

HIGH PERFORMANCE SILICA

**FOR TYRE AND
RUBBER PRODUCTS**



Madhu Silica Pvt. Ltd.
Bhavnagar, Gujarat

Manufacturers of Precipitated Silicas

ABOUT US

Madhu Silica Pvt. Ltd. (MSPL) is the largest manufacturer of Precipitated Silica in India.

MSPL manufactures more than 50 different grades of Silicas catering to a wide array of Industries for different applications.

The Company has four established plants capable of manufacturing 2,95,000 MT/annum.

The company today has a marketing office in Delhi, a large Business Associate network in India and across the Globe.

We are ISO certified organization, registered for REACH with compliance to several other standards and country specific requirements.

Our Markets & Silica Grades

- Tyre / Rubber / Footwear / Misc. Rubber Applications (Highly Dispersible & Conventional Silica grades), Dust Free or micro pearl Silica.
- Oral Healthcare / Cosmetics / Pharma Industries
- Food / Feed applications
- Specialty applications
- Polymer / Plastics / Paints applications (Gel route Silica's)

Facilities

- World class manufacturing facilities to give customer satisfaction through Consistency in Quality
- In-house Rubber, Dental, paint Application Labs
- World class Research & Development Centre, established in 1996, recognized by DSIR, New Delhi.

“Madhu Silica Pvt. Ltd. (MSPL) is the largest manufacturer of Precipitated Silica in India.”



MISSION

Mission to serve the Industry by offering consistent quality products, product accessibility with differentiating services.

VISION

With a vision to create a Brand Image bringing in sustainability with growth.

VALUES

Keeping intact the values for core competence in Governance with Integrity, Accountability, Passion and Diversity.



3-D view of the manufacturing site

REACH registered

Country specific certificates

FAMI-QS

HACCP

FDA-Cosmetic

ISO 45001

ISO 9001

ISO 14001

ISO 22000



Q. C. Laboratory



R & D Lab



Madhu Silica Pvt. Ltd. – Research & Development Centre D. S. I. R., Govt. of India recognized centre

Our manufacturing setups

are capable to produce defined quality with consistency.

In place are

- Quality Management Systems
- Accreditations from ISO systems
- Sustainability, Transparency with Accountable work practices

Our R & D Centre was established in 1996 which gave strength to our operations and fuelled our growth.

With Innovative capabilities, in place are:

- Testing and Application Laboratories for Rubber and Oral Care
- Pilot Plant Set up

PRECIPITATED SILICA FOR TYRE & RUBBER GOODS

Precipitated silica is reinforcement filler used in the Tyre and Rubber Industry. Precipitated Silica manufactured by Madhu Silica Pvt. Ltd., is active filler which contributes toward betterment of mechanical properties. It enhances abrasion resistance, tear resistance, tensile strength, and hardness when used with additives. These grades of products also improve dynamic properties like rolling resistance and wet traction performance of tires. For greater transparency, precipitated silica is used in Vulcanized goods also.

MSPL Precipitated Silica grades are available in powder as well in Granular form (mechanically compacted). Granulation of powder results in pallets which helps in less dust build up during compound processing.

We manufacture high performance grades of Precipitated silica, having wide range of surface area and porosity, found to be suitable for broad application areas like in Tyres, Conveyor belts, Shoes soles, Micro sheets, Rice rollers, Conveyor belts, Engineering rubber goods, Battery separator etc.

MSPL portfolio of products also includes high dispersible grades to meet today's requirement of Green and energy efficient tyres. These grades of silica help in reducing the rolling resistance of tyres and improve the wet grip, thus improving the fuel efficiency without affecting the other Tyre performance properties.





CATEGORIES OF PRECIPITATED SILICA GRADES FOR TYRE & RUBBER GOODS

We offer a wide range of Precipitated Silica grades which can be categorized into:

**A. CONVENTIONAL / EASY DISPERSIBLE
PRECIPITATED SILICA GRADES**

**B. HIGHLY DISPERSIBLE PRECIPITATED
SILICA GRADES FOR TYRES**

ADVANTAGES OF USING MFIL GRADES OF SILICA IN RUBBER PRODUCTS

Tyres



- Improves Fuel Efficiency
- Superior tear and Tensile strength
- Imparts high Abrasion resistance & Improves Cut & Chip behaviour
- Better Dynamic & Anti-skid Properties
- Reduces heat build up

- Optimizes tensile and Abrasion resistance
 - Superior reinforcing properties
 - Imparts higher hardness and modulus



Rice Rollers, conveyor Belts etc

Shoe Soles



- Improves hardness
- Imparts abrasion resistance
- Better transparency

- Imparts high Porosity
- High puncture resistance and flexibility
- Low electrical resistivity and long life, maintenance free storage batteries



Battery separators

Thermoplastic Rubber



- Better transparency
- Resistance to heat ageing
- Superior mechanical properties

Used as a carrier for liquid & paste products to transform into powder form:

- Ease in handling with advantage of precise dosing.
- Exhibits excellent flow properties.
- Generates minimum dust during handling.
 - Recommend for use in animal nutrition products.



Carrier for actives used in rubber industry and other applications.

A. CONVENTIONAL / EASY DISPERSIBLE PRECIPITATED SILICA GRADES FOR TYRES: (Granular and Dust Free Silica's):

- Dust Free Silica:**
- Controlled PSD profile, d50: 250-350 µm
 - Dust free – results in clean environment
 - Ease in handling & Conveying

GRADE	FORM	PRODUCT HIGHLIGHTS
MFIL-80(G) MFIL-90(G)	Granular Granular	<ul style="list-style-type: none"> • Low surface area highly dispersible silica granules used primarily in winter tire tread. • Provides processing, traction and fuel efficiency benefits.
MFIL-125(G) MFIL-135(G)	Granular Granular	<ul style="list-style-type: none"> • Low Surface Area Silica granulated for higher loading • Better dispersion, compound viscosity and easy processing at higher loading
MFIL-125(S)DF MFIL-135(S)DF	Dust Free Dust Free	<ul style="list-style-type: none"> • Imparts higher hardness and mechanical properties. • Optimize Tear, Tensile & Abrasion, Better Dynamic & Anti skid Properties • Better dynamic and Anti skid properties
MFIL-150(G)	Granular	<ul style="list-style-type: none"> • Low Surface Area Silica granulated non-dusting form easy to disperse • Better compound viscosity and processing. • Imparts higher hardness and mechanical properties. • Optimize Tear, Tensile & Abrasion Low Surface Area Silica granulated non-dusting form easy to disperse • Better compound viscosity and processing. • Imparts higher hardness and mechanical properties. • Optimize Tear, Tensile & Abrasion
MFIL-160(G)	Granular	<ul style="list-style-type: none"> • Highly reinforcing granule and well dispersing in most polymers and polymer blends. • It is used in most of the rubber goods such as off-the-road & passenger tires, conveyor belt covers, belting.
MFIL-175(G)	Granular	<ul style="list-style-type: none"> • Highly reinforcing and higher surface area filler granules used in tire industry. • Other typical applications include footwear and industrial rubber goods.
MFIL-200(G)	Granular	<ul style="list-style-type: none"> • Better dispersion & High reinforcing potential. • Better Silica – Polymer interaction when used with additives to get better physical properties

GRADE	FORM	PRODUCT HIGHLIGHTS
MFIL-200(S)DF	Dust Free	<ul style="list-style-type: none"> • Better rebound, handling and wet-breaking. • Superior Tear & Tensile, Better Abrasion, Optimize Hardness & Modulus for tread compound
MFIL-190(G)	Granular	<ul style="list-style-type: none"> • Highly reinforcing granule for achieving better wear performance properties of footwear outsoles. • Imparts high tear resistance to industrial rubber products such as conveyer belts, wire and cable, hose covers and others.
MFIL-200(HG)	Granular	<ul style="list-style-type: none"> • High surface area grade offering better mechanical properties and better handling / cornering. High reinforcing potential. • Good Silica – Polymer interaction • Better Tear strength for Tread compounds
MFIL-200(FW-G) MFIL-200(FW) DF	Granular Dust Free	<ul style="list-style-type: none"> • Marginal lower surface with optimum reinforcing potential. • Better rebound, handling and wet-breaking. • Good Tear & Tensile, Better Abrasion, Optimize Hardness & Modulus for tread compound



TYPICAL PRODUCT PROPERTIES

SILICA GRADE	BET Surface area, m ² /g	CTAB Surface area, m ² /g	pH (5% slurry)	Loss on Drying, %	Soluble Salts (Max), %	Bulk Density, g/l
MFIL-80(G)	80	75	6.5	5.5	1.5	380
MFIL-90(G)	90	80	6.5	5.5	1.5	380
MFIL-125(G)	125	115	6.9	5.5	2.0	300
MFIL-135(G)	140	120	6.5	5.5	1.0	330
MFIL-150(G)	125	115	6.9	5.5	1.0	330
MFIL-160(G)	165	155	6.5	5.5	1.5	330
MFIL-175(G)	175	167	6.5	5.5	1.5	330
MFIL-190(G)	195	185	6.5	5.5	1.5	330
MFIL-200(G)	180	165	6.5	5.5	1.0	330
MFIL-200(FW-G)	165	155	6.5	5.5	1.0	330
MFIL-200(HG)	220	200	6.5	5.5	1.0	330
MFIL-125(S)DF	125	115	6.5	5.5	1.0	250
MFIL-135(S)DF	140	130	6.5	5.0	1.0	250
MFIL-200(S)DF	180	165	6.5	5.5	1.0	250
MFIL-200(FW)DF	165	155	6.5	5.5	1.0	250



B. HIGHLY DISPERSIBLE PRECIPITATED SILICA GRADES FOR TYRES (Granular and Dust Free Silica's):

- Dust Free Silica:**
- Controlled PSD profile, d50: 250-350 μ m
 - Dust free – results in clean environment
 - Ease in handling & Conveying

GRADE	FORM	PRODUCT HIGHLIGHTS
MFIL-100(G)	Granular	<ul style="list-style-type: none"> • Low Surface area granulated form and easy to disperse • Highly dispersible at higher loading & Better Processing • Imparts higher hardness & mechanical properties • Better dispersion characteristics • Excellent Hysteresis
MFIL-160(HDS-G)	Granular	<ul style="list-style-type: none"> • Medium Surface area granulated form and easy to disperse
MFIL-200(HDS-G)	Granular	<ul style="list-style-type: none"> • Better fuel efficiency, wet traction & Dynamic Properties • Higher loading possible and better dispersion
MFIL-160(HDS)DF	Dust Free	<ul style="list-style-type: none"> • Improves cut & chip behaviour. • High reinforcing, Low rolling resistance • Imparts high abrasion resistance and wet traction.
MFIL-210(G)	Granular	<ul style="list-style-type: none"> • High BET surface area & Low CTAB Surface Area. • Good rolling resistance and handling. • Excellent wear performance with higher modulus
MFIL-210(HDS-G)	Granular	<ul style="list-style-type: none"> • High BET surface area. • Offers Good rolling resistance and handling
MFIL-210(HDS)DF	Dust Free	<ul style="list-style-type: none"> • Excellent wear performance. • For Higher mechanical properties
MFIL-240(HDS-G)	Granular	<ul style="list-style-type: none"> • High surface area and highly dispersible silica granule due to its high reinforcing characteristics is used in high performance passenger tire treads.
MFIL-240(HDS)DF	Dust Free	<ul style="list-style-type: none"> • Offers a high dynamic stiffness with superior abrasion and hysteresis performance. • Also used in truck tire tread for achieving better cut & chip resistance properties.

TYPICAL PRODUCT PROPERTIES

SILICA GRADE	BET Surface area, m ² /g	CTAB Surface area, m ² /g	pH (5% slurry)	Loss on Drying, %	Soluble Salts (Max), %	Bulk Density, g/l
MFIL-100(G)	115	105	6.5	5.5	1.0	320
MFIL-160(HDS-G)	160	155	6.5	5.5	1.0	320
MFIL-200(HDS-G)	170	160	6.5	5.5	1.0	320
MFIL-210(G)	205	155	6.5	5.5	1.0	330
MFIL-210(HDS-G)	220	190	6.5	5.5	1.0	320
MFIL-160(HDS)DF	160	155	6.5	6.0	1.0	250
MFIL-210(HDS)DF	220	190	6.5	6.0	1.0	250
MFIL-240(HDS-G)	235	205	6.5	5.5	1.5	320
MFIL-240(HDS)DF	235	205	6.5	5.5	1.5	250



PRECIPITATED SILICA IN POWDER & GRANULAR FORM FOR RUBBER APPLICATIONS.

GRADE	FORM	PRODUCT HIGHLIGHTS
1. Rice Roller, conveyor Belts & Misc. Rubber Products:		
MFIL-200(S) MFIL-200(G) MFIL-200(S)DF MFIL-200(HG) MFIL-200(HG)DF MFIL-200(HS) MFIL-200(P)	Powder Granular Dust Free Granular Dust Free Powder Powder	<ul style="list-style-type: none">• Superior Reinforcing Properties• Better Abrasion & Tensile Properties• Better Hardness & Modulus / Excellent bonding properties
MFIL-150(S) MFIL-135(S) MFIL-125(S) MFIL-125(S)DF MFIL-100(S)	Powder Powder Powder Dust Free Powder	<ul style="list-style-type: none">• For Cables Improving Electrical conductivity.• Imparts desired tear, tensile and abrasion properties.• Superior Dispersion with higher load ability & ease in processing.
MFIL-30(S) MFIL-30(S)DF MFIL-30(SM) MFIL-60(G) MFIL-60 MFIL-60(S)DF	Powder Dust Free Powder Granular Powder Dust Free	<ul style="list-style-type: none">• Imparts medium reinforcing potential to mechanical rubber goods• Offers excellent compression set and extrusion properties to rubber compounds• Low surface area silica in granular form used as a reinforcing filler in the rubber industry.• Permits the use of high levels of filler loading.• Offers very good processability, high resilience and low heat build up• Imparts a low compression set and excellent dynamic vulcanizate properties.
2. Shoe Soles & Footwear:		
MFIL-200(S) MFIL-200(S)DF MFIL-200(FW)	Powder Dust Free Powder	<ul style="list-style-type: none">• Optimum Hardness; Good abrasion resistance• Better Transparency

GRADE	FORM	PRODUCT HIGHLIGHTS
3. Battery Separators / Condoms:		
MFIL-P(S) (AC Milled)	Powder	In Battery Separator: <ul style="list-style-type: none"> Imparts high Porosity, High puncture resistance and flexibility Low electrical resistivity, long life, maintenance free storage batteries. In Condoms used as striping aid
4. Carrier for actives used in rubber industry and other applications:		
MFIL-P(U) MFIL-P(U)(Special) MFIL-P(U)DF (Dust free/ micro pearl)	Powder Powder Dust Free	As a carrier for liquid & active ingredients: <ul style="list-style-type: none"> Transforms liquids into solid form for ease in handling & precise dosing. Generates minimum dust during handling. Recommend for use in animal nutrition products. Good anti-caking and free flow properties
5. For Silicone Rubber applications:		
MFIL-SR MFIL-P(U)SR	Powder Powder	<ul style="list-style-type: none"> High Purity and high transparency in conjunction with better heat ageing properties. Better reinforcing and mechanical properties

Precipitated Silica In



Rubber Applications



Molded Rubber Goods



Colored Hoses



Rice rollers

TYPICAL PRODUCT PROPERTIES

SILICA GRADE	BET Surface area, m ² /g	pH (5% slurry)	Loss on Drying, %	Soluble Salts (Max), %	Bulk Density, g/l	Average particle size, Microns
MFIL-30(S)	35	8.0	5.0	1.5	360	65
MFIL-30(SM)	35	8.0	5.0	1.5	250	10
MFIL-30(S)DF	35	8.0	5.5	1.0	360	275
MFIL-60	55	9.0	5.5	1.5	345	75
MFIL-60(S)	55	9.0	5.5	1.5	190	15
MFIL-60(S)DF	60	8.7	5.5	1.0	230	200
MFIL-200(S)	180	6.5	5.0	1.0	250	125
MFIL-200(G)	180	6.5	5.5	1.0	330	-
MFIL-200(S)DF	180	6.5	5.0	1.0	250	300
MFIL-200(P)	185	6.5	5.0	1.0	100	12
MFIL-150(S)	150	6.5	5.0	1.0	250	125
MFIL-135(S)	140	6.5	5.0	1.0	250	125
MFIL-125(S)	125	6.5	5.0	1.0	250	125
MFIL-125(S)DF	125	6.5	5.0	1.0	250	300
MFIL-100(S)	115	6.5	5.0	1.0	250	125
MFIL-200(FW)	165	6.5	5.0	1.0	250	125
MFIL-P(S)(AC Milled)	190	6.5	5.0	1.0	85	12
MFIL-P(U)	190	6.5	5.0	1.0	250	110
MFIL-P(U)(Special)	190	6.5	5.0	1.0	250	85
MFIL-P(U)DF	190	6.5	5.0	1.0	250	300
MFIL-SR	180	6.5	5.0	0.5	90	12
MFIL-P(U)SR	175	6.5	5.0	0.5	250	80

WE CATER TO INDUSTRIES WORLDWIDE FOR BELOW APPLICATIONS



Please contact us for your requirements



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