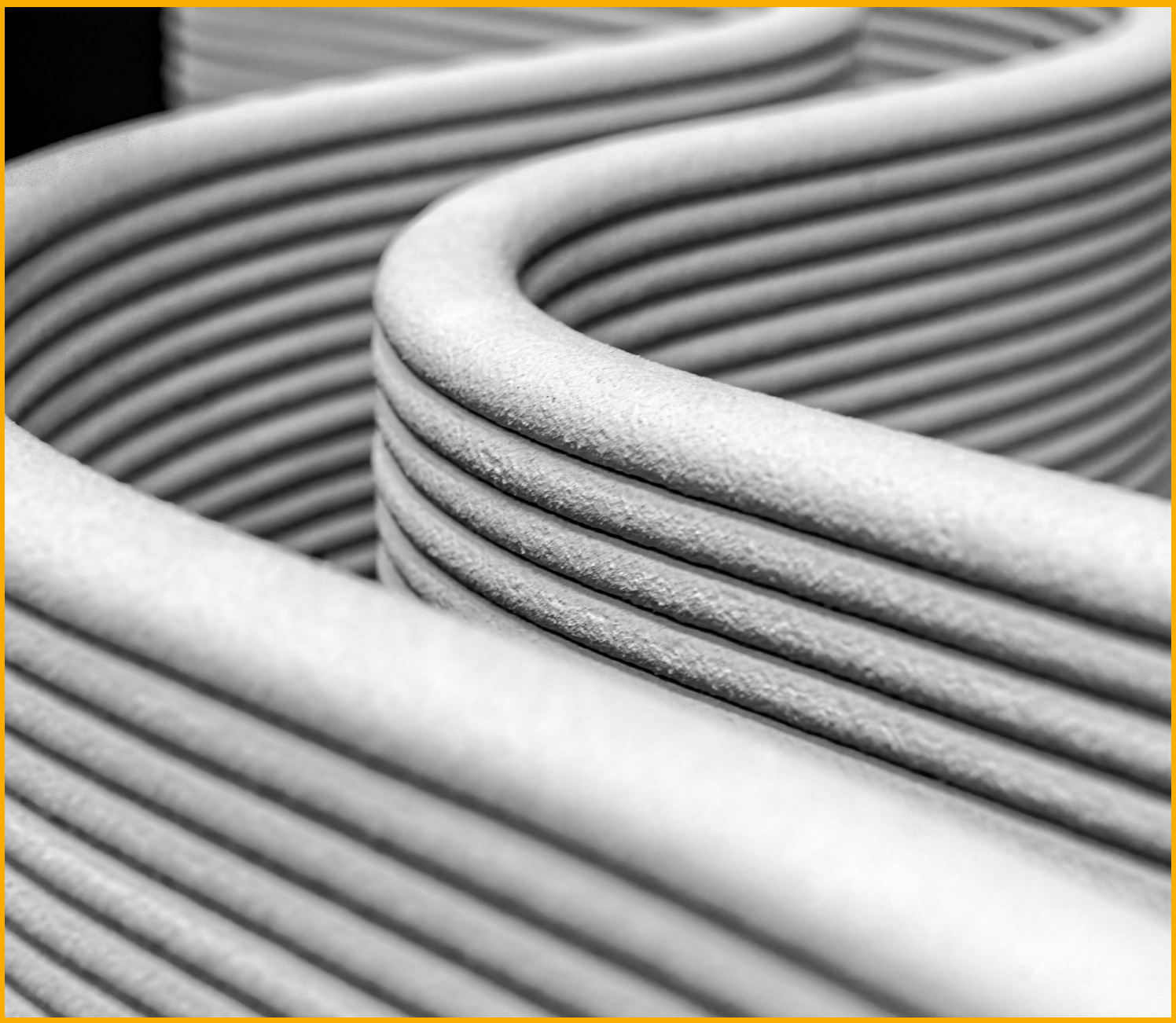

3D CONCRETE PRINTING
REDUCING SHRINKAGE AND SHRINKAGE CRACKING WITH SIKA

BUILDING TRUST

REASONS AND SIGNIFICANCE OF SHRINKAGE AND SHRINKAGE CRACKING

AT SIKA, WE ARE COMMITTED to pushing the boundaries of construction technology. Our specialized 1K and 2K formulations for 3D concrete printing are expertly designed to minimize shrinkage while enhancing both the durability and aesthetic appeal of your projects.

Shrinkage and cracking are common issues in concrete that can significantly impact the durability, structural integrity, and appearance of concrete structures. Shrinkage refers to the reduction in the volume of concrete as it hardens and dries. If the volumetric contractions are hindered by, e.g. layer bonding or rebar, and the occurred shrinkage stresses are higher than the tensile strength of concrete, cracks begin to form.

3D-printed concrete elements are suspended to a much higher propensity to shrinkage and related cracking than conventionally cast concrete. The reason for that can be traced back to general material-related issues and production-related issues:

MATERIAL-RELATED ISSUES:	PRODUCTION-RELATED ISSUES:
High paste content	No formwork
Low water-to-binder ratio	Time intervals
Low bleeding	Restrained conditions

SIKA'S SOLUTION AGAINST SHRINKAGE & SHRINKAGE CRACKING

SIKA'S ADVANCED 3D PRINTABLE CONCRETE compositions are engineered to minimize shrinkage and effectively mitigating the risk of cracking. Our innovative formulations provide superior 3D-printing performance, ensuring high durability and extended service life.

SIKA'S PRODUCT RANGE FOR YOUR OWN MIX DESIGN

- **Shrinkage-reducing admixtures (SRA)**: Significantly lower the risk of autogenous and drying shrinkage
- **Superplasticizers**: Reduce shrinkage by lowering the water content
- **Synthetic fibres**: Enhance the tensile strength of your concrete and reduce the risk of cracking
- **Bio-based fibres**: Water-retaining cellulose fibres enhance stress distribution and significantly minimize shrinkage

CURING COMPOUNDS FOR OPTIMAL PERFORMANCE UNDER HARSH ENVIRONMENTAL CONDITIONS

- **Paraffin-based curing compounds**: Prevent water evaporation by creating a vapour-tight film on the concrete's surface, preventing shrinkage and shrinkage cracking
- **Acrylic-based curing compounds**: Effectively cures and seals concrete surfaces by limiting surface drying and cracking

Find out more about our solutions for 3D Concrete Printing or contact us at:
concrete@de.sika.com

CRACKING IN 3D-PRINTED CONCRETE ELEMENTS INDUCED BY SHRINKAGE

UNCRACKED 3D-PRINTED CONCRETE WITH SIKA SOLUTION

As a subsidiary of the globally active Sika AG, Baar/Switzerland, Sika Deutschland GmbH is one of the world's leading suppliers of construction chemical product systems and sealants and adhesives for industrial production.

Our current terms and conditions apply. The current local product data sheet must always be consulted before use and processing.

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