Multi-Sector Application & Target Fields:

Mayer MT-WB 420 ThermoFlex is a high-performance, eco-friendly water-based polyurethane dispersion (PUD) adhesive engineered for multi-sector industrial manufacturing. Benefiting from a low thermal activation window and superior elasticity, it ensures outstanding thermo-lamination across wood, plastic, leather, fabric, and composite substrates.

1. Automotive & Transportation Interior Trim: Vacuum forming and heated press thermo-lamination of passenger car, bus, commercial vehicle, and rail interior trim parts including door panels, dashboards/instrument panels, pillar trims (A/B/C), sunvisors, and armrests with PVC, TPO foils, PU synthetic leather, and technical fabrics.

2. Footwear, Leathergoods & Technical Leather: Shoe upper and lining bonding, shoe component lamination, belts, bags, luggage, and luxury leather goods where permanent elasticity, high green strength, and non-brittle bond lines are critical.

3. Technical Plastics, Composites & 3D Thermoforming: 3D vacuum membrane pressing and thermoforming of decorative films, technical foils, and protective wraps onto rigid PVC, ABS, polystyrene (PS), fiberglass composites, and molded parts.

4. Furniture, Interior Architectural Doors & Acoustic Panels: 3D vacuum and membrane press wrapping (Wemhöner, Bürkle, etc.) of CNC-routed MDF kitchen cabinet doors, drawer fronts, interior room doors, curved panels, and acoustic wall panels with high-gloss or matte PVC/PET foils.

Characteristics, Technical Advantages & Performance Benefits:

Low Thermal Activation Window (60 – 75 °C): Ensures complete polymer activation at lower press temperatures, protecting heat-sensitive thin foils and delicate leather/fabrics from shrinkage, burning, or thermal distortion while reducing press cycle energy costs.

Mirror-Smooth Finish & Zero Orange-Peel Defect: Superior spray atomization eliminates stringing and droplet spatters, delivering a flawlessly smooth adhesive layer under thin and high-gloss thermoplastic foils.

Superior Thermal & Environmental Endurance: Provides ~90 °C heat resistance as a 1-component (1K) adhesive. Addition of 3 – 5% Mayer WB Hardener (Isocyanate) boosts heat resistance beyond 110 °C with outstanding moisture and aging resistance (compliant with WATT 91).

High Elasticity & Permanent Bond Flexibility: The polyurethane molecular backbone retains resilient flexibility over time, resisting mechanical vibration, thermal cycling, and dynamic stress in automotive and footwear applications.

Low-VOC & Operator-Safe Aqueous Formulation: Water-based, solvent-free, virtually odorless, and non-flammable, ensuring high workplace safety and reduced environmental impact.

Processing Parameters & Operating Conditions:

Process / Application Parameter	Specification Value & Operating Conditions
Press Activation Temperature (Thermal Window)	60 – 75 °C (Minimum core glue-line temperature measured on substrate)
Viscosity (Brookfield @ 20 °C, Spindle 3, 20 rpm)	1,400 ± 300 mPa·s (Smooth spray atomization)
Applied Quantity (Wet Film - Flat / Broad Area)	50 – 80 g/m² (By roller coater or spray gun)
Applied Quantity (Wet Film - Edges / Routed / Porous)	100 – 130 g/m² (Two cross-coats recommended)
Recommended Spray Gun Nozzle	1.4 – 1.8 mm (Gravity feed, suction cup, or pressure pot system)
Atomizing Air Pressure	2.0 – 3.0 bar (Spraying distance: 25 – 40 cm)
Drying Time Window (@ 20 °C / 50% RH)	20 – 35 minutes (Accelerated in warm air / IR tunnel: 2 – 4 minutes)
Post-Drying Reactivation Window (Open Assembly)	Parts can be thermo-activated up to 8 – 12 hours after drying
Press Cycle Time & Operating Pressure	30 – 60 seconds (4.0 – 6.0 bar vacuum / hydraulic press pressure)
Hardener Mixing Ratio (Optional 2K System)	100 parts by weight MT-WB 420 : 3 – 5 parts by weight Mayer WB Hardener
2K Mixture Pot Life (@ 20 °C)	approx. 4 – 6 hours (Mix thoroughly with a mechanical agitator)

Physical & Technical Specifications:

Technical Parameter	Test Method & Normative Value
Chemical Base	Water-Based Polyurethane Dispersion (Aliphatic / Aromatic Modified PUD)
Solids Content (DIN EN 827)	40.0 ± 1.5 % (Gravimetric)
Density (@ 20 °C, DIN 51757)	approx. 1.06 ± 0.02 g/cm³ (1.06 kg/L)
pH Value (DIN ISO 976)	7.5 ± 0.5 (Neutral dispersion)
Appearance & Liquid Color	Milky White Liquid Emulsion
Dried Film Appearance	Crystal Clear Transparent, High Elasticity Film
Heat Resistance (1-Component / 1K System)	approx. 90 °C
Heat Resistance (2-Component / 2K Crosslinked)	> 110 °C (Compliant with WATT 91 and Automotive OEM specifications)
Flammability & Flash Point	Non-flammable / Flash point > 100 °C (Water-Based System)

Performance Ratings & Quality Index:

3D Thermoforming & Membrane Heat Resistance	**98 / 100**
Spray Atomization & Smooth Leveling Quality	**99 / 100**
Multi-Sector Substrate Adhesion Strength	**97 / 100**
Low Thermal Activation Window (60 – 75 °C)	**96 / 100**
Mirror-Smooth Finish (Zero Orange-Peel)	**99 / 100**

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Surface Preparation, Spraying & Application Guidelines:

Surface Preparation: All substrates must be dry, clean, and free of dust, sawdust, grease, mold release agents, and loose particles. Recommended moisture content for wood and MDF panels is 8 – 10%. Check surface tension on plastic substrates (ABS, PVC) prior to application.

Spray Application Technique: Apply the adhesive with a 1.4 – 1.8 mm nozzle spray gun at a 90° angle from a distance of 25 – 40 cm. For flat, non-porous surfaces, a single uniform coat of 50 – 80 g/m² is sufficient. For deep routed profiles, profiled edges, or porous boards, apply two cross-coats (100 – 130 g/m²) with a 2 – 3 minute flash-off in between.

Drying Stage: Allow coated parts to dry at room temperature for 20 – 35 minutes, or in heated air / IR drying tunnels (45 – 50 °C) for 2 – 4 minutes. Once the milky white film turns completely transparent and clear, the part is ready for thermal activation and pressing.

Optional Two-Component (2K) Isocyanate Crosslinking System:

1-Component (1K) Processing: For standard interior furniture, decorative panels, and light leathercraft, the adhesive is processed directly as a 1K system without hardener (~90 °C heat resistance).

2-Component (2K) Processing: For automotive parts exposed to direct sunlight, exterior doors, high-moisture kitchen/bathroom cabinetry, or heavy dynamic loads, add 3 – 5 parts by weight of Mayer WB Hardener per 100 parts by weight of MT-WB 420. Mix thoroughly for at least 2 – 3 minutes using a mechanical stirrer. The catalyzed mixture has a pot life of 4 – 6 hours.

Cleaning & Equipment Maintenance:

Clean wet adhesive residues, spray nozzles, and hoses immediately with warm water. Dried polymer deposits can be removed mechanically or using Mayer Dispersion Cleaner.

Storage Conditions & Shelf Life (Frost Protection Warning):

Store in original, unopened containers in a dry, temperate environment (+15 °C to +25 °C). PROTECT FROM FROST AT ALL TIMES! If exposed to temperatures below +5 °C, irreversible coagulative damage will occur. Protect from direct sunlight and keep container lids tightly sealed. Shelf life is 9 months from production date.

Packaging & Delivery Form:

Supplied in 30 kg Plastic Pails / Jerricans and 1000 kg IBC Containers.

Important Remarks & Legal Disclaimer:

For occupational safety and handling protocols, consult the Material Safety Data Sheet (MSDS / SDS).

Because foil surface tensions, plasticizers, leather grain, and substrate porosity vary across different manufacturers, factory trials under actual production conditions are recommended prior to large-scale runs.

Mayer Adhesive Engineering & Quality Assurance Standards:

Quality Assurance: Manufactured under ISO 9001:2015 Quality and ISO 14001:2015 Environmental Management Systems.

Workplace & Operator Safety: Solvent-free, low-VOC, formaldehyde-free, non-toxic, and non-hazardous water-based PUD chemistry.

Mayer Engineering Field Support: Expert technical consultation for press temperature profiling, spray nozzle tuning, and peel-test audits.

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