

The logo for Resonac, featuring the word "RESONAC" in a bold, italicized, teal-colored sans-serif font. The letter "R" is stylized with two vertical bars to its left.

Chloroprene

Poly Chloroprene Rubber
"Manufacturing since 1963"

Polychloroprene Rubber

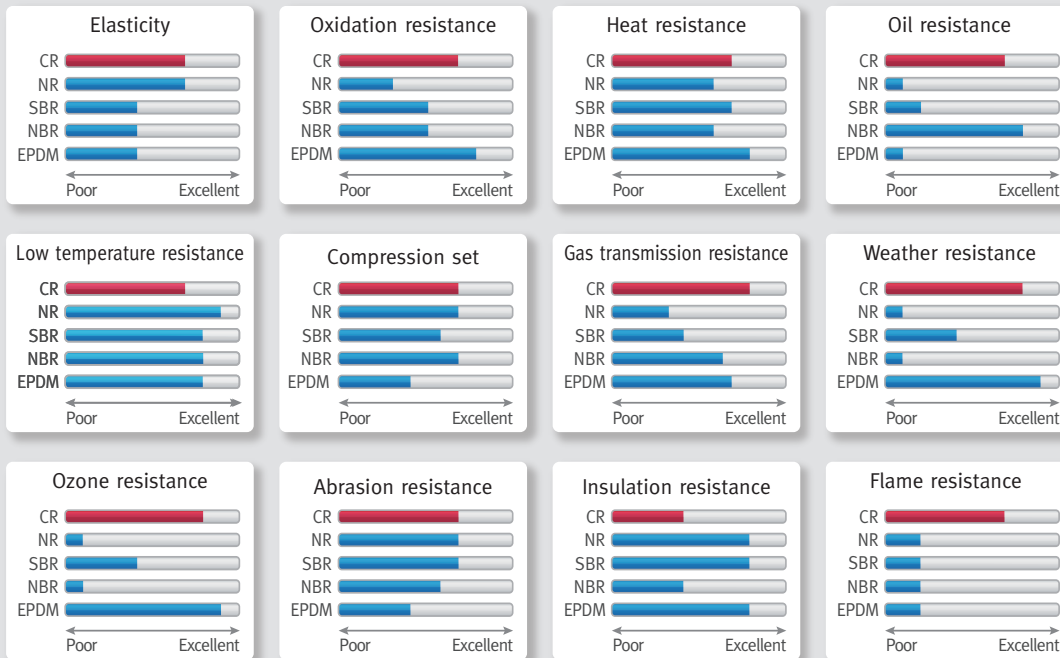
2

What is **Resonac** Chloroprene?

Resonac Chloroprene rubber (CR) is a type of synthetic rubber used as an elastomer in the automotive (belts and hoses), construction (waterproofing and sealing), wire and cable, adhesives, and many of other industries. **Resonac** Chloroprene has been produced for 60 years and continues to expand its application field. The properties of **Resonac** Chloroprene are highlighted by the high resistances to sunlight, ozone, flame, weathering, many oils and chemicals, low and high temperatures, and toughness against abrasion and general wear. The versatile properties have long been the key to **Resonac** Chloroprene's utility as a multi-purpose rubber. The product is available in over 30 grades, produced as either dry chips or aqueous dispersions (Latex).



Well balanced elastomer CR



*These figures are only for reference purposes and do not serve as specifications

Historical Overview

3

Location

Plant: Kawasaki, Japan



Footprints

1960: Established Showa Neoprene (Showa Denko 50% ,DuPont 50%)

1963: Started Neoprene production at Kawasaki plant with DuPont technology

2002: Terminated JV and started CR business as Showa Denko

2023: Changed company and product name from Showa Denko to Resonac

Process

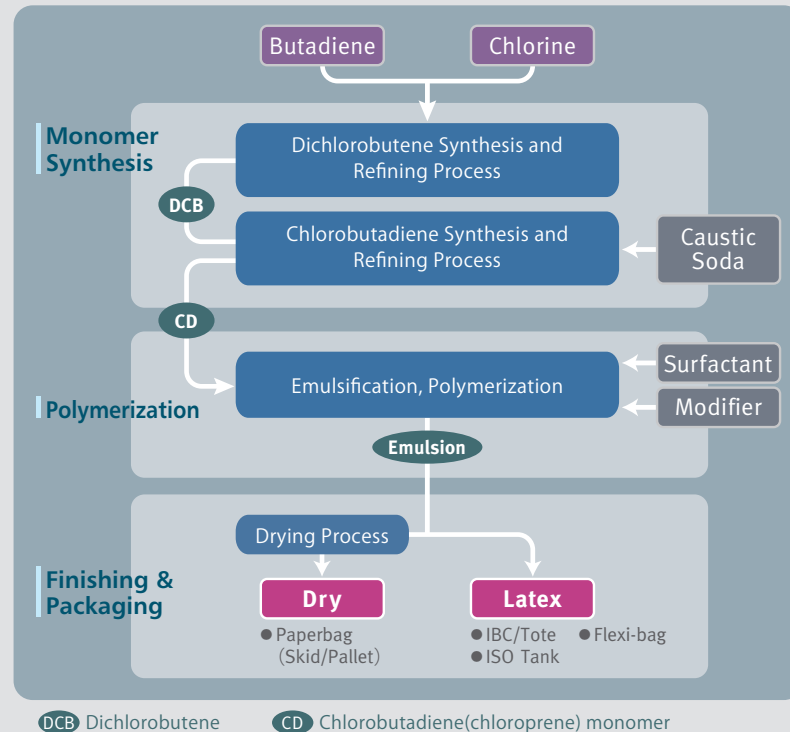
1963: Started production with Acetylene process

1972: Converted to butadiene process, developed by DuPont, for safety concerns

Quality & Environment Management

ISO9001, ISO14001, OSHMS

Process (Butadiene)



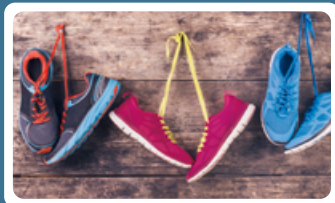
LATEX Aqueous Dispersion

4

Resonac Chloroprene latexes are emulsions of polymerized chloroprene dispersed in water; containing emulsifying agents and stabilizers. The latexes are viscous off-white liquids which solid contents are ranged from 42% to 60%. **Resonac** chloroprene latex is available in over 15 different grades, each tailored to meet the requirements of specific end uses.

Water-based adhesives

Foam to foam, Shoe sole bonding, Contact adhesive, High pressure laminate, Metal bonding



Dipped goods

Surgical gloves, Industrial gloves, Medical breathing bags



Construction & Coating

Asphalt emulsion, Mortar modification, Waterproof coating, Roofing



Others

Sealant, Mattress, Textile coating, Flame retardant foam



It is intended for use by persons having technical skill, at their own discretion and risk. Do not use in medical applications involving permanent implantation in the human body. For other medical applications, contact your Resonac customer service representative.

DRY CHIP General Purpose

5

Resonac Chloroprene is available in a dry chip form. There are around 20 dry grades which cover a wide range of properties and performance to meet the requirements from automobile, adhesive, construction and general rubber industrial fields.

Automotive

Transmission belt, Hose,
Engine mount



Industrial

Conveyor belt, Gasket, Boots seal,
O-ring, Wire and cable



Construction

Bearing pad, Joint,
Rubber sheet



Adhesive

Foam to foam, Carpet backing,
High pressure laminate



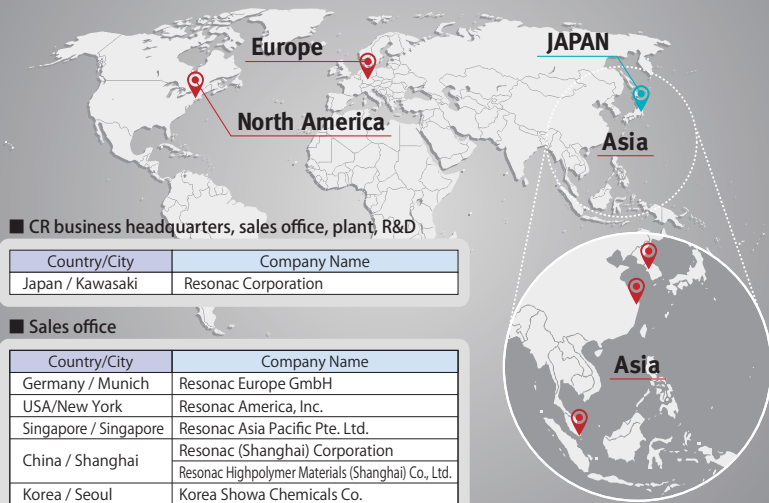
Others

Sponge, Escalator handrail,
Mattress



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CR Business Global Network



Profile Resonac Corporation

Under the purpose of "Contribute to the sustainable development of global society by creating functions required of the times as an advanced material partner", **Resonac** was established in January 2023, integrating **Showa Denko** and **Hitachi Chemicals**. The name "Resonac" was created by combining the word "resonate" with the "c" of "chemistry".

Business Segment



Semiconductor and Electronical Materials Segment

Front-end semiconductor materials, Back-end semiconductor materials, Hard-disks, Silicon carbide (SiC)



Mobility Segment

Automotive products, Lithium-ion battery materials



Chemicals Segment

Petrochemicals, Basic Chemicals and industrial gases, Graphite electrodes



Innocation Enabling Materials Segment

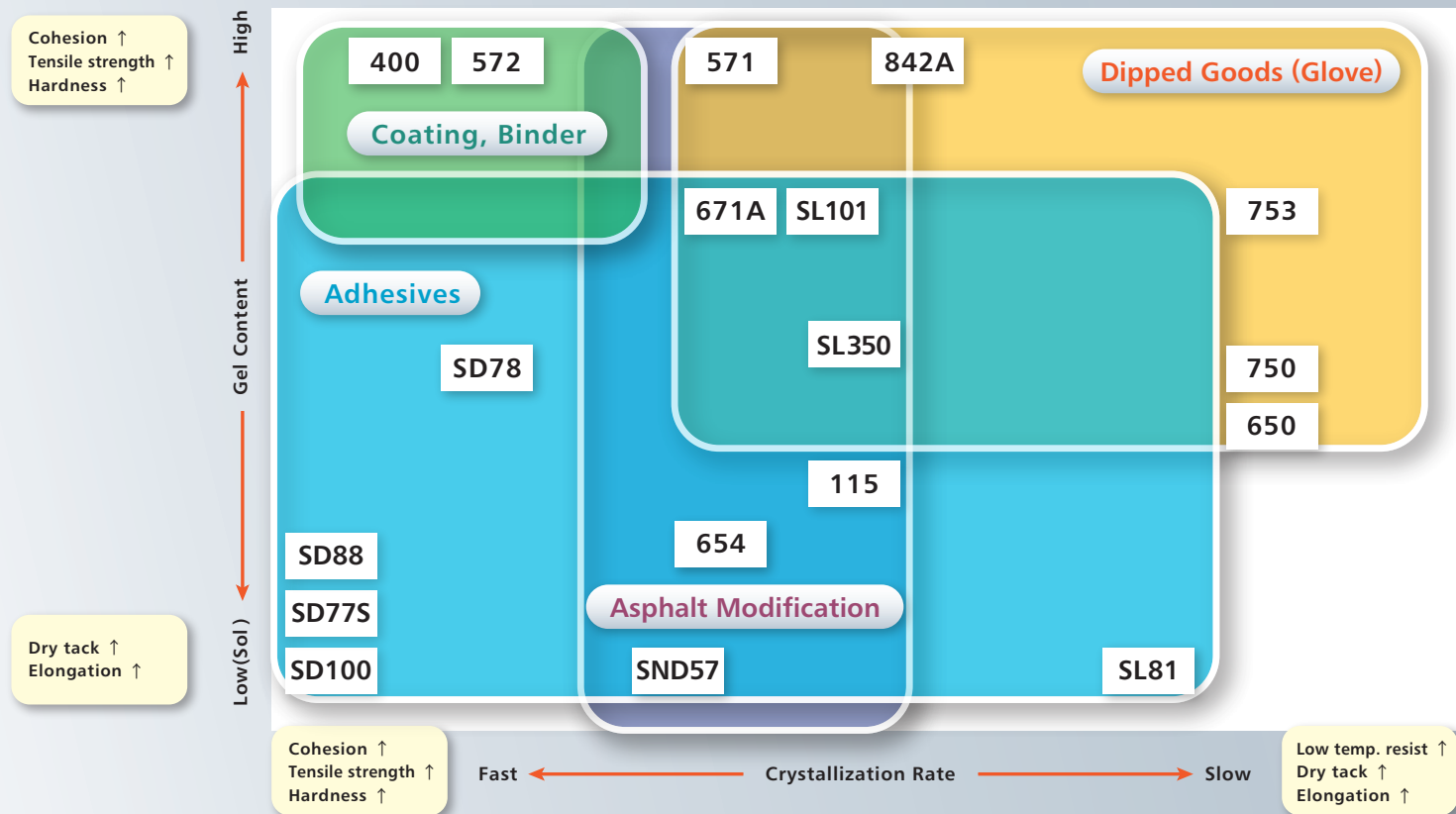
Functional chemicals, Resin materials, Coating materials, Ceramics, Aluminium specialty components



Other Segment

medical

LATEX APPLICATION MAP BY CRYSTALLIZATION VS. GEL CONTENT



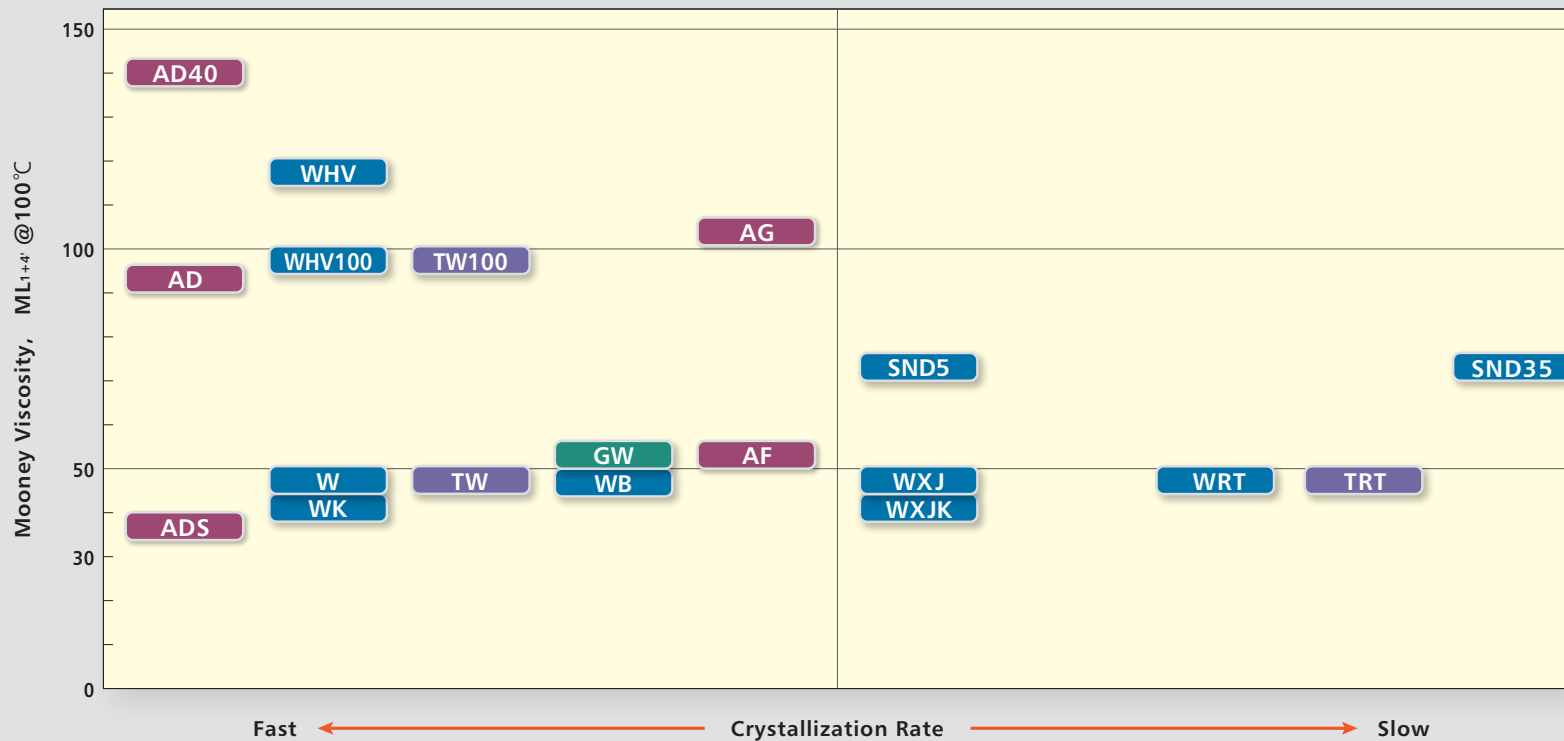
RESONAC CHLOROPRENE LIQUID DISPERSION PROPERTIES (Typical Values)

Grades	400	750	753	650	654	842A	671A	572	571	SND57	SD77S	SD88	SD100	SD78	SL101	115	SL350	SL81
Polarity	Anionic	Anionic	Anionic	Anionic	Anionic	Anionic	Anionic	Anionic	Anionic	Anionic	Anionic	Anionic	Anionic	Anionic	Non ionic	Non ionic	Non ionic	Non ionic
Polymer Construction	Copolymer	Copolymer	Copolymer	Copolymer	Homopolymer	Homopolymer	Homopolymer	Homopolymer	Homopolymer	Homopolymer	Homopolymer	Homopolymer	Homopolymer	Homopolymer	Homopolymer	Copolymer	Copolymer	Copolymer
Main Feature	Ozone and weather resistance	Excellent flexibility			Low modulus	Fast curing	Good wet strength	Fast crystallizing	General purpose	Good tackiness	Water based adhesives for foam bonding			Water based adhesives for high pressure laminate	Non-ionic	Non-ionic Carboxylated	Non-ionic Carboxylated	Non-ionic Carboxylated
Solids Content, %	49	50	50	60	59	50	59	50	50	58	57	42.5	57	60.5	59	47.5	47	46.5
Application and Other Characteristics	<ul style="list-style-type: none"> Bonded fibers Coatings Adhesives 	<ul style="list-style-type: none"> Adhesives Dipped goods Non-woven fabric Low modulus Excellent elasticity 	<ul style="list-style-type: none"> Adhesives Dipped goods Non-woven fabric Low modulus Accelerator free 	<ul style="list-style-type: none"> Dipped goods Adhesives Foam Sealant High solid same polymer as 750 	<ul style="list-style-type: none"> Dipped goods Fabric impregnation (Binder) Bonded fibers Dipped goods Coatings Carpet backing 	<ul style="list-style-type: none"> Treated paper Bonded fibers Dipped goods Coatings Mastics 	<ul style="list-style-type: none"> Dipped goods Adhesives Bonded fibers Treated paper Mastics 	<ul style="list-style-type: none"> Adhesives Fabric impregnation (Binder) Adhesives 	<ul style="list-style-type: none"> Dipped goods Adhesives 	<ul style="list-style-type: none"> Pressure sensitive adhesives Primer 	<ul style="list-style-type: none"> Adhesives Excellent quick break with decent stability 	<ul style="list-style-type: none"> Adhesives Excellent quick break with decent stability High solid same polymer as SD88 	<ul style="list-style-type: none"> Adhesives Heat creep resistance 	<ul style="list-style-type: none"> Colloidal stability at low pH Asphaltit modification 	<ul style="list-style-type: none"> Contact adhesives Coatings Mastics Sealant Asphaltit modification 	<ul style="list-style-type: none"> Contact adhesives Coatings Asphaltit modification Colloidal stability at low pH 	<ul style="list-style-type: none"> Contact adhesives Coatings Asphaltit modification Colloidal stability at low pH 	<ul style="list-style-type: none"> Contact adhesives Pressure sensitive adhesive Colloidal stability at low pH
Physical Characteristics																		
pH, 25°C ^(*)	11.5	12	12	12	12	12	12	11.5	12	12	11	11	11	12	12	7	6	7
Specific gravity, 25°C																		
Latex	1.15	1.12	1.12	1.13	1.13	1.11	1.13	1.11	1.11	1.13	1.12	1.10	1.12	1.13	1.13	1.09	1.09	1.08
Polymer	1.41	1.27	1.27	1.27	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.24	1.23	1.23
Brookfield viscosity, mPa·s, 25°C (Spindle No. 1, 60rpm)	8	10	10	400 ^(*)	40	15	40	10	10	35	100 ^(*)	10	120 ^(*)	30	200 ^(*)	300 ^(*)	300 ^(*)	200 ^(*)
Polymer type	High gel	Mid.gel	High gel	Mid.gel	Low gel	High gel	Mid-high gel	High gel	High gel	Sol	Sol	Sol	Sol	Mid.gel	Mid-high gel	Mid.gel	Mid-high gel	Sol
Wet gel properties																		
Tensile strength	Very high	High	High	High	Medium	Medium	Very high	Medium	Medium	Low	Very high	Very high	Very high	Very high	High	High	High	Low
Elongation	High	High	High	High	High	Medium	High	Medium	Medium	Medium-high	High	High	High	High	High	Medium	Medium	Medium
Cure rate	Slow	Medium	Medium-fast	Medium	Medium	Fast	Medium-fast	Fast	Fast	Slow	Slow	Slow	Slow	Medium-fast	Medium-fast	Medium	Medium	Slow
Cured Film Properties																		
Modulus	Very high	Low	Low	Low	Low	Medium	High	High	High	Medium	High	High	High	High	Mid.-high	Medium	Mid.-high	Low
Tensile strength	High	Medium	Medium	Medium	Medium	Mid.-high	High	High	High	Medium	High	High	High	High	Mid.-high	Medium	Mid.-high	Low
Crystallization rate	Extremely fast	Extremely slow	Extremely slow	Extremely slow	Medium-fast	Very slow	Medium-fast	Very fast	Medium	Medium	Extremely fast	Extremely fast	Extremely fast	Medium-fast	Medium-fast	Slow	Slow	Very slow

[Note] *1) : pH values decline slowly upon ageing. *2) : Spindle No.2

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PLOT OF DRY GRADES CRYSTALLIZATION RATE VS. MOONEY VISCOSITY



RESONAC CHLOROPRENE DRY GRADE PROPERTIES (Typical Values)

GENERAL PURPOSE

Type	Grades	Mooney Viscosity [ML 1+4, 100°C]	Crystallization Rate	Other Characteristics
G Types (Sulfur-modified group)	GW	34 – 52	Slow	Sulfur modified G type with better heat and compression set resistance than GN
W Types (Basic group)	W	42 – 51	Medium	Standard grade for general purposes
	WHV	109 – 130	Medium	Higher viscosity version of W for high loading application and general adhesives
	WHV100	95 – 105	Medium	Lower viscosity version of WHV
W Types (Crystallization resistant group)	WXJ	42 – 51	Very Slow	Good low temperature properties for general use
	SND5	67 – 76	Very Slow	Higher viscosity version of WXJ
	WRT	42 – 51	Extremely slow	Excellent low temperature properties
W Types (Extrusion & calendering)	WB	42 – 51	Medium	Best extrusion and calendering properties
W Types (Low mold fouling group)	WK	42 – 51	Medium	Better mold release version of W with good mill-and flow-ability
	WXJK	42 – 51	Very Slow	Improved mold release version of WXJ with good mill-ability
	SND35	63 – 73	Extremely slow	More excellent low temperature properties of WRT with improved mold release for injection molding goods
T Types (Specific group for extrusion, calendering)	TW	42 – 51	Medium	Superior extrusion and calendering grade with good tensile properties
	TW100	85 – 102	Medium	Higher viscosity version of TW for high loading use
	TRT	42 – 51	Extremely slow	Excellent low temperature properties with better processability
A Types (Adhesive application)	ADS	10 – 35*	Very fast	Low solution viscosity version of AD. Low VOC adhesive potential
	AD	33 – 46*	Very fast	Adhesives and paints use with good solution viscosity stability
	AD40	76 – 115*	Very fast	High solution viscosity version of AD
	AF	40 – 115**	Slow	Excellent hot bond strength, carboxylated
	AG	80 – 140	Medium-Slow	Excellent sprayability, thixotropic

Note *: Brookfield viscosity of 5% raw polymer solution in toluene at 25°C, [mPas] **: Brookfield viscosity of 10% raw polymer solution in toluene/hexane (60/40 vol/vol) at 25°C, [mPas]

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