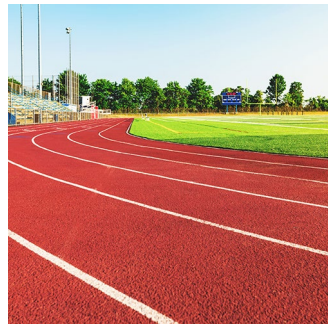
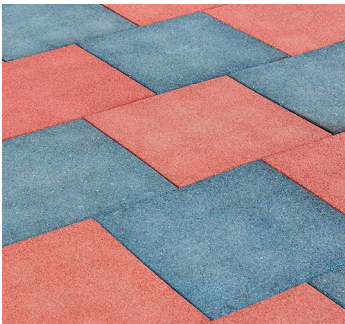




DOW[®]

VORAMER™ Polyurethane Binders

for sports, safety and landscape surfaces



VORAMER™ Polyurethane Binders are durable, solvent free, and environmentally friendly products for recycling various materials including rubber, EVA, cork, gravel and wood mulch. The binders and resulting composites offer excellent properties such as:

- Adhesion to particles
- Flexibility
- Shock absorption
- Abrasion resistance
- Tailored permeability
- Hydrolytic stability
- Weatherability

This makes them useful for a wide range of products such as playground surfaces, resilient flooring, safety tiles, running tracks and other applications.

Playground applications

VORAMER™ MR Binders for playground surfaces are specifically designed with requisite viscosity, tensile strength and elongation properties to achieve easy processing and durability. VORAMER™ MR Binders cater to various climate conditions, including extreme conditions. Specific VORAMER™ MR Binders also offer advantages that include negligible bubble formation during the moisture cure process.

VORAMER™ MR Prepolymers, in addition with rubber granules, can offer the necessary resiliency to help reduce injuries. All VORAMER™ Polyurethane Binders for playground applications address the performance requirements for impact attenuation as specified in ASTM F1292-18.

The VORAMER™ Polyurethane Binders portfolio also includes UV stable aliphatic binders that support improved color fastness.

Running track applications

An athlete's safety is most important – VORAMER™ Polyurethane Binder technology for running tracks and sports fields can enhance performance, while also helping reduce the risk of injury. VORAMER™ Polyurethane Binders are free of volatile solvent, toxins and hazardous additives.

Landscape binders

VORAMER™ Binders for landscaping are used to bind together and stabilize loose gravel, pebbles and other kinds of aggregate. The one component moisture-cured binders hold the aggregate together without affecting the porosity of the surface. The low viscosity prepolymers offer the option to be poured or sprayed on with ease, depending on the application.

Molded rubber tiles

Molded rubber tiles are used in a wide range of indoor and outdoor applications to offer cushioning and better traction for playgrounds, gyms, patios, landscape edging, molded mats, and more. VORAMER™ MR Binders for molded rubber tiles offer a range of reaction profiles for specific open times as well as demolding times. The polyurethane binders have low shrinkage and consistent dimensional stability during temperature and climate fluctuations. This allows a level of highly uniform composite quality, helping to ensure better results in the final application.

Molded cylinders

The molded cylinder application finds its major use in the manufacturing of flooring mats such as underlay mats and sound or vibration-dampening mats. VORAMER™ Polyurethane Binders are specifically designed to create molded cylinders using recycled rubber granules. The binders have excellent processability, high flexibility, and excellent adhesion to rubber while also offering longer working times or faster cycle times.

Playground applications¹

Product	%NCO	Viscosity (cps)	Recommended use temperature	Description
MR 1160	10	4000	40 - 60°F	Cool weather binder
MR 1165	10	3500	60 - 80°F	Standard spring/summer binder
MR 1220	9.8	4600	60 - 80°F	Base layer binder with fast reactivity for quicker return to service
MR 1196	10.3	4500	60 - 90°F	Suitable for hot and humid climates
MR 1105	9.5	5200	80 - 100°F	Standard desert binder for hot and arid climates
MR 1217	9.8	4600	80 - 100°F	Desert base layer binder - faster curing for quicker return to service
MR 1195 Aliphatic	6.7	5700	80 - 100°F	UV stable aliphatic binder for hot and arid climates

Running track applications¹

Product	%NCO	Viscosity (cps)	Specific gravity*	Description
MR 1099	9.7	2400	1.07	Binder for the base layer
MB 3208	NA	600	1.00	Full pour system - Polyol
ME 3534	14	3600	1.14	Full pour system - Isocyanate

Landscape applications¹

Product	%NCO	Viscosity (cps)	Specific gravity*	Description
MR 1181	16.3	2200	1.14	Standard binder - can be poured or sprayed

Molded tile applications¹

Product	%NCO	Viscosity (cps)	Specific gravity*	Description
MR 1141	14.1	1385	1.14	High reactivity binder for fast demold times
MR 1194	12.1	2600	1.10	Standard binder with medium cure speed
MR 1230	10.1	1600	1.10	Slower curing binder for longer working time

Molded cylinder applications¹

Product	%NCO	Viscosity (cps)	Specific gravity*	Description
MR 1140	12	1600	1.10	Clear, flexible binder excellent choice for molded cylinder applications
MR 1201	10	1900	1.10	Comparable in performance to MR 1140 with an extended open time
MR 1212	12	1600	1.10	Slower curing binder
MR 1215	10.3	3125	1.10	Faster curing binder for a shorter cycle time
MR 1222	9.5	2000	1.10	High elongation binder with excellent processability

¹The graphic representations are presented here for illustrative purposes only and should not be construed as product specifications.

*Measured at 25°C

Recommended usage levels

Molded cylinder applications – 5 - 6 wt% of rubber crumbs

Molded Tiles/Products - Up to 10 wt% of rubber crumbs

Playground applications – 15 wt% of base buffing rubber; 20 wt % of top layer EPDM/TPV rubber

Contact us

North America 800 258 2436

dow.com

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