



TOSOH

CHLOROPRENE RUBBER

SKYPRENE[®]

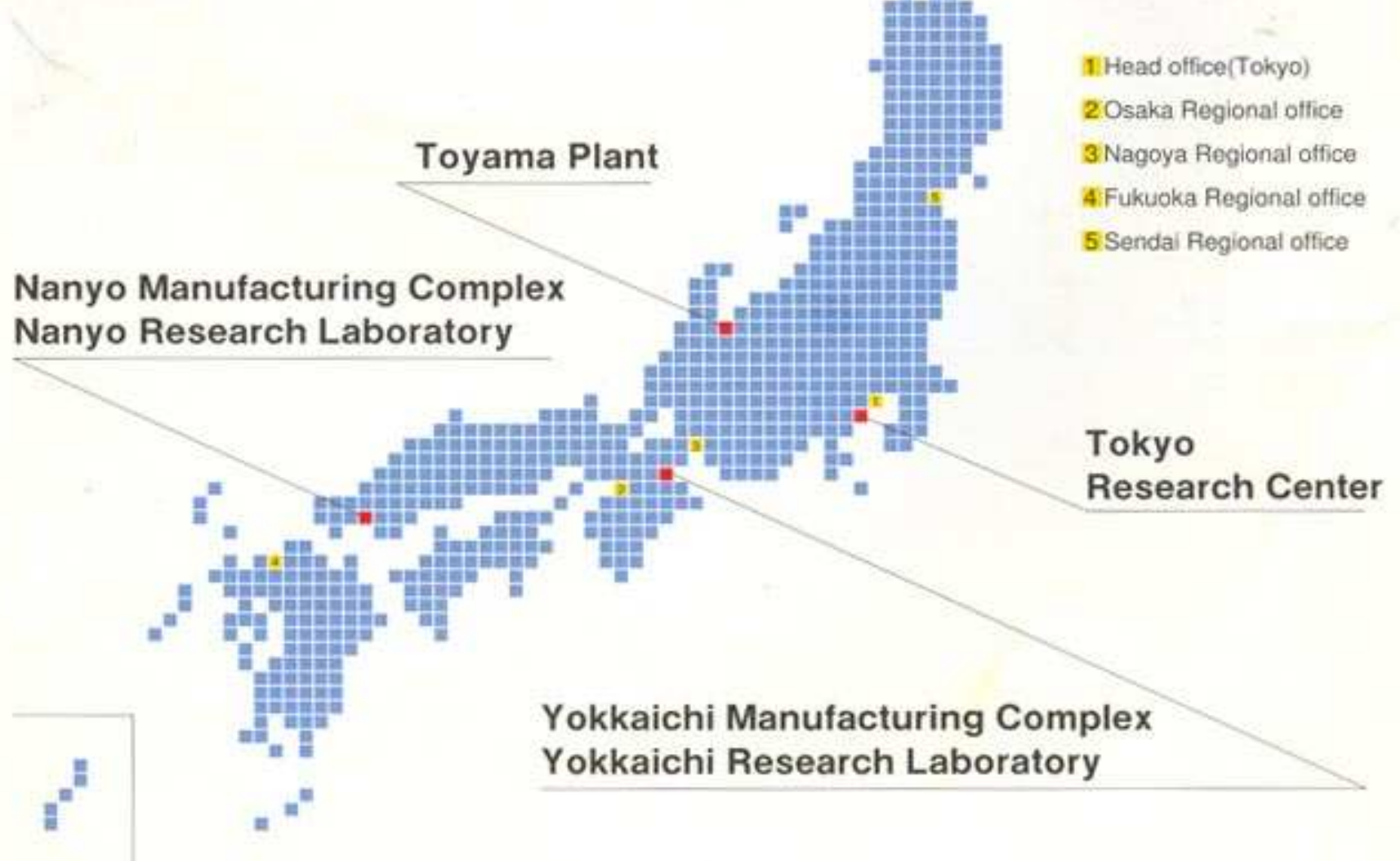




Introduction

TOSOH Corporation was established in 1935. Our first products were soda ash and caustic soda produced by the Solvay process. In the years that followed new plants were gradually added to produce an ever-increasing stream of important industrial chemicals. The technology developed and the experience gained in operating these plants provided the basis for expansion and growth into diverse sectors.

Early in 1960's TOSOH was ready to enter into the organic and petrochemical fields. To achieve this, the company organized a new petrochemical complex by grouping together a number of firms. Today, TOSOH has three factories in Japan and is producing many ranges of products. The company possesses three well-equipped laboratories staffed by a capable team of scientists and engineers who are always available to provide technical service and advice on the processing and applications of company products.





SKYPRENE[®] Adhesive

SKYPRENE[®] is a registered brand of chloroprene rubber (CR) produced by TOSH Corporation. CR, a polymer of 2-chloro-1,3-butadiene, is recognized in the industry as a superior form of synthetic rubber due to its excellent elasticity, mechanical

properties, chemical and flame resistance. In addition CR offers a crystallinity. CR-base adhesives are used in wide-ranging applications due to these properties.



Product Safety

Refer to the Material Safety Data Sheet for SKYPRENE[®]





SKYPRENE[®] Adhesive Grades & Characteristics

Grade	Moony Viscosity	10% Solution Viscosity	Crystallization Rate	Characteristics
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General Purpose Grades

G-42	36~48**	70~130	Fast	Lower viscosity form of G-40S. Ideal for use in sprays.
G-41H	75~90**	250~500		Thiuram stabilized type. Easily masticated, excellent viscosity and phasing stability of adhesive.
G-40S	81~95**	300~600		Typical grade of fast crystallization rate and excellent initial bonding strength.
G-55	80~96**	300~600		Higher reactivity to isocyanate than G-40S.
G-40S-1	81~99**	300~700		Ideal for use in MMA grafted adhesive for soft PVC and synthetic leather.
G-40T	96~113**	600~900		Higher viscosity form of G-40S with superior heat resistance.
G-70		1600~2400		
B-31	36~44**		Medium	Lower viscosity form of Y-31.
B-30S	45~53**	110~170		
Y-31	90~110**	340~660		Lower viscosity form of Y-30S.
Y-30S	111~135**	600~1100		Typical grade. Medium crystallization rate, Excellent heat resistance and tack retention time.
Y-30SA		1100~1700		
Y-30H		1400~2100		Higher viscosity form of Y-30S with superior heat resistance.
Y-30HA		1900~2600		
B-10	47~55**		Very slow	Crystallization resistant form of B-30S. Effective for the improvement of tack retention time.
B-5	45~53**			

Heat resistant Grades(Carboxylated)

510L	35~47**	80~170	Fast	Excellent heat resistance and initial bonding strength.
510	48~60**	120~260		Higher viscosity form of 510L.
580	35~47**	60~150	Very slow	Slower crystallization and lower carboxyl content form of 510L. Effective for the improvement of tack retention time.
580H	57~77**	140~300		Higher viscosity form of 580.

Latex Grades

GFL-280	High**		Fast	Carboxylated anionic latex. Ideal for footwear, construction, automotive interiors use .
GFL-820	Low**		Medium	
GFL-890	High**		Medium	
LA-660	Gel**		Medium	Anionic latex. Ideal for urethane foams.

**ML(1+2.5)100°C **ML(1+4)100°C

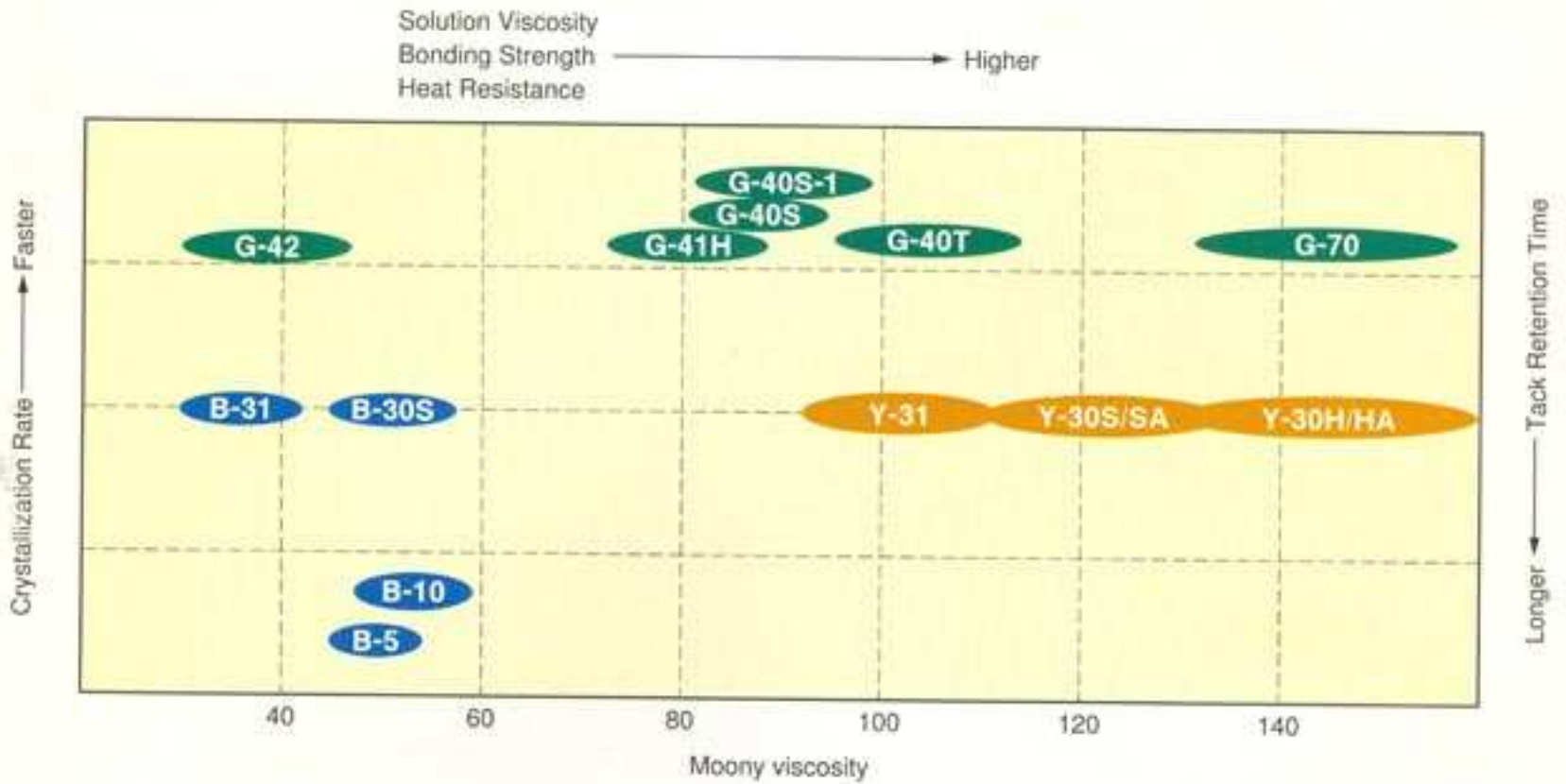
**10% toluene solution viscosity ((mPa·s / Brookfield(BL) type viscometer , 23°C))

** Relative molecular weight

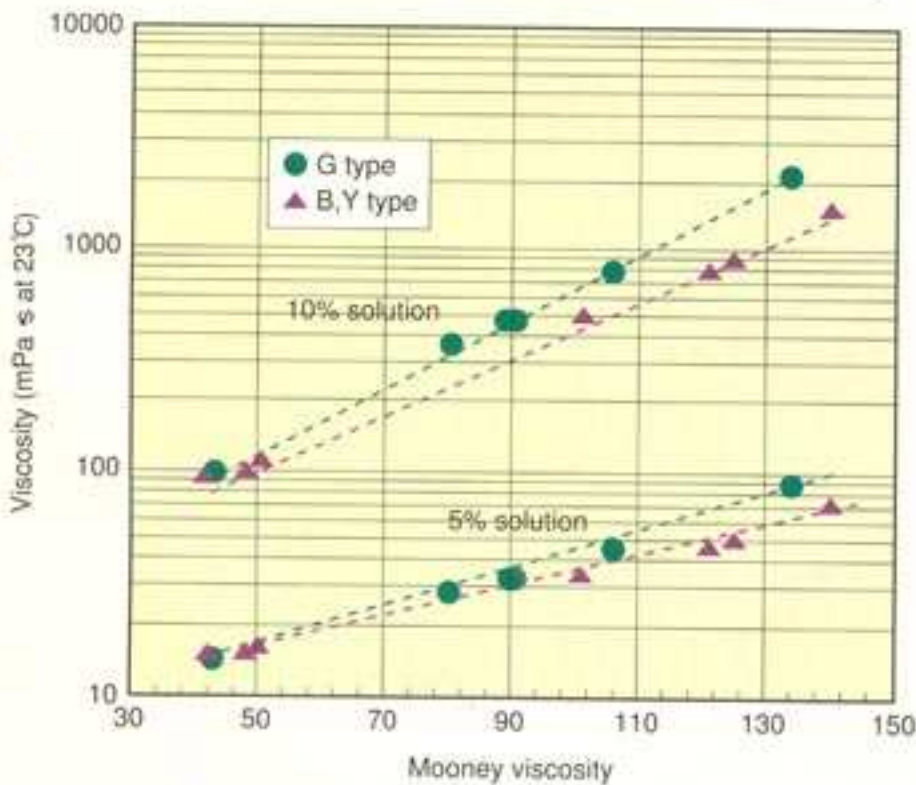


General Purpose Grades

Grades & Characteristics



Relationship between ML and toluene solution viscosity



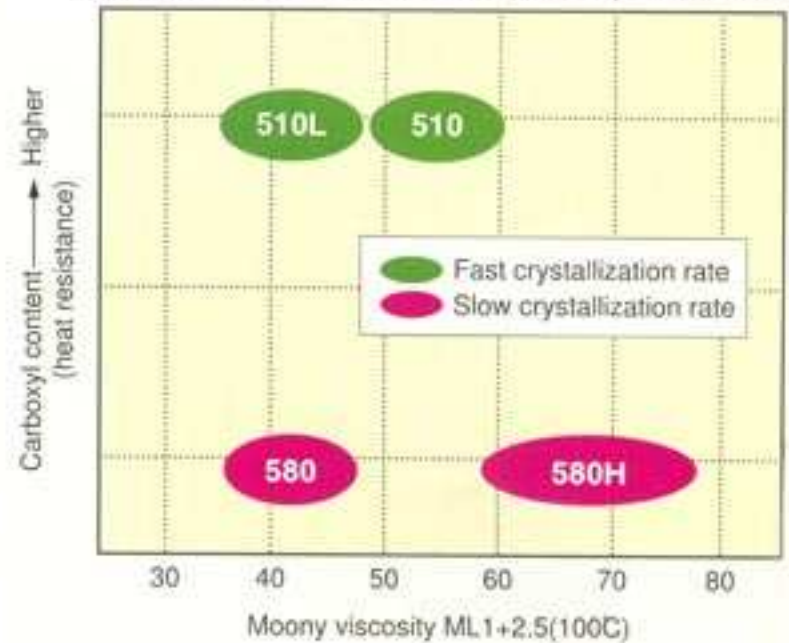
*This figure is reference values, not served as specifications.



Heat Resistant Grades

Heat-resistant carboxylated grades can be readily cured with metal oxide. Due to the rapid formation of ionic crosslinks, these grades exhibit superior heat resistance at temperatures over 80°C.

Relationship of SKYPRENE® Carboxylated Grade



Bonding Properties of Carboxylated Grade

SKYPRENE®		510	580	Y-30S	G-40S
Formulation					
Rubber compound	SKYPRENE®			100	
	MgO			4	
	BHT			2	
	ZnO			5	
Pre-reaction(30°C×6hrs)	Alkylphenolic resin ¹⁾			50	
	MgO			5	
	Toluene			100	
	water			0.5	
Solvents	Toluene	88.5	53.7	114	85
	n-Hexane	113	92	128	111
	Ethyl acetate	75.5	61.5	85	74
	i-Propanol	10	1	-	-
Total		553.5	474.7	593.5	536.5
Solid(%)		30	35	28	31
Raw rubber					
Mooney viscosity ML1+2.5(100°C)		54	40	-	86
10% toluene viscosity at 23°C	mPa·s	190	85	1030	420
Compound					
Solution viscosity at 23°C	mPa·s	2400	2600	2500	2500
Peel Strength (Canvas/Canvas)					
After 1hr (23°C)	N/25mm	112	100	100	73
After 1hr (80°C)	N/25mm	83	26	12	5
After 7days (23°C)	N/25mm	166	190	185	210
After 7days (80°C)	N/25mm	95	80	61	61
After 7days (120°C)	N/25mm	68	41	35	21

1) CKM1634 (Showa High Polymer Co., Ltd.)



LATEX Grades

SKYPRENE® LATEX grades were developed to replace solvent type adhesives. TOSOH's GFL series, designed for dry contact adhesive use, have the advantages of gel-free components and higher crosslinkability with ZnO, superior to those of traditional

carboxylated chloroprene latex. In addition the GFL series have better mechanical and electrolytic stability than traditional anionic latex.

Properties

Grade	GFL-820	GFL-890	GFL-280
Polymer Type	Chloroprene/methacrylic acid		
Emulsifying Agent	Anionic		
Solid Content(%)	50-56		
pH at 25°C	2.1-6.0		
Specific Gravity at 25°C	1.12		
Gel Content	None		
Molecular Weight	Low	High	High
Crystallization Rate	Slow	Slow	Fast
Stability			
Mechanical	Good		
Electrolyte	Good		
Storage	Good		
Freeze	Unstable		

Relationship of SKYPRENE® GFL Series



Bonding Properties of SKYPRENE® Series

SKYPRENE®	GFL-820	GFL-890	GFL-280	Solvent Type
Formulation				G-40S 50
SKYPRENE® LATEX				Y-30S 50
Terpene phenol ¹⁾				ZnO 3
Rosin ester ²⁾				Phenolic ³⁾ 20
ZnO ⁴⁾				MgO 2
Thickener ⁵⁾				solvent 810
Property at 25°C				
viscosity	mPa · s	5400	5300	5600
pH		5.4	5.3	5.7
Peel Strength(Canvas/Canvas)				3200
after 7days (23°C)	N/25mm	65	100	114
after 7days (80°C)	N/25mm	7	27	29
Water Resistance (23°C)	N/25mm	42	56	75
Tack retention time	min	>120	70	40

- 1) Resin emulsion E-100 (Arakawa Chemicals)
- 2) Resin emulsion E-720 (Arakawa Chemicals)
- 3) ZnO Emulsion AZ-SW (Osaki Kogyo)
- 4) 10%UH-420 (Asahidenka Kogyo)
- 5) Alkyl phenolic resin TD-773 (Dainippon Ink & Chemicals)

Test condition
 Dry method : 80°C for 5min.
 Press : 5.4kg/cm² for 20 sec.
 Peel rate : 100mm/min
 Water resistance : aging (7days), dipping(3days)



TOSOH

TOSOH CORPORATION

Synthetic Rubber Group

HIGH PERFORMANCE POLYMERS DEPT.
3-8-2,SHIBA,MINATO-KU,TOKYO
105-8623,JAPAN

TEL:81-3-5427-5146 FAX:81-3-5427-5210

Nanyo Plant

4560 KAISEICHO,SHINNANYO CITY,YAMAGUCHI PREF,
746-8501,JAPAN

TOSOH EUROPE B.V.

CROWN BUILDING-SOUTH
HULLENBERGWEG 359
1101 CP AMSTERDAM Z.O.
THE NETHERLANDS

TEL:31-20-6918104

FAX:31-20-6915458

TOSOH USA, Inc.

SUITE 600,1100 CIRCLE 75 PARKWAY,ATLANTA,
GEORGIA,30339-3097,U.S.A.

TEL:1-770-956-1100

FAX:1-770-956-7368

Home Page : www.tosoh.com

Please see TOSOH's Material Safety Data Sheet
when using our products.