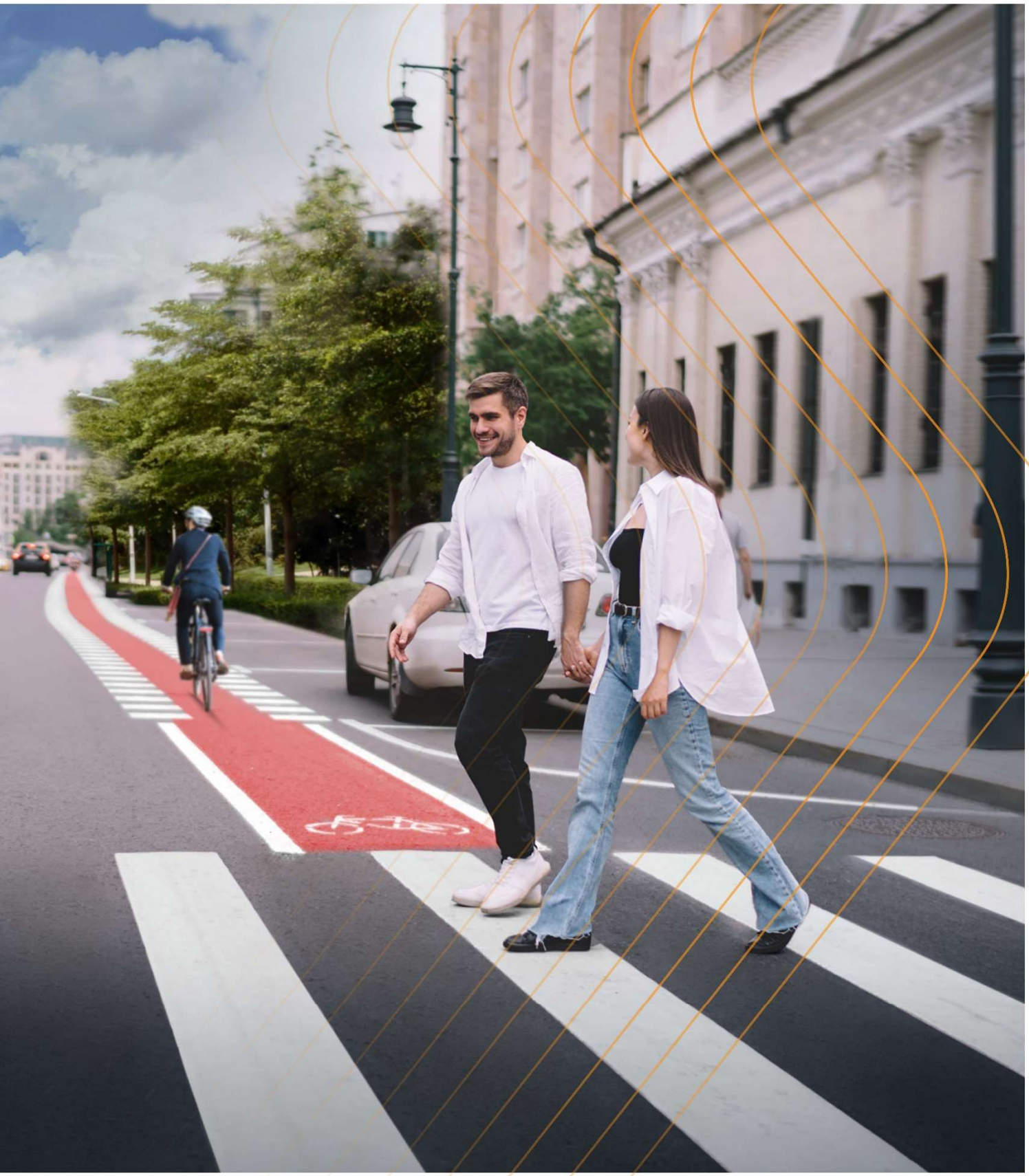
TECHNICAL INFORMATION

SWARCOPLAST G701

for plain / structure / profile



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Road Marking Systems

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SWARCOPLAST G701
for plain / structure / profile

Art.-No.: 5060G701R (reactive component)
5060G701RW (reactive component, winter formulation)

Version: 2026-03-26

Important Information:
Please consider our General Terms and Conditions and the general notes of the Technical Information Sheet! No liability is accepted for any errors! The information is provided to our best knowledge and experience. This information is, however, no warranty for any properties of the material. We provide this information without obligation, also regarding the rights of third parties. The user has to make sure that the material is appropriate for the respective application.

1 Main characteristics / Fields of application

SWARCOPLAST G701...

- is designed for maximum performance through the combination of the best raw materials. The product impresses with its unique retroreflection values.
- uses a special BaO-free type of SWARCO SOLIDPLUS NEXT as a premix bead (class B). The bead impresses with unprecedented robustness and scratch resistance. The titanium aluminum silicate reflective glass beads achieve a refractive index of nd > 1.7 for increased retro-reflection values (class B according to EN 1423). When rolled over, the premix beads become free and provide optimum retroreflection values over a longer service life. This effect has previously only been known to occur with thermoplastics and can only be achieved with cold plastics if the proportion of specially adjusted and produced premix beads is significantly higher than 10% of the total cold plastic mass.
- is particularly impressive due to its exceptional visibility at night and in wet conditions. This is ensured by the high refractive index of the BaO-free SWARCO SOLIDPLUS NEXT bead. The effect of the robust premix bead becoming free thus leads to the best measured values over the entire service life. Together with the unique whiteness of the product, this results in a system with unparalleled performance.
- proves its performance in official BASt renewal tests. With 12 million rollovers to date, the high-performance system still delivers excellent results. This is particularly true at night and in wet conditions, as demonstrated by traffic class RW5. These reports confirm the product's exceptionally long functional life.
- When used with the high-quality SWARCO SOLIDPLUS NEXT retread materials and the associated exceptionally high night visibility values, it is very well suited for accident black spots and roads with high traffic volumes.
- belongs to the group of solvent-free, multi-component, reactive systems
- consists of two components which – through chemical interaction – form a duroplastic compound and cannot be thermally plastified thereafter
- has been tested and approved by several test reports on the turntable simulator at the German Road Institute (BASt) as TYPE II marking (rain safety marking)
- is suitable for all bituminous surfaces and also concrete pavements (priming required)
- can be applied with all currently available cold plastic application machines for agglomerates (regular and irregular)
- as agglomerate marking (open structure) provides an excellent drain effect and good resistance against snow ploughs. Causes noise while being driven over by cars, therefore the structure version is not suitable for urban areas

2 Technical Data

Color	White (other colors on request)
Density	approx. 1.85 kg/l +/- 0.06
Potlife	5-10 min (depending on hardener quantity added and air, material and surface temperatures; cf. “Table Potlife / Curing time”!)
Solvent content	Solvent-free
Solvent for cleaning	Special cleaner for marking machines Art.-No.: 3086
Storage stability	6 months (unmixed), in sealed original packaging; protect from frost and direct sun light
Trafficability / curing time	Depends on the climatic conditions (cf. table “Potlife / Curing times”). In general, the markings` over rollability must be checked before exposing them to traffic impact.

Standard packaging	**2-C SWARCOPLAST G701:** Tin container with 16/25/40 kg filling weight; Other tin container / filling weights on request larger container filling upon request **Hardener powder:** PE-bags, filling weight corresponds to cold plastic quantity and mixing ratio **Hardener beads:** PE-bags, 20 kg filling weight **Attention:** all hardener types are organic peroxides. They must be packaged separately, transported and stored away from the cold plastic in special containers (special cartons and boxes). **Drop-on material:** paper bags with PE-inlay, 25 kg filling weight
Identification	The regulations and instructions concerning appropriate transport, handling, storage, first aid & measures, toxicology and ecology are stated in detail in our material safety data sheets! The instructions stated on the product label and in the MSDS must be followed.
Processing temperature	min. +5°C
Surface temperature	+5°C to +45°C
Relative humidity	max. 75% (dew point spreadsheet has to be regarded)
Theoretical consumption	**approx. 2.2 - 2.8 kg/m² for structure marking** The material consumption for agglomerate markings (without drop-on material) must not to be underrun. In areas with intensive snow plough impact we recommend a material consumption of 2.5 kg/m² - 3.0 kg/m²
agglomerate coverage	min. 60% by vertical viewing (see general information to the technical information)

3 Mixing ratio / Application techniques / Hardener

Product	Art.-No.	Technique	Hardener type
2-C SWARCOPLAST G701 **reactive component = base component** summer formulation winter formulation	**5060G701R** **5060G701RW**	**Shielded mixture technique** 2-component applicators, prior-ranking spicked roller technique, spring tension technique	Liquid hardener
Mixing ratio: **reactive component** (G701) : **liquid hardener** = **98 : 2** (2% to 4%)			

Between October and April SWARCOPLAST G701 is delivered in winter formulation, due to weather conditions.

4 Processing instructions

4.1 Preparation of material and application techniques

SWARCOPLAST G701 must be **homogeneously stirred** in its original container before processing! Depending on machine or application technique the hardener (powder or liquid) is mixed with the defined component under adherence to the stated mixture ratio using an appropriate stirring device. Never prepare more material with hardener than is needed for the application (observe potlife).

When using 2-component marking machines with a shielded mixture technique it is important to ensure that base component and liquid hardener are mixed in the extruder in adherence to the stated mixture ratio.

Cold plastics (reactive systems) are **solvent-free** and must be applied without adding solvent (optimizing of material processability, see point 4.2).
The cleaning must occur before the complete curing of the material takes place by using special cleaner for marking machines (Art.-No.: 3086).

The exact machine adjustments should be done according to the manufacturer's instructions. Layer thickness and quantity of drop-on material need to be evenly distributed. Scattering losses on both line sides make modified machine adjustments necessary.

Theoretical consumption of paint and drop-on material is listed:

- in the respective test reports by BASt
- in the table 1 “RPA – test reports by BASt” see point 7

4.2 Optimizing of application properties of the material

4.2.1 General information

The application properties, structure and reactivity of the material depends on temperatures of cold plastic, air and surface. Proper storage conditions improve application conditions partly (see Technical Data).
Within a limited extend viscosity and reactivity / curing time can be adjusted to processing conditions.
Attention: use methods described in 4.2.2 and 4.2.3 regarding agent quantities.
Exceeding the determined quantities may lead to substantial changes in material processability and subsequently in a change of its traffic technological properties.

4.2.2 Viscosity

Increase of viscosity (e. g. high material-, air- and surface temperatures): addition of max. 0.2% thixotropic agent (Art.-No.: RH13700 solid or RH10459 liquid).
Reduction of viscosity (e. g. low material-, air- and surface temperatures) addition of max. 1% condenser (Art.-No.: 3044).
Attention: Add the needed agent quantity to the required amount of material for application only, otherwise viscosity or settle properties can change.

4.2.3 Reactivity / curing time

Acceleration of reactivity / curing time (e. g. spring/autumn application jobs with low temperatures)

a) addition of max. 0.2 % accelerator for cold plastic (Art.-No.: 8060) or
b) increase hardener quantity up to max. 2% by weight

Retarding of reactivity / curing time (e. g. high temperatures in the summertime)

a) add max. 0.2 % retarder (Art.-No.: 8050) or
b) reduce hardener quantity but not below 0.5% by weight

Attention: for ensuring proper chemical reaction do not get below 0.5% by weight and do not exceed 2% by weight for hardener.

Different pot life and curing times depend on material, surface temperature, hardener quantities, addition of accelerator or retarder as shown in the spreadsheet.

Table 1: Pot life and curing times of 2-component cold plastics depending on material and surface temperature

Temp. (°C)	Powder hardener (weight %)	Pot life (min)	Curing time (min)	Liquid hardener (weight %)	Pot life (min)	Curing time (min)
0°	2	-	-	2	-	-
5°	2	x+20	x+18	2	x+14	x+35
10°	2	x+12	x+10	2	x+3	x+20
15°	2	x+1	x+1	2	x+1	x+16
20°	1	x	x	2	x	x
25°	1	x-2	x-4	2	x-2	x-4
30°	1	x-4	x-9	2	x-4	x-9
40°	0,5	x-1	x-3	2	x-8	x-15
45°	0,5	x-3	x-10	2	x-9	x-18

Table 2: Pot life and curing times of 2-component cold plastics as a function of temperature with addition of accelerator or retarder

Temp. (°C)	Accelerator (weight %)	Retarder (weight %)	Powder hardener (weight %)	Pot life (min)	Curing time (min)	Liquid hardener (weight %)	Pot life (min)	Curing time (min)
0°	0,2	-	1	-	-	2	-	-
5°	0,2	-	1	x+9	x+36	2	x+8	x+30
10°	0,2	-	1	x+4	x+5	2	x+2	x+4
15°	0,1	-	1	x+3	x	2	x+2	x+2
20°	-	-	1	x	x	2	x	x
25°	-	0,1	1	x-1	x-2	2	x+1	x-2
30°	-	0,1	1	x-2	x-5	2	x-2	x-3
30°	-	0,2	1	x+3	x+4	2	x+1	x+5
40°	-	0,2	1	x-1	x-5	2	x-4	x-8
45°	-	0,2	1	x-3	x-2	2	x-2	x

5 Road surface / pretreatment

5.1 General information

The surface must be dry, clean and free from grease, oil, loose gravel & other contaminations. The surface and any existing old markings must be checked for their carrying capacity and compatibility with the material to be applied. In case of doubt, application and adhesion tests are required. Ideally, old markings should be removed with appropriate mechanical procedures.

For initial markings, the tested LIMBOROUTE 2-Comp. K809 is generally recommended. In addition to application on residual damp surfaces, it also ensures sufficient carrying capacity for the final marking from reactive systems.

Attention: SWARCOPLAST G701 is not appropriate for large area applications on bituminous surfaces (e. g. playground, sportsground, cycle path or similar).

5.2 Concrete or cement bound surfaces

Parts on new concrete surfaces that prevent good bonding (fine mortar layer, concrete slurries) must be appropriately removed (e. g. with high pressure waterjet, fine millcuts or similar). We recommend conducting test applications.
Before applying the cold plastic on concrete or cement bound surfaces should be pretreated with primers:

a. using spray technique (paint spray machine) with 2-C EP-primer (Art.-No.: 8609000)
b. manually (roller) with 2-C primer B71 for concrete (Art.-No.: 8010)
c. using spray technique (paint spray machine) with LIMBOROUTE 2-C K809 (Art.-No.: 14809A)

It is essential to have a sufficient and uniform coverage with primer to obtain an optimum bonding of the cold plastic and the concrete. Primer consumption may vary depending on the concrete's porosity. The moisture of concrete must not exceed 4% during the application of 2-C primer B71 for concrete. Primers based on epoxide resins are suitable for residual moisture surfaces (see point a and c).

When applying an initial marking instead of conducting surface pretreatment it is import to check bonding properties before applying the final marking. Otherwise, the initial marking has to be removed.

5.3 Bituminous surfaces

Any loose components such as chippings must be removed. Fluxoils, releasing agents for road rollers, are detrimental to good bonding of markings or can cause discoloration of the striping. Since a mechanical removal is hardly possible, the surface should be exposed to traffic for 4 - 6 weeks or an initial marking of paint is to be applied. It is recommended to use LIMBOROUTE 2-Comp. K809, instead of a one-component paint when applying an initial marking. A bonding check is required before applying the final marking.

5.4 Cobbled pavement

For markings on cobbled pavement one of our suitable products should be used.

5.5 Floor coatings

For markings on floor coatings one of our “SWARCO SAFETY-LINE” marking products should be used.

6 Application techniques

With common self-driving cold plastic extruder or dispensing shoe machines or manually with smaller equipment (for small-scale applications) including the various adaptive kits for the creation of agglomerate markings.
The stated mixture ratios must be respected. The type of application technique and the type of hardener (liquid or powder hardener) used do not influence the quality of the final marking. The traffic technological properties will be the same.

Currently the following techniques are used to apply agglomerate markings:

1. **Spiked roller technique**

   A spiked roller rotating under the dispensing shoe stochastically distributes the material onto the road surface.

2. **Spring tension technique**

   A roller whose pretensioned springs tear off the material and distribute it mechanically.

3. **Spinning spatula technique (SST)**

   A roller whose unpretensioned springs scatter the unmixed (without hardener) material flowing from the dispensing shoe stochastically and cures after immediately broadcasting hardener beads 2000 (open system – no pot life) onto the material.

4. **Perforated plate technique**

   The material is distributed stochastically through the dispensing shoe via a perforated plate.

5. **Air pulsed methods**
   a) Spotflex® -Technique, Hofmann GmbH
      The material mixed with hardener in a mixing tube is applied under pressure through a block with an integrated pin system (pins abruptly open and close electropneumatically). Irregular agglomerates can be applied by mounting a spiked roller underneath the extruder.
   b) VisiDot® und VisiStrukt®, Grün GmbH
      The static mixing tube is fixed with the special application unit „Air Jet“.
      Cold plastic is pressured without any moving parts through the “Air Jet”. Regular agglomerates (VisiDot®) or irregular agglomerates (VisiStrukt®) are applicable.

Besides regular and irregular agglomerates different techniques can create various shapes of single agglomerates like compartmentalized or large-scaled blots, drop-shaped dots etc.
At present, it is not obvious which shape is the ideal agglomerate to get the best traffic technological properties.
Practical experience shows that the traffic technological properties of all agglomerate markings and their useful life depends on the following influencing factors:

- optimal structure with well-formed flanks
- agglomerate coverage > 60% (vertical viewing)
- processing properties, adapted to weather conditions (see 4.2.2 and 4.2.3), machine and application technique
- optimal bead distribution and embedment, especially at the sides adjustment of machine and application device according to the manufacturer's instructions

To optimize special properties and to enhance the useful life of the agglomerate SWARCOPLAST G701 can be applied as a system:

1. **Agglomerate with thin base line**

- SWARCOPLAST KSP 230 HighLine as thin base line and agglomerates as second layer. System can be applied with "fresh in fresh" technique by one single machine or by two machines.

2. **Refurbishment of agglomerate markings that no longer fulfil traffic technological requirements with**

- SWARCOPLAST KSP 230 HighLine with 0,3 – 0,4 mm layer thickness

Prerequisite is that the old agglomerate structure has a refreshable shape and after refreshment a Type II marking (night visibility under wet conditions) is attainable.

7 Test reports / Test field reports

7.1 Table 1: RPA – Test Reports by BASt (German Road Institute)

Test report-no.	Layer thick-ness	consumption		Drop-on material (DOM)	Traffic technological properties	
	mm	Material kg/m²	DOM kg/m²	Identification (divergent identification possible - see relevant test report)	New condition	Used condition
Plain marking – Type II						
2024 1DK 13.14	3,0	5,55	0,5	SWARCO SOLIDPLUS NEXT 100 – CLASS B 425-1180 T18 MK30	P7, >S1, R5, RW6, Q5, T3*	P7, S1, R5, RW3, Q5
Structured marking – Irregular agglomerates Type II						
2024 1DK 12.08	1,5 – 3,0	2,2-2,8	0,50	SWARCO SOLIDPLUS NEXT 100 – CLASS B 300-850 T18	P7, S0, R5, RW6, Q5, T3*	P7, S0, R5, RW5, Q5
Structured markings – Regular agglomerates Type II						
2024 1DK 11.17	1,5 – 3,0	2,5-2,8	0,50	SWARCO SOLIDPLUS NEXT 100 – CLASS B 300-850 T18	P7, S0, R5, RW6, Q5, T3*	P7, S0, R5, RW6, Q5
Structured marked with white underline – Irregular agglomerates type II						
2025 1DK 08.09 KSP230 G701	0,625 1,5 – 3,0	0,986 2,4-2,8	0,45 0,45	a) SWARCO SOLIDPLUS NEXT 100 – CLASS B 425-1180 T18 b) SWARCO SOLIDPLUS NEXT 100 – CLASS B 300-850 T18	T2* P7, S0, R5, RW6, Q5, T2*	P7, S0, R5, RW6, Q5
Structure marked with white underline – Regular agglomerates type II						
2025 1DK 07.06 KSP230 G701	0,625 1,5 – 3,0	0,986 2,4-2,8	0,45 0,45	a) SWARCO SOLIDPLUS NEXT 100 – CLASS B 425-1180 T18 b) SWARCO SOLIDPLUS NEXT 100 – CLASS B 300-850 T18	T2* P7, S0, R5, RW6, Q5, T2*	P7, S0, R5, RW6, Q5