

Care & Specialty Products

19.07.2018 | Geretsried | Dr. Volker Graf

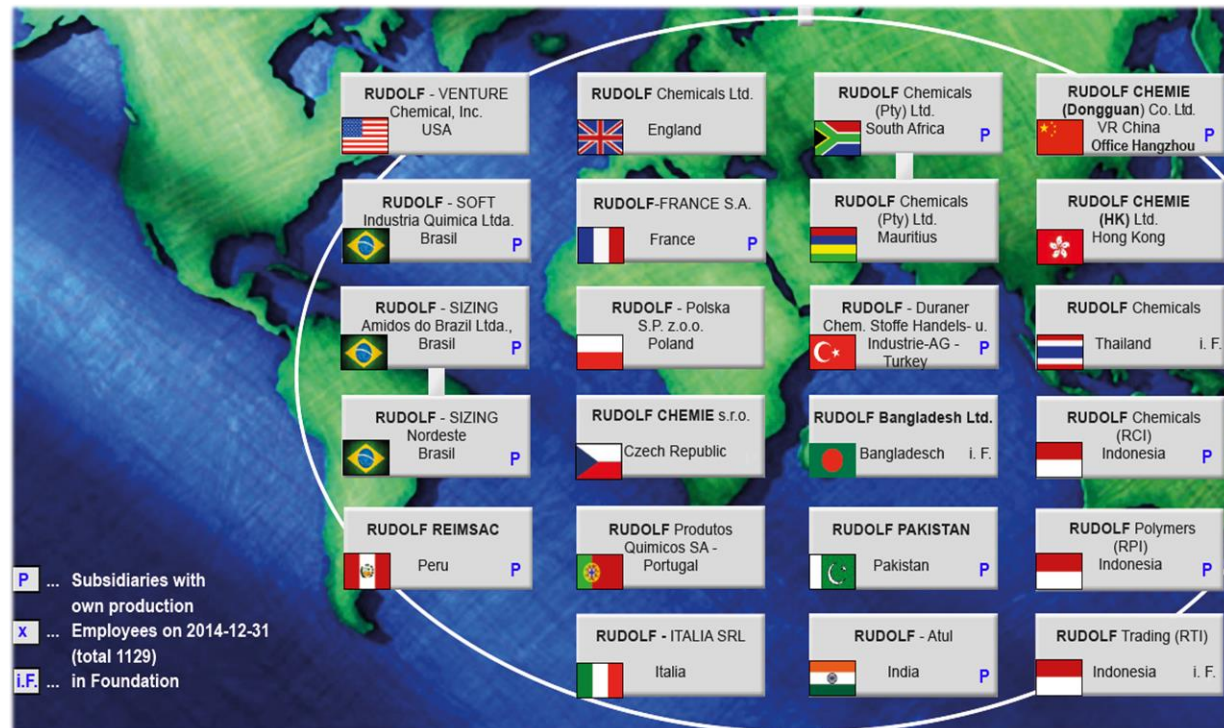
Rudolf GmbH

- Family-run producer of textile auxiliary chemicals for almost 100 years
- 350 employees at HQ Geretsried, ca. 1200 worldwide
- Ca. 60 employees in R&D unit
- Support for product and process development and marketing



Rudolf GmbH

- Main production site and competence center Geretsried, D
- 23 Subsidiaries
- 12 Production sites
- Global distributor network



- Sizing – smooth production production processes
- Pretreatment – for a gleaming white fabric
- Dyeing – colours that will never fade
- Finishing – functional additional value
- Functional coatings of textiles
- Consumer application chemicals



Textile Care & Specialty Products

Care & Specialty Products focusses on **after care markets**, in which functions like water repellency etc are revived by **professional** and **consumer applications**

- **Professional applications:** Industrial laundries, dry cleaning, upholstery/ textile restoration services, automatic car wash...
- **Consumer applications:** Water proofing spray, laundry detergent, fabric freshener...



Consumer Product Applications



- Wash-in

- Aerosol spray



- Trigger spray

- Sponge



- Wipe

- Cream & brush



Industrial and Professional Applications



- Industrial laundry
- Spray Care



- Dry cleaning
- Dip Dyeing

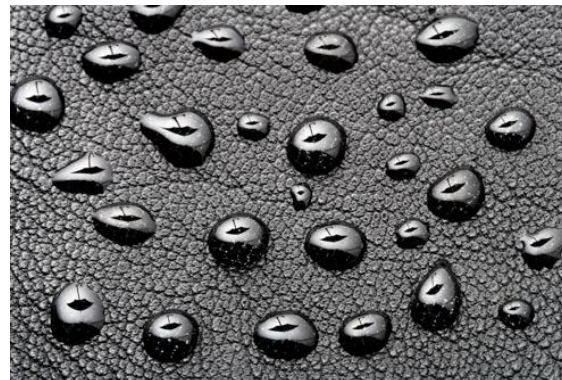


- Spray Finishing
- Automatic Car Care



Water Repellent Agents – The Chemistry

- C6 fluorocarbons
- Hyperbranched Polymers
- Silicones



WR Systems – Chemistry Overview

C6-FC Polymers


- + Oil & soil repellency
- + Do not affect color & handle
- + Best durability
- + Robust systems
- Environmental discussion

Hyp-branch. Polymers

- + Great abrasion resistance
- + Do not affect color & handle
- + New generation in solvent works at RT
- No oil and soil repellency
- Only water-based systems
- Activ. Temp. needed

Silicones

- + Active at room temp.
- Often limited shelf life
- No oil and soil repellency
- Affects color & handle
- Reactive Si can attract dry soil and dirt
- Limited stability



Water Repellent Performance Level

Overview Solvent- vs Waterborne WR

Solvent-borne WR

- + Best performance (no emulsifiers)
- + Less actives DWR needed
- + Better wetting, hence more uniform coverage
- + Applied substrates dry quickly
- + No curing/temperature activation needed
- + Best shelf-lives, better stability
- Limited application methods (dip dyeing or spray)
- Contain often flammable solvents
- Choice of solvent (blends) complicated sometimes
- Products can have a strong odor
- Consumer products often need more expensive packaging (aerosol)
- Safety!!

Waterborne WR

- + More application methods available (pad, coating, spray, wash-in, sponge, roller application)
- + Easily dilutable with water
- + Often non-classified products
- + Application with cross-linkers available for wash resistance (relevant only in industrial finishing)
- Wetting agents/additives often needed
- Curing/Activ. Temp. needed, few air cure systems available
- Shelf-life, stability limited

Solvent-borne WR

Concentrates for Aerosol Spray Applications

- **RUCO 1016:** C6-fluorocarbon with best performance
 - **RUCO 1026:** C6-fluorocarbon with best solvent compatibility
 - **RUCO 1410:** Silicone wax with excellent performance on leather, F-free
 - **RUCO EPV 3471:** F-free and silicone free
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- Consumer safety due to all products being tested for acute inhalation toxicity (*augmented OECD TG403 "TNO test"*)
 - Most convenient and quick application method
 - Consumer aerosol applications bear greatest risk potential



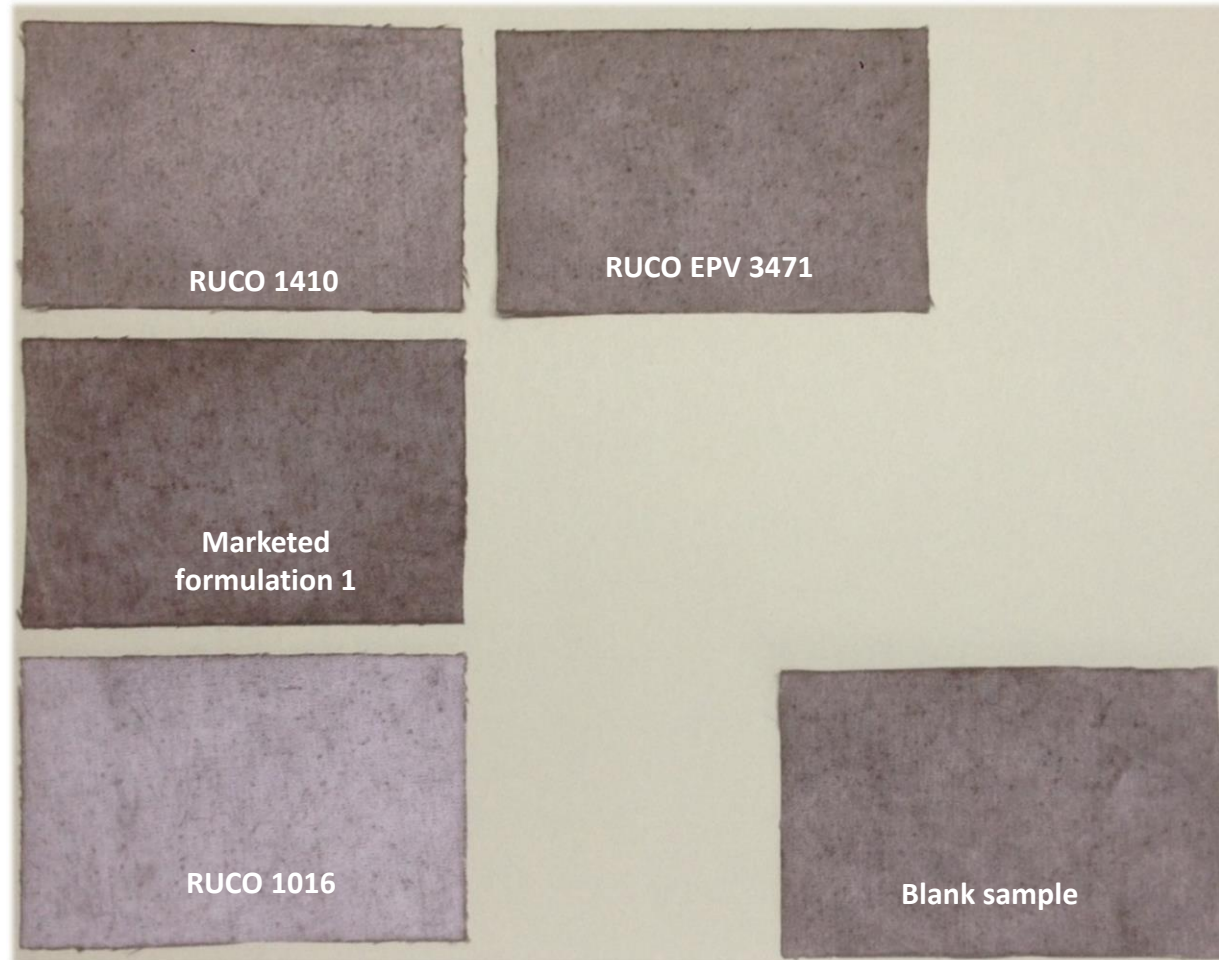
Solvent-borne WR

Dust and Soil Repellency

F - free, non-reactive

**Silicone,
reactive + metallates**

C6-Fluorocarbons



Application:
Aerosol spray
(FC-free: 2.5 % SC)
FC-based 0.5 % SC)

RUCO Repellency Products

Dry Soil Attraction of Samples Treated with Water Repellents

- Substrate: PES, white
- Application: Aerosol Spray
- Formulation:
 - RUCO 1016: 0.5 % solids in formulation
 - RUCO 1410: 2.5 % solids in formulation
 - EPV 3471: 2.5 % solids in formulation
 - Reactive Silicone: 2.5 % solids in formulation
- Conclusion:

Ranking with increasing dirt attraction:

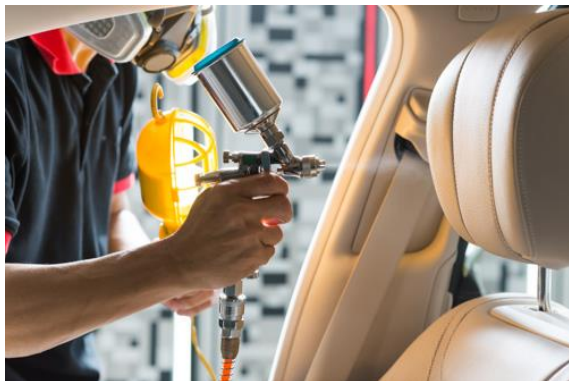
1016 > 1410 > Blank=EPV 3471 > Reactive Silicones



Solvent-borne WR

Industrial/ Professional Spray Applications

- **RUCO 1006:** C6-fluorocarbon with best performance, no inhalation test
- **RUCO 1016/1026:** C6-fluorocarbon with tested inhalation toxicity
- **RUCO 1410:** F-free silicone wax with excellent performance on leather, tested inhalation toxicity
- **RUCO EPV 3471:** F-free and silicone free
- **RUCO 1494:** Non flammable version of 1410
- Solvent-based WR are used in the industrial/professional area for *e.g.* finishing leather articles, car valeting, professional upholstery care, professional sails restoration, etc.
- The spray equipment must have a local exhaust ventilation or protective respiratory devices must be used



Solvent-borne WR

Dry Cleaning

- **RUCO 1006:** Solvent-based C6-fluorocarbon with best performance, but no inhalation test
 - **RUCO 1450:** Reactive silicone with crosslinkers
 - **RUCO 1494:** **NEW** Solvent-based silicone wax. Non flammable.
-
- RUCO 1006, 1450 and 1494 have high boiling points (> 60° C) needed for dry cleaning
 - RUCO 1006, 1450 and 1494 are dilutable in solvents used in dry cleaning (PCE & petrol ether)



Solvent-borne WR

Sponge Applications

- **RUCO 1006:** Solvent-based C6-fluorocarbon with best performance
 - **RUCO 1410:** Fluorine-free and silicone wax with excellent performance on leather
 - **RUCO 2093:** Silicone wax solid (100 %), contained in many shoe sponge applicators
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- Spezial nozzles can dispense RUCO 1006 as a foam from an aerosol can, which is then applied by sponges e.g. on convertible soft tops



Solvent-borne WR

Brush and Dip dyeing

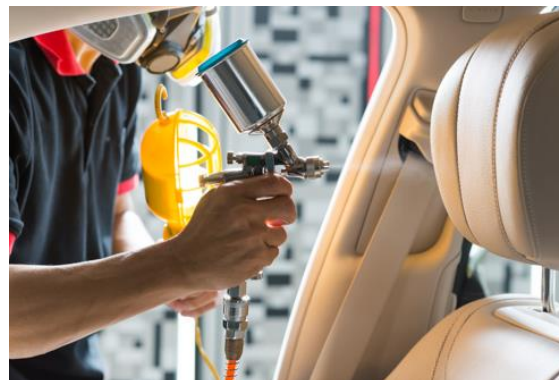
- **RUCO 1006:** Solvent-based C6-fluorocarbon with best performance
 - **RUCO 1450:** Fluorine-free and silicone wax with excellent performance on leather
 - **RUCO 2093:** Silicone wax solid (100 %), contained in many shoe sponge applicators
-
- DWR can be applied using dip dyeing technique for small items (shoe laces or large textile items e.g sails, tents etc)
 - For the dip dyeing method any solvent-based RUCO DWR can be used



Solvent-borne WR

NEW Solvent Water Repellents

- **RUCO EPV 3471:** Solvent-based hyperbranched Polymers, **F- & Si-free**
- Excellent WR performance on all fibre types and leather
- Does not affect the fabric's color or handle
- **RUCO EPV 3471:** Targets aerosol spray application, inhalation tox. Tested at 4 μ m MMAD (augmented OECD 403)



Waterborne WR

Trigger Spray

- RUCO 1146: C6-fluorocarbon with excellent air cure features
 - RUCO 1514: Hyperbranched polymers with great performance after curing (tumbler, iron, heat blower)
 - RUCO 1490: Silicone wax with excellent performance and air cure features
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- RUCO 1146 excellent air cure performance is unique for aqueous C6, must be diluted **demin.** water
 - RUCO 1490 great air cure performance even on CO and leather, dilute (< 50 %) upon receipt



Waterborne WR

Wash-in

- RUCO 1046: C6-fluorocarbon, good air cure performance, excellent WR after curing (tumbler, iron, heat blower)
 - RUCO 1514: Hyperbranched polymers with great performance after curing (tumbler, iron, heat blower)
 - RUCO 1490: Silicone wax with excellent performance and air cure features
-
- RUCO 1046 and 1514 are bestsellers for wash- in applications, WR activation by heat is essential excellent air cure performance is unique for aqueous C6, must be diluted **demin.** water
 - RUCO 1490 great air cure performance even on CO and leather, dilute (< 50 %) upon receipt



Waterborne WR

Industrial Laundry

- RUCO 1124: C6-fluorocarbon, best performance, excellent WR after curing (tunnel finishing)
 - RUCO EPF 3482: C6-fluorocarbon/ hyperbranched polymers blend, water repellent power boost
 - RUCO 1510: Hyperbranched polymers, economic
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- RUCO 1124 is standard WR for reproofing of PPE (fire fighter jackets) in industrial laundries
 - RUCO EPF 3482 is economy solution, though fantastic WR effects due to synergistic effects of actives

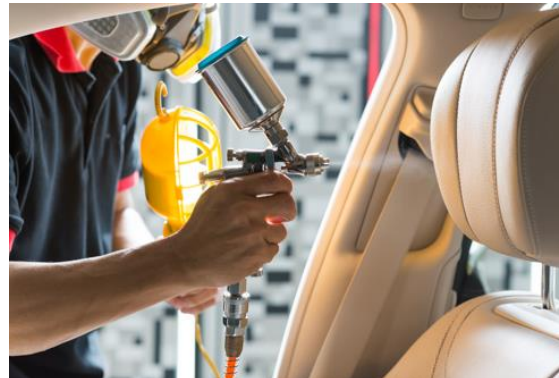


Waterborne WR

NEW Waterborne Water Repellents

- **RUCO 1133:** C6 Emulsion, best oil repellency and best air cure (LAD) features
- **RUCO EPV 3498:** Microemulsion of an reactive silicone fluid (superior to RUCO 1460)

- **RUCO 1133:** Targets exhaust and pad application, better oil repellency than AFB6, Spray test 100 on PES after 5 washes, LAD conditions
- **RUCO EPV 3498:** Targets industrial and professional spray finishing of textiles and leather and consumer applications



RUCO Cleaning

High Performance Detergent

- RUCO 6130: Surfactant concentrate
- RUCO 7240: Enzyme concentrate (amylase, lipase, protease)

• *Power formula*: 28 % RUCO 6130 & 17 % RUCO 7240

• *'Alright mix'*: 9.5 % RUCO 6130 & 8 % RUCO 7240

H319 labelling



NO labelling

- For industrial laundries as pretreatment for catering & hospital laundry or consumer detergent for outdoor apparel
- Targets stubborn stains resulting from outdoor activities and urban life



RUCO Cleaning

RUCO 6130 and 7240 – Heavy Duty Fabric Detergent

Application range

pH 7.0 – 10.5

T = 30 – 60 °C

Wash conditions

Power formula (28 % R 6130 & 17 % R 7240)

Dosage 15 g/ kg fabric load

Application conditions 30 min at 40 °C



RUCO Cleaning

Down wash

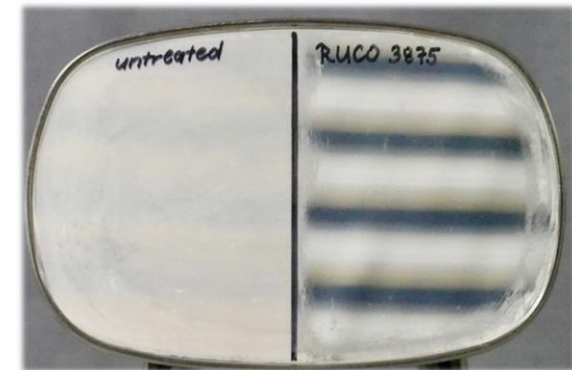
- **RUCO EPT 3481: Highly concentrated (50%)& non-classified surfactants**
- Consumer detergent for down and feather-filled garments (pillows, jackets, sleeping bags, etc)
- Retains the fill power and insulating features of the natural downs and feathers
- Free from coconut, palm oil and palm kernel oil-based substances



RUCO Cleaning

Glass Cleaner with Antifog

- **RUCO 3875: Superwetting Surfactant Blend**
- For consumer glass cleaners formulations with durable antifog-effects
- For trigger sprays or finishing anti-fog wipes
- Powerful & streak-free cleansing action
- Dilutable with water, glycols or isopropanol



RUCO Cleaning

Carpet Shampoo

- **RUCO 3875: Superwetting Surfactant Blend**
- **RUCO 6410: Amphoteric Surfactant Carpet Shampoo**

- For consumer trigger sprays
- Combine **RUCO 3875** with **RUCO 6410** for cleansing boost



RUCO Cleaning

Multi-Purpose Cleaners

- **RUCO 6040: Powerful Surfactant Blend**
- For trigger sprays or foam applications
- For hard surfaces such as table tops, tiles, oven stoves etc
- Powerful cleansing action



RUCO Specialties

Odor Absorber

- **RUCO 3811: Aqueous concentrate of an organozinc compound**
- Eliminates all kinds of organic malodors e.g. cigarette smoke, sweat, urine, garlic etc
- Fast and durable performance
- Suitable for alkaline formulations pH 9 – 11
- **Combine with RUCO 3875 Carpet Shampoo**



RUCO Floor Cleaner

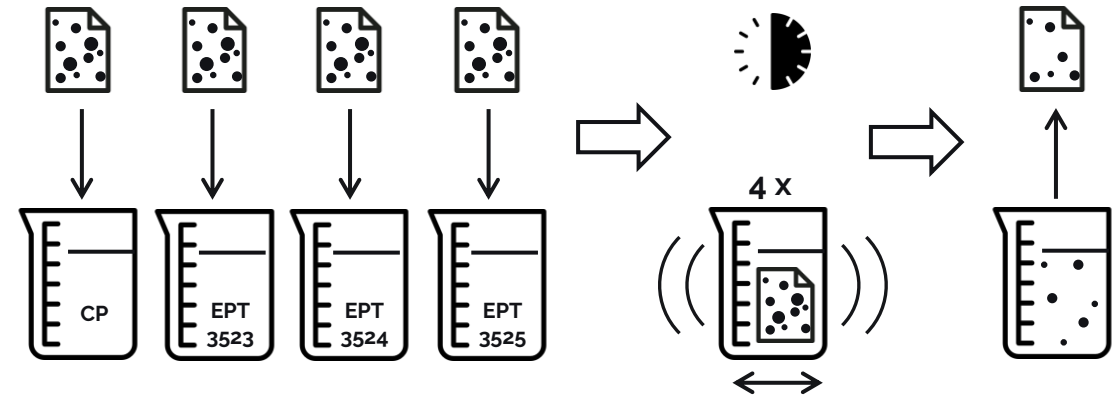
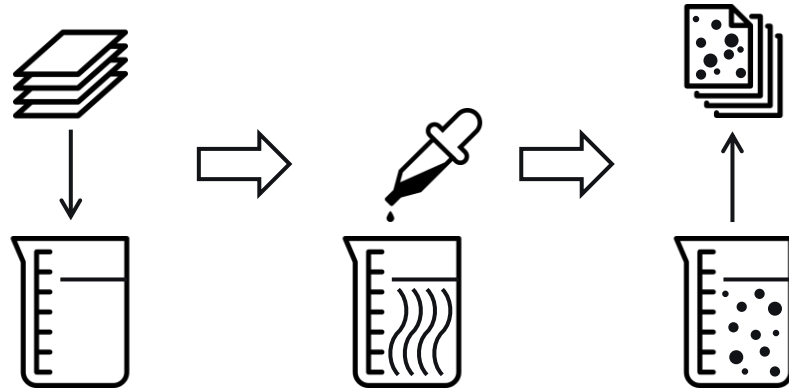
NEW RUCO EPT 3523:

- High performance floor cleaner concentrate
- Excellent cleaning and dirt dispersing properties.
- Contains additive for better dirt release (cleaning mop)
- Dosage: 10% in water

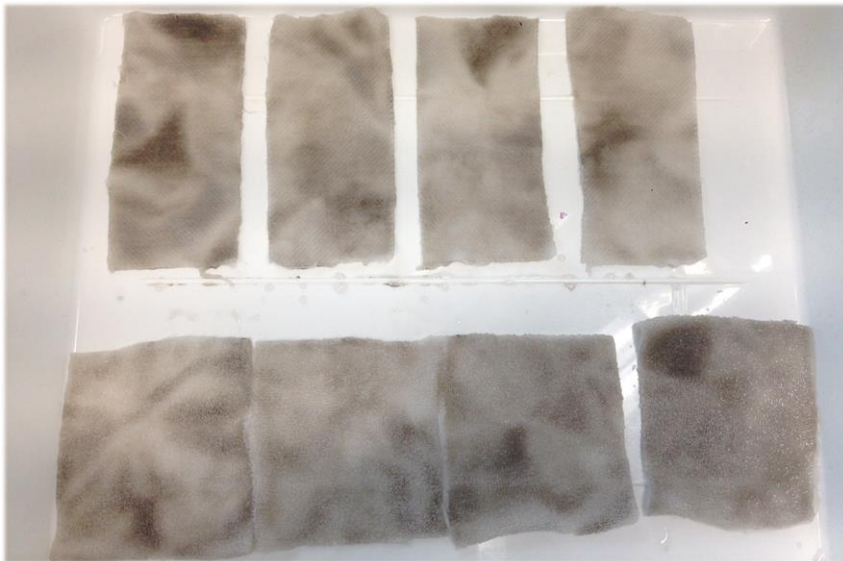


RUCO Floor Cleaner

Test of Soil-Release Performance with Upholstery Dust



CO
Molton



CO/PES
Terrycloth

Counter
product

EPT 3523

EPT 3524

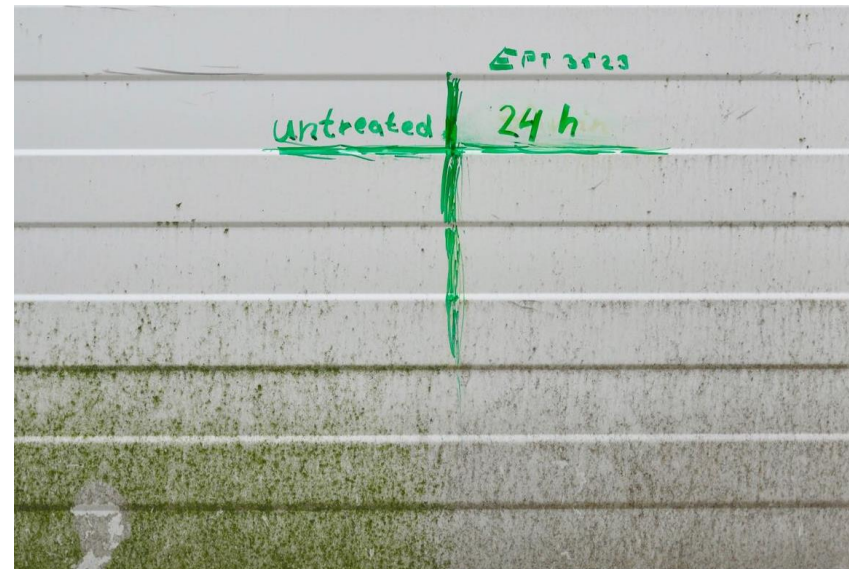
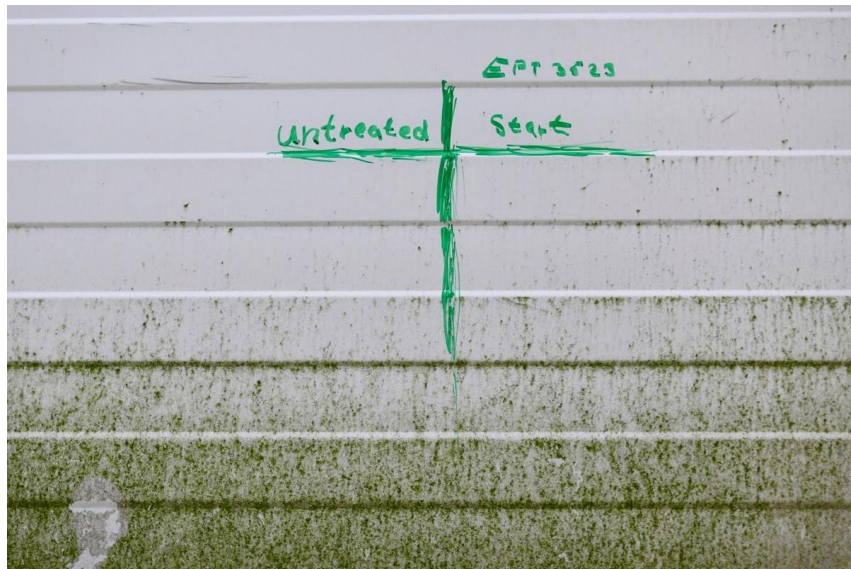
EPT 3525



RUCO Floor Cleaner

Testing the effectiveness of algae removal

- 1) Treatment of an algae-covered corrugated sheet with 10 % sol. EPT 3523 by spray-on, no mechanical agitation
- 2) Assessment of the treated area after 24 h



RUCO Specialties

Odor Remover and Freshness Agent

RUCO 3232: Aqueous emulsion of a silver-based biocide

- Sprayable ready-to-use product for consumer trigger sprays or wash-in applications
- For all kinds of textiles (sports wear, socks and the inside of shoes, helmets or gloves)
- Resistant to laundering and dry cleaning
- **RUCO 3231:** For wash-in applications. More concentrated.



RUCO Specialities

Photocatalyst and VOC-Remover

- **RUCO EPV 3458: Nanoscale and Photocatalytic Titanium Dioxide Dispersion**
- **Application by padding or professional spray**
- Applied substrates remove air pollutants (formaldehyde) and malodors from air in natural light
- Self-cleaning effects by degradation of organic dirt and stains
- Inhibits growth of organic microorganisms like bacteria, funghi, algae etc
- Nearly transparent dilutions do not affect appearance of applied substrates (no markings)
- Catalytic action, hence inexhaustible actives depot



RUCO Polish

Polish and Shine Agent for Various Hard Surfaces

- RUCO 3850: fine-grained polish
- RUCO 3860: medium-grained polish
- RUCO 3880: coarse-grained polish

- Used for finishing polish wipes by pad application
- Levels out fine scratches
- Provides a durable glossy and deep finish



Car Care

Quick Detailer (Spray Wax)

- **RUCO 1460: Aqueous reactive polysiloxane fluid emulsion**
- Used for spray-on applications ('wash & wax' products)
- Excellent water repellency ('beading') and protection
- Provides a glossy and deep finish
- Used for effective paintwork protection and tire shine products



Car Care

Plastic, Tire and Interior Care

- **RUCO 2200:** Emulsion of an amido-modif. siloxane
- **RUCO 2182:** Emulsion of a mv-PDMS
- Used for tire shine and plastic care products (wipes or trigger spray)
- Shine and Colour Saturation Agent for Plastic and Rubber Surfaces
- RUCO 2200: Excellent colour saturation and antistatic and non-tacky finish
- RUCO 2182:, High gloss and deep finish ideally combined with RUCO 2100



Car Care

Paint Polishes

- **RUCO EPV 2673: Solvent-Based Reactive Polysiloxane Fluid**
- **RUCO 2093: Silicone Wax, 100 %**

- Used as additives in polishes, waxes and creams
- Impart shine, protection and hydrophobic properties to car paintwork
- Dry off quickly and work instantly
- Soluble in hydrocarbons



Car Care

Rain Repellent for Car Windscreen

- **RUCO 2105: Microemulsion of an Reactive Silicone Quat Fluid**
- Applied from windscreen wiper system or manually by trigger spray and sponge
- Improves beading effects and facilitates vision during rain
- Snow and sleet are removed from treated surfaces more easily



Car Care

SUMMERY CAR CARE Products:

Silicon sealants for lacquer protection: RUCO 1460, RUCO EPV 3498

Plastic and tire shine: RUCO 2200, RUCO 2182

Paint polish: RUCO EPV 2673, RUCO 2093. Wax emulsions: RUCO 1490

Rain repellent for wind screens: RUCO 2105

Aminosilicones for rinsing aids: RUCO 2105

Rinsing aid also for automatic car wash: EPS 3288 or R-00408-2