

# **MRA**

**(MARBLE Release Agent)**

**HKCHEM**

# **MRA**

## **Introduce**

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# ABOUT MRA1

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- MRA is the best PVA release agent that has been proven in various fields for a long time.
- Manufacturers of engineer stones (Hyundai L&C of Korea, Advantis, SRP and Rajakejari of India) using our product-MRA.
- MRA is a powdered product and consists of a single product and can make PVA solutions more conveniently than other existing products.

# ABOUT MRA2

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- MRA Can be comfortably used on rubber molds from various manufacturers.
- MRA can used immediately without a process such as weight measurement, reduces mistakes in the field
- MRA can significantly increases the life of the rubber mold.
- MRA can Solve problems in the QUARTS field with its technology accumulated over a long period of time.

# Advantages of MRA1

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- **Easy to use**
  - MRA(MARBLE Release Agent) is a powdered, single product
  - It does not need mixing with another product
  - You can make a good pva release agent with just mra and hot water.

# Advantages of MRA2-1

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- **Excellent properties(1)**

- MRA aqueous solution forms MRA film (PVA film) through natural drying/IR drying.
- Films dried with MRA is superior to other products in terms of tensile strength/strength/flexibility/shrinkage.
- This provides more protection to products made of resin and allows them to be used for a long time.

# Advantages of MRA2-2

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- **Excellent properties(2)**

- MRA has very high heat resistance.
- MRA can be used continuously even if the coating layer of the rubber mold is deeply damaged.
- Can use the rubber mold for a long time with MRA.

## - Heat resistance / Shrinkage test

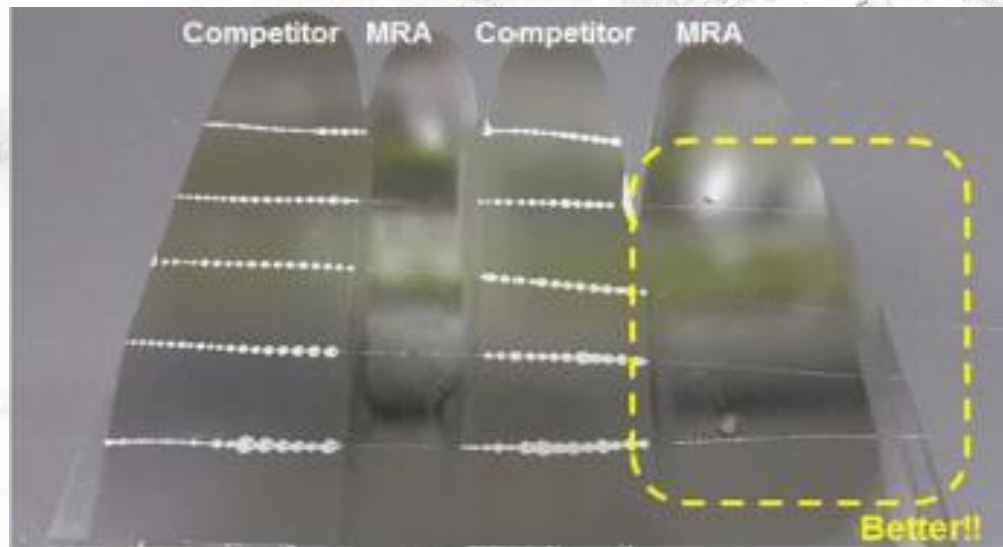
Dry time : 30 min.	MRA	Italy
135 °C	OK	Shrinkage
180 °C	OK	Crack

# Advantages of MRA2-3

## - Tensile strength test

Dry time : 20 min.	MRA	Japan
110 °C	1.69 kg	0.82 kg
120 °C	1.42 kg	0.86 kg

## - Scratch resistance (MRA vs Japan)



# Advantages of MRA3

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- **Field adaptation ability**

- MRA is used in the same way as the existing conditions.
- MRA have effects of various manufacturing cost savings and manufacturing environment improvement.

# Advantages of MRA4

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- **Great stability**

- MRA have remarkable wettability on various coated surfaces and various rubber surfaces.
- It great help in protecting the rubber mold in your process.
- MRA solutions maintain a stable viscosity of 135 cps (solid 20%. at 20 °C).

# Advantages of MRA5

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- **Excellent environmentally friendly**
  - MRA is made up of biodegradable materials (cosmetic grade).

# Usage of MRA1 (Pretreatment)

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- Customer should dissolve MRA in water (solid content: 8~24%).
- Condition is 85 degrees (minimum)\*1 hour.
- When this solution reaches the appropriate temperature (50 degrees~room temperature), customer can use it.
- Use the produced MRA aqueous solution by spray or roller/brush.

# Usage of MRA1 (Post-processing)

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- MRA film (PVA film) is easily removed with water (room temperature).
  - For faster removal, use a soft sponge together.
  - MRA removed with water is harmless to nature (Cosmetic grade).
  - If there is no wastewater treatment facility, it is recommended to add antifoam to the wastewater.

# PHYSICAL

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- **Appearance** : powdered solid
- **Odor** : Odorless
- **Color** : Off-white
- **MRA solution viscosity (20%)** :  $135 \pm 10$  cps (at 20°C)
- **Heating temperature when in use** : 85°C
- **Concentration of use** : 11~24% (recommended 18%)

# MRA Manufacturing process

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INPUT 1

- raw material 1. Polyvinylalcohol
- raw material 2. Poly(ethylene glycol) raw

MIX 1

MIX2

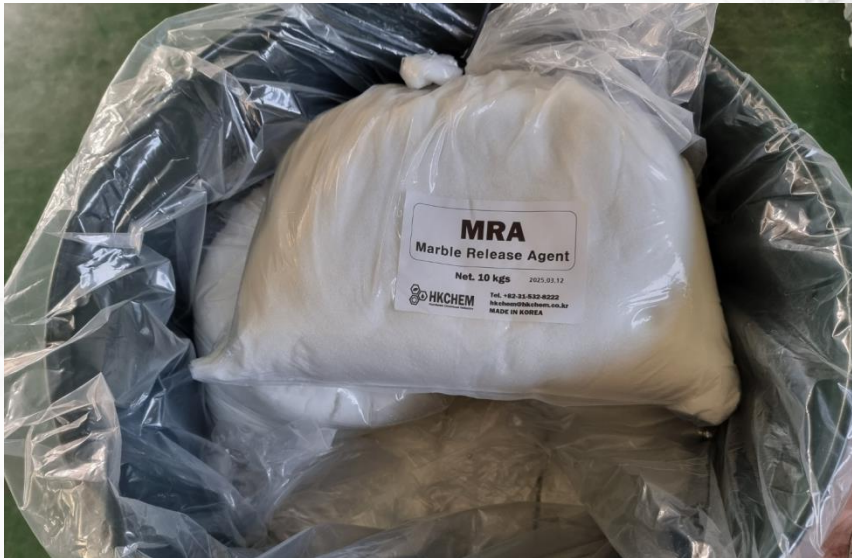
RECAT

PACKAGING

- raw material 3. EtOH
  - raw material 4. Biodegradable polymer 1&2
  - raw material 5. Addtives 1&2&3&4
- Condition : 80 ° C \* 1 hr

# PACKAGING

- It packed exactly in 10kg
- NET : 120kgs (at 200liter drum)
- 1 Drum consists of 12 small packages (10kg)





# Thank you

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