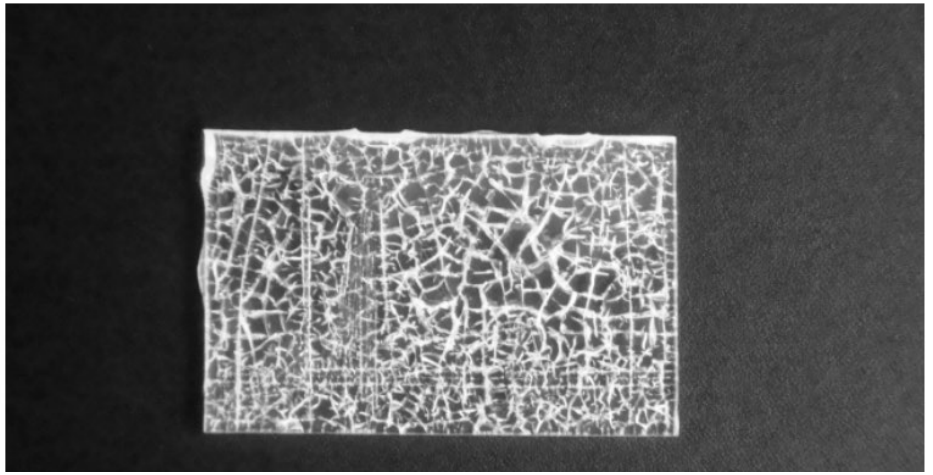
Stress corrosion cracking is the phenomenon of premature failure of plastics resulting from a combined action of mechanical load and chemically aggressive environment.

Such mode of plastics failure has been observed long ago and widely discussed for a few decades



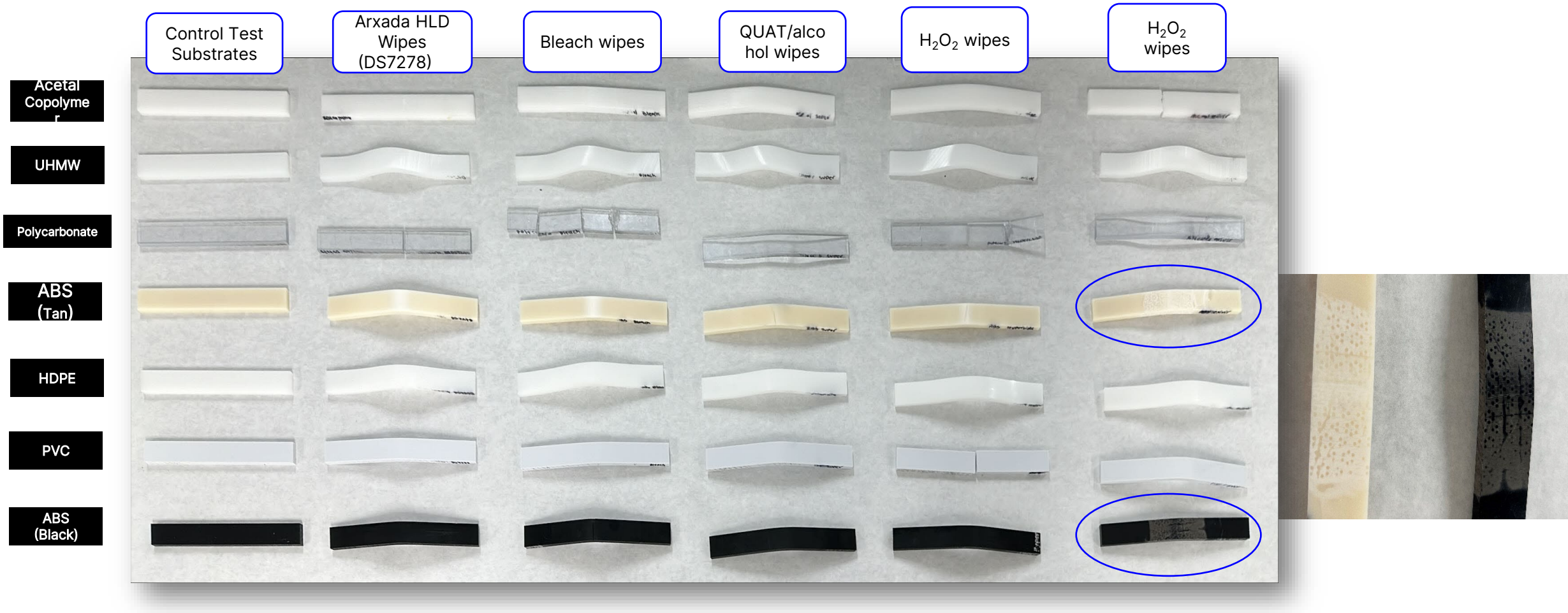
Environmental stress cracking occurs in acrylic after repeated contact with common glass cleaners.

Figure 1. Photograph of an acrylic sample contacted with acetone, leading to failure. In addition to the large visible cracks, the surface contains many microscopic cracks.



Neogi, P. and G. Zahedi, Environmental Stress Cracking of Glassy Polymers. Industrial & Engineering Chemistry Research, 2014. 53(2): p. 672-677
https://www.curbellplastics.com/wp-content/uploads/2022/11/Plastics-Environmental-Stress-Cracking-White-Paper.pdf

Stress cracking



Material compatibility comparison

	Alcohols	QAC's	Bleach (NaOCl)	Chlorine dioxide
Metals (incl. soft metals)	good	good	limited	good (can cause discoloration on cooper and brass)
Plastics	limited	good	limited	good
Elastomers	limited	good	limited	good
Ceramic	good	good	good	good
Glass	good	good	good	good

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Cleaning

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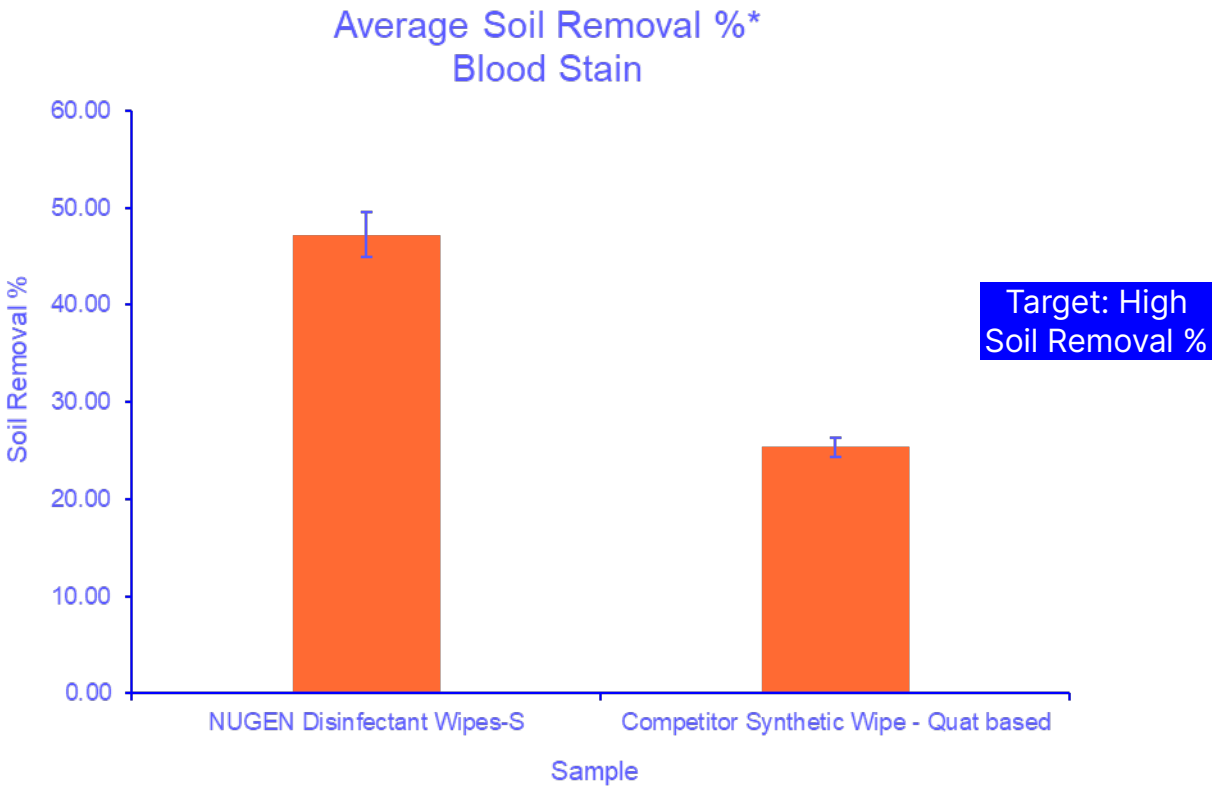
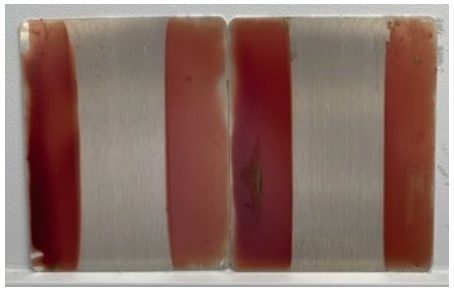
Cleaning Performance Evaluation

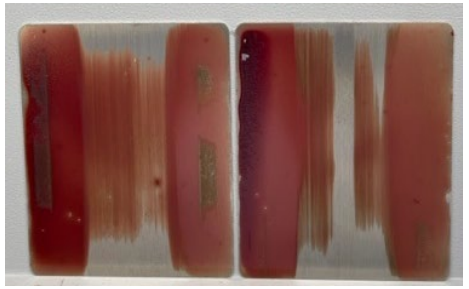


Target: High Soil Removal %

NUGEN® Disinfectant Wipes-S



Competitor Synthetic Wipe A



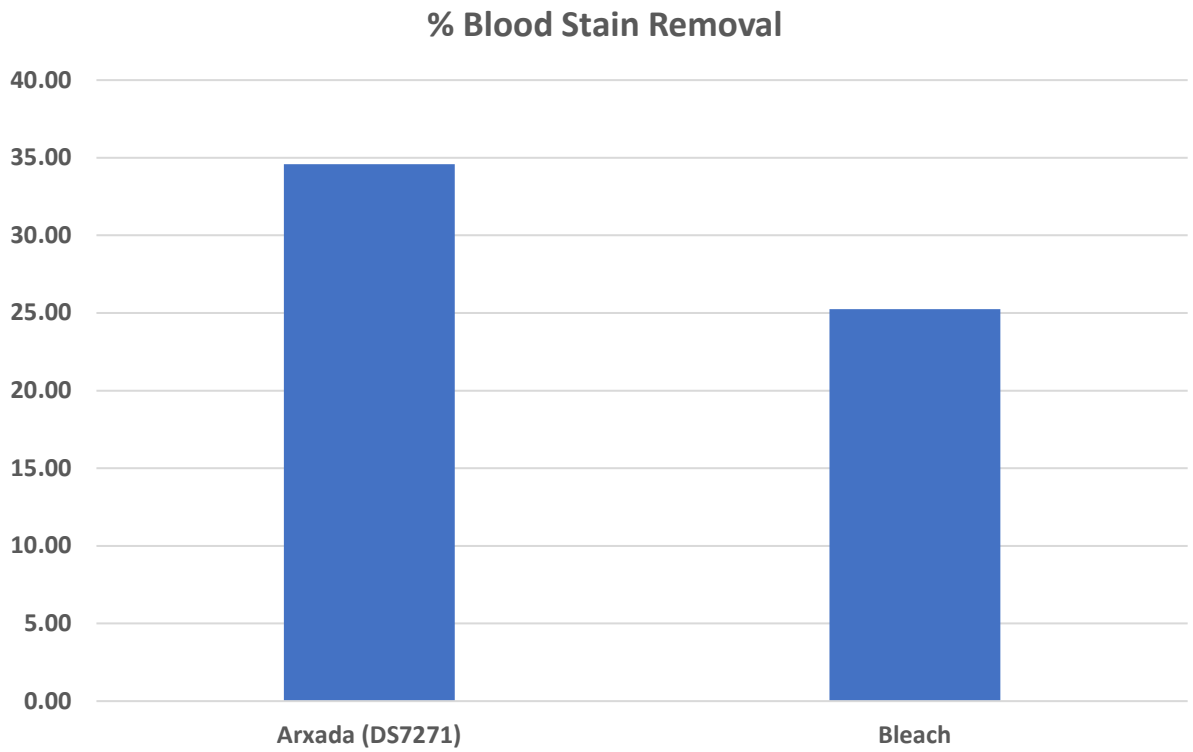
The data from this cleaning study on dried blood shows that NUGEN® Disinfectant Wipes-S has a statistically superior cleaning performance when compared with this quat based competitor disinfectant wipe, (measured on a % soil removal* basis).

The images taken during the study of the NUGEN® Disinfection Wipes-S, also indicate superior cleaning performance (from a visual perspective) of the NUGEN® Disinfectant Wipes-S, in comparison to the same quat based Competitor disinfectant wipe, in line with the statistical findings above.

*The soil removal % in this cleaning study is quantified by change in the mass of the soiled tiles.

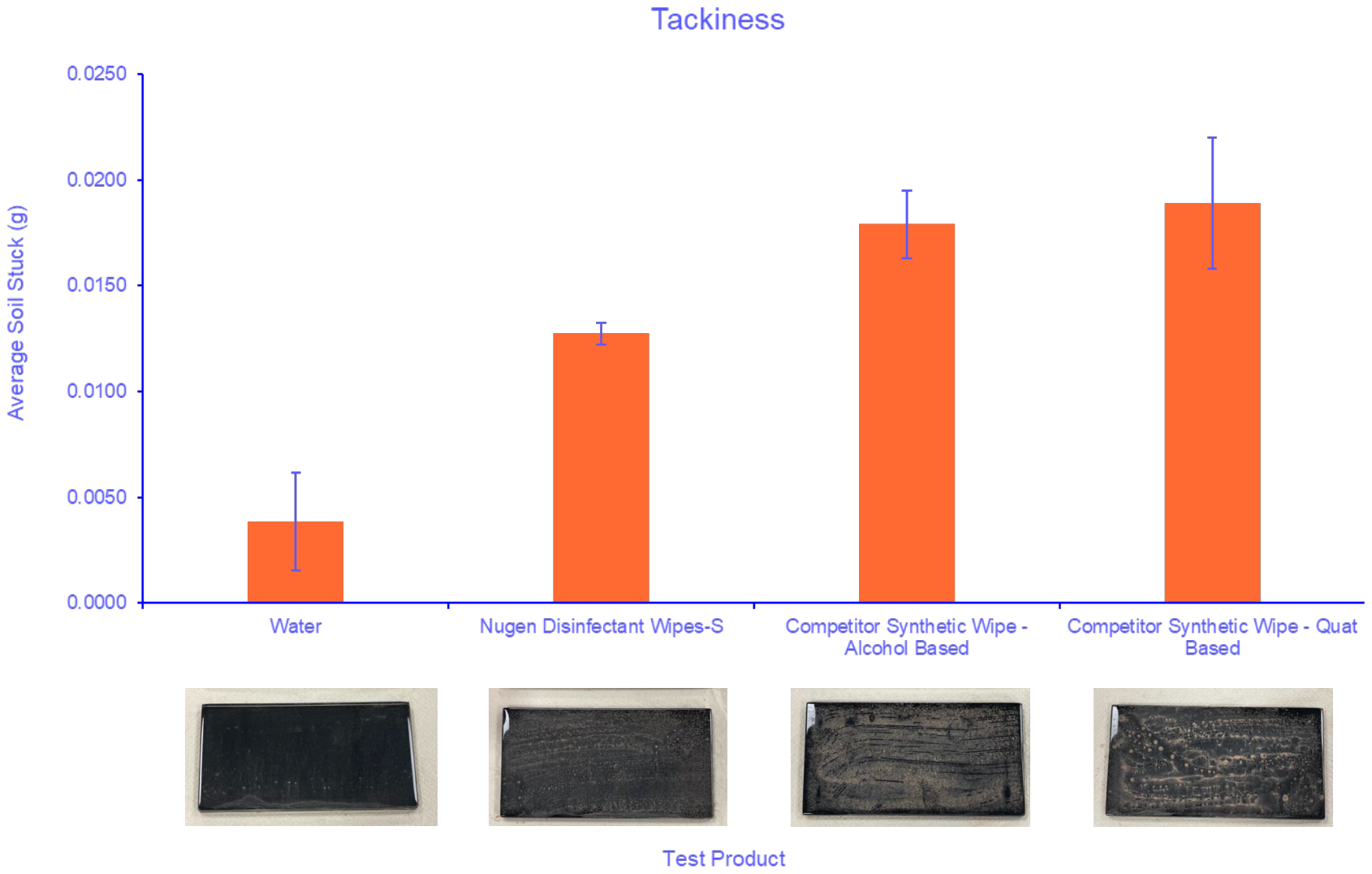
Cleaning Performance Evaluation

Blood stain cleaning test



- Blood cleaning tests are performed according to the EN ISO 15883 standard, using DS-99 dried blood soil applied to stainless steel coupons. This is a recognized EU method for assessing the cleaning effectiveness of medical device detergents and processes.
- **Arxada product demonstrated about 40% better blood stain cleaning efficiency than bleach.**

Cleaning Performance Evaluation



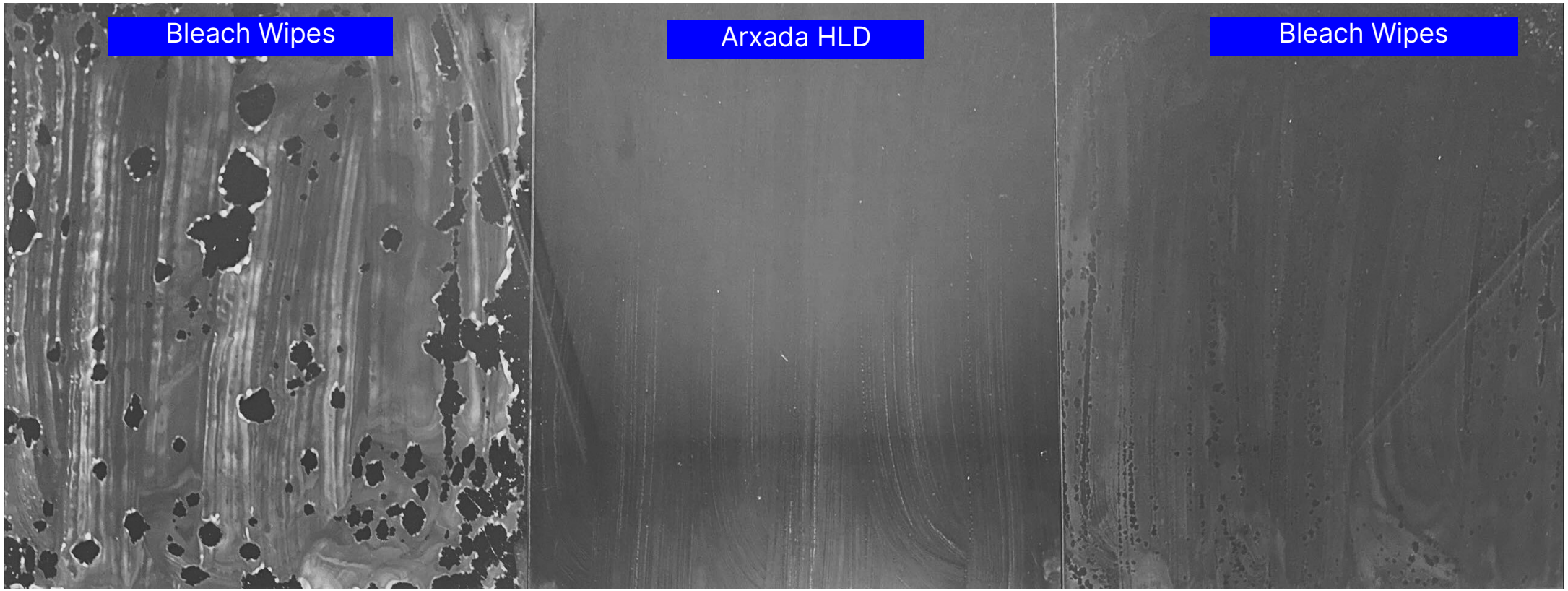
Tackiness

- Surfaces are treated with the test product and allowed to dry. A set amount of soil is then applied across the surface and left for a few minutes, before any excess is tapped off.
- The greater the mass of soil which adhered to the tile surface, the tackier the surface was after treatment with the test product.

Target: Low Soil Pick Up (g)

This data shows that the NUGEN® Disinfectant Wipes-S have a statistically superior performance when compared with these competitor benchmarks in this tackiness study.

Cleaning Performance Evaluation



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Tox profile

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Chlorinated organic matter

Chlorinated organic compounds can cause various significant health risks like:

- Cancer
- Endocrine disruption
- Immune system suppression

Exposure can occur among others through skin contact, drinking water. Severity of effects are dependent on compound, concentration and duration of exposure.

Sodium hypochlorite (bleach) can react with organic compounds and create byproducts like chloroform.

Bleach can cause:

- Skin burns and eyes damage
- Nose and throat irritation
- Lung irritation
- Headache, dizziness, vomits

Chlorination disinfection byproducts (Tak & Kumar 2017)

Regulated DBPS	DBP	Chemical formula
Trihalomethanes	Chloroform	$CHCl_3$
	Bromodichloromethane	CH_2BrCl
	Dibromochloromethane	$CHBr_2Cl$
	Bromoform	$CHBr_3$
Haloacetic acids	Bromochloroacetic acid	$C_2H_2BrClO_2$
	Bromodichloroacetic acid	$BrCl_2CCOOH$
	Chlorodibromoacetic acid	$C_2HBr_2ClO_2$
	Dibromoacetic acid	$C_2H_2Br_2O_2$
	Dichloroacetic acid	$C_2H_2Cl_2O_2$
Chlorate		
Chlorite		
Bromate		

Take aways:

- **Antimicrobial Efficacy** must be determined passing the latest approved and requested efficacy tests for a given setting – 20 (or sometimes 5) year old test results are often outdated and give a false sense of safety
- **Material Compatibility is key:** Not only for aesthetic reasons, but also because microbes sit tight in cavities and adhere very well to uneven surfaces, eventually building up even more resistant biofilms
- **Choosing the "wrong" disinfectant can damage the mechanical integrity of a device**
- **High antimicrobial efficacy and excellent material compatibility often require a compromise**
- Tox profile is important to be considered

Arxada offering

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GAME CHANGER
NUGEN® HLD-CD
Full sporicidal spectrum:
5-minute contact time

Introducing NUGEN® HLD-CD by Arxada

- Achieves full efficacy within 5 minutes.
- Highly effective against bacterial spores.
- No activation required
- No rinsing step required
- Degrades to water and chloride after application
- Broad spectrum efficacy with excellent material compatibility
- Certified as MD IIA
- Can be stored at room temperature
- No CLP classification

NUGEN® HLD-CD efficacy

Efficacy under clean conditions (disinfectant)

Contamination	Claim	Microorganisms	Exposure time	ClO_2 content
Low	Sporicidal EN 17126	B. subtilis, B. cereus C. difficile	5 min	200 ppm
Low	Mycobactericidal EN 14348	M. avium, M. terrae	1 min	200 ppm
Low	Virucidal EN 14476	Polio, Adeno, MNV	30 s	200 ppm
Low	Fungicidal EN13624	A. brasiliensis, C. albicans	1 min	200 ppm
Low	Yeasticidal EN 16615	C. albicans	1 min	200 ppm
Low	Bactericidal EN 13727	S. aureus, E. hirae, P. aeruginosa	1 min	200 ppm
Low	Bactericidal EN 16615	S. aureus, E. hirae, P. aeruginosa	5 min	200 ppm

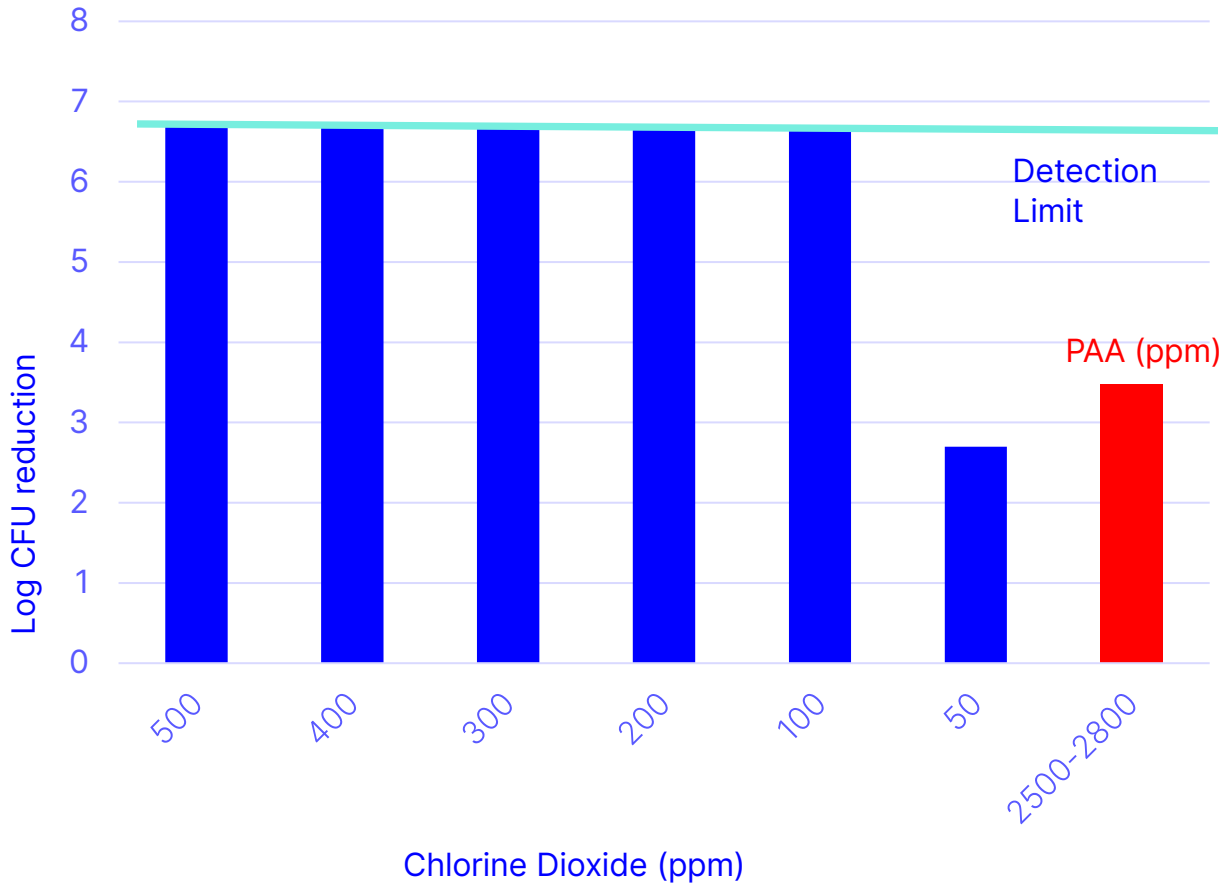
Efficacy of Stabilized Chlorine Dioxide against Biofilms

Disinfection of a biofilm with Chlorine Dioxide respectively Peracetic Acid (PAA)

- ClO2 Standard Concentration 529 ppm
- Diluted to 500, 400, 300, 200, 100 and 50 ppm ClO_2
- Biofilm Density of 9.35 LogCFU per coupon, sd=0.07

Result: 100 ppm of ClO_2 is **effective against biofilm at 5 min**

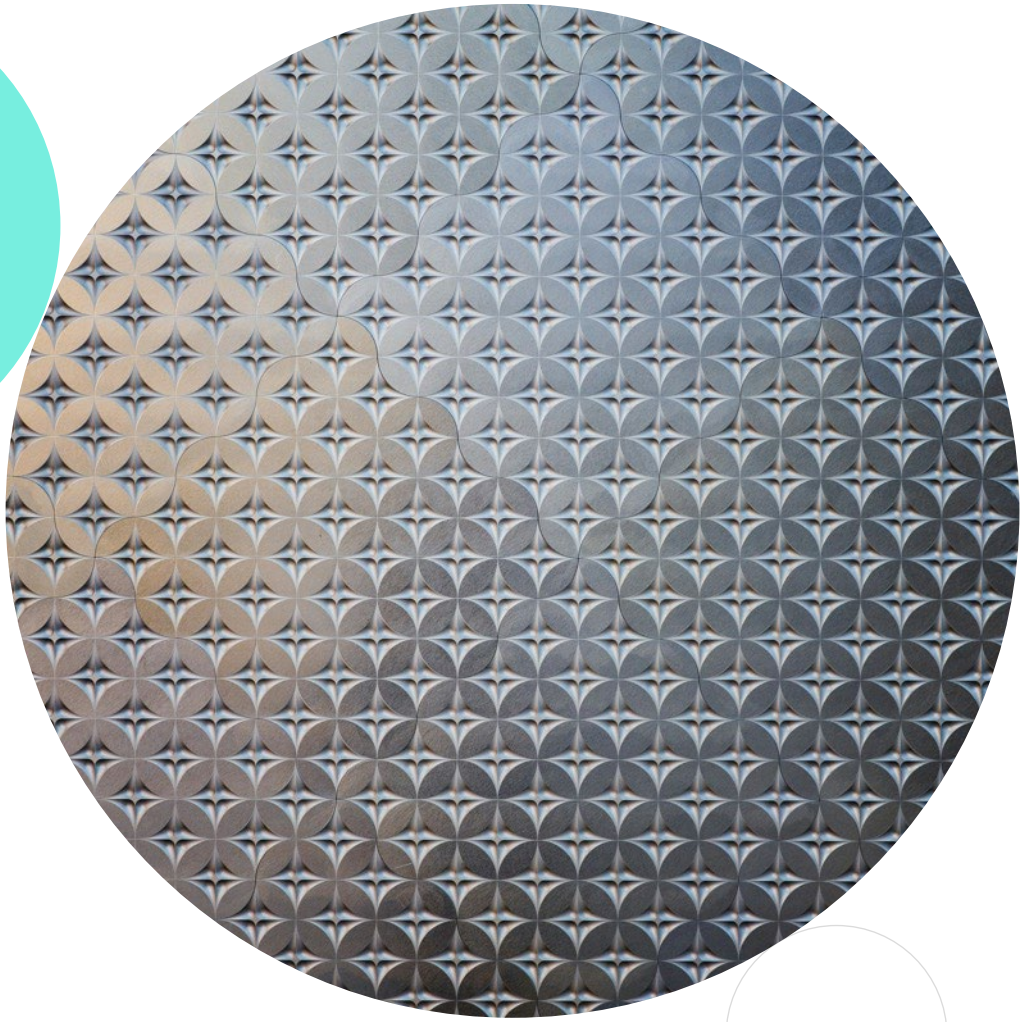
The EPA Pass criterion for allowing an efficacy claim against Biofilms is a **successful log 6** reduction



Log Reduction of Biofilm by ClO_2 Concentration

Material Compatibilities I

Ready-to-use Disinfectant



Material	Result
Glass	Good
Porcelain	Good
Wood	Good
PP	Good
PE	Good
PVC	Good
Stainless Steel	Good, light discoloration
Copper	Good, discoloration
Brass	Good, light discoloration
Galvanised Steel	Discoloration
Aluminium	Discoloration, Spot formation on the surface

Material Compatibilities II

Figure 1: Photographic documentation of **copper** surface over the test period of 28 days. From left to right 0 d, 1 d, 14 d, 28 d.

Figure 2: Photographic documentation of **brass** surface over the test period of 28 days. From left to right 0 d, 1 d, 14 d, 28 d.

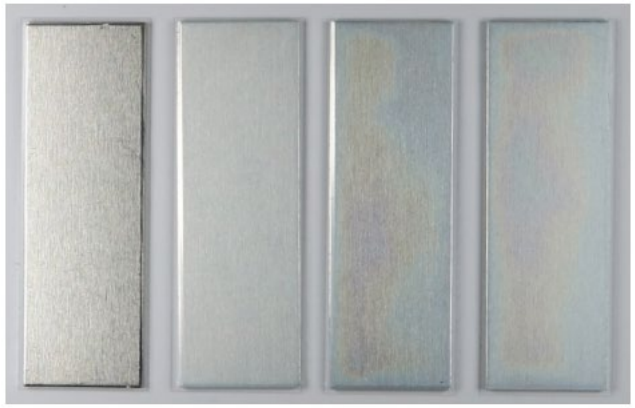


Figure 4: Photographic documentation of **aluminium** surface over the test period of 28 days. From left to right 0 d, 1 d, 14 d, 28 d.

Figure 6: Photographic documentation of **latex** surface over the test period of 28 days. From left to right 0 d, 1 d, 14 d, 28 d.

Figure 10: Photographic documentation of **polycarbonate** surface over the test period of 28 days. From left to right 0 d, 1 d, 14 d, 28 d.

Figure 12: Photographic documentation of **polysulfone** surface over the test period of 28 days. From left to right 0 d, 1 d, 14 d, 28 d.

Material Compatibilities III

Table 1: Summary of results

Test material	Average loss of mass and SD after test time			Measured chlorine dioxide [ppm]	Optical observation
	1 d	14 d	28 d		
	[g]	[g]	[g]		
copper	0.02 ± 0.00	0.10 ± 0.01	0.10 ± 0.00	1 d: 10 ppm; 14 d - 28 d: 0 ppm	1 d –28 d: significant change in color of the material, surface more matt over time
brass	0.02 ± 0.00	0.04 ± 0.00	0.06 ± 0.00	1 d: 10 ppm; 14d: 10 ppm; 28 d: 0 ppm	1 d –28 d: significant change in color of the material, surface more matt over time, 28 d: test product slightly bluish greenish, few sediments
stainless steel	0.01 ± 0.00	0.02 ± 0.00	0.04 ± 0.00	1 d - 28 d: 0 ppm	1 d – 28 d: no visible changes of the material, test product greenish
aluminium	0.01 ± 0.00	0.02 ± 0.00	0.03 ± 0.00	1 d - 28 d: 0 ppm	1 d –28 d: surface more matt over time and shimmers in rainbow colors.
silicate glass	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	1 d: 100 – 250 ppm; 14 d - 28 d: 0 ppm	no visible changes
latex	0.00 ± 0.00	0.02 ± 0.00	-0.03 ± 0.01	1 d: 10 ppm; 14 d - 28 d: 0 ppm	1 d – 28 d: slight color change of the material and surface slight sticky
synthetic rubber	0.00 ± 0.00	-0.01 ± 0.00	-0.02 ± 0.00	1 d: 50 ppm; 14 d - 28 d: 0 ppm	no visible changes
silicone	0.01 ± 0.00	0.01 ± 0.00	0.01 ± 0.00	1 d: 100 – 250 ppm; 14 d - 28 d: 0 ppm	no visible changes
PVC (hard)	0.00 ± 0.00	0.00 ± 0.00	-0.01 ± 0.00	1 d: 100 ppm; 14 d - 28 d: 0 ppm	no visible changes
polycarbonate	0.00 ± 0.00	-0.01 ± 0.00	-0.01 ± 0.00	1 d: 100 ppm; 14 d and 28 d: 0 ppm	1 d 28 d: yellowish discoloration of the material
PMMA	-0.01 ± 0.00	-0.01 ± 0.02	-0.03 ± 0.00	1 d: 100 ppm; 14 d - 28 d: 0 ppm	no visible changes
polysulfone	-0.01 ± 0.00	-0.02 ± 0.00	-0.04 ± 0.00	1 d: 100 ppm; 14 d - 28 d: 0 ppm	1 d 28 d: yellowish discoloration of the material

Table 1: Summary of results (continued)

Test material	Average loss of mass and SD after test time			Measured chlorine dioxide [ppm]	Optical observation
	1 d	14 d	28 d		
	[g]	[g]	[g]		
NBR	0.00 ± 0.00	0.03 ± 0.00	0.02 ± 0.00	1 d: 0 - 10 ppm; 14 d - 28 d: 0 ppm	no visible changes
FKM	0.01 ± 0.00	0.00 ± 0.00	-0.01 ± 0.00	1 d: 100 ppm; 14 d - 28 d: 0 ppm	no visible changes
ABS	0.00 ± 0.00	-0.01 ± 0.01	-0.01 ± 0.00	1 d: 100 ppm; 14 d - 28 d: 0 ppm	no visible changes
polyethylene	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	1 d: 100 ppm; 14 d - 28 d: 0 ppm	no visible changes
high density polyethylene	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	1 d: 100 ppm; 14 d - 28 d: 0 ppm	no visible changes
polypropylene	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	1 d: 100 ppm; 14 d - 28 d: 0 ppm	no visible changes
chrome	0.01 ± 0.00	0.04 ± 0.01	0.05 ± 0.01	1 d – 28 d: 0 ppm	no visible changes

"Based on these findings, a **suitability** of the 200ppm active Chlorine Dioxide for application on materials made from stainless steel, chrome glass (silicate glass), synthetic rubber as well as silicone, hard PVC, PMMA, NBR, FKM, ABS, LDPE, HDPE, and PP can be assumed if used according to manufacturer's recommendations. Taking into account the aforementioned limitations, attention should be paid to usage on copper, brass, aluminium, natural rubber (latex), polycarbonate and polysulfone".

Expert Opinion L24/00235.1-240531-V01, Institute Dr. Florian Brill, Hamburg, 2024

NUGEN® Disinfectant Wipes-B & NUGEN® Disinfectant Wipes-S

Features & benefits

Neutral pH & wide range of material compatibility.

Compatible with:

- Surfaces sensitive to oxidisers and alcohol-based products
- Metals: Aluminium & Stainless Steel
- Plastics: Acrylonitrile Butadiene Styrene (ABS), Polycarbonate, Polyoxymethylene (POM) Natural, Polyvinyl Chloride (PVC) and Polystyrene, PMMA (“Plexiglas”)

Based on quat technology.

- Low Odour
- Alternative to alcohol or bleach-based wipes
- Un-coloured, Un-fragranced
- Finished wipes not classified as hazardous*
- Effective antimicrobial performance using a substrate with good absorbency

Premium Wipes optimized for cost-in-use**

- Proven open pack efficacy – after opening, the resealable packs of wipes do not dry out and remain efficacious for at least 28 days**

* According to Regulation No 1272/2008 (CLP)
** Applicable when using the specified wipe substrate in combination with NUGEN® LLD-W Concentrate at the specified dilution and dose rate
*** Applicable for NUGEN® Disinfectant Wipes-S

NUGEN® Disinfectant Wipes-B & NUGEN® Disinfectant Wipes-S

Industrial & Institutional (I&I), Healthcare and Home Care aligned to Product Type 2
Tested according to European Norms (EN)

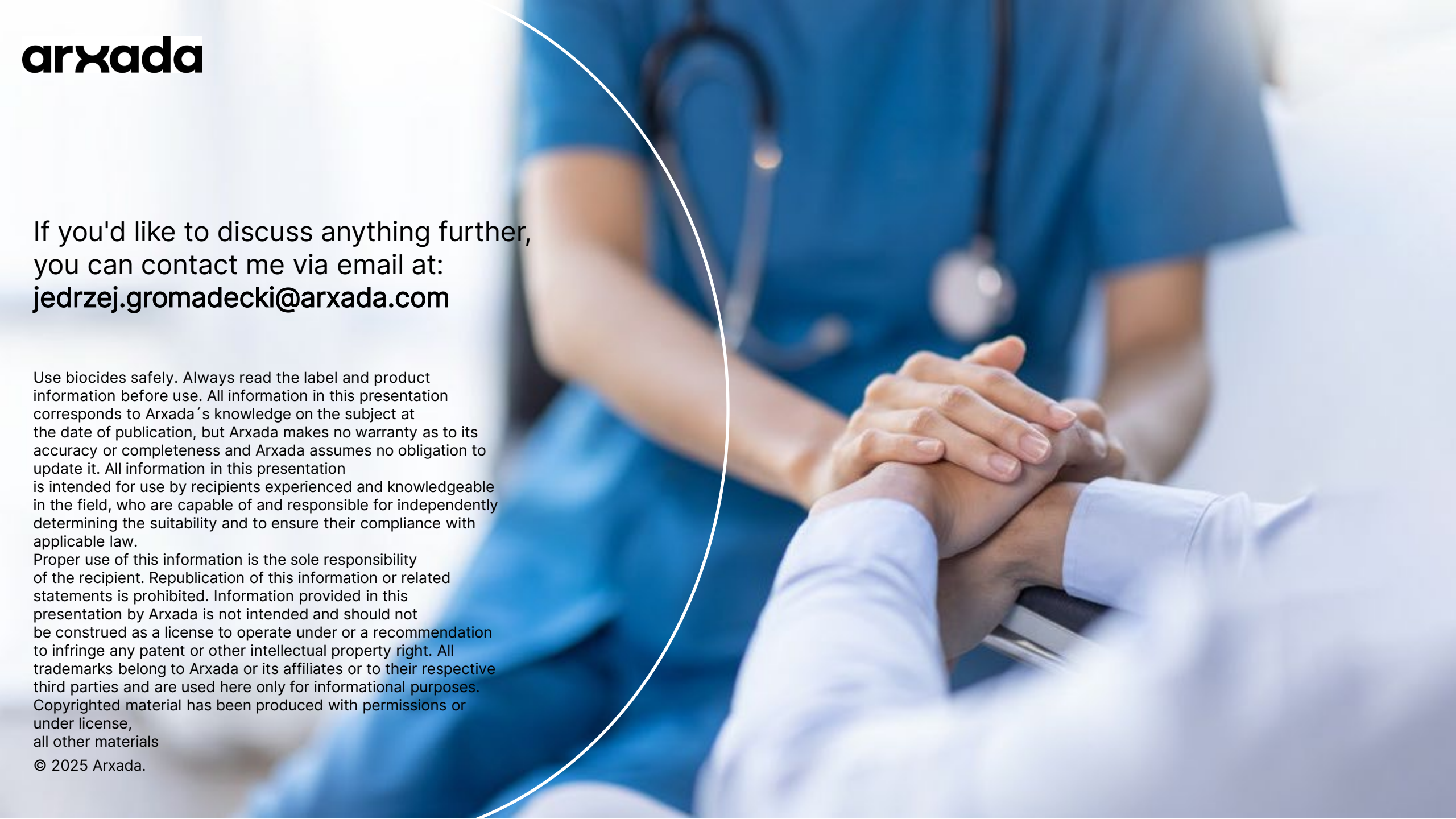
Claim	Relevant EN Norms	Contact Time	Soiling Conditions[iii]	Representative Organism(s)
Bactericidal*	EN 13727[i] EN 16615[ii]	1 minute	Medical dirty	Staphylococcus aureus Enterococcus hirae Escherichia coli Pseudomonas aeruginosa
Yeasticidal**	EN 13624[i] EN 16615[ii]	1 minute	Medical dirty	Candida albicans
Virucidal against Enveloped Viruses***	EN 14476[i] EN 16615[ii], [iv]	1 minute	Medical dirty	Modified Vaccinia virus, strain Ankara (MVA)

i. Phase 2, Step 1 Suspension tests were performed using disinfecting liquid extracted from the wipe
ii. Data obtained when using the suggested wipe substrate in combination with NUGEN® LLD-W Concentrate at the specified dilution and dose rate
iii. Medical dirty soiling conditions refer to 3g/l BSA (albumin) + 3g/l sheep erythrocytes
iv. Data generated according to a modified version of the EN Test Norm - to better align with the intended use pattern of wiping

Have your wipes products been tested according to the Phase 2, Step 2 test norm for mechanical action - EN 16615?

Do you struggle with disinfectant efficacy and wipe compatibility? Is the efficacy of your formulation compromised?

* Basic microbiological claim requirement for PT2 Healthcare, PT2 I&I, PT2 Home Care
** Basic microbiological claim requirement for PT2 Healthcare, Optional organism claim for PT2 I&I, PT2 Home Care
*** Optional organism claim for PT2 Healthcare, PT2 I&I, PT2 Home Care



If you'd like to discuss anything further, you can contact me via email at:
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