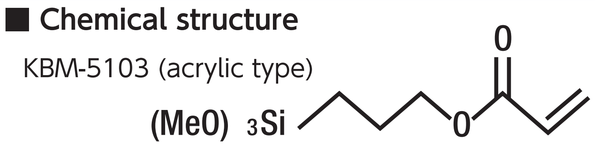
Silicones for Acrylic Resin Modification

Inorganic-organic Coupling Agent (Alkoxy Groups + Acrylic Groups)

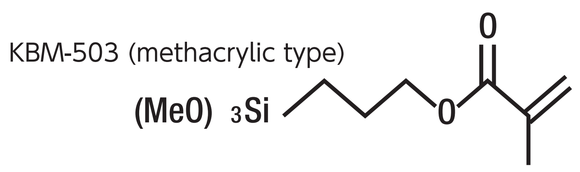
KBM-5103,KBM-503 Monomer Type

■ Chemical structure

KBM-5103 (acrylic type)



KBM-503 (methacrylic type)



■ Features and benefits

Features	Benefits
High radical reactivity (especially for acrylic)	Increased strength and durability owing to improved adhesion

■ Comparison with Other Radically Reactive Silane Coupling Agents

R (functional groups)	Minimum cure dose (Mrad)
Vinyl	>10
Methacrylate	**5**
Acrylic	**2**

KBM-5803 Long-chain Spacer Type

■ Chemical structure

■ Features and benefits

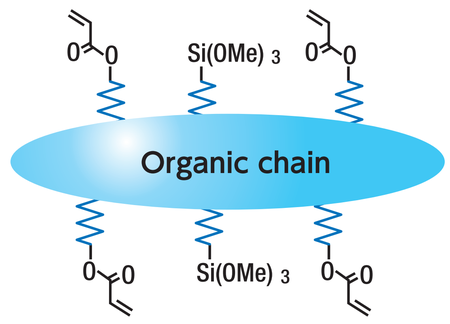
Features By alkyl chain extension (C8)	Benefits
Improved hydrophobicity	Improved dispersibility of inorganic filler (Viscosity can be reduced and high loading is possible.)
	Imparting water and alkali resistance
Improved flexibility	Imparting flexibility

■ Comparison of inorganic filler dispersion (compared with C3 type)

Product name	KBM-5803 KBM-503(C3 type)
Appearance	

X-12-1048, X-12-1050 Polymer Type

■ Chemical structure

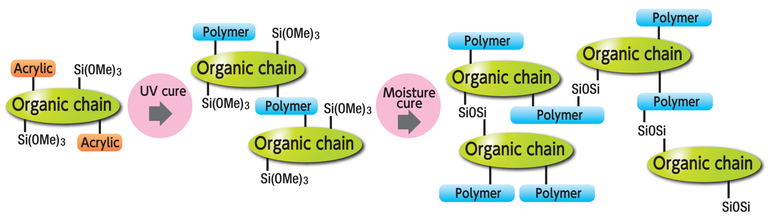


*Functional group equivalent (against $Si(OR)_3$)
X-12-1048 = 1 X-12-1050 = 5

■ Features and benefits

Features	Benefits
A large number of functional groups and excellent reactivity	Increased strength and durability
A large number of functional groups	Surface hardness improvement
Low volatility	Active ingredients function even at high temperatures
Film-forming properties	Usable as a primer
Main chain is an organic group.	Excellent compatibility

■ Reaction mechanism of dual cure (UV cure/Moisture cure) materials

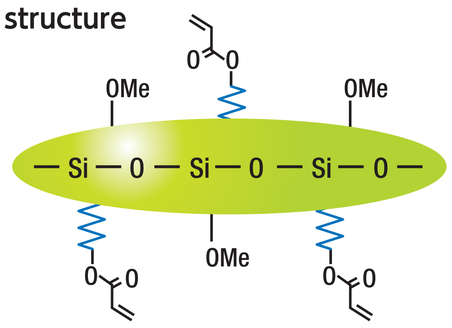


Parameter \ Product name	X-12-1050
Pencil hardness	>3H
Taber abrasion test (⊿ Haze, 500 g load 100 rotation)	2.7

(Not specified values)

KR-513 Siloxane Type

■ Chemical structure



■ Features and benefits

Features	Benefits
A large number of functional groups and excellent reactivity	Increased strength and durability owing to improved adhesion
Low volatility	Excellent stability of the reaction
Main chain is a siloxane skeleton.	Resistant to heat and light

■ Volatility comparison data compared to monomer type

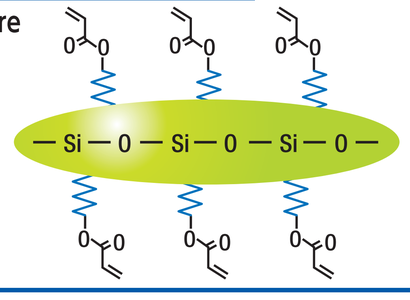
Product name	Volatile content %		
	105℃×3h	150℃×3h	180℃×3h
KR-513	**3**	**6**	**7**
KBM-5103	71	100	100

(Not specified values)

Related Materials (Siloxane + Acrylic Groups)

X-12-2475 Siloxane Type

■ Chemical structure

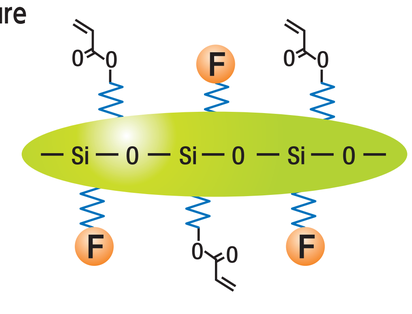


■ Features and benefits

Features	Benefits
A large number of functional groups	Higher hardness
Main chain is a siloxane skeleton.	Resistant to heat and light

X-12-2430C Fluorine-containing Type

■ Chemical structure



■ Features and benefits

Features	Benefits
Main chain is a siloxane skeleton.	Resistant to heat and light
A large number of functional groups	Higher hardness
Containing fluorine	Anti fouling properties
	Water and oil repellency

■ Hardening test data

Product name	Pencil hardness	Taber abrasion test (⊿ Haze, 500 g load 100 rotation)
X-12-2475	**3H**	**2.5**
X-12-2430C	**2H**	**3.0**
Blank	H	4.5

(Not specified values)