

LOCTITE[®]

Mold Release Agents for the Aerospace Composites Industry



Henkel

Excellence is our Passion

LOCTITE FREKOTE: The Aerospace Standard for Release Materials.

Henkel's LOCTITE FREKOTE release agents, sealers and cleaners are based on over 50 years of technical experience and are the most trusted for consistent release of composite parts from tools. These wax- and silicone-free release agents polymerize to create a low surface energy film which is durable, chemically resistant and thermally stable. A minimal transfer to molded components, low clogging, easy application and the highest number of releases possible per application are guaranteed.

Henkel provides optimum solutions to meet the most rigorous requirements and is qualified worldwide at all major aircraft manufacturers.

With support from its authorized aerospace distribution network, Henkel delivers LOCTITE FREKOTE mold release agents for aerospace customers throughout the globe.

LOCTITE FREKOTE Mold Release Benefits

- › No volatile organic compounds (VOCs)
- › No CFCs releases
- › Semi-permanent mold release bonds to mold surface for consistent release
- › Higher productivity and profitability through reduced downtime
- › Low reject rates
- › Dispensing equipment available



Key Factors to Consider When Choosing the Right LOCTITE Product

- › Water based vs. solvent based
- › Slip/release characteristics
- › Use temperature
- › Transfer characteristics

LOCTITE FREKOTE Mold Release Materials: All Facts at a Glance.

Henkel's coatings can be applied to the following surfaces:

- › Thermoset epoxies, phenolics and BMIs
- › Thermoset prepregs
- › Thermoplastic polymers
- › Thermoplastic prepregs
- › Natural & Synthetic rubbers
- › Silicones
- › Urethanes
- › Polyester resins
- › Vinyl ester resins
- › MRO & repair

Henkel mold releases can be used in all composite manufacturing processes:

- › Hand lay-up
- › Automated fiber placement & tape laying
- › Autoclave molding
- › Vacuum bag only molding
- › Resin transfer molding
- › Vacuum infusion processes
- › Resin film infusion
- › Filament winding
- › Injection molding
- › Compression molding
- › Pultrusion
- › Rotational molding
- › Metallic, ceramic and composite tooling
- › Automated spray application

Troubleshooting Guide

Problem	Cause	Solution
Complete failure to obtain release.	<ul style="list-style-type: none"> › Insufficiently cleaned mold surface has prevented LOCTITE FREKOTE from bonding to the mold. › Improperly cured LOCTITE FREKOTE film. › Precipitated and thus ineffective LOCTITE FREKOTE. 	<ul style="list-style-type: none"> › Strip out part. Thoroughly clean mold and reapply LOCTITE FREKOTE. › Ensure that LOCTITE FREKOTE is fully cured before molding. › Examine LOCTITE FREKOTE. If separation is present replace with fresh material. Clean mold and reapply.
Poor release accompanied by small particles of molding material left on mold surface. Particles of molding material left on mold surface.	<ul style="list-style-type: none"> › Micro-porosity present in mold. 	<ul style="list-style-type: none"> › Thoroughly clean mold and apply a LOCTITE FREKOTE mold sealer. Reapply LOCTITE FREKOTE top coats.
Poor release accompanied by white patches on parts.	<ul style="list-style-type: none"> › Insufficiently cleaned mold surface that prevents LOCTITE FREKOTE from bonding properly, resulting in transfer to parts. 	<ul style="list-style-type: none"> › Thoroughly clean mold and reapply LOCTITE FREKOTE.
Poor release accompanied by discolored blemishes on parts.	<ul style="list-style-type: none"> › Solvent-based FREKOTE contaminated by use of synthetic application cloths. Contaminants applied to tool surface. 	<ul style="list-style-type: none"> › Thoroughly clean mold and reapply LOCTITE FREKOTE ensuring the use of non-synthetic application cloths.
Poor release in high-draft areas.	<ul style="list-style-type: none"> › Lack of slip due to mold geometry in difficult high-draft areas. 	<ul style="list-style-type: none"> › Apply one or two extra coats of LOCTITE FREKOTE.
Inability to achieve multiple releases.	<ul style="list-style-type: none"> › Unconditioned mold surface. › Separated and thus ineffective LOCTITE FREKOTE. 	<ul style="list-style-type: none"> › Reapply LOCTITE FREKOTE frequently for initial production shift. Thereafter gradually decrease the frequency of application. › Examine LOCTITE FREKOTE. If separation is present, use fresh material.
Good release but build-up of LOCTITE FREKOTE on mold surface.	<ul style="list-style-type: none"> › Over-application of LOCTITE FREKOTE. 	<ul style="list-style-type: none"> › Thoroughly clean mold and reduce amount of LOCTITE FREKOTE applied.
Good release but parts exhibit white blemishes.	<ul style="list-style-type: none"> › Excessive FREKOTE applied to mold, resulting in transfer to parts. 	<ul style="list-style-type: none"> › Thoroughly clean mold and reduce amount of LOCTITE FREKOTE applied.

Product type	Mold Cleaner		Mold Sealer	Solvent Based Mold Release				Water-Based Mold Release
Application	Wax Removing	Residue removing	Sealing	Compression Molding, Casting and Vacuum bagging	Compression Molding, Casting and Vacuum bagging	High Slip	Filament Winding	Composites Release
Finishing	–	Gloss Finish	–	Matte Finish	Satin Finish	Gloss Finish	Gloss Finish	Matte Finish
Mold sealer	–	–	–	LOCTITE FREKOTE B15 AERO	LOCTITE FREKOTE B15 AERO	LOCTITE FREKOTE B15 AERO	LOCTITE FREKOTE B15 AERO	LOCTITE FREKOTE B15 AERO
Product appearance	Clear Liquid	Beige-pasty Liquid	Clear Liquid	Clear Liquid	Clear Liquid	Clear Liquid	Clear Liquid	Clear Liquid
Cure Temperature (°F / °C)	Ambient	Ambient	Ambient 210 – 300 °F 100 – 150 °C	Ambient 210 – 300 °F 100 – 150 °C	Ambient 210 – 300 °F 100 – 150 °C	Ambient 210 – 300 °F 100 – 150 °C	Ambient	Ambient 210 – 300 °F 100 – 150 °C
Cure Time at RT / at 210°F – 100 °C	–	5 mins	24 hours 60 mins	3 hours 15 mins	30 mins 5 mins	10 mins 5 mins	5 – 10 mins	3 hours 5 – 15 mins
Application Temperature Range	68 – 86 °F / 20 – 30 °C	68 – 104 °F / 20 – 40 °C	68 – 140 °F / 20 – 60 °C	60 – 140 °F / 15 – 60 °C	60 – 140 °F / 15 – 60 °C	60 – 275 °F / 15 – 135 °C	60 – 140 °F / 15 – 60 °C	59 – 122 °F / 15 – 50 °C
Storage Temperature (°F / °C)	46 – 70 °F / 8 – 21 °C	46 – 70 °F / 8 – 21 °C	46 – 70 °F / 8 – 21 °C	46 – 70 °F / 8 – 21 °C	46 – 70 °F / 8 – 21 °C	46 – 70 °F / 8 – 21 °C	46 – 70 °F / 8 – 21 °C	Ambient
Storage Time	2 years from date of manufacture	24 months at room temperature	1 year from date of manufacture	1 year from date of manufacture	1 year from date of manufacture	1 year from date of manufacture	1 year from date of manufacture	9 months from date of manufacture
Benefits	<ul style="list-style-type: none"> › Easy to use › Eliminates contaminants › Enhances release effectiveness 	<ul style="list-style-type: none"> › Water-based polisher › Removes cured films 	<ul style="list-style-type: none"> › Seals mold porosity, scratches, and imperfections › Non-contaminating transfer › High thermal stability 	<ul style="list-style-type: none"> › Better mold utilization › Non-contaminating transfer › No mold build-up › Significantly lower mold maintenance costs 	<ul style="list-style-type: none"> › Fast drying › Non-contaminating transfer › High thermal stability › Non-CFC › No mold build-up 	<ul style="list-style-type: none"> › No chlorinated solvents › High gloss finish › High slip › Non-contaminating transfer › No mold build-up 	<ul style="list-style-type: none"> › Non-contaminating transfer › High gloss finish › High slip › No mold build-up › Low odor 	<ul style="list-style-type: none"> › High slip › Easy application › Multiple releases › Low transfer › No corrosion / oxidation of the mold surface › Minimal mold build-up
Regional availability*	▲ ■ ● ◆	■ ◆	▲ ■ ● ◆	▲ ■ ◆	▲ ■ ◆	▲ ■ ● ◆	▲ ■ ● ◆	▲ ■ ● ◆
Description	LOCTITE FREKOTE PMC AERO helps dissolve and remove wax from polyester molds without dulling the surfaces. It can also clean epoxy and metal mold surface, brushes and equipment. It is highly recommended for preparing polyester mold surfaces prior to application of FREKOTE mold sealers and mold release agents.	LOCTITE FREKOTE 915WB AERO is a water-based cleaner developed for removing residue from mold surfaces. The high-grade surfactants and emulsifiers in combination with fine abrasives give excellent results without dulling the mold surface.	LOCTITE FREKOTE B-15 AERO is a sealer for metal molds with micro porosity and small surface scratches. Used in conjunction with other FREKOTE products, B-15 provides an excellent base coat enhancing the release advantages offered.	LOCTITE FREKOTE 44-NC AERO should be your first choice release agent where non-transference of release is important. It forms a micro thin film which is stable at high temperatures. It can be used for the release of epoxies, polyester resins, thermoplastics, adhesives, and rotational molded plastics.	LOCTITE FREKOTE 55-NC AERO is a release agent where a non-transferring release is necessary. It forms a micro thin film which is stable at high temperature. It can be used for the release of epoxies, polyester resins, thermoplastics, adhesives, and rotational molded plastics.	LOCTITE FREKOTE 700-NC AERO offers excellent release properties for the most demanding applications and is a great all-purpose release agent. It releases epoxies, polyester resins, thermoplastics, rubber compounds, and most other molded polymers.	LOCTITE FREKOTE 770-NC AERO offers excellent release for various molding applications. It is particularly well-suited for tougher to release processes such as filament winding and non-gel-coated polyester and fiberglass molding.	LOCTITE FREKOTE C-800 AERO is designed for releasing composite materials. It offers easy application and higher number of releases which reduces product usage and minimizes operator exposure to chemicals.
New Product Name	LOCTITE FREKOTE PMC AERO	LOCTITE FREKOTE 915WB AERO	LOCTITE FREKOTE B-15 AERO	LOCTITE FREKOTE 44-NC AERO	LOCTITE FREKOTE 55-NC AERO	LOCTITE FREKOTE 700-NC AERO	LOCTITE FREKOTE 770-NC AERO	LOCTITE FREKOTE C-800 AERO
Known As	Frekote® PMC™	Frekote® 915WB™	Frekote® B-15™	Frekote® 44-NC™	Frekote® 55-NC™	Frekote® 700-NC™	Frekote® 770-NC™	Frekote® Aqualine® C-800™

* Asia Pacific: ▲, Europe, Middle East, Africa: ■, Latin America: ●, North America: ◆

LOCTITE®
BONDERITE®
TECHNOMELT®
TEROSON®
AQUENCE®

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