Mould Release Agents

Semi-Permanent Mould Release Technology

World class products for release applications

Henkel offers highly effective solutions for tough moulding and application challenges. Customers worldwide turn to FREKOTE not just for our unique mould release products, but also for our expertise in developing customised solutions. We take pride in our knowledge, experience and responsiveness in providing the best technical service to our customers around the globe.

The FREKOTE line offers the broadest range of semi-permanent release agents, mould sealers and cleaners in the industry. FREKOTE mould release agents, backed by over 50 years of research and development, are the global industry standard for performance, quality and value. Having pioneered release solutions for many of the world's largest manufacturing organisations, Henkel understands what it takes to release the most complex materials in the most demanding applications.

Lowest cost per release – FREKOTE semi-permanent release agents minimise fouling and ensure the highest number of releases per application. Our customers realise higher productivity and profitability through reduced downtime, lower reject rates, and higher quality products. FREKOTE products are the industry standard replacement for sacrificial release agents. Unlike sacrificial waxes or silicones, FREKOTE semi-permanent mould release agents do not transfer to your parts; instead they chemically bond with the mould surface, enabling multiple releases. The parts release cleanly and will not stick to low energy film. A touch-up coat is all that is necessary to refresh the mould after multiple releases. FREKOTE products are designed to save you money.

Henkel has designed mould release agents for virtually all composite, plastic and rubber moulding operations. From jumbo jets to tennis rackets, truck tyres to O-rings, bathtubs to custom yachts, we have the release agent to fulfil your requirements.

Markets Served

A brief overview:

Thermoset Plastics

Advanced Composite Epoxy Systems

- Renewable energies: Wind rotor blades
- Aerospace : Aircraft, helicopters, etc.
- Recreational: Bicycles, skis, rackets, etc.
- Special: Racing parts, medicals, electronics, filament windings, etc.

GRP Composite Polyester, Vinyl Ester

- Marine GRP: Boats, yachts, jet-skis, etc.
- Transportation GRP: Panels, roofs, spoilers, etc.
- Construction GRP: Wind rotor blades, cultured marble sinks and countertops, bathtubs, etc.

Thermoplastics

Rotational Moulding

- Recreational: Kayaks, pedal boats, etc.
- Construction: Containers, tanks, chairs, waste bins, etc.

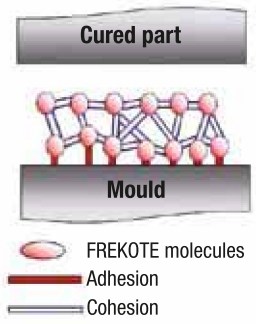
Rubbers

Rubber Industry

- Tyres: Treads / side walls
- Technical rubber products: Vibration dampers, roller blade wheels, footwear, custom moulding, etc.

How FREKOTE release agents work

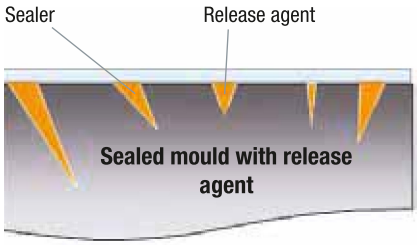
Solvent based semi permanent FREKOTE products are moisture curing, while the resins used in the Aqualine range are heat cured or cured at room temperature. FREKOTE release agents can be wiped on or sprayed on. Cured FREKOTE release coatings form a solid, non greasy, durable film which withstands the shear forces encountered in moulding and demoulding operations. The maximum film thickness is 5µm. This prevents mould build up to minimise costly mould cleaning while achieving excellent part detail and mould geometry retention. Special FREKOTE release agents are available that allow post-mould painting or bonding without the need for any cleaning of the released parts.



Semi-permanent technology as applied in coating the mould with a low energy film.

Sealing

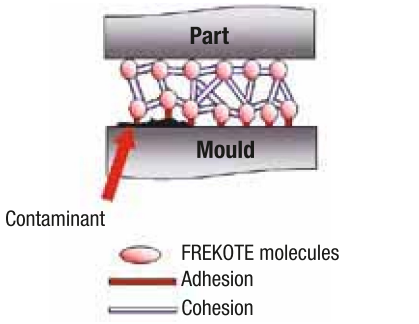
FREKOTE sealers are used prior to application of mould release coats to seal mould microporosities and provide a uniform, stable base coat for the release agent. Sealers also improve the durability of the FREKOTE film, ensuring the maximum number of releases per application. Some release agents contain a mould sealer, for example the water-based FREKOTE Aqualine C-600. Previous release contamination, e.g. sacrificial or semi-permanent release agents, should be removed before the sealer coat is applied.



Sealers seal microporosities to achieve a uniform release coating

Cleaning

For maximum performance, FREKOTE release agents should be applied to a completely cleaned mould. Therefore, mould cleaning is an important preparatory step to ensure that all cured release agents and other unwanted contaminants left on the mould are removed. FREKOTE water based and solvent based cleaners remove all contaminants from composite and metal moulds.



Unwanted contaminants may impair adhesion of the FREKOTE release agent to the mould.

FREKOTE Features and Benefits

- Semi-permanent technology – multiple release performance
- Quick room temperature cure, heat accelerated cure – reduces process downtime
- Spray on, wipe on – easy to apply with cloth or spray gun
- Low or no transfer – reduces part post cleaning
- 5 µm film ensures low mould build up – reduces mould post cleaning
- Forms a hard durable and dry thermoset film – extended mould life
- Reduced cleaning and application time – lower cost per part

Mould Release Agents
Product Table

Are you releasing composites or rubber?

Epoxy

High gloss | **Matt**

Sealer FMS, CS125 | **Sealer B15, CS125**

Fast cure at RT | **Post bonding / painting** | **Water-based** | **Wipe-on-leave-on**

Solution

	FREKOTE 770 NC	FREKOTE 55 NC	FREKOTE C 600	FREKOTE WOLO
				
Description	Release agent	Release agent	Release agent	Release agent
Appearance	Clear, liquid	Clear, liquid	White emulsion	Clear, liquid
Application temperature	+15°C to +60°C	+15°C to +60°C	+20°C to +40°C	+15°C to +45°C
Drying time between coats	5 min. / RT	5 min. / RT	15 min. / RT	5 min. / RT
Cure time after final coat	10 min. / RT	30 min. / RT	40 min. / RT	15 min. / RT
Thermal stability	Up to +400°C	Up to +400°C	Up to +315°C	Up to +400°C
	FREKOTE 770 NC • Fast RT cure • High gloss and high slip • Releases most polymers	**FREKOTE 55 NC** • No mould build up • No contaminating transfer • High thermal stability	**FREKOTE C 600** • Fast RT application and cure • Large parts • Non-flammable	**FREKOTE WOLO** • Easy application • Multiple releases • High gloss finish

FRP polyester	Rubber	Cleaner
High gloss	Water-based	Plastic & metal moulds
Sealer FMS	Sealer RS100	Polishing liquid
	Rubber to metal bonding / Highly filled elastomers	
Spray-on-leave-on / Water based	General purpose / Highest slip / special rubbers	Heavy contamination

FREKOTE 1 Step	FREKOTE C 400	FREKOTE R 120	FREKOTE R 220	FREKOTE 915 WB
				
Release agent	Release agent	Release agent	Release agent	Pre-cleaning
Clear, liquid	White emulsion	White emulsion	White emulsion	Beige, liquid
+15°C to +45°C	+15°C to +40°C	+60°C to +205°C	+60°C to +205°C	+10°C to +40°C
Immediate RT	5 min. / RT	Immediate at +60°C	Immediate at +60°C	5 min. / RT
30 min. / RT	30 min. / RT	10 min. at +90°C 4 min. at +150°C	10 min. at +90°C 4 min. at +150°C	–
Up to +400°C	Up to +315°C	Up to +315°C	Up to +315°C	–
FREKOTE 1 Step • Easy to use • High gloss finish • Minimal mould build up	**FREKOTE C 400** • Water based system • Fast RT application and cure • High gloss finish	**FREKOTE R 120** • Fast cure • General purpose • Low transfer	**FREKOTE R 220** • Fast cure • High slip • For difficult to release rubbers	**FREKOTE 915WB** • Water-based • Polishing liquid • Removes cured release agents

Mould Release Agents

Product List

Product FREKOTE		Description	Chemical basis	Mould temperature	Cure system	Drying time between coats at		Cure time after final coat			
						20°C	60°C	20°C	60°C	100°C	150°C
909 WB	▲	Pre-cleaner	Water	+10°C to +40°C	–	1 hr	–	–	–	–	–
913 WB	▲	Post-cleaner	Water	+10°C to +40°C	–	*	–	–	–	–	–
915 WB	▲	Pre-cleaner	Water	+10°C to +40°C	–	5 min.	–	–	–	–	–
PMC	▲	Post-cleaner	Solvent	+15°C to +40°C	–	*	–	–	–	–	–
B 15	●	Mould preparation	Solvent	+15°C to +60°C	Moisture	30 min.	5 min.	24 hr	2 hr	–	–
CS 125	●	Mould preparation	Solvent	+13°C to +40°C	Moisture	5 min.	–	2 hr	–	–	–
FMS	●	Mould preparation	Solvent	+15°C to +35°C	Moisture	15 min.	–	20 min.	–	–	–
RS 100	●	Mould preparation	Water	+90°C to +200°C	Heat	–	–	–	–	30 min.	12 min.
1 Step	■	FRP polyester parts	Solvent	+15°C to +40°C	Moisture	*	–	30 min.	–	–	–
44 NC	■	Advanced composites	Solvent	+20°C to +60°C	Moisture	15 min.	5 min.	3 hr	30 min.	15 min.	–
55 NC	■	Advanced composites, FRP polyester parts	Solvent	+15°C to +60°C	Moisture	5 min.	3 min.	30 min.	10 min.	–	–
700 NC	■	Advanced composites	Solvent	+15°C to +135°C	Moisture	5 min.	3 min.	20 min.	8 min.	5 min.	–
770 NC	■	Advanced composites, FRP polyester parts	Solvent	+15°C to +60°C	Moisture	5 min.	1 min.	10 min.	5 min.	–	–
C 200	■	Advanced composites	Water	+60°C to +205°C	Heat	–	*	–	30 min.	10 min.	4 min.
C 400	■	FRP polyester parts	Water	+14°C to +40°C	2K, room temperature	5 min	–	30 min.	–	–	–
C 600	■	Advanced composites	Water	+20°C to +40°C	Evaporation	15 min.	1 min.	40 min.	10 min.	–	–

Resulting surface	Type of polymer / elastomer	Application technique	Pack sizes							Comments
			1 ltr	3.7 ltr	5 ltr	10 ltr	25 ltr	208 ltr	210 ltr	
All	Steel, nickel, stainless steel	Wipe-on								Alkaline foam cleaner, removes cured release agents and other contamination
All	Polyesters, epoxies, steel, nickel, aluminium	Wipe-on								Antistatic mould cleaner, prevents dust re-contamination, removes fingerprints
All	Polyesters, epoxies, steel, nickel	Wipe-on	•							Removes cured release agents and other contamination
All	Polyesters, epoxies, steel, nickel, aluminium	Wipe-on	•		•					Removes dust, dirt, fingerprints, oil
Matt	Epoxies	Wipe-on	•		•					Seals microporosities, provides uniform release agent coating
High gloss	Epoxies	Wipe-on	•		•				•	Seals large porosities, provides uniform release agent coating, low odour, thicker coating, for tooling blocks
High gloss	Polyesters, vinyl ester	Wipe-on	•		•					Seals microporosities, provides uniform release agent coating
All	NR, SBR, HNBR, CR, EPDM	Spray-on			•					Seals microporosities, provides uniform release agent coating
High gloss	Polyester gel-coats	Spray-on			•					Spray-on-leave-on, no sealer required, high gloss gel-coat parts
Matt	Epoxies, PA	Wipe-on, spray-on			•		•			No mould build up, non-contaminating transfer, minimised cleaning before bonding and painting
Satin matt	Epoxies, polyester resin, PA	Wipe-on, spray-on	•				•	•		No mould build up, non-contaminating transfer
Gloss	Epoxies	Wipe-on, spray-on			•		•	•		High slip, universal for most composites, also for polyester resins
High gloss	Epoxies, polyester resin, PE	Wipe-on, spray-on	•		•					High slip, high gloss, fast curing, universal for most composites
Matt	Epoxies, PA, PP, PE	Spray-on								Low mould build up, non contaminating transfer
High gloss	Polyester gel-coats, polyester resins	Wipe-on, spray-on								Room temperature curing, high gloss gel-coat parts, 2K system
Matt	Epoxies	Wipe-on, spray-on			•					Integrated sealer, room-temperature curing

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Product List

Product FREKOTE		Description	Chemical basis	Mould temperature	Cure system	Drying time between coats at		Cure time after final coat			
						20°C	60°C	20°C	60°C	100°C	150°C
PUR 100	■	Polyurethane releasing	Water	+60°C to +205°C	Heat	–	*	–	30 min.	10 min.	4 min.
R 100	■	Rubber releasing	Water	+60°C to +205°C	Heat	–	*	–	30 min.	10 min.	4 min.
R 110	■	Rubber releasing	Water	+60°C to +205°C	Heat	–	*	–	30 min.	10 min.	4 min.
R 120	■	Rubber releasing	Water	+60°C to +205°C	Heat	–	*	–	30 min.	10 min.	4 min.
R 150	■	Rubber releasing	Water	+60°C to +205°C	Heat	–	*	–	30 min.	10 min.	4 min.
R 180	■	Rubber releasing	Water	+60°C to +205°C	Heat	–	*	–	30 min.	10 min.	4 min.
R 220	■	Rubber releasing	Water	+60°C to +205°C	Heat	–	*	–	30 min.	10 min.	4 min.
Frewax	■	FRP polyester parts	Solvent	+15°C to +35°C	Moisture	5 min.	–	10 min.	–	–	–
FRP NC	■	FRP polyester parts	Solvent	+15°C to +40°C	Moisture	15 min.	–	20 min.	–	–	–
S50 E	■	Special product	Water	+100°C to +205°C	Heat	–	–	–	–	*	*
WOLO	■	FRP polyester parts	Solvent	+15°C to +40°C	Moisture	5 min.	–	15 min.	–	–	–

■ Release agent ● Mould sealer ▲ Mould cleaner * Immediate

Resulting surface	Type of polymer / elastomer	Application technique	Pack sizes							Comments
			1 ltr	3.7 ltr	5 ltr	10 ltr	25 ltr	208 ltr	210 ltr	
Matt	Rigid PUR	Spray-on		•						For rigid PUR materials
Matt	NR, SBR, HNBR, CR	Spray-on								High slip, difficult to release rubbers, synthetic rubbers
Matt	NR, SBR, HNBR	Spray-on								Low transfer, low mould build up, standard rubbers
Matt	NR, SBR, HNBR	Spray-on			•	•				General purpose, standard rubbers, low mould build up
Matt	NR, SBR, HNBR, CR	Spray-on								Low slip, low mould build up, standard rubbers, rubber to metal
Satin matt	NR, SBR, HNBR, CR, EPDM	Spray-on			•	•			•	High slip, difficult to release rubbers
Gloss	NR, SBR, HNBR, CR, EPDM	Spray-on						•		High slip, most difficult to release rubbers, for highly filled elastomers, synthetic rubbers
High gloss	Polyester gel-coat resins	Wipe-on	•		•					Easy to use, visible, no sealer required, high gloss gel-coat parts
High gloss	Polyester gel-coat resins	Wipe-on			•					Low mould build-up, high gloss gel-coat parts
Matt	Silicone rubber	Spray-on								For silicone elastomers
High gloss	Polyester gel-coats	Wipe-on	•		•					Wipe-on-leave-on, no sealer required, high gloss gel-coat parts