



# Ucrete Industrial Flooring

## The World's Toughest Floor



Our reference in Çayirova  
(Turkey): Namet meat factory

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# Master Builders Solutions

## Master Builders Solutions

The Master Builders Solutions brand brings all of expertise together to create chemical solutions for new construction, maintenance, repair and renovation of structures. Master Builders Solutions is built on the experience gained from more than a century in the construction industry.

The know-how and experience of a global community of construction experts form the core of Master Builders Solutions. We combine the right elements from our portfolio to solve specific construction challenges. We collaborate across areas of expertise and regions and draw on the experience gained from countless construction projects worldwide. We at Master Builders Solutions leverage global technologies, as well as our in-depth knowledge of local building needs, to develop innovations that help make more successful and drive sustainable construction.

Market leading products are developed from technically advanced formulations, optimized for the harsh environmental conditions found in the Middle East.

## Our Comprehensive Portfolio

- » Concrete admixtures
- » Cement additives
- » Chemical solutions for underground construction
- » Waterproofing solutions
- » Sealants
- » Tile fixing systems
- » Concrete repair and protection solutions
- » Performance grouts
- » Performance flooring solutions
- » Wall systems
- » Fire protection systems





# The World's Toughest Floor

**Performing at the highest level.** If you are looking for the right flooring for your project, you want to rely on expertise and reputation that have been built up over decades. The Master Builders Solutions experts will provide you with the perfect solution to meet all your needs.

Ucrete industrial flooring is cost effective because it is long lasting, quick and practical to install and meets all the needs of modern processing industry. It is a unique suite of products based upon the Ucrete heavy duty polyurethane resins which enjoy an unequalled reputation for performance built up over four decades of use throughout the food, beverage, pharmaceutical and chemical industries.

## Ucrete – Key benefits

- » **Durable: excellent impact and wear resistance.** Many 20 – 30 year old Ucrete floors in aggressive environments are still in service.
- » **Non-tainting: even during application in food handling areas.**
- » **Fast application and curing: even at low temperatures.** Specifications are available that are fully serviceable after only 5 hours at 10 °C, making it ideally suited for refurbishment work.
- » **Moisture tolerant: can be installed onto 7 day old concrete without the need for special primers, helping to maintain programme on fast track projects.**

- » **Thermal shock resistance: withstands spillages up to 150 °C depending upon specification.**
- » **Hygiene: cleanable to the same standard as stainless steel and does not support biological growth, so helping to maintain hygiene standards.**
- » **Chemical resistance: from strong acids to alkalis, fats, oils and solvents which can rapidly degrade other types of resin flooring.**
- » **Clean and safe: for your workers, your products and the environment. Certified with the Eurofins Indoor Air Comfort Gold standard for low emissions.**

To ensure long-term performance, your flooring will be installed by trained specialist applicators. For your local partner visit [www.master-builders-solutions.com/en-sa](http://www.master-builders-solutions.com/en-sa)





#### Smooth floors

- » Ucrete MF 4 – 6 mm
- » Ucrete MFAS 4 – 6 mm, antistatic
- » Ucrete MFAS-C 4 – 6 mm, conductive
- » Ucrete TZ 9 – 12 mm terrazzo floor
- » Ucrete TZAS 9 – 12 mm terrazzo floor, antistatic

#### Light textured floors

- » Ucrete DP10 4 – 9 mm
- » Ucrete DP10AS 6 mm, antistatic
- » Ucrete HF60RT 6 mm
- » Ucrete HF100RT 9 mm
- » Ucrete HPQ 4 – 6 mm colored quartz
- » Ucrete HPQAS 6 mm colored quartz, antistatic
- » Ucrete IF 9 mm iron armoured
- » Ucrete MT 4 – 6 mm
- » Ucrete UD200 6 – 12 mm

#### Medium textured floor

- » Ucrete DP20 4 – 9 mm
- » Ucrete DP20AS 6 mm, antistatic
- » Ucrete UD200SR 6 – 12 mm

#### Highly textured floor

- » Ucrete DP30 4 – 9 mm

#### Vertical surfaces

- » Ucrete RG 4 – 9 mm coving mortar and render





# Floors for Your Specific Requirements

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 you many years of service even in very aggressive industrial and process environments. The purpose of this brochure is to help you choose the right floor. First consider your requirements.

## Rapid installation

We appreciate that it is not always easy to close production lines, so many of our systems can be installed in weekend or even overnight application windows. By minimising downtime, we cut the cost of upgrading to a Ucrete floor. Ucrete UD200, for example, can be put back into service after only 5 hours at 10 °C.

## Non-tainting

Ucrete flooring systems are non-tainting even during application, making them the safe choice for weekend and maintenance work. Your local Master Builders Solutions expert will be pleased to advise you.

## Temperature resistance

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 needed, which may limit the number of appropriate finishes.

## Slip resistance

Your choice of floor finish is then one of aesthetics and surface profile. The most

appropriate surface texture for any particular application will depend on 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. Slip resistance is discussed on page 8.

## Chemical resistance

All Ucrete floors have the same chemical resistance characteristics as shown in the tables on page 13. So in this regard all Ucrete floors are equally suitable

## Antistatic

To protect sensitive electronic devices or minimize explosion risks, a range of antistatic floors are available as detailed on page 16.

## Mechanical resistance

In areas where heavy mechanical impact and intense hard wheeled traffic is expected thicker systems with larger aggregate should be used.

## A bespoke solution

The wide range of Ucrete flooring systems allows you to tailor your floor to meet your specific needs, so achieving the best and most cost effective flooring solution.

We will work with you to help you select the best floor for your facility. Please contact your local Master Builders Solutions expert for guidance:  
[www.master-builders-solutions.com/en-sa](http://www.master-builders-solutions.com/en-sa)

Cream Green Green / Brown Red



Grey Blue Yellow Orange



All Ucrete systems are available in these eight standard colors. Colors shown are approximate, actual color will vary with product grade and site conditions. Ucrete resins yellow under ultraviolet light.

For further information and product samples, please contact your local Master Builders Solutions expert.



# Temperature Resistance

While most resin flooring systems soften at temperatures of 60 °C or less, the unique Ucrete heavy duty polyurethane resin systems are unaffected until temperatures of 130 °C are exceeded.

This high temperature resistance, coupled with high resilience, enables Ucrete floors to withstand high temperature spillages and extreme thermal shock conditions.

Ucrete industrial flooring is available in four separate thickness specifications, ranging from 4 mm floors, which are fully serviceable up to 70 °C, to 12 mm specifications suitable for the most extreme environments with occasional spillage up to 150 °C.

## Always reliable

The increasing thickness protects the bond line with the substrate 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.

A 9 mm thick Ucrete floor 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.

## Thickness specifications

### 4 mm

- fully resistant to +70 °C
- for freezer temperatures to –15 °C
- Ucrete DP, HPQ, MF, MT, RG

### 6 mm

- fully resistant to +80 °C
- light steam clean
- for freezer temperatures to –25 °C
- Ucrete DP, HF60RT, MT, RG, UD200, UD200SR, TZ

### 9 mm

- fully resistant to +120 °C
- full steam clean
- for freezer temperatures to –40 °C
- Ucrete DP, HF100RT, IF, RG, UD200, UD200SR, TZ

### 12 mm

- fully resistant to +130 °C
- occasional spillage up to 150 °C
- full steam clean
- for freezer temperatures to –40 °C
- Ucrete UD200, UD200SR, TZ

## 40 years of experience

There is no simple test to prove that a flooring system will withstand repeated thermal shock over many years in a factory environment due to the wide variations in substrate quality and design.

The performance quoted is based upon our experience with Ucrete flooring in aggressive process environments throughout the world over more than 40 years.

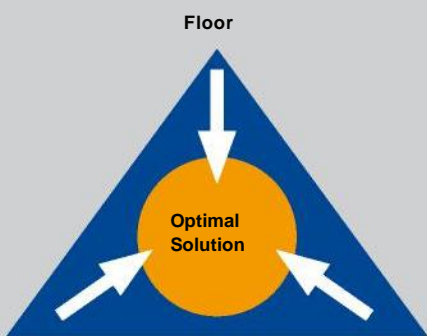




Our reference in Harsewinkel (Germany):  
Windau speciality sausages and cured meats



**Slip Resistance is a Balance**



Our reference in Manchester (United Kingdom):  
Barton Meats



# Slip Resistant Flooring

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.

## Floors to falls

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 require a good profile to be safe. Where for example personnel are required to push bins and racks 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. In general, flatter floors are safer.

## Slips, trips and falls

You need a holistic approach to minimize slips, trips and falls. Engineering solutions or a change of working practices and procedures may be required as well as looking at the effect of cleaning and footwear. A compromise between ease of cleaning and slip resistance is required. Smoother floors may call for more frequent cleaning, while rougher floors need more aggressive cleaning.

## Smooth or textured?

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

“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”

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

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

## Planned cleaning

A formal cleaning plan should be in place detailing the frequency and type of cleaning required in each location. Floor cleaning should coordinate with that of plant and equipment, so that residues from plant cleaning are removed promptly and not left to evaporate to dryness on the floor.

## Bespoke solutions

Not every location will need the same degree of slip resistance. This is why we offer Ucrete with a range of surface profiles available to enable the floor to be tailored to meet your needs. For specific advice as to the most appropriate grade of Ucrete for your floor, please contact your local Master Builders Solutions expert.

## EN 13036-4 pendulum test

Pendulum test value on wet floor using 4S rubber

■ below 24	:	high slip potential
■ 25 – 35	:	moderate slip potential
■ above 35	:	low slip potential

■ Ucrete MF	35	■ Ucrete UD20	40–45
■ Ucrete TZ	35–40	■ Ucrete IF	40–45
■ Ucrete HPQ	36–45	■ Ucrete DP10	45–50
■ Ucrete MT	40–45	■ Ucrete DP20	45–55
■ Ucrete HF60RT	40–45	■ Ucrete UD200SR	50–60
■ Ucrete HF100RT	40–45	■ Ucrete DP30	50–60

## Conformity to DIN 51130

■ Ucrete MF R10	■ Ucrete UD200 R11
■ Ucrete TZ n/a	■ Ucrete DP10 R11
■ Ucrete HPQ R11	■ Ucrete IF R11
■ Ucrete MT R10/R11*	■ Ucrete DP20 R12/R13*
■ Ucrete HF60RT R10/R11*	■ Ucrete UD200SR R13
■ Ucrete HF100RT R10/R11*	■ Ucrete DP30 R13

\* Depending upon Specification



# Chemical Resistance

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 many polyurethane cement flooring systems.

Ucrete industrial flooring is unaffected by those compounds marked 'R' in the table, even after continuous long-term immersion.

## Good to know

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 standards of housekeeping are maintained. 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 surface erosion can occur.

Solvents may soften Ucrete on continuous immersion over a number 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.

Discoloration 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 minimized by good housekeeping, especially if ponding is avoided and spillages are not allowed to evaporate to dryness on the floor. Effective cleaning regimes will enhance the life and appearance of your floor.

For specific advice on chemical resistance and the cleaning of Ucrete floors, please contact your local Master Builders Solutions expert.

## Chemicals in the food industry

Ucrete industrial flooring is resistant to the following commonly encountered food chemicals, for example

### Acetic acid, 50 %:

As spirit vinegar widely used in the food industry for cleaning food contact surfaces.

### Lactic acid, 30 % at 60 °C:

Indicative of resistance to milk and dairy products.

### Oleic acid, 100 % at 60 °C:

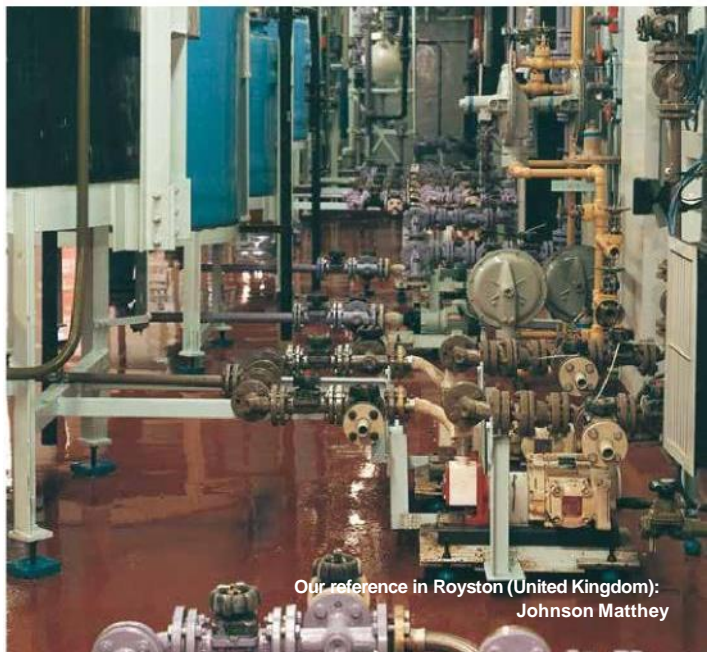
Representative of the organic acids formed by oxidation of vegetable oils and animal fats widely encountered in the food industry.

### Citric acid, 50 %:

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

### Sodium hydroxide, 50 % at 60 °C:

Widely used for cleaning and in CIP areas.



Our reference in Royston (United Kingdom):  
Johnson Matthey

## Resistance to common industrial chemicals

Chemical	Conc. %	Temp. °C	Ucrete all grades	Chemical	Conc. %	Temp. °C	Ucrete all grades
Acetaldehyde	100	20	R	Lactic acid	5	20	R
Acetic Acid	10	85	R		25	60	R
	25	20	R		85	20	R
	25	85	L		85	60	R
	40	20	R	Lauric acid	100	60	R
	90 (Glacial)	20	L	Maleic acid	30	20	R
Acetone	100	20	L	Maleic anhydride	100	20	R
Adipic Acid	Saturated	20	R	Methacrylic acid	100	20	R
Ammonium hydroxide	28	20	R	Methanol	100	20	R
Aniline	100	20	R	Methylated spirits	–	20	R
Antifreeze (Ethylene glycol)	100	20	R	Methylene chloride	100	20	L
Aqua regia	–	20	L	Methyl ethyl ketone	100	20	L
Benzene	100	20	L	Methyl methacrylate	100	20	R
Benzoic acid	100	20	R	Milk	–	20	R
Benzoyl chloride	100	20	R	Mineral oils	–	20	R
Blood	–	20	R	Motor oil	–	20	R
Brake fluid	–	20	R	N, N-dimethyl acetamide	100	20	NR
Brine (Sodium chloride)	Saturated	20	R	N-methyl pyrrolidone	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	Skydol® 500B4	–	20	R
Decanoic (Capric) acid	100	20	R	Skydol® 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
Hydrochlorid 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
Isopropanol	100	20	R				
Jet fuel	–	20	R				
Kerosene	–	20	R				

A more comprehensive chemical resistance table is available upon request from your local Master Builders Solutions Construction Chemicals office

R = Resistant

L = Limited Resistance

NR = Not Resistant



Our reference in Dubai  
(UAE): Trade Centre Kitchen



# Cleaning and Hygiene

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

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

## Immune to stress

The highly chemical resistant nature of Ucrete industrial flooring means that no commercially available cleaning compounds will damage the floor when used at their normal use 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 keep your floor looking its best.

The cleaning chemicals use should be appropriate to the environment and the soil to be encountered. As with all cleaning procedures, the soiling must be mobilized and then removed from the surface. For best results mechanical cleaning equipment should be used, particularly on larger floors.

Cleaning guidelines are available from your local Master Builders Solutions expert: [www.master-builders-solutions.com/en-sa](http://www.master-builders-solutions.com/en-sa)

## Certified hygiene

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

In 2006, independent microbiological testing by the Polymer Institute (Germany) showed the efficacy of a range of industrial sanitizers on a Ucrete UD200 floor, using the test organism *aspergillus niger*.

Initial germ content: 650000 KbE/ 25cm <sup>2</sup>			
Disinfectant	KbE/25cm <sup>2</sup> after reaction time of		
	1 h	24 h	72 h
p-chloro-m-cresol, 0,3 %	720 / 2100	< 10 / < 10	< 10 / < 10
Alkyl dimethyl benzyl ammonium chloride, 0,1 %	328 / 148	< 10 / < 10	< 10 / < 10
p-toluene sulfon chloroamide-Na, 5 %	130 / < 10	< 10 / < 10	< 10 / < 10
Formaldehyde, 5 %	6000 / 2500	< 10 / < 10	< 10 / < 10
Ethanol, 70 %	< 10 / < 10	< 10 / < 10	< 10 / < 10
Reference:	35.000	1500 / 270	< 10 / < 10
Water	34.000		

There is no growth after 72 hours, even on the control using just water, demonstrating that Ucrete does not support biological growth and thus ensures that the floor remains hygienic from the time of cleaning until production restarts.





# Antistatic Flooring

## Explosion protection

Ucrete industrial flooring is widely used in many areas where solvents are stored and handled because of its 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 you with the chemical and solvent resistance required of a floor together with the conductive properties needed to control undesired static electricity.

## Protecting electronic components

Protecting sensitive electronic devices from the effects of an electrostatic discharge becomes even more critical as the devices get smaller. The best defence is to prevent the accumulation of charge in the first place. In this respect more conductive floors are more effective. Personnel walking on Ucrete antistatic floors while wearing appropriate footwear generate very low body voltages.

## A system approach

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: that includes the design and earthing of plant and equipment, the use of barrel clamps as well as correct footwear and clothing. For further guidance, consult the British Standard BS5958 'The code of practice for control of undesirable static electricity'. 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, they must wear antistatic footwear and be in electrical contact with the floor.

### Undesirable static electricity



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

## Electrical properties

### Resistance to earth, EN 1081

- Ucrete MFAS < 1 M $\Omega$
- Ucrete MFAS-C < 50 k $\Omega$
- Ucrete DP10AS < 1 M $\Omega$
- Ucrete DP20AS < 1 M $\Omega$
- Ucrete HPQAS < 1 M $\Omega$
- Ucrete TZAS < 1 M $\Omega$

### Resistance to earth, EN 61340-4-1

- Ucrete MFAS < 1 G  $\Omega$
- Ucrete TZAS < 1 G $\Omega$

### Resistance of man to earth, EN 61340-4-5

- Ucrete MFAS < 35 M  $\Omega$
- Ucrete TZAS < 35 M $\Omega$

### Body voltage generation, EN 61340-4-5

- Ucrete MFAS < 100 V
- Ucrete TZAS < 100 V

### Isolation resistance, DIN VDE 0100-610

- Ucrete MFAS > 50 k $\Omega$
- Ucrete TZAS > 50 k $\Omega$
- Suitable for use with electrical systems up to 1000V

## Specification

To find the right floor with the necessary electrostatic properties as well as meeting all the requirements for low emissions, slip resistance, safety, durability, etc., please contact your local Master Builders Solutions expert.

## Electrical safety

To assess the electrical safety of working in an environment with a conductive floor the Isolation Resistance is considered. This is measured using an alternating current as described in the German Standard VDE 0100-610 where a minimum of 50,000 Ohm is required for use with electrical systems up to 1000V. Ucrete MFAS has been tested and found to have a resistance to earth to EN1081 of 24 k) while the isolation resistance was 3.9 M), demonstrating excellent static dissipation properties and electrical safety.



Ucrete Industrial Flooring  
The World's Toughest Floor



Our reference in Luton (United Kingdom);  
Measurement Technology Ltd  
© Flo-Dek(UK) Ltd



Our reference in Magor (United Kingdom):  
Production facility



## Durability

It is easy to understand why a Ucrete floor is such good value for money, when you consider the risk to hygiene and safety of a failing floor and the costs in lost production and management time of replacing it. Ucrete gives you best value for your money because it is a long lived floor. But where does this durability come from?

The durability is a result of a combination of factors, from the blend of high strength with resilience and from the chemical and mechanical resistance of the floor. Aggregates are specifically selected for their toughness and abrasion resistance. We use the best raw materials, not the cheapest.

In the food industry, for example, organic acids are endemic; there are organic acids from milk, from fruit or from vegetable oils. As spillages evaporate, concentrations rise and so become

more aggressive. The effects of such chemicals are accumulative and will become evident over time. The superior chemical resistance that a Ucrete floor provides is the safety margin that helps ensure that a Ucrete floor lasts 20 years or more.

Thicker floors are also more durable than thinner floors, not because there is more material to wear out, but because the extra thickness protects the bond line from stress in service. Larger aggregates impart better scratch resistance and enable a floor to maintain its slip resistance profile especially where there is impact or frequent movements by hard plastic or steel wheeled traffic.

Please contact your local Ucrete representative; he will be happy to assist you in making the right specification to meet your needs.



### Over 25 years of service

In 1984, the Magor production facility, a major UK beverage supplier, installed 2800 m<sup>2</sup> of Ucrete flooring in their kegger hall (opposite and left). More than 25 years later, the floor is still in service, as you can see in these in these photographs. The floor takes hot water and chemical spillage under the keg washers as well as the impact from the occasional keg that manages to escape. With the line filling up to 1000 barrels per hour round the clock, it is clear that stopping is not an option. The huge cost of closing this plant to replace the floor far outweighs any extra cost in having a quality Ucrete floor in the first place. Since this floor was installed, the production facility has used many thousands of meters of Ucrete floors. Not surprisingly, it continues to do so today.



# Sustainability

Ucrete industrial flooring solutions contribute to sustainability in many respects throughout their life cycle.

Building and maintaining any kind of structure means facing a key sustainability challenge: the consumption of natural resources. The longevity of Ucrete floors, with many 20-30 year old floors still in service, helps to save resources. What could be more wasteful of raw materials, time and energy than ripping up and throwing away a floor after five to ten years?

The contribution of Ucrete floors to climate protection and saving of energy is also demonstrated by independent environmental impact assessment:



BMG Engineering, based in Zurich, undertook such an assessment of

Ucrete industrial flooring. They also looked at a scenario of a large commercial kitchen, as in a prison or a hospital, and compared a Ucrete UD200 specification against a typical tiled floor specification that traditionally might be used for this application. The results are quite compelling; square meter for square meter an equivalent tiled floor was found to have 50 % higher Cumulative Energy Demand, 70 % higher Global Warming Potential, 200 % higher Ozone Depletion Potential and 50 % higher Water use than a 9 mm thick Ucrete UD200 floor. Clearly, Ucrete offers significant benefits for the environment.

Another important element of sustainable construction is protecting the health of both flooring applicators and users of buildings. Ucrete floors contribute to that with their low levels of emissions to the air and non-tainting properties, again confirmed by external experts:



We are becoming increasingly aware of the importance of clean air. Emissions impacting air quality are controlled by a variety of national regulations and voluntary standards. The

Indoor Air Comfort Gold certification from Eurofins combines the most stringent specifications from all relevant European regulations and voluntary labels, including the auditing of

production and quality control to ensure that Ucrete meets all product emissions requirements. All Ucrete grades give very low emissions and conform to all the emissions requirements for indoor flooring systems in Europe, including AgBB in Germany, M1 in Finland and Afsset in France. Ucrete has been measured at A+, the lowest French emissions rating. This demonstrates that Ucrete is an extremely clean product without any volatile compounds that might taint foodstuffs or affect the well-being of personnel.

Systems to evaluate the sustainability of a building are becoming more and more important in the construction industry, and confirm the contribution of Ucrete floors to sustainable construction.

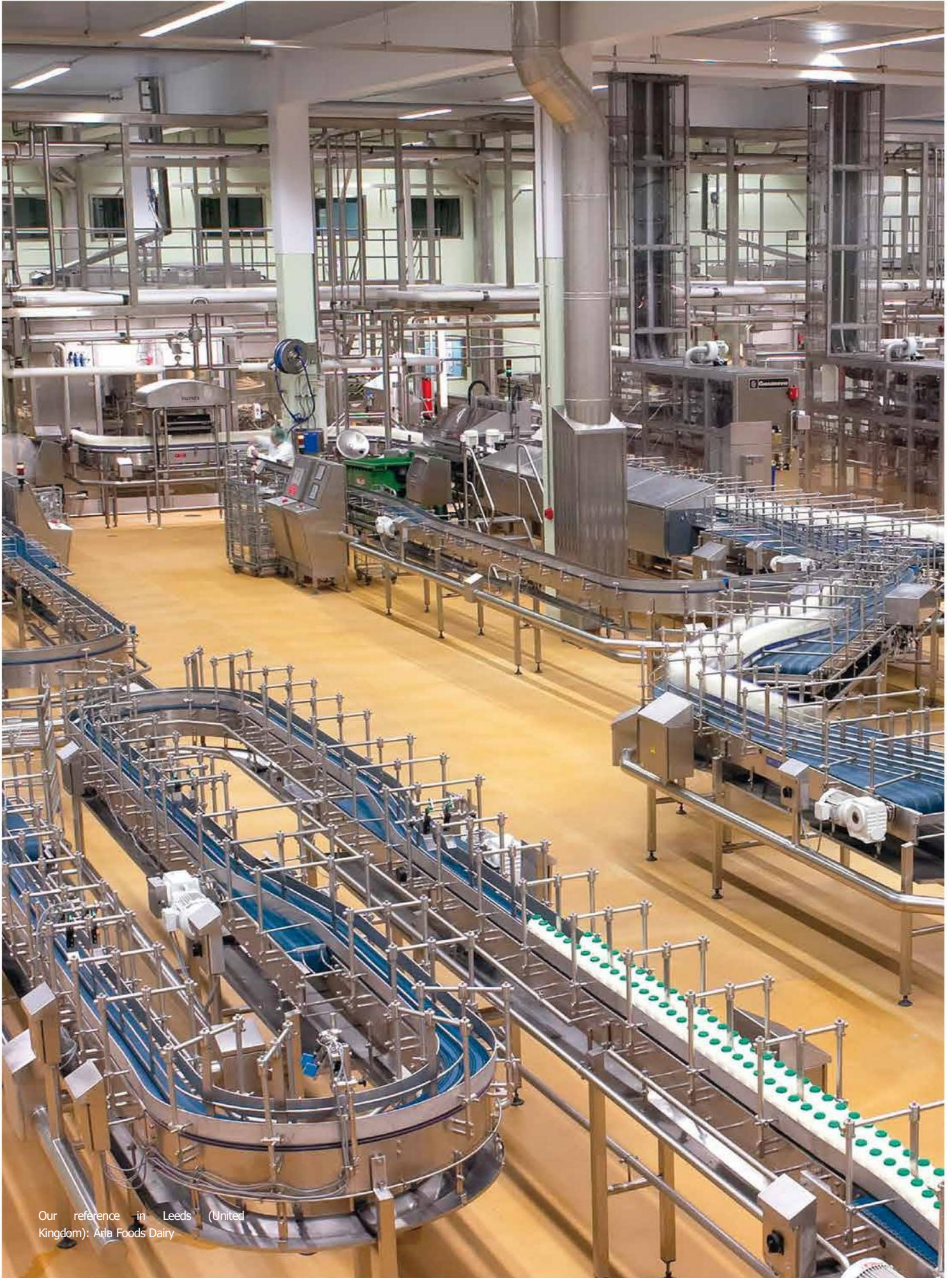


The Leadership in Energy & Environmental Design Green Building Rating System LEED® provides a process to verify that a project was designed and built in a sustainable manner.

It covers performance in key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. With regard to materials selection a series of credits are made to encourage the use of more sustainable and environmentally friendly materials. A Product Information Statement for LEED®New Construction (NC) Version 3.0 Credit Documentation is available for all Ucrete flooring products and systems.

In daily use, Ucrete floors help our customers in many industries to meet their sustainability needs, for example in handling chemicals safely in the chemical and pharmaceutical industries. By protecting concrete from aggressive and noxious chemicals, Ucrete contributes to containing chemicals reliably and preventing them from escaping into the environment. Another aspect of sustainability in industrial operations is occupational safety, where the slip resistant properties of Ucrete floors can help to avoid accidents and injuries caused by slipping and falling.





Our reference in Leeds (United Kingdom): Arla Foods Dairy



## A Clear Choice

When factory owners, architects and engineers who specified and installed Ucrete in the 1970s and 1980s find that their floor is still in service well into the 21st century, you can understand why they want to specify Ucrete again. But you don't need to have used Ucrete in the past to be convinced of its performance. You want to make sure you specify the correct floor, excluding any inferior materials which may lead to floor failure and all the cost which that entails in lost production and management time.

### Tell us your needs!

Discussing your floor with your local Ucrete expert from Master Builders Solutions will help define the right product for you, with the right appearance and slip resistance, the right thickness to meet your temperature requirements, and the robustness to provide a long lived solution. Guidance on the design and detailing of the substrate is also available to help ensure you get the best floor possible.

Having specified the correct grade of Ucrete for your application, there are a number of key performance criteria that ensure that a Ucrete floor will meet your requirements for years to come. A draft performance specification for a floor in the food industry is given on the right, which can be adapted to meet the specific requirements of the project. For further information please contact your local Master Builders Solutions expert.

### Typical performance specification for Ucrete flooring

The floor topping materials shall be a pre-packed 4 component low emissions self-compacting mortar based upon a HD polyurethane cement resin binder system with minimum resin content of 18.5 %, equating to 5.7 kg of total liquid components with 24.8 kg of aggregates and powders. The primer system must be based upon the same Heavy Duty polyurethane technology as the mortar.

To ensure reliability during application the system must be substrate moisture tolerant and able to be applied directly to 7 day old concrete without the need for special primers.

To conform to European requirements for non-porosity the floor shall exhibit zero absorption when tested to CP. BM2/67/2.

To ensure food product quality the chosen flooring material shall be non-tainting from the end of mixing as confirmed by certification of sensory evaluation from a recognized food industry body giving a non-taint result. The material shall meet AgBB standards for indoor air quality certified by independent testing and factory audit.

To ensure long term performance in the anticipated environment the flooring product shall exhibit resistance under continuous immersion conditions to the chemicals to be encountered, as detailed in the list attached (attach list of anticipated chemicals, the concentrations and temperatures to be encountered both from cleaning regimes and from processes. For milk list 30 % Lactic Acid, for oils and fats list 100 % Oleic Acid at 60 °C, for fruit list 50 % Citric Acid, for sauces and vinegar list 50 % Acetic Acid, for CIP areas list 50 % Sodium Hydroxide at 60 °C).

To ensure long life in high traffic areas the floor shall meet AR0.5 standard when tested by the BCA wear tester to EN13892 part 4.

To ensure hygiene standards the floor finish shall demonstrate cleanability comparable to stainless steel confirmed by independent testing. The material manufacturer shall demonstrate a proven track record in similar industrial environments of more than 20 years.



## Food Industry

The strictest levels of quality, hygiene and safety are normal in the food and beverage industries. In open food areas in particular, a high performance and functional floor which fulfils the requirements of the International Food Standard (IFS), those for VOCs and also workplace safety forms the basis for quality and high value products. In the meat industry, for example, boning, cutting and slicing in particular put flooring systems to the test; organic liquids such as blood and fats can severely soil the floor. Contaminants which could quickly spoil food must be removed with suitable processes in defined cleaning cycles.

A durable Ucrete floor is the best solution to enable good hygiene to be maintained, long term, in food production areas. The floors are dense and impervious, meaning that soil and contamination remains at the surface, and they dry completely in a very short time. As a result, germs and bacteria cannot take hold on a Ucrete floor. Such characteristics ensure a cleanability similar to stainless steel, even on highly profiled slip resistant floors. This, together with their chemical and live steam resistance, makes these floors an excellent basis for a safe and germ-free working environment.

### Typical fields of application:

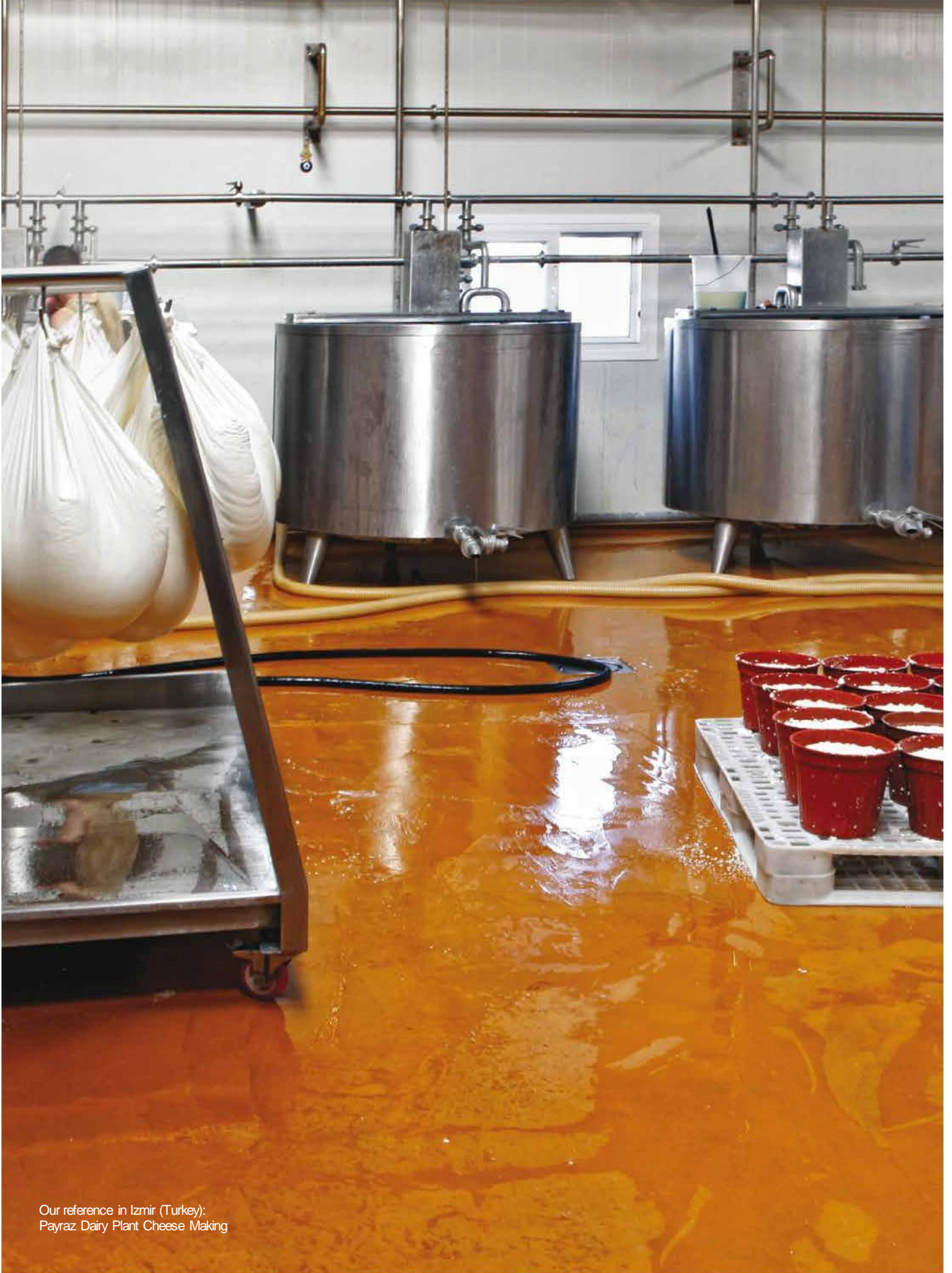
Industrial kitchens, canteens, fast food restaurants, catering, ready meals production, dairies, bakeries, meat preparation, abattoirs, curing and pickling areas, fish and game processing, preserves and sauces manufacturing, cold rooms, washing areas, distilleries, grape and fruit juice presses, mineral water bottling, carbonated drinks production.

### Suitable for most stringent hygiene requirements

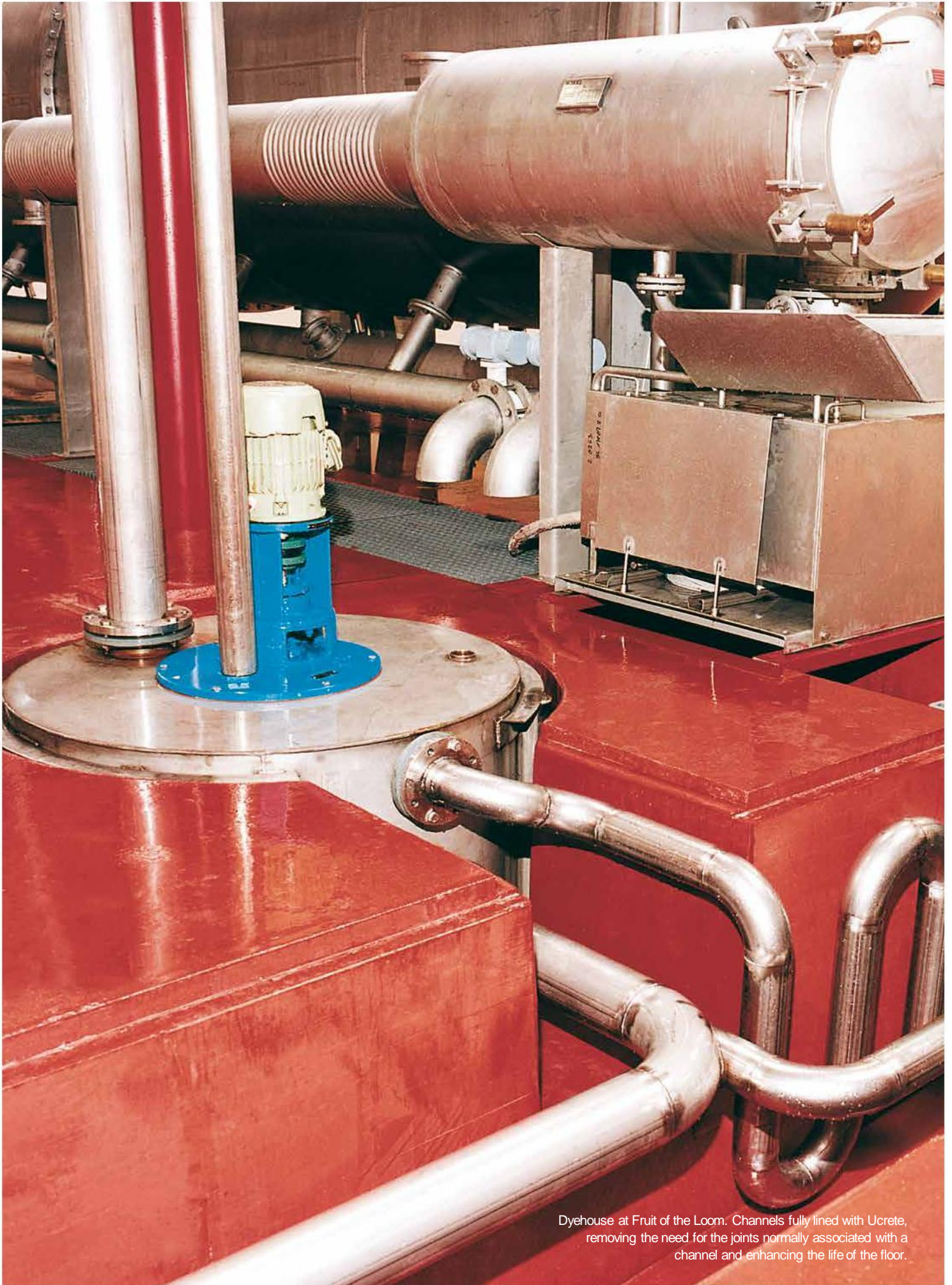
Engineering consultants Realien GmbH in Neckartailfingen, Germany, studied Ucrete's water draining and drying behaviour and its water absorption. The test results showed that Ucrete is highly suitable for use in areas with the most stringent hygiene requirements, because no water absorption could be identified, and the floor dries completely in only three hours. This not only improves the hygienic characteristics of the floor, but greatly reduces the amount of energy required to re-establish the desired humidity levels following cleaning.







Our reference in Izmir (Turkey):  
Payraz Dairy Plant Cheese Making



Dyehouse at Fruit of the Loom. Channels fully lined with Ucrete, removing the need for the joints normally associated with a channel and enhancing the life of the floor.



# Chemical Industry

The materials and processes used in the chemical industry create a number of unusual challenges for flooring. Floors must withstand heavy loads and offer corresponding durability. Where leakage or spillage of hazardous chemicals is likely, slip resistance is important. Solutions are therefore required which can resist persistent chemical exposure and at the same time offer a high degree of safety.

Ucrete's broad spectrum of resistance to acids, alkalis, fats, oils, solvents and salt solutions makes it the ideal flooring wherever chemical resistance is imperative. You need good slip resistance not just in foot traffic areas, but also where there is fork lift, truck and tanker access, also externally, to ensure a safe environment. Ucrete's wide range of slip resistant finishes meets these needs. Where organic powders, solvents or gases are handled, there is a real risk of explosions. Ucrete antistatic and conductive floors provide not only the required chemical and solvent resistance but ensure that static electricity is kept under control.

Ucrete heavy duty polyurethane systems withstand high impact and abrasion conditions as well as extreme thermal and chemical and solvent exposure. They are easily installed and tolerant to a wide range of site conditions, thus minimising downtime and providing a cost-effective alternative to other flooring solutions for this segment. Ucrete provides a dense and impermeable surface protection system that can be used in wet and dry process areas and can also be used to line bunds plinths, channels and drains, thus ensuring that chemicals are contained and do not escape into the environment.

### Typical fields of application:

Bulk chemical manufacture, electroplating, mining, heavy metal refining, household chemicals, toiletries, biodiesel production, bunded stores, wet process areas, tanker loading bays.

## Durability by design

Ucrete is designed to provide a long-lived floor in aggressive environments. Any joints in the substrate, where they occur, inevitably mean weak points in the protective Ucrete lining and also need maintenance. It follows therefore, that designing joints out reduces ongoing maintenance costs and improves the longevity of a floor.

Ground floor concrete slabs are frequently cut into 6 m bays to control shrinkage of the concrete. With steel reinforcement to control shrinkage, only those joints needed to accommodate thermal and other movements in service would be required.

Joints are frequently associated with drainage channels, for example where the Ucrete floor meets a metal lining or the grating supports. In many circumstances channels can be lined with Ucrete throughout, removing the need for such joints.

Where joints are required, they should be positioned where they are accessible for inspection and maintenance. For further information on substrate design, please contact your local Master Builders Solutions expert.





# Pharmaceutical Industry

A floor in the pharmaceutical industry needs to fulfil a number of complex functions. Above all, it must help ensure product and worker safety. Clean rooms in which medicines are manufactured and packed must be sterile and dust free, which requires excellent cleanability of the floor. The cleaning qualities of Ucrete surface protection systems score highly here: Being dense and impervious enables them to be cleaned to a standard comparable to stainless steel, making them an extremely hygienic solution for the pharmaceutical industry.

But floors can only maintain their cleanability and hygienic properties if they resist the solvents, chemicals and the heavy abrasion from hard plastic and steel wheeled vessels that are widely encountered. Ucrete is renowned for its chemical resistance and durability, providing long-lived solutions, ensuring hygiene standards and minimizing maintenance for years to come.

Many pharmaceutical production areas involve work with extremely fine organic powders, creating the potential for dust explosions, while solvents are also used widely, in process and for cleaning and sanitising. Consequently the control of static electricity is a critical safety factor which is readily addressed using one of a range of Ucrete antistatic flooring solutions.

From tanker reception areas and banded stores, through processing to clean rooms and tableting halls, Ucrete flooring provides the appropriate floor to meet the diverse needs of the pharmaceutical industry.

## Typical fields of application:

Primary and secondary manufacture, wash bays, clean rooms, aseptic areas, grinding and blending, pilot plants, tableting facilities.

## Aesthetic floors

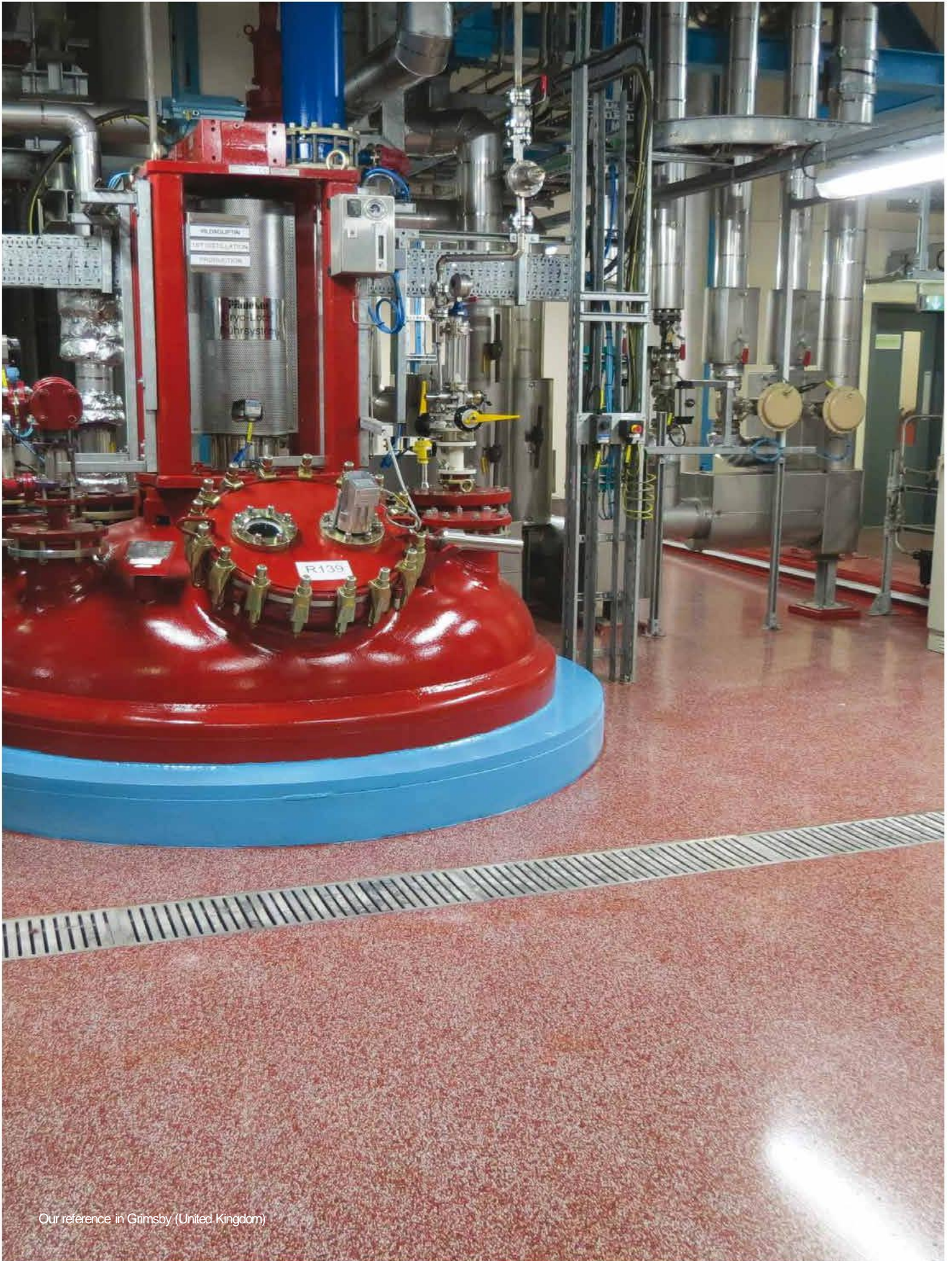
As an important part of daily life, a floor must not only be functional and economic, but should also be aesthetically pleasing – even in industrial facilities. Good cleanability contributes to this by ensuring a clean appearance, but in addition decorative floors ensure a productive working atmosphere.

Ucrete TZ is an option for all floors where both decorative effects and robust performance are desired: The floor provides the optical qualities of a polished terrazzo coating while at the same time resisting high mechanical, thermal and chemical stresses.

Unlike conventional terrazzo floors, Ucrete TZ can be laid almost seamlessly and is also available in an antistatic version. Layer thicknesses between 9 mm and 12 mm are available, depending on the desired temperature resistance.



Our reference in Newcastle (United Kingdom):  
Sanofi





Our reference in Bad Zwischenahn (Germany):  
Carl Müller GmbH & Co. KG Rügenwalder sausage factory





# Master Builders Solutions for the Construction Industry

## MasterAir®

Complete solutions for air entrained concrete

## MasterBrace®

Solutions for concrete strengthening

## MasterCast®

Solutions for the manufactured concrete product industry

## MasterCem®

Solutions for cement manufacture

## MasterEase®

Solutions for reducing concrete viscosity

## MasterEmaco®

Solutions for concrete repair

## MasterFinish®

Solutions for formwork treatment

## MasterFlame®

Complete firestopping solutions

## MasterFlow®

Solutions for precision grouting

## MasterFiber®

Comprehensive solutions for fiber reinforced concrete

## MasterGlenium®

Solutions for hyperplasticized concrete

## MasterInject®

Solutions for concrete injection

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Solutions for concrete curing

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Advanced rheology control solutions for self-consolidating concrete

## MasterPel®

Solutions for water tight concrete

## MasterPolyheed®

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Solutions for concrete protection

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Solutions for set control

## MasterTile®

Solutions for tile fixing system

## MasterTop®

Solutions for industrial and commercial floors

## MasterWeld®

Adhesive solutions for construction

## Master X-Seed®

Advance addelator solutions for concrete

## Ucrete®

Flooring solutions for harsh environments

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