TECHNICAL
DATA SHEET

RASCOflex PU309L
POLYURETHANE INJECTION MATERIAL

POLYURETHANE INJECTION PRODUCTS

All RASCOflex polyurethanes in the PU309 series are solvent-free, 2-component, polyol- and isocyanate-based injection resins. All products undergo strict material tests, with particular priority given to their environmental compatibility.

The RASCOflex polyurethanes in the PU309 series excel by their high versatility and wide-ranging applications. The individual products in the series vary in terms of their standard preset gel time, foaming behaviour or thixotropic properties. To maximize flexibility on site and efficiently accommodate the constantly changing injection conditions, all standard RASCOflex PU309 products can be modified by additives, even during the injection works. It is thanks to this modularity that the RASCOflex PU309 series has evolved into a truly all-round system.

All products in the RASCOflex PU309 series are formulated so as to foam upon contact with water and thereby quickly halt the water flow. The polyurethane grout injected behind this then gels, without any contact with water, into a compact polyurethane mass. In its non-foamed state, the cured polyurethane body is rigid and tough-elastic.

Further product info

USE

The key feature of RASCOflex PU309L L (L = “slow”) is its long gel time. This property allows the achievement of long injection distances or the controlled application of slow injection procedures.

RASCOflex PU309L is suitable for the waterproofing and consolidation of dry to water-bearing soft ground, rock, concrete and masonry etc. Its long gel times, controlled viscosity and reaction behaviour upon contact with water make it ideal for waterproofing in case of low water flow speeds, both above water and underwater. Applications include the consolidation and waterproofing of porous concrete, masonry, rock and soft ground as well as structural, waterproof filling of cracks, joints and voids.

CE
EN 1504-5:2004

swiss safety center ISO 9001 certified system

FEATURES

- high ground permeation
- long gel time
- suitable for long injection distances
- foaming of material limited to area of water contact, with material behind this forming compact, tough-elastic PU mass
- in absence of water: no foaming; material cures to resin with very high compressive strengths
- use of accelerator allows fine adjustment of gel time
- tough-elastic filling of cracks, voids, interstices and defects
- injectable as 1- or 2-component grout

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TECHNICAL/PHYSICAL DATA

	A-Comp Base component	B-Comp Base component
Supplied form	liquid	liquid
Material colour	slightly yellowish	brown
Container type	canister	canister
Standard container size	19.8 ltr / 20.0 kg	19.8 ltr / 24.3 kg
Density (DIN EN ISO 2811)	1.01 kg/ltr (± 0.03)	1.23 kg/l (± 0.04)
Hazardous goods/ADR	none	none

	Mix (ready-to-use)
Mixing ratio	1:1 (by volume)
Setting time at 20° C	approx. 50 min
Tensile bond strength (DIN EN 12618-2)	approx. 3.7 N/mm²
Flexural tensile strength (DIN EN 196-1)	approx. 17.7 N/mm²
Tensile strength (DIN EN ISO 527-3)	approx. 44.2 N/mm²
Compressive strength (DIN EN 196-1)	approx. 62 N/mm²
Application temperature	from +5° C to +40° C
Storage/shelf life	12 months, in original container at +10° C to +25° C, in dry conditions

The technical details are based on laboratory values from external and/or internal laboratory tests. These details are for information purposes only. The exact product values and their tolerances (e.g. temperature fluctuations ± 2°C) are verified and approved on the basis of the test guidelines.

APPROVALS

- EN 1504-5 System 4
- REACh-assessed exposure scenarios: water contact, periodic inhalation, application
- REACh-tested raw materials, classed as harmless

EXPERT REPORTS

- Impact on groundwater hygiene in accordance with DIBt (German Institute for Construction Technology) guidance paper, Institute of Environmental Hygiene and Environmental Medicine, Gelsenkirchen, Germany
- Compatibility with polymers to DIN EN 12637-3, MFPA Leipzig, Germany
- Flexural tensile and compressive strength, University of Duisburg-Essen, Germany

SUPPLY/ADDITIVES

Item no.	Product	Container	Contents
1401.6311.001	RASCOflex PU309L canister set	set	44,3 kg
1101.6311.001	RASCOflex PU309L A-Comp	canister	20 kg
1101.6391.001	RASCOflex PU309 B-Comp	canister	24,3 kg
1101.6911.001	RASCOflex PU-AC	canister	5 kg
1101.6921.001	RASCOflex PU-THIX	canister	5 kg
1101.6931.001	RASCOflex PU-FO	canister	5 kg

Grouting machines, equipment and accessories available on request

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APPLICATION/PREPARATION

The A and B components are supplied in the correct, ready-to-use volumetric proportions. Grouting is performed using a 2-component injection pump. The components are separately fed, in the ratio 1:1 by volume, to a static mixer located immediately upstream of the injection point. The mixed components react to form a solid polyurethane resin mass. The long setting time means that the material can also be injected as a ready-prepared, 1-component mix.

GENERAL GUIDELINES / SAFETY NOTICE

The gel and curing times are temperature-dependent. The reaction between the components is significantly influenced by the ambient, material, ground and groundwater temperatures. A minimum application temperature of +5° C should be observed for the individual components.

The components shall be properly blended into a homogeneous mix. For this purpose, a static mixer of min. 300 mm length should be used. As all RASCOflex polyurethane resins are moisture-sensitive, always ensure that the containers are properly sealed during storage.

As the B component is identical for the various RASCOflex PU309 systems, it does not need to be exchanged when switching systems. Do not use water or aqueous agents to clean the equipment and pumps.

Mixing video

MODIFICATION / ADJUSTMENT OF PRODUCT PROPERTIES

Additives can be used at any time, also directly on site, to tailor RASCOflex PU309 to the demands of the particular situation.

Gel time acceleration:	RASCOflex PU-AC
Foaming agent:	RASCOflex PU-FO
Thixotropic agent:	RASCOflex PU-THIX

To ensure correct dosage of the specific additive, please consult the relevant technical data sheet!

CLEANING OF WORKING EQUIPMENT

As the injection product reacts with water, no parts of the working equipment shall under any circumstances be cleaned with aqueous cleaning agents. Either machine oil or, in particular cases, acetone-based rinsing or cleaning agents are recommended for cleaning all equipment and accessories that have come into contact with polyurethane. Please consult the manufacturer's instructions for the relevant pumps and equipment.

DISPOSAL

For details on how to dispose of the individual components, please consult the product safety data sheet. Cured material, in moderate quantities, may be disposed of with normal domestic waste.

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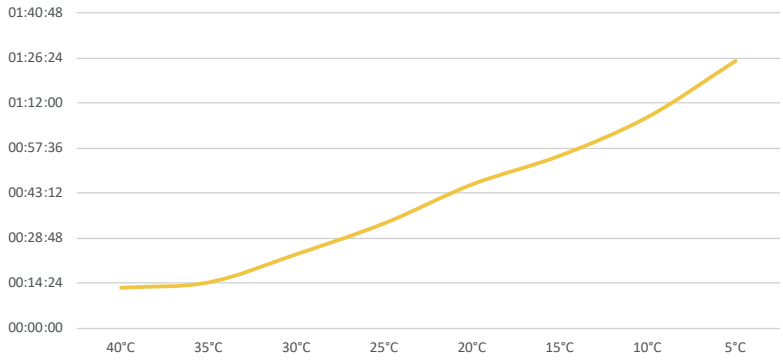
STANDARD GEL TIME

Gel time in minutes, in function of material/building fabric temperature



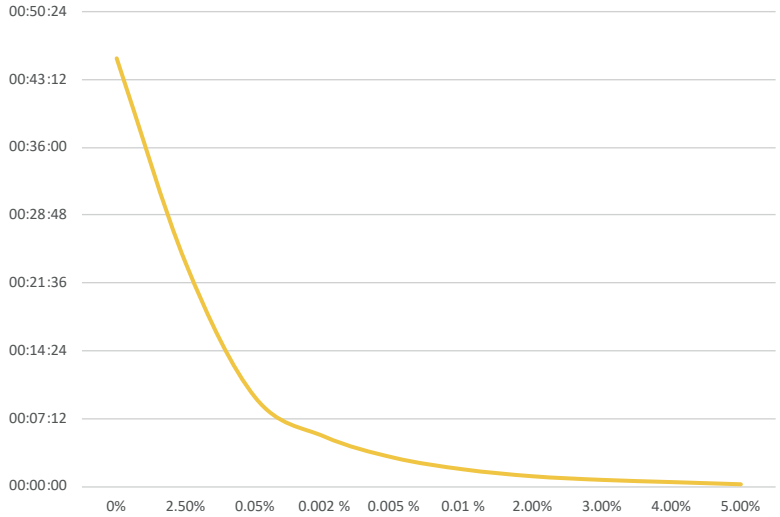
Temp.	Standard
40 °C	12:40
35 °C	14:25
30 °C	23:27
25 °C	33:20
20 °C	45:47
15 °C	54:59
10 °C	1:07:23
5°C	1:25:20

Time in (h:min:sec)

Guide values from laboratory tests!

GEL TIME WITH ACCELERATOR

Gel time in minutes, in function of material/building fabric temperature



PU-AC at 20 °C	in g of A-Comp	Time
5 %	1000	00:12
4 %	800	00:26
3 %	600	00:40
2 %	400	01:03
1 %	200	01:47
0.5 %	100	03:01
0.2 %	40	05:15
0.05 %	10	09:24
0.025 %	5	23:36
0.01 %	2	45:26

Time in (min:sec)

Guide values from laboratory tests!

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