



A Subsidiary of PETRONAS Chemicals Group

# Silicone solutions for RTV Formulators

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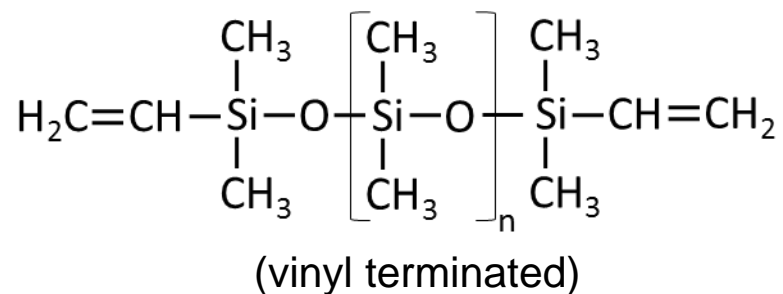
# BRB's Value Proposition

- BRB is an independent silicone supplier and part of Petronas group of companies.
- Quality Silicone intermediates at competitive pricing
- Quick customization to help customer shorten commercialization time.
- Global reach & supply chain
- High integrity, protection of customer's Intellectual Property
- Flexible MOQ to support customers' initial launch

# BRB Vinyl Fluids

- **BRB Vinyl Fluids** are Vinyl end-capped linear polydimethylsiloxanes with different viscosities.
- **Features & Benefits**
  - Used as the base polymer in most addition-cured RTV-2 formulations
  - Suitable for formulation of technical products
  - Volatile content <2 wt%
  - Customization upon request of vinyl groups in different constellation

# BRB Vinyl Fluids

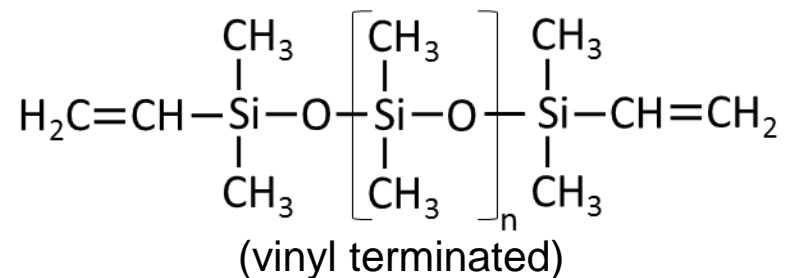


Product name	Viscosity (cSt)	Vinyl content (mmol/g)
BRB Vinyl Fluid 20 cSt	20	1
BRB Vinyl Fluid 100 cSt	100	0.38
BRB Vinyl Fluid 200 cSt	200	0.25
BRB Vinyl Fluid 500 cSt	500	0.15
BRB Vinyl Fluid 1000 cSt	1000	0.11
BRB Vinyl Fluid 2000 cSt	2000	0.08
BRB Vinyl Fluid 5000 cSt	5000	0.06
BRB Vinyl Fluid 10.000 cSt	10000	0.05
BRB Vinyl Fluid 20.000 cSt	20000	0.04
BRB Vinyl Fluid 65.000 cSt	65000	0.03
BRB Vinyl Fluid 165.000 cSt	165000	0.02

# BRB Vinyl Dimethicone

- **BRB Vinyl Dimethicones** are Vinyl end-capped linear polydimethylsiloxanes with different viscosities.
- Used as base polymers for formulating dental impressions, electronic & auto pottants/encapsulants and medical device applications.
- **Features & Benefits**
  - Clear liquid & wide range of viscosities
  - Very low volatile content of <0.5 wt%
  - Low cyclic (D4/5/6) content @ 0.1% available upon request.
  - Customization upon request of vinyl groups in different constellation

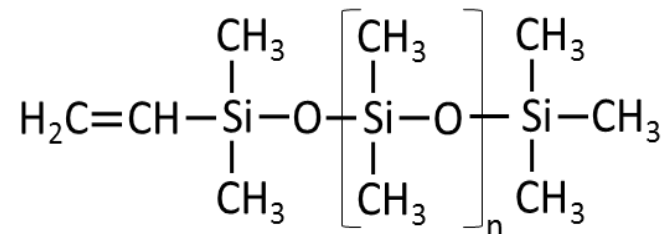
# BRB Vinyl Dimethicone



Product name	Viscosity (cSt)	Vinyl content (mmol/g)
BRB Vinyl Dimethicone 20 cSt	20	1
BRB Vinyl Dimethicone 100 cSt	100	0.38
BRB Vinyl Dimethicone - 200 cSt	200	0.25
BRB Vinyl Dimethicone 500 cSt	500	0.15
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BRB Vinyl Dimethicone 10.000 cSt	10000	0.05
BRB Vinyl Dimethicone 20.000 cSt	20000	0.04
BRB Vinyl Dimethicone 65.000 cSt	65000	0.03
BRB Vinyl Dimethicone 165.000 cSt	165000	0.02

# BRB Mono Vinyl Fluid

- **BRB Mono Vinyl Fluid** is a single side Vinyl end-capped linear polydimethylsiloxanes
- **Features & Benefits**
  - Single side vinyl terminated to achieve reduction in modulus & hardness
  - Low volatile @ 1% (wt)
  - Viscosity of 1000cSt

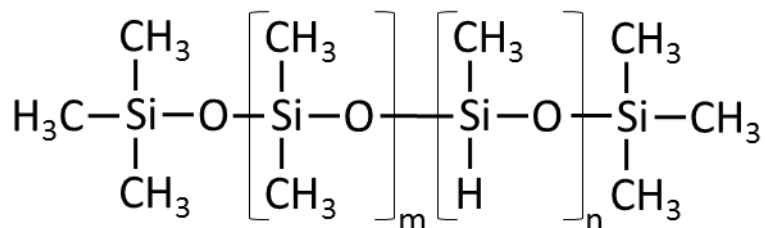




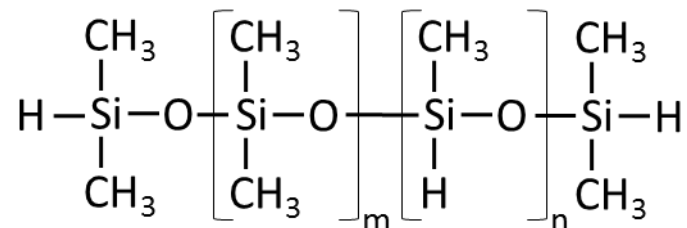
# BRB Crosslinkers

- **BRB SiH Crosslinkers** are SiH-functional polydimethylsiloxanes with varying SiH content and viscosities
- Used as the crosslinker in addition-cured RTV-2 formulation
- **Features & Benefits**
  - Major influence on the mechanical properties of the elastomer
  - Cures with vinyl-functional components without by-product formation
  - Low volatile & cyclic (D4/5/6) content available upon request
  - Both pendant and terminal SiH available for higher reactivity.
  - Customisation of molecular structure available upon request

# BRB Crosslinkers



Crosslinker (pendant SiH)



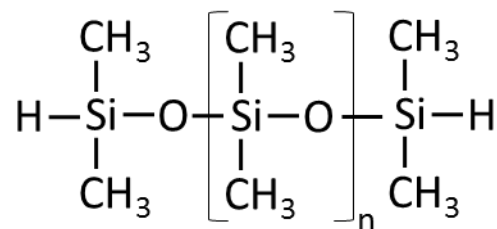
Crosslinker extender - 959H2.5  
(Pendant & terminated SiH)

Product name	Type of SiH	Viscosity (cSt)	SiH content (mmol/g)
BRB Crosslinker 434H4	Pendant	50	4
BRB Crosslinker 1595H7	Pendant	30	7
BRB Crosslinker 1738H1.9	Pendant	53	1.9
BRB Crosslinker 959H2.5	Pendant & Endcapped	30	2.5

# BRB Modifiers (Chain Extender)

- **BRB Modifiers** are SiH terminated polydimethylsiloxanes with varying SiH content and viscosities.
- Used for the formulation of addition-cured RTV-2
- **Features & Benefits**
  - Synergetic effect with BRB Crosslinkers on mechanical properties of elastomer
  - Allows free flowing low viscosity formulations with good mechanical properties
  - Cures with vinyl-functional components without by-product formation
  - Reduces crosslinking density thereby reduce elastomer hardness
  - Suitable to formulate addition cure gel
  - Low dosage required
  - Low volatile content available upon request

# BRB Modifiers (Chain Extender)



Modifier  
(SiH terminated)

Product name	Type of SiH	Viscosity (cSt)	SiH content (mmol/g)
BRB Modifier 1439	End-capped	5	2.5
BRB Modifier 1449	End-capped	13	1.3

# BRB Vinyl Gum

- **BRB GUM TG 22** is a Vinyl-functional Polydimethylsiloxane Gum
- Used as key ingredient to manufacture various silicone rubber as well as to manufacture master-batches of pigments & process additives
- **Features & Benefits**
  - Low Volatile Content
  - Translucent
  - High level of filler/pigment acceptance
  - High storage stability
  - Food grade approval and conforms to the following guidelines:
    - EU 2023/2006 & 1935/2004
    - EU 10/2011
    - USA FDA 21 CFR
    - China GB9685-2016 & GB4806-11-2016
    - MERCOSUR/GMC/RES.N°02/12

# BRB Vinyl Gum

Product name	Molecular weight ( $10^4$ )	Volatile (wt%)
BRB Vinyl Gum TG 22	67	<3

# BRB Vinyl-functional base compound

- **BRB B300 & 1300** are a mixture of vinyl-group-containing silicones and reinforcing filler
- Used for formulating addition-cured two-component silicone rubber
- **Features & Benefits**
  - Impart mechanical properties (tensile, elongation) of addition-cured silicone rubber
  - Eliminate handling of dry, dust forming filler during formulation process
  - Offered with a complete package of components for formulating addition-cured RTV-2.
  - Translucent colorless paste
    - 100 parts of Base, 3.5 parts of crosslinker 434H4, 0.12 parts of 1-ETCH & 0.05 parts of Pt catalyst
    - Curing - 10 mins @ 175°C and post cure 4 hours @ 200°C

# BRB Vinyl-functional base compound

Product name	Viscosity (cSt)	Vinyl (mmol/g)	Hardness (Shore A)	Tear Strength (kN/m)	Tensile Strength (Mpa)	Elongation (%)
B 300	300,000	0.09	47 to 53	26 to 40	7.5 to 25	440 to 600
B 1300	870,000	0.11	57 to 63	25 to 40	8 to 25	300 to 500



# BRB Vinylated MQ Resin

- **Vinyl-functional resin** dissolved in Vinyl fluid or 100% solids.
- As an additive for RTV-2 addition-cured formulations. Especially suitable to formulate clear elastomer in replacement of reinforcing filler
  
- **Features & Benefits**
  - Increases hardness of elastomer when formulated into RTV-2
  - Improves mechanical properties of elastomer when formulated into RTV-2
  - Good compatibility with other addition-cured RTV-2 components
  - Customization of resin and viscosity is available upon request
  - Clear liquid

# BRB Vinylated MQ Resin

Product name	Viscosity (cSt)	Vinyl content (mmol/g)
BRB MQ 339	6500	0.22
BRB MQ 393	50000	0.2
BRB MQ 325	6500	0.26
BRB MQ 330	6500	0.3
BRB VMQ 100	Powder	0.96

# Vinyl Additives – Inhibitors

- **BRB Inhibitors** are Vinyl-functional siloxanes used to increase the pot life of addition-cured RTV-2
- **Features & Benefits**
  - Increases pot life from minutes up to hours. For longer pot life (days), Ethynylcyclohexanol (ECH) is recommended.
  - Vinyl M2 (divinyl tetramethyl disiloxane) is highly volatile, which enables instant curing at elevated temperature
  - Vinyl D4 (tetravinyl tetramethyl cyclotetrasiloxane) is less volatile, which enables inhibited curing at elevated temperature
  - Low dosage required
  - Good compatibility with addition-cured RTV-2 components

# Vinyl Additives – Inhibitors

Product name	Viscosity (cSt)	Density (g/cm <sup>3</sup> )
BRB Vinyl M2 (CAS# - 2627-95-4)	1	0.81
BRB Vinyl D4 (CAS# - 2554-06-5)	4	0.98

# BRB Platinum (Pt) Catalyst

- **BRB Pt Cat** consists of Karstedt platinum catalyst in vinyl fluid
- Used for the formulation of addition-cured RTV-2.
- **Features & Benefits**
  - Available as 1 and 2 wt% Pt concentrations
  - Enables room temperature curing as well as accelerated curing at elevated temperature
  - Extremely low dosage required
  - Good compatibility with addition-cured RTV-2 components
  - Slightly yellow clear liquid

# BRB Platinum (Pt) Catalyst

Product name	Pt content (wt%)
BRB Pt Cat 10000 Fast	1

# Condensation cure RTV-2

## Silanol endcapped polydimethylsiloxane base polymer

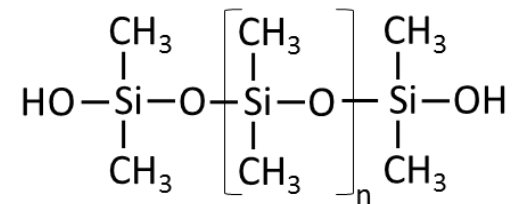
- Low viscosity (cSt) – 40 & 70 cSt
- Mid viscosity (cSt) – 750, 1000, 2000, 3500, 5000 & 6000 cSt
- High Viscosity (cSt) – 20,000, 50,000, 80,000, 300,000 cSt

## Crosslinker for RTV-1 & 2

- Acetoxy - BRB Silanil MTAS, ETAS, PTAS
- Oxime - BRB Silanil MOS, VOS
- Alkoxy - BRB Silanil 118 (MTMS), 203 (MTES)
- RTV-2 - BRB Silanil Si-28, Si-40 (TEOS)

## Catalyst

- BRB DBTDL – Dibutyltin dilaurate CAS# 77-58-7
- BRB DBTDA – Dibutyltin diacetate CAS# 1067-33-0



OH fluids  
(OH terminated)

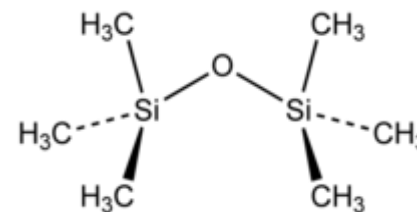
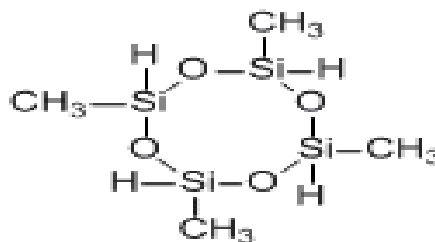
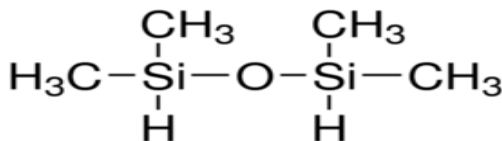
# Intermediates for Silicone Synthesis

## BRB 1,1,3,3 Tetramethyldisiloxane

- Primarily used as an intermediate in the preparation of silicon hydride end-capped siloxane polymers and other organo silicone
- CAS number - 3277-26-7

## BRB D4H (2,4,6,8 Tetramethylcyclotetrasiloxane)

- Utilized widely to synthesize variety functional reactive silicone fluids and crosslinker for addition cure rubber
- CAS number - 2370-88-9







**BRB**

**Passionate about Progress**