UCRETE

UCRETE –
The World's Toughest Floor

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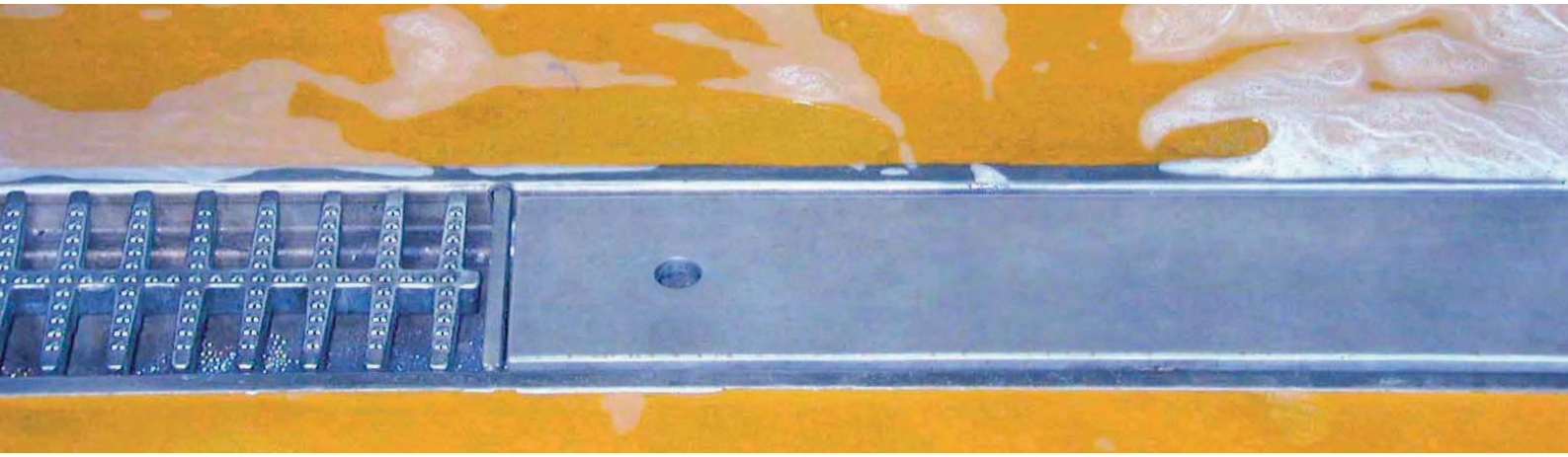


UCRETE Industrial Flooring

UCRETE industrial flooring is a unique suite of products offering wide a range of surface profile and performance specifications. These systems have an exceptional resistance to aggressive chemicals, heavy impact and thermal shock.

Thousands of satisfied local and multinational clients, in countries on all continents and in all industries over more than 30 years, attest to UCRETE's ability to provide long-term, problem-free and therefore, cost-effective, flooring protection in the most difficult environments. Without doubt, UCRETE is the flooring system of choice for discerning end users, specifiers and contractors worldwide.

Our competence in the field of floors and floor finishes that are durable and meet high in service demands is based on many years of experience. The expertise we have acquired from many projects around the world supports our continuous investment in the research and development of innovative products to meet our clients needs. All our systems are applied by trained specialist applicators to ensure the long-term performance.

Our partnering approach covers not only products but also systems and services. This is the guarantee that you are dealing with a partner who wants to know and understand your requirements and who will take a holistic approach to find a tailor-made solution to meet your needs.

Our UCRETE production facilities operate to an environmental management system audited to ISO 14001 and a quality management system audited to ISO 9001.

UCRETE industrial flooring systems are tested and conform to the relevant CE mark standards.

For your local partner visit

Typical UCRETE applications include:

Food preparation
Commercial, hospital and prison kitchens, fast food, airline catering, ready meals

Food processing
Dairies, bakeries, meat processing, pickling, sauces, conserves, freezers, wash bays

Drinks & beverages
Breweries, distilleries, soft drinks, fruit juice, mineral water, bottling and canning

Pharmaceutical
Primary and secondary manufacture, research, clean rooms, pilot plants

Chemical
Tanker reception, process, bunded stores

Engineering
Plating, vehicle maintenance and all heavy use areas

...and all wet process environments

Slip Resistant Flooring for Wet Process Environments

In wet process environments the correct surface profile is essential to provide a safe and efficient working environment.

UCRETE industrial flooring offers a range of surface profiles from smooth and terrazzo systems to highly textured defined profile floors.

In wet process areas floors are often laid to falls to allow water and liquid spillages to flow to drain. Free draining floors often necessitate the need for steep falls which will need to have a good profile to be safe.

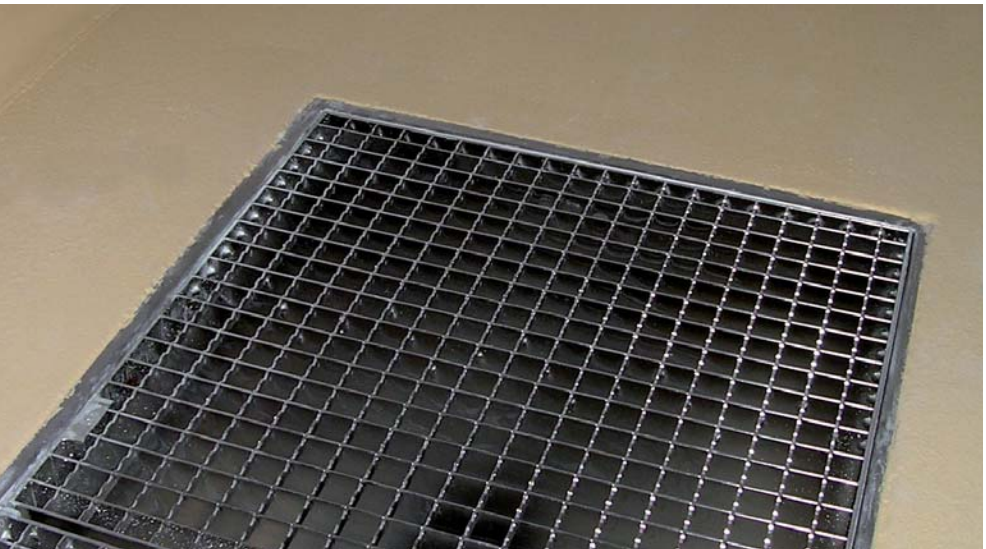
Where personnel are pushing bins and racks, etc. over a floor with complex falls, the need to try and prevent the load rolling downhill can increase the likelihood of strain injuries as well as slips, trips and falls. Generally flatter floors are safer.

EN 13036-4 pendulum test

Coefficient of friction using 4S rubber

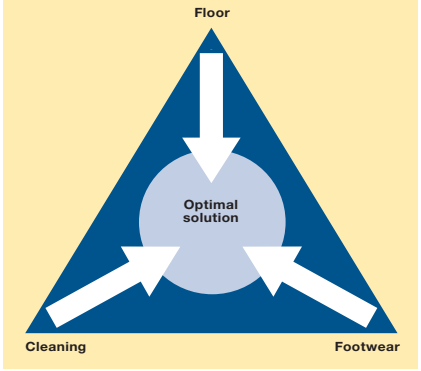
–24	high slip potential
25–35	moderate slip potential
36–	low slip potential

Results for wet floor	
UCRETE MF	35
UCRETE TZ	35–40
UCRETE HPQ (EP)	36–40
UCRETE HPQ (PU)	36–45
UCRETE MT	40–45
UCRETE HF100RT	40–45
UCRETE UD200	40–45
UCRETE DP10	45–50
UCRETE DP20	45–55
UCRETE DP30	50–60
UCRETE UD200SR	50–60



A compromise between ease of cleaning and slip resistance is required. Smoother floors may require more frequent cleaning while rougher floors need more aggressive cleaning. Minimising slips, trips and falls requires a holistic approach. Engineering solutions or the change of work practises and procedures may be required, as well as looking at the effect of cleaning and footwear.

Slip resistance is a balance



Conformity to DIN 51130

UCRETE MF	R10
UCRETE HF100RT	R10/R11*
UCRETE UD200	R11
UCRETE DP10	R11/R12*
UCRETE HPQ	R11/R12*
UCRETE DP20	R12/R13*
UCRETE UD200SR	R12/R13*
UCRETE DP30	R13 V8/10*

* depending upon specificaion

The German Standard DIN 51130 measures the volume of space within the texture of a floor (the lower the volume, the smoother the floor) and gives it a 'V' value from V4 to V10. This space within the surface texture enables the squeeze film to be ejected from between the shoe sole and the floor. DIN 51130 also measures slip resistance directly on a tilting ramp, the angle of the floor at which a man slips is recorded and given an 'R' value from 10 to 13. R13 being the most slip resistant category when the angle of the floor is over 35°

Temperature Resistant Flooring

The unique UCRETE heavy duty polyurethane resin systems do not start to soften until temperatures of 130 °C are exceeded.
Most other resin flooring materials soften at temperatures in the region 50 °C – 60 °C. Together with the high resilience of UCRETE floors, this enables them to withstand high temperatures and extreme thermal shock conditions. UCRETE industrial flooring is able to withstand routine and regular discharges of boiling water.

It is clear that in extreme thermal shock environments a good quality well designed substrate is required. In particular the potentially large thermal movements of the substrate must be allowed for.

UCRETE industrial flooring presents a range of floor finishes available in four separate thickness specifications, ranging from 4 mm floors fully serviceable up to 60 °C to 12 mm specifications suitable for the most extreme environments with occasional spillage up to 150 °C.

The increasing thickness protects the bond line from the enormous stresses of an extreme thermal shock event. The bond line under a 9 mm UCRETE floor reaches 70 °C within 2 minutes of boiling water impinging upon the surface.

When the volume of liquid spilled is small, however, no damage is likely. So, for example, a spilt cup of coffee at 90 °C will not damage a 4 mm floor, but a 1000 litre discharge at 90 °C probably would.

Thickness specifications

4 mm
fully resistant to 60 °C
UCRETE RG, MF, MT, DP, HPQ (PU & EP)

6 mm
fully resistant to 70 °C and light steam clean
UCRETE RG, MT, DP, UD200, HPQ (PU), UD200SR

9 mm w
fully resistant to 120 °C and full steam clean
UCRETE DP, UD200, TZ, HF100RT, UD200SR

12 mm
fully resistant to 130 °C occasional spillage up to 150 °C and full steam clean
UCRETE UD200, TZ, UD200SR

Chemical Resistant Flooring

Chemical	Conc. %	Temp. °C	UCRETE® All grades	Chemical	Conc. %	Temp. °C	UCRETE® All grades
Acetaldehyde	100	20	R	Isopropanol	100	20	R
Acetic acid	10	85	R	Jet fuel	—	20	R
	25	20	R	Kerosene	—	20	R
	25	85	L	Lactic acid	5	20	R
	40	20	R		25	60	R
	99 (Glacial)	20	L		85	20	R
Acetone	100	20	L		85	60	R
Adipic acid	Saturated	20	R	Lauric acid	100	60	R
Ammonium hydroxide	28	20	R	Maleic acid	30	20	R
Aniline	100	20	R	Maleic anhydride	100	20	R
Antifreeze				Methacrylic acid	100	20	R
(Ethylene glycol)	100	20	R	Methanol	100	20	R
Aqua regia	—	20	L	Methylated spirits	—	20	R
Beer	—	20	R	Methylene chloride	100	20	L
Benzene	100	20	L	Methyl ethyl ketone	100	20	L
Benzoic acid	100	20	R	Methyl methacrylate	100	20	R
Benzoyl chloride	100	20	R	Milk	—	20	R
Blood	—	20	R	Mineral oils	—	20	R
Brake fluid	—	20	R	Motor oil	—	20	R
Brine				“N, N-dimethyl acetamide”	100	20	NR
(Sodium chloride)	Saturated	20	R	N-methyl pyrollidone	100	20	NR
Butanol	100	20	R	Nitric acid	5	20	R
Calcium chloride	50	20	R		30	20	R
Calcium hypochlorite	Saturated	20	R		65	20	L
Caprolactam	100	20	R	Oleic acid	100	20	R
Carbon disulphide	100	20	L		100	80	R
Carbon tetrachloride	100	20	R	Oleum	—	20	L
Chlorine water	Saturated	20	R	Paraffin	—	20	R
Chloroacetic acid	10	20	R	Perchloroethylene	100	20	R
	50	20	L	Phenol	5	20	L
Chloroform	100	20	L	Phenyl sulphuric acid	10	20	R
Chromic acid	20	20	R	Phosphoric acid	40	85	R
	30	20	R		50	20	R
Citric acid	60	20	R		85	20	R
Copper (II) sulphate	Saturated	20	R	Picric acid	50	20	R
Cresols	100	20	L	Propylene glycol	100	20	R
Crude oil	—	20	R	Potassium hydroxide	50	20	R
Cyclohexane	100	20	R	Skydrol® 500B4	—	20	R
Decanoic (Capric) acid	100	20	R	Skydrol® LD4	—	20	R
	100	60	R	Sodium hydroxide	20	20	R
Diethylene glycol	100	20	R		20	90	R
Dimethyl formamide	100	20	NR		32	20	R
Ethanol	100	20	R		50	20	R
Ethyl acetate	100	20	L		50	60	R
Ethylene glycol	100	20	R		50	90	L
Fats	—	80	R	Sodium hypochlorite	15	20	R
Formic acid	40	20	R	Styrene	100	20	R
	70	20	R	Sulphuric acid	50	20	R
	90	20	L		98	20	L
	100	20	L	Tetrahydrofuran	100	20	L
Gasoline	—	20	R	Toluene	100	20	R
Heptanoic acid	100	60	R	Toluene sulphonic acid	100	20	R
Hexane	100	20	R	Trichloroacetic acid	100	20	L
Hydrochloric acid	10	60	R	Turpentine	—	20	R
	37	20	R	Vegetable oils	—	80	R
Hydrofluoric acid	4	20	R	Water (distilled)	—	85	R
	20	20	L	White spirit	—	20	R
Hydrogen peroxide	30	20	R	Xylene	100	20	R

R = Resistant L = Limited Resistance NR = Not Resistant

UCRETE industrial flooring has excellent resistance to a wide spectrum of chemicals including many organic acids and solvents that will rapidly degrade other types of resin flooring, including other polyurethane flooring systems.

There are very few chemicals which will rapidly degrade UCRETE flooring. These are marked with 'NR' in the table.

UCRETE is suitable for use on floors in wet process areas where chemicals marked 'L' in the table are employed provided that there are reasonable standards of housekeeping. Care should be taken where valves and pump seals start to leak. If these are not addressed, the leakage results in a continuous immersion environment and some surface erosion can occur.

Solvents may soften UCRETE on continuous immersion over a couple of weeks, but UCRETE will recover when the solvent is removed and the floor is allowed to dry out. In practice most solvents will evaporate before they do any damage.
UCRETE industrial flooring is unaffected by those compounds marked 'R' even after continuous long-term immersion.

Discolouration may occur due to salt deposits, contaminants in solvents, strong dyes and strong acids. This does not affect the performance of the floor.

Such effects are minimised by good housekeeping. Effective cleaning regimes will enhance the life and appearance of any floor.

Chemicals in the food industry

UCRETE industrial flooring is resistant to the following commonly encountered food chemicals.

Acetic acid, 50 %:
As spirit vinegar widely used in the food industry, indicative of resistance to vinegar, sauces, etc.

30 % lactic acid at 60 °C:
Indicative of resistance to milk and dairy products.

Oleic acid, 100 % at 60 °C:
Representative of the organic acids formed by oxidation of vegetable and animal fats widely encountered in the food industry.

Concentrated citric acid:
Found in citrus fruits,representative of the wider range of fruit acids which rapidly degrade other resin floors.

UCRETE is widely used to line drains, bunds and sumps as well as floors.

Cleaning and Hygiene

Wherever floors are used, good housekeeping will help keep them looking at their best and help ensure that they provide a safe and attractive working environment.

All grades of UCRETE are dense and impervious throughout their thickness. UCRETE is essentially inert, it is non-biodegradable and will not support bacterial or fungal growth. UCRETE industrial flooring is used throughout the food and pharmaceutical industry in environments where the highest standards of hygiene are required.

The very chemical resistant nature of UCRETE industrial flooring means that no commercially available cleaning compounds will damage the floor when used at their normal concentrations. Puddling of cleaning solutions if allowed to evaporate to dryness may lead to deposits on the surface and 'water marks' which can be hard to remove subsequently. It follows that removal of cleaning solutions and adequate rinsing is required to maintain your floor looking its best.

The chosen cleaning chemicals should be appropriate to the environment and the soil to be encountered. As with all cleaning procedures the soiling must be mobilised and then removed from the surface.

For best results mechanical cleaning equipment should be used, particularly on larger floors.

Floors in the food industry

Cleaning regimes should be frequent enough to ensure that a safe working environment is maintained at all times.

Remove debris, do not expect mechanical scrubber-dryer machines to remove large items of food and packaging debris.

Where required, use proprietary degreasing agents/detergents. High temperatures in excess of 50 °C and mechanical action greatly improve the mobilisation of fats.

Degreasing agents require time to work, when using scrubber-dryers it is beneficial to apply the cleaning solution to the floor with the vacuum turned off and after a few minutes return to the area to scrub and remove the cleaning solutions.

Mechanical action helps shift dirt.

Cleaning solution and soil must be removed from the floor, otherwise a layer of soil and detergent may build up making the floor slippery and reducing the appearance.

Effective rinsing is required for best results.

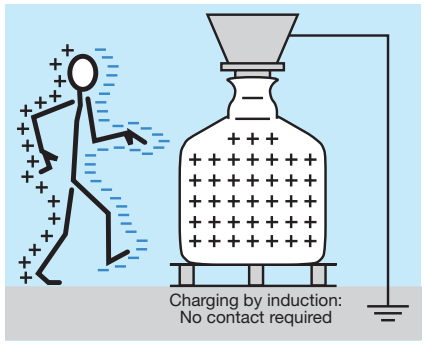
Independent tests undertaken by Campden and Chorleywood Food Research Association in the UK demonstrate that UCRETE UD200, DP20 and DP30 can be effectively sanitised to a standard comparable to stainless steel.

Antistatic Flooring

UCRETE industrial flooring is widely used in many areas where solvents are stored and handled because of the excellent resistance to a wide range of very aggressive solvents. Wherever solvents are used, whether in processes or for cleaning, there is a potential risk of explosive vapour/air mixtures forming. An electrostatic discharge can provide sufficient energy to ignite such a mixture, often resulting in an explosion.

Similarly, wherever fine organic powders are handled or generated during processing, these too can form powder/air mixtures with the potential for a dust explosion if ignited.

UCRETE antistatic floors provide the chemical and solvent resistance required of a floor in process areas together with the static conductive properties required for the control of undesirable static electricity.



Earth linkages

Earth linkages connect the antistatic floor to earth and facilitate the dissipation of electrical charge.
It is good practice to ensure that there are two earth linkages, at opposite corners of the room, to ensure that even if one is damaged, the whole floor will still conform to the original specification.
The earthing cable must be provided by the site or project electrician.
It is connected to the floor during installation using a crow's foot linkage.

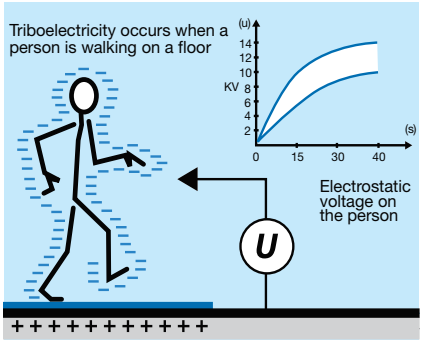
An antistatic floor can only play a part in the elimination of undesirable static discharge and must be seen as an integral part of a total strategy. For example the design and earthing of plant and equipment, the use of barrel clamps as well as correct footwear and clothing. For further guidance the British Standard BS5958 'The code of practice for control of undesirable static electricity' refers.

Measurement standards

EN 1081		**IEC 61340-5-1**	
UCRETE MFAS	$Rg < 10^6$	UCRETE MFAS	$Rg < 10^9$
UCRETE DP10AS	$Rg < 10^6$	UCRETE TZAS	$Rg < 10^9$
UCRETE DP20AS	$Rg < 10^6$		
UCRETE HPQAS	$Rg < 10^6$		
UCRETE TZAS	$Rg < 10^6$		

Undesirable static electricity

- leads to unwanted accumulation of dust
- can cause discomfort
- can damage electronic equipment
- can ignite solvent/air or air/powder mixtures



UCRETE antistatic floors work by dissipating static electricity to earth. In order to prevent personnel working in the area from becoming charged through induction or triboelectrically, personnel must be in electrical contact with the floor, which requires the wearing of antistatic footwear.

Laboratory tests by B.E.STAT on a wide range of different types of resin antistatic floor finishes showed that the potential generated on a man walking across a UCRETE MFAS floor was significantly lower than on other floor systems. Since the best defence against static discharge is to prevent static electricity being generated in the first place this makes UCRETE industrial flooring the safest option for your floors.

Product Selection

UCRETE industrial flooring is a range of robust floor finishes produced using the unique UCRETE heavy duty polyurethane resin binder system. Correctly specified, UCRETE will give many years of service even in very aggressive industrial and process environments.

All grades of UCRETE have essentially the same chemical resistance characteristics as shown in the chemical resistance tables. Apart from very aggressive environments such as drains, bunds and sumps in the chemical industry for example, the nature of the chemicals to be encountered has no bearing on the choice of which UCRETE grade is to be used.

The first requirement to be assessed when selecting your UCRETE floor is the in-service temperature requirements, see page 6. This determines the thickness of the floor required which may limit the number of appropriate finishes.

In areas where heavy mechanical impact is expected to impinge upon the floor, then thicker systems should be preferred.

The choice of floor finish is then one of aesthetics and surface profile. The most appropriate surface texture for any particular application will depend upon the nature of any spillage to be encountered, the type of work undertaken in the area and the standards

of housekeeping and cleaning to be maintained.

Your local BASF Construction Chemicals office will be pleased to advise you.

The choice of smooth or textured floors in process areas is not always clear-cut. For example the two statements, can both be correct.

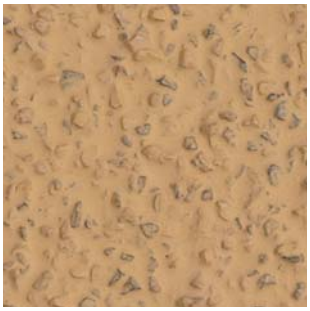
- I have occasional spillage here, therefore I need a textured floor to avoid slip incidents
- I have occasional spillage here, therefore I need a smooth floor so I can clean the spillage up quickly and easily

If spillage is too frequent, it may be impractical to clean them up immediately, so a smooth floor would be slippery.

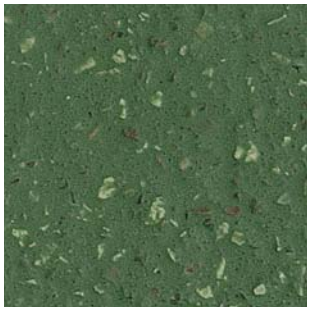
If the spillage is noxious, it may be a requirement that it is removed so it is always dealt with immediately and the question of slip hazard does not arise.

UCRETE MF	4–6	mm smooth
UCRETE MFAS	4–6	mm smooth, antistatic
UCRETE MT	4–6	mm light texture
UCRETE HPQ	4–6	mm coloured quartz
UCRETE HPQAS	6	mm coloured quartz,antistatic
UCRETE DP10	4–9	mm light texture
UCRETE DP10AS	6	mm medium texture, antistatic
UCRETE DP20	4–9	mm medium texture
UCRETE DP20AS	6	mm medium texture, antistatic
UCRETE DP30	4–9	mm heavy texture
UCRETE HF100RT	9	mm light texture
UCRETE UD200	6–12	mm light texture
UCRETE UD200SR	6–12	mm medium texture
UCRETE TZ	9–12	mm terrazzo
UCRETE TZAS	9–12	mm terrazzo, antistatic

The range of UCRETE flooring systems allows you to tailor the floor to meet your specific project needs and so achieve the best, and most cost-effective, flooring solution. For specific advice please contact your local BASF Construction Chemicals office.



Cream
UCRETE DP30



Green
UCRETE UD200SR

Green Brown
UCRETE MF

Red
UCRETE UD200

Orange
UCRETE HF100RT

Yellow
UCRETE DP10

Grey
UCRETE DP20AS

All UCRETE systems are available in these seven standard colours. Colours shown are approximate. Actual colour will vary with product grade and site conditions. UCRETE resins yellow under ultraviolet light. For further information and product samples please contact your local BASF Construction Chemicals office.