

Glass Surface Maintenance Matrix

**Table 1—Architectural Glass Surface Maintenance (AGSM)
MATRIX OF PROFESSIONAL WINDOW CLEANING METHODS AND MATERIALS**

IWCA AGSM Cleaning Category Code	IWCA AGSM Product Application Category	IWCA AGSM Product and Equipment—Type and Application
Routine: Type 1	Routine: Glass or solar panel cleaning— squeegee and hand cleaning/application of detergent	Manual cleaning using a squeegee and hand-applied (brush or applicator) soap or mild detergents diluted with water
Routine: Type 2 LEED Certified Properties	Routine: Squeegee and hand cleaning/application of detergents on LEED Certified properties, depending on client specifications, only detergents that meet the Green Seal approval may be used.	Manual cleaning using a squeegee and hand-applied (brush or applicator) soap or mild detergents diluted with water
Routine: Type 3 Solar Film present	Routine: Squeegee and hand cleaning of glass with solar film or unique metallic coatings	Cleaning tinted glass with field-applied solar film often requires specific soaps and/or methods specified by the solar film manufacturer. In general, manufacturers of solar film specify that all cleaning must be performed using ONLY soft cloth applicators; no contact with any metal scrapers or abrasives; use only mild soaps; no ammonia, vinegar, metal tools, abrasive pads, natural sponges, etc.
Routine: Type 4 Water-Fed Pole (WFP)	Routine: Water-Fed Pole (WFP) with pure water technology	Water-fed pole using tap water that is treated (de-ionized, reverse osmosis, filtered, etc.)
Routine: Type 5 Water-Fed Pole (WFP) with detergent	Routine: Water-Fed Pole (WFP) with pure water technology using mild chemicals or soap	Water-fed pole using tap water that is treated (de-ionized, reverse osmosis, filtered, etc.) and the addition of mild detergents introduced into the water stream
Non-Routine: Type 6	Non-routine: Targeting removal of stickers, excess caulking, oxidation, paint, tar, concrete, waterproofing sealants, and general stain removal. This	Debris removal using any of the following: Organic solvents (typically flammable) or non-metallic scrapers. No use of scrapers or strong acids.

Debris and stain removal via organic solvents	may include deposit and stain removal from weathered glass, construction cleanings, and removal of debris on glass from remodeling activities	Includes deposit and stain removal from weathered glass, construction cleanings, and removal of remodeling activities, concrete, stickers, etc.
Non-Routine: Type 7 Debris and stain removal via abrasives	Non-routine: Targeting removal of stickers, excess caulking, oxidation, paint, tar, concrete, waterproofing sealants, and general stain removal. This may include deposit and stain removal from weathered glass, construction cleanings, and removal of debris on glass from remodeling activities.	Debris removal using any of the following: Non-flammable solvents, compounds, microcrystalline abrasives, and non-metallic scrapers. No use of metal scrapers or strong acids.
Non-Routine: Type 8 Debris and stain removal via use of metal scrapers and/or strong acids/alkaline	Non-routine: Targeting stain removal of metal oxides, severe oxidation, severe concrete splatter, and Stage 3 corrosion using strong acids or alkali EXCLUDES TINTED OR COATED GLASS PRODUCTS	Debris removal using any of the following: Non-flammable solvents, compounds, strong acids or alkali, or metallic scrapers. Last resort attempt before mechanical polishing. Removal of certain deposits (i.e. large concrete spills on glass) may cause scratching. Depending on conditions, the debris removal is a required step before proceeding to mechanical polishing Non-Routine: Type 9.
Non-Routine: Type 9 Mechanical Polishing	Non-Routine: Mechanical Polishing—restoration and scratch removal	Surface restoration involving mechanical polishing using power tools and polishing abrasives
Non-Routine: Type 10 Robotic Cleaning	Non-Routine: Robotic Cleaning systems and unmanned automatic systems	Targeting chemicals and soaps used with robotic systems. This could include recycled water, detergents, or pure water technology.

NOTE: Generally accepted product applications for Routine Cleaning Types 1 through 6 consist of squeegee and hand cleaning using water and application of detergents. Routine cleaning EXCLUDES the removal of non-water-soluble debris removals such as paint, tar, concrete, caulk, waterproofing compounds, hard water stains and etching.

Appendix A—Routine Cleaning Products

Product Number (IWCA Unique Code)	Product Name(s)	IWCA AGSM Product Type Category	Typical Debris Product Is Effective On:	Product Description	pH (If Applicable)

1.1	Dish detergent	Mild soaps	**Generally Accepted Products for Routine Cleaning Types 1 through 6 Methods consist of squeegee and hand cleaning, using water and application of detergents. Routine cleaning EXCLUDES the removal of non-water-soluble debris removals such as paint, tar, concrete, caulk, waterproofing compounds, hard water stains, and etching. Excludes the use of flammable solvents to remove debris or stains.	Neutral pH detergent (when diluted)	7
1.2	Ammonia-based cleaners	Alkaline—Mild		Neutral pH detergent (when diluted)	6.0-7.5
1.3	Anionic surfactants	Mild soaps		Neutral pH detergent (when diluted)	7
2-1.2	Green Seal Certified Detergents	Only Green Seal approved detergents, soaps, and methods approved by the client or project manager shall be used.		Neutral pH detergent in concentrate	7

APPENDIX B—Non-Routine Cleaning Type 6: ORGANIC SOLVENTS

Product Number (IWCA Unique Code)	Product Name(s)	IWCA AGSM Product Type Category	Typical Debris Product Is Effective On	Flammable? (Y or N)	Flash Point (Flammable Only)	Incompatible Materials	Health and Safety Measures/PPE	Other Recommendations/Precautions
2.1	Acetic Acid (vinegar 1%-3%)	Organic Solvents	Hard water deposits, mineral deposits high in alkaline	N	NA	Strong oxidizing agents. Strong bases.	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	Acetic acid is one of the few organic solvents that has a measurable pH, which in stronger concentrations is 2.4-3.4

2.2	Acetone	Organic Solvents	Targets organic sealants such as urethane, paint, varnish lacquer, waterproofing sealants, silicone caulk removal without use of razor blades	Y	18°C	Strong oxidizing agents, acetic acid Strong acids. Strong bases.	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	
2.3	Butyl-Cellosolve	Organic Solvents	Targets fire and soot damage on glass, certain architectural metals and painted surfaces (can be safe on baked-on or Kynar-based coatings). Leaves oily residue which must be removed with detergents.	Y	-20°C (-4°F)	Strong oxidizing agents. Strong acids. Strong bases.	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	Highly flammable
2.4	Carbon tetrachloride (dry cleaning solvent)	Organic Solvents	Cleaning solvent for certain signage, ink removal.	Y	57°C (135°F)	Strong oxidizing agents. Strong acids. Strong bases.	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	
2.5	Ethanol	Organic Solvents	See "2.9: Methanol"	Y	-19°C (-2°F)	Strong oxidizing agents (e.g. peroxides, chromic acid). Strong acids (e.g. sulfuric acid, nitric	Gloves, goggles, protective clothing, HazCom training, firefighting measures,	

						acid). Strong bases (e.g. sodium hydroxide, potassium hydroxide).	thorough JHA	
2.6	Isopropyl alcohol	Organic Solvents	See “2.9: Methanol”	Y	13°C (55°F)	Strong oxidizing agents (e.g. peroxides, chromic acid). Strong acids (e.g. sulfuric acid, nitric acid). Strong bases (e.g. sodium hydroxide, potassium hydroxide).	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	
2.7	Lacquer thinner	Organic Solvents	Targets organic sealants such as urethane, paint, varnish lacquer, waterproofing sealants, silicone caulk removal without use of razor blades	Y	12°C (54°F)	Strong oxidizing agents (e.g. peroxides, chromic acid). Strong acids (e.g. sulfuric acid, nitric acid). Strong bases (e.g. sodium hydroxide, potassium hydroxide).	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	
2.8	Methyl acetate	Organic Solvents	Targets organic sealants such as urethane, paint, varnish lacquer, waterproofing sealants, silicone caulk removal	Y	-18°C to 4°C (0°F to 39°F)	Strong oxidizing agents. Strong acids. Strong bases.	Gloves, goggles, protective clothing, HazCom training, firefighting measures,	

			without use of razor blades				thorough JHA	
2.9	Methanol (methyl alcohol)	Organic Solvents	Alcohol is used as an antifreeze agent when cleaning is performed below 32 degrees. Dilute with water as needed to prevent freezing.	Y	-8°C (18°F)	Strong oxidizing agents (e.g. peroxides, chromic acid). Strong acids (e.g. sulfuric acid, nitric acid). Strong bases (e.g. sodium hydroxide, potassium hydroxide).	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	Transport in approved containers. Methanol can be diluted with water to be made non-flammable, but, it can never be made non-poisonous.
2.1	Methyl ethyl ketone (MEK)	Organic Solvents	Targets organic sealants such as urethane, paint, varnish lacquer, waterproofing sealants, silicone caulk removal without use of razor blades	Y	11°C (52°F)	Strong oxidizing agents (e.g. peroxides, chromic acid). Strong acids (e.g. sulfuric acid, nitric acid). Strong bases (e.g. sodium hydroxide, potassium hydroxide).	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	
2.11	Mineral Spirits (aka naphtha, turpentine, paint thinner)	Organic Solvents	Targets organic sealants such as urethane, paint, varnish lacquer, waterproofing sealants, silicone caulk removal without use of razor blades	Y	-9°C (16°F)	Strong oxidizing agents (e.g. peroxides, chromic acid). Strong acids (e.g. sulfuric acid, nitric acid). Strong bases (e.g. sodium hydroxide,	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	

						potassium hydroxide).		
2.12	Toluene (Toluol)	Organic Solvents	Targets organic sealants such as urethane, paint, varnish lacquer, waterproofing sealants, silicone caulk removal without use of razor blades	Y	35°C to 60°C (95°F to 140°F)	Strong oxidizing agents. Strong acids. Strong bases.	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	
2.13	Trichloroethane	Organic Solvents	Cleaning solvent for certain signage, ink removal.	Y	4°C (39°F)	Strong oxidizing agents. Strong acids. Strong bases.	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	
2.14	Xylene (xylol)	Organic Solvents	Targets organic sealants such as urethane, paint, varnish lacquer, waterproofing sealants, silicone caulk removal without use of razor blades	Y	23°C (73°F)	Strong oxidizing agents. Strong acids. Strong bases.	Gloves, goggles, protective clothing, HazCom training, firefighting measures, thorough JHA	

DISCLAIMER: *The information contained in this guide was compiled from various industry sources and represents the current best methods and practices employed for commercial cleaning of glass. This guide is presented for informational purposes only.*

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Additional information can be found at iwca.org.