

Build a Better Society

AT YKK AP, BUILDING A BETTER SOCIETY THROUGH OUR ACTIVITIES IS THE MEANING AND PURPOSE OF OUR BUSINESS. With a spirit of curiosity and exploration, we develop architectural products of true value that connect people, planet and the future. We want to create a better society, while remaining committed to the art and technology that have always been fundamental to architectural culture.

To provide years of dependable use, a new building must have excellence built-in from the beginning. That's why savvy architects, developers, and construction engineers are specifying architectural aluminum entrances, storefronts, curtain wall, and fenestration systems from YKK AP.

YKK AP has a long track record of enhancing the exterior envelope of all types of buildings, including office buildings, stadiums, malls, schools, hospitals, hotels, condominiums and more. Our products ensure users a safe, sustainable and comfortable environment. For example, YKK AP pioneered the introduction of ProTek® — a unique family of systems that mitigate risks associated with natural and man-made disasters.

As Architects, builders, and developers of commercial and institutional buildings employ "green" design, they are turning to YKK AP for custom crafted sustainable building products. To make it easy for architects to select the right products for their green building designs, YKK AP introduced the enerGfacade® family of energy efficient products. The enerGfacade product family provides ecologically sustainable and economically sensible solutions for the entire building envelope.

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Technical Assistance

YKK AP offers a variety of services available to design professionals to aid in product selection and design assistance.

A sampling of these services are listed below:

- Individual In-Office Consultations
- Phone-In Design Assistance
- Design Proposal Drawings and Sketches
- Box Lunch Presentations
- National Account Programs
- Budget Estimates
- Educational Seminars

For any of these services, please contact your local YKK AP Sales office or call 1-800-955-9551 and ask for an architectural sales representative.

Shop Drawings

Preparation of shop drawings by YKK AP, when required by the contract, will begin promptly after receipt of order and receipt of complete contract documents from buyer. YKK AP reserves the right at all times to apportion the necessary engineering and drafting work required to complete the shop drawings required by the contract. As to best utilize the facilities and personnel available to YKK AP, agreement as to quantity, finish and general description of materials should be supplied. If extensive revision is required, on the drawings, additional costs may be incurred by the buyer. No work will be performed by YKK AP nor will production be scheduled until approved shop drawings for production and/or fabrication have been received by YKK AP. Any change made after approved shop drawings are received by YKK AP and/or products have been in progress and/or produced will be subject to additional charges to the buyer.

Limited Warranty and Remedy

YKK AP America Inc. (YKK AP) is pleased to offer a one year limited warranty on all YKK AP products subject to every term, condition and limitation stated herein. YKK AP warrants that products supplied by YKK AP will be free from defects in materials and workmanship for a period of one (1) year after the date of shipment provided that they are installed in accordance with YKK AP's installation instructions and maintained in accordance with YKK AP's recommendations.

YKK AP will warrant its products provided YKK AP is notified in writing of the alleged defects within 30 days of the occurrence or appearance of such defect. Upon receipt of the written claim, YKK AP must be provided access to the product and be given a reasonable opportunity to inspect the material claimed to be defective. The sole and exclusive remedy with respect to the above warranty or with respect to any other claims to defects or any other conditions or use of the products supplied by YKK AP, however caused, and whether such claim is based upon a warranty contract, negligence, strict liability, or any theory, is limited to the repair or replacement of such products at YKK AP's option, or payment of the original purchaser's price to YKK AP. In no event does YKK AP's limited warranty cover the cost of labor or materials required to remove and/or replace any defective product. In addition, the remedy with respect to claims made relating to YKK AP's limited lifetime warranty on welded door corners excludes the replacement of glass, gaskets, hardware, immediate framing, temporary enclosures or any related labor or installation costs to remove and/or replace the defective product.

All products repaired, replaced or otherwise restored shall be warranted to the same extent and to the expiration date from the original date of shipment, and this Limited Warranty shall not be deemed to have been extended from the date of such warranty work. At no time does this Limited Warranty confer upon the claiming party or any other party the right to proceed with repair, replacement or restoration, unless authorized in writing and signed by an officer of YKK AP. YKK AP will not pay for any unauthorized work undertaken by the claiming party or any other party.

YKK AP'S AGGREGATE TOTAL CUMULATIVE LIABILITY UNDER THIS LIMITED WARRANTY IS LIMITED TO THE DOLLAR AMOUNT OF THE PURCHASER'S ORIGINAL PAYMENT MADE TO YKK AP FOR PRODUCT FURNISHED BY YKK AP. YKK AP DOES NOT MAKE ANY OTHER REPRESENTATIONS OR WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL YKK AP BE LIABLE FOR SPECIAL, DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO GOOD WILL, LOSS OF USE, LOSS OF PROFITS OR OTHER COMMERCIAL LOSS OR INJURY. BUYER AGREES TO PASS ON TO ITS CUSTOMERS AND USERS IN WRITING, AT THE TIME INQUIRIES AND ORDERS ARE RECEIVED BY BUYER, YKK AP'S WARRANTY AND REMEDY SET FORTH ABOVE.

YKK AP does not guarantee any part or product to meet local, municipal, state, or national laws or regulations.

This warranty does not cover, and YKK AP hereby disclaims all liability for the installation of YKK AP products and particular application or selection of the product for any particular building, project or design, hardware, gasket, glazing materials, any parts and accessories, components or sealants of other manufacturers used with YKK AP products, or any lack of performance of YKK AP products attributable to such item. This warranty also does not cover, and YKK AP hereby disclaims all liability for any products which have been subject to modifications, alterations, misuse, neglect, abuse, abnormal use, fire, earthquakes, accident, war, flood, act of God, or to which parts, not supplied by YKK AP have been added, or to defects caused by depreciation or normal wear.

This is the only warranty made in connection with the sale and distribution of YKK AP products. No representative, dealer or any other person is authorized to make any other warranty, representation or promise with respect to YKK AP products. No agreement or understanding, oral or written, in any way purporting to modify this warranty shall be binding on YKK AP unless made in writing and signed by an officer of YKK AP America Inc.

Waiver of Liability

Due to the widespread diversity of state, local and Federal laws and building codes which govern the application of architectural aluminum products, it is the responsibility of the architect, owner, and installer to assure that products selected for use comply with all applicable building codes and laws.

YKK AP does not control the selection of products, and therefore assumes no responsibility for their misuse.

If any product shall be manufactured by YKK AP to meet Buyer's specifications which are not part of YKK AP's standard line, Buyer shall identify and hold harmless YKK AP against all suits in law and equity, and from all damages, claims and demands for actual or alleged infringement of any United States or foreign patent and shall defend any suits or actions which may be brought against YKK AP for any alleged infringement because of the manufacture or sale of any such products.

YKK AP reserves the right to discontinue or change any product presented herein without prior written notice.

Products shall be installed by experienced workman in accordance with YKK AP's recommended installation procedures and/or approved shop drawings.

Products shall be cleaned by following YKK AP's recommended procedures. YKK AP assumes no responsibility for damage to finishes when using cleaning solution or methods other than those recommended by YKK AP.

Whenever there is a question concerning the correct application of any YKK AP architectural aluminum product, contact your YKK AP representative.

Handling and Installation Procedures

Care should be used during the movement and storage of materials for any reason. The following recommendations should be used to avoid damage to the material or finish:

1. Job site personnel should be informed and instructed of the correct methods of installing YKK AP systems (products). The correct and/or proper use of tools during installation should be applied. The standing, climbing or walking on material not designed for such purposes should be avoided to eliminate severe damage or injury.
2. Care should be used when lifting and handling products to avoid distortion, twisting, racking and contact with objects or abrasive surfaces that could cause any damage to the finish. Materials should be stored in a dry, ventilated area. Keep materials common to other trades such as mortar, chemicals, rags and welding operations away from materials.
3. Avoid storage of materials in areas used for cleaning other products or areas that will require the constant moving of materials or high traffic areas.

After products have been installed, provide adequate protection and precaution to avoid damage from other trades that will follow.

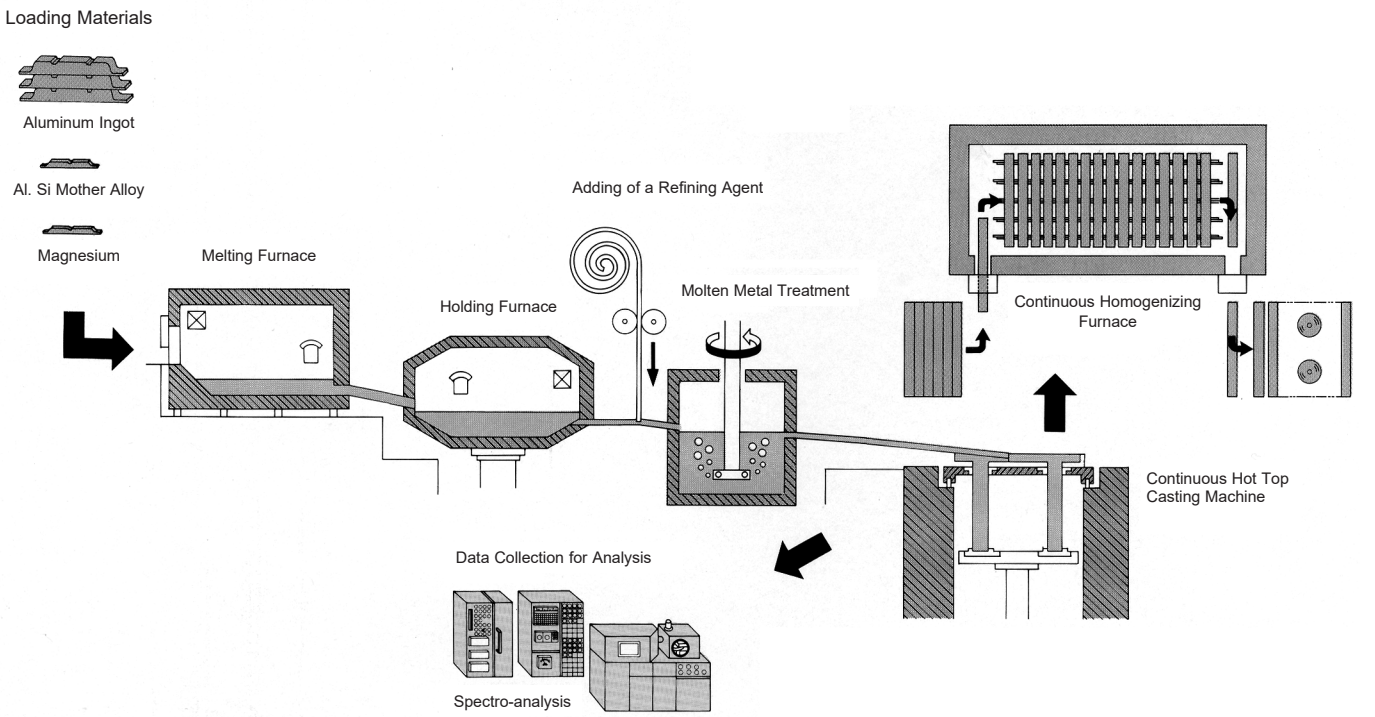
In cleaning of aluminum extrusions, it is important to select the proper cleaner suited for the type of finish.

It is especially important in the case of YKK AP's finish since it is a new technology incorporating the best features of anodizing and sealed with an organic top coating.

While YKK AP's Anodized Plus® finish is a true anodize, the top coat requires that it be cleaned along the same guidelines used for Fluoropolymer painted finishes. The top coating on Anodized Plus, however, should not be confused with a lacquer top coat. It is not.

1. Use mild soaps and detergents and non-etching cleaners. Spot test to be sure it does not affect the finish.
2. Solvent and emulsion cleaners are generally mild in their action and more effective on certain stains when used on anodized or painted surfaces. Surface shall be spot tested.
3. Care should be taken in cleaning finished surfaces. Grit, sand, metal pieces, etc., should be removed from all cleaning tools. Do not use wire brushes, steel wool, metal spatulas, etc., for cleaning.
4. The use of acidic or alkaline detergents should be avoided, since they cause corrosion or color change.
5. Some commercially available cleaners cause corrosion of aluminum extrusions. Make a spot test to be sure the cleaner used does not affect the finished surface.
6. After using water soluble detergents, wash the extrusions thoroughly with water, and wipe off the water using a dry cloth.
7. Reference "Care of Aluminum" booklet published by the Aluminum Association for further information.

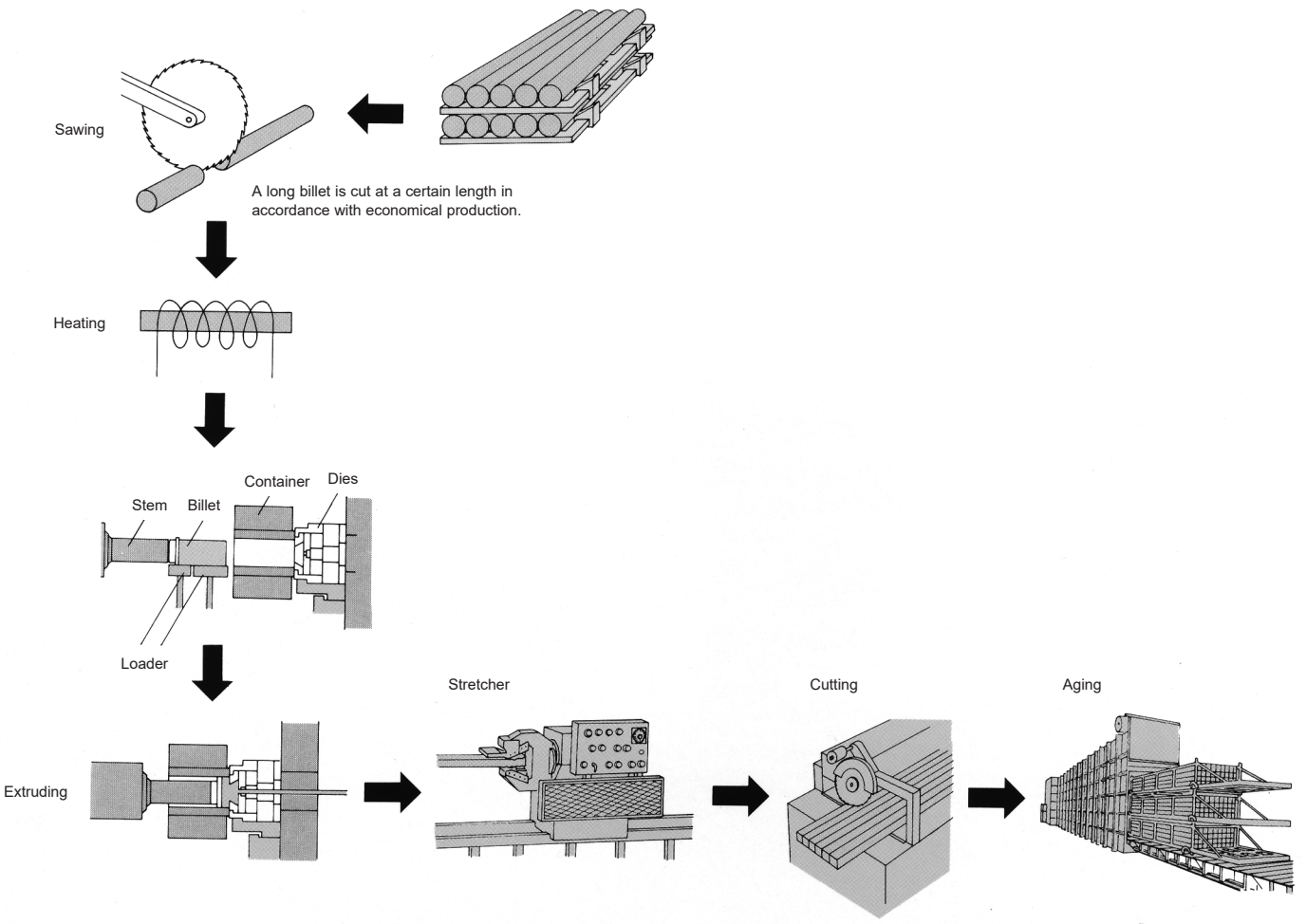
Casting



In order to produce high-quality aluminum extrusions, one starts by making good aluminum alloys. At the moment the most widely used type of aluminum alloy for extruded shapes is 6063. This is an alloy where a small amount of magnesium and silicon has been added to the aluminum. This alloy is highly anticorrosive, easily extruded, and also provides a good surface treatment effect.

We at YKK AP have been making this alloy since 1959. Although we have processed this alloy for a long time, we analyze the quality of each lot we produce by checking the contents of the components that will be added to the alloy. This is why our products never lose their top quality.

Extrusions



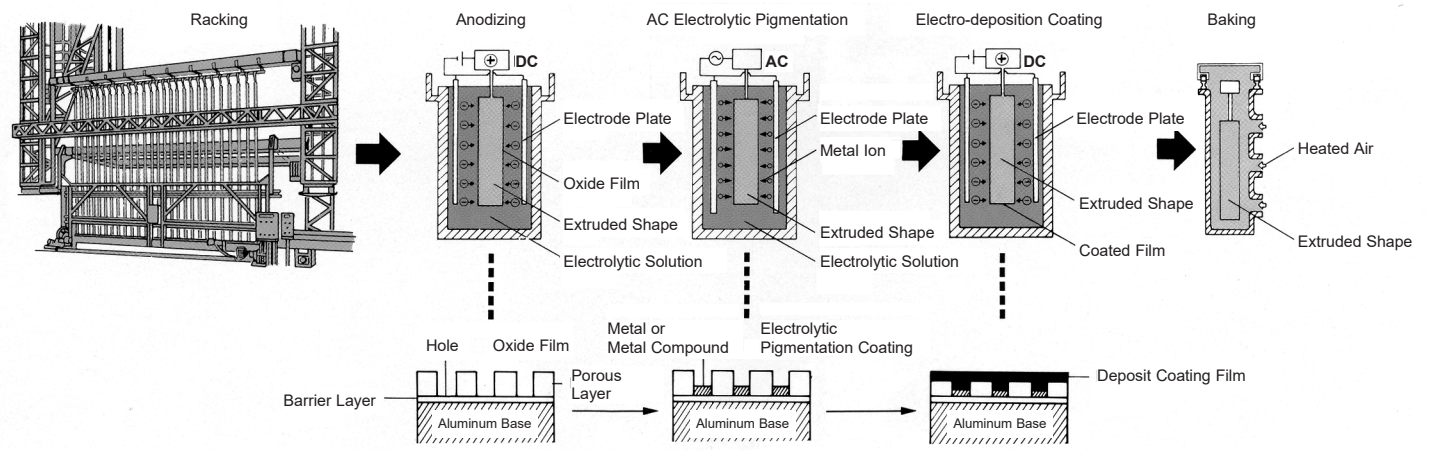
Aluminum alloy billets, manufactured by the melting process and preheated to some 450° C, are then loaded into the container of the extrusion press. Through high pressure, these billets are extruded through various dies to form the required profile.

YKK AP is currently operating over 50 extrusion presses worldwide. This gives YKK AP an extensive capacity to produce profiles of various types and groups.

Finishes

Anodizing Aluminum Surface Treatment

A number of methods are available for the surface treatment of architectural aluminum members. They include anodizing, coating and a combination thereof. Each method has its own advantages. The following is a brief description of anodizing and combination of anodizing and organic top coating.



Anodizing is successfully used for a wide range of general exterior construction purposes, such as for a curtain wall, since it produces an oxide film which is excellent in hardness, abrasion and corrosion resistance. Aluminum is, however, not strong against alkali. In the event an aluminum member is placed in contact with an alkaline substrate, such as mortar, it is necessary to cover the aluminum member. The oxide film is not satisfactory in corrosion resistance for use in a highly corrosive environment, such as in a coastal industrial zone. Moreover, the appearance of interference colors may impair the decorative features of the aluminum members. Considerable maintenance work is required to solve these problems.

Under these circumstances, it is desirable to have the aluminum members surface covered by a composite protective film which consists of an oxide film formed by anodizing and a corrosion and chemical resistant resin top coating on the oxide film. The composite film is characterized by its good hardness, abrasion resistance and other physical properties which are attributed to the oxide film, and its good corrosion and chemical resistance and other chemical properties which are attributable to the resin coating. There is now available, if the customer desires, a composite film having a matte surface which is similar to that on a chemically sealed oxide film. YKK AP employs an electrodeposition coating which produces an excellent film having a uniform thickness on even a complicated shape, and showing excellent corrosion resistance throughout the entire film, as the new film is free from any unduly thin portion that is unavoidable in a corner or projecting portion on a film formed by a dip or electrostatic coating.

Brief Process Description

PROCESS	DESCRIPTION
Racking	Mounting material to be treated on a frame.
Cleaning	Removing oil and stains from the material.
Etching	Dipping the material in a caustic soda solution to form a smooth surface thereon.
Neutralizing	Removing from the material surface the smut produced by etching.
Anodizing	Applying an electric current to the material as an anode in an electrolyte to form an oxide film.
Electrolytic Pigmentation	Applying an electric current to the material in an electrolytic pigmentation solution containing a metal salt so that the metal salt may be absorbed into the fine pores of the oxide film to develop color.
Sealing	Improving the corrosion resistance and physical properties of the porous film formed by anodizing.
Electrodeposition Coating	Improving the corrosion resistance and physical properties of the porous film formed by anodizing.
Baking	Heating the coating and film at a high temperature to harden it.
Unracking	Removing the surface treated material from the frame.

YKK AP Anodized Plus® Finish Limited Warranty and Remedy

YKK AP America Inc. (YKK AP) is pleased to offer a ten (10) year limited warranty on Anodized Plus® finishes YS1N, YB5N, YB1N, YH3N, YK1N applied to YKK AP products as manufactured by YKK AP subject to every term, condition and limitation stated herein. YKK AP is also pleased to offer a five (5) year limited warranty for YKK AP's white Anodized Plus finish, YW3N, applied to YKK AP products as manufactured by YKK AP subject to every term, condition and limitation stated herein.

The limited warranty for each Anodized Plus finish starts on the substantial completion date provided that the materials are fabricated and installed in accordance with YKK AP's installation instructions. The substantial completion date should be provided to YKK AP but in no case shall it be later than 6 months from YKK AP's date of shipment. If no substantial completion date is provided, YKK AP's shipping date shall be used for the effective start date of the limited warranty.

YKK AP warrants that the Anodized Plus finish will not:

A. Peel, crack, flake or blister.

B. 1) Chalk in excess of a numerical rating of 8 when measured in accordance with the standard procedures defined in ASTM D4214-07, Method D659.

2) Fade or change in color in excess of 5 units (Hunter Color Difference) when measured in accordance with the standard procedures defined in ASTM D2244-09b, Section 6.3.

3) Change its gloss retention in excess of 50% (percentage retention) when measured in accordance with standard procedures defined in ASTM D523-08.

This limited warranty applies to YKK AP products installed within continental North America, provided the installation is in a non-chemical use area and provided the product's exterior surface is washed with fresh water at least two (2) times per year. Washes must be recorded in a log book and contain the date that the products were washed, source of water, company, persons performing the cleaning, AND how the wash was performed. Washing must begin within six (6) months of product installation and the log shall be made available upon request. In addition, product installations that are located near coastal and/or heavy industrial areas must comply with the guidelines for "climatic conditions" aluminum care as defined in AAMA's CW-10 publication, Care and Handling of Architectural Aluminum from Shop to Site.

The limited warranty will apply provided YKK AP is notified in writing of the alleged defects within 30 days of the occurrence or appearance of such defect. Upon receipt of the written claim, YKK AP must be provided access to the product and be given a reasonable opportunity to inspect the material claimed to be defective.

The sole and exclusive remedy with respect to the above limited warranty, whether such claim is based on warranty, contract, negligence, strict liability, or any other theory, is limited to the repair or replacement of such product(s) or, at the option of YKK AP, reimbursed by YKK AP of the purchase price paid to YKK AP for the particular product(s).

The warranty will not apply to or cover:

A. Products that have been curved, formed, or welded after anodizing.
B. Damage to the coating occasioned by moisture or other contamination detrimental to the coating because of improper storage of the coated metal prior to installation.
C. Damage to the coated metal caused by handling, shipping processing and/or installation.
D. Fading or color changes on products that are not equally exposed to the sun and elements.

(continued on next page)

YKK AP Anodized Plus® Finish Limited Warranty and Remedy (cont'd)

E. Products installed within chemical use areas that can experience concentrated chemical build-up on the product's surfaces such as, but not limited to, pools, laboratories, and chemical storage areas.
F. The warranty will not be applicable to damage or failure which is caused by acts of God, falling objects, external forces, explosions, fire, riot, civil commotions, acts of war, radiation, or other such similar or dissimilar occurrences beyond the control of YKK AP.

YKK AP does not make any other representations or warranties, whether oral or written, express or implied, including but not limited to any warranty regarding merchantability or fitness for a particular purpose. In no event shall YKK AP be liable for direct, indirect, consequential or special damages, including but not limited to property damage, lost profits or lost revenue. Buyer agrees to pass on to all its customers and users in writing at the time of inquiries and orders are received by Buyer, YKK AP's limited warranty and remedy set forth above.

The agents, dealers and employees of YKK AP are not authorized to make modifications to this warranty, or make additional warranties binding on YKK AP. Accordingly, additional statements, whether oral or written, do not constitute warranties and should not be relied upon.

YKK AP Aluminum Finish Code

CODE	DESCRIPTION
YS1N	Clear Anodized Plus®
YH3N	Champagne Anodized Plus®
YB1N	Medium Bronze Anodized Plus®
YB5N	Dark Bronze Anodized Plus®
YK1N	Black Anodized Plus®
YW3N	White Anodized Plus®
M	Mill Finish

Anodized Plus® is an advanced sealing technology for anodized aluminum that completely seals the anodic film yielding superior durability (Refer to AAMA 612 for performance attributes).

Painted Finishes

Building designs may require the use of painted finishes for a variety of color.

The American Architectural Manufacturers Association (AAMA) has developed a set of specifications to aid specifiers in selecting the proper paint based on the desired application. YKK AP applies painted finishes to YKK AP's products in accordance with the following AAMA standards.

AAMA 2603 covers most baked enamel (acrylic / polyester) paint finishes. Common applications for these finishes are interior applications where color retention is not required. The baked enamel coatings are harder than the fluoropolymer PVDF (Kynar) coatings. These paints are less expensive, but have poor resistance to color fading and chalking.

AAMA 2604 covers most 50% fluoropolymer paint finishes. These finishes provide good color and gloss retention. They also will provide good hardness and abrasion resistance. A paint meeting this specification is often used in exterior applications where a high level of performance is required.

AAMA 2605 covers most 70% flouropolymer paint finishes. These finishes exhibit superior resistance to humidity, color change, chalk, gloss loss and chemicals. Paints meeting this specification are often used in exterior applications where superior performance is required.

Film Characteristics	AAMA 2605 Paragraph Number and Performance Requirements*	
Dry Film Thickness	**4.3**	1.2 mils minimum
Color Uniformity	**7.1**	Visually controlled
60° Gloss, ASTM D523	**7.2**	Low, medium and high
Hardness-Berol Eagle Turquoise Pencil	**7.3**	F minimum
Adhesion-Crosshatch 1/16" Wet and Dry and boiling water	**7.4**	No removal
Direct Impact 1/10" Distortion	**7.5**	No removal
Abrasion Resistance ASTM D968	**7.6**	Abrasion coefficient Value 40 min.
Acid Resistance 10% Muriatic Acid Spot Test	**7.7.1**	15 minutes-no attack
Mortar Resistance-24 Hour Pat Test	**7.7.2**	24 hours-no attack
Nitric Acid	**7.7.3**	30 minutes-max. 5△E Units (Hunter) Color Change
Detergent Resistance 3% immersion at 100°F	**7.7.4**	72 hours-no attack
Window Cleaner	**7.7.5**	24 hours-no attack
Humidity Resistance 100% RH at 100°F	**7.8.1**	Few #8 blisters max. 4000 hours exposure
Salt Spray Resistance 5% Salt at 100°F	**7.8.2**	1/16" max. undercutting 4000 hours exposure
Weathering-Color Retention ASTM D 2224	**7.9.1.2**	Max. 5△E Units (Hunter) Color Change,10 years, 45° So. Florida
Chalk Resistance ASTM D659	**7.9.1.3**	Max Rating 8 (Colors) and 6 (white), 10 years, 45° So. Florida
60° Gloss, ASTM D523	**7.9.1.4**	Max. 50% loss
Erosion	**7.9.1.5**	Max. 10% loss, 10 years, 45° So. Florida

* American Architectural Manufacturers Association "Voluntary Specifications for High Performance Organic Coatings on Architectural Extrusions and Panels" Publication No. AAMA 2605

Film Characteristics	AAMA 2603 Paragraph Number and Performance Requirements*	
Dry Film Thickness	**4.3**	0.8 mils minimum
Color Uniformity	**6.1**	Visually controlled
60° Gloss, ASTM D523	**6.2**	Low, medium and high
Hardness-Berol Eagle Turquoise Pencil	**6.3**	H minimum
Adhesion-Crosshatch 1/16" Wet and Dry	**6.4**	No removal
Direct Impact 1/10" Distortion	**6.5**	No removal
Acid Resistance 10% Muriatic Acid Spot Test	**6.6.1**	15 minutes-no attack
Mortar Resistance-24 Hour Pat Test 100% RH at 100°F	**6.6.2**	24 hours-no attack
Detergent Resistance 3% immersion at 100°F	**6.6.3**	72 hours-no attack
Humidity Resistance 100% RH at 100°F	**6.7.1**	Few #8 blisters max. 1500 hours exposure
Salt Spray Resistance 5% Salt at 100°F	**6.7.2**	1/16" max. undercutting 1500 hours exposure
Weathering Exposure	**6.8**	1000 hours Weather-O-Meter and 1 year So. Florida exposure; no loss of adhesion, minimal color change

* American Architectural Manufacturers Association "Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels" Publication No. AAMA 2603

YKK AP has the technology to provide both finishes under totally environmentally friendly conditions.

YKK AP recommends the use of the fluoropolymer coatings for all exterior surfaces. In addition, YKK AP recommends the use of a clear top coat on all entry doors. The application of the clear top coat will cause a slight color variation-but will add greatly to the wear resistance of the painted surface.

Thermal Barriers

Thermally Insulated Aluminum Sections

Note: The below text has been extracted from the Aluminum Store Front and Entrance Manual, Section 2 Design, published by the American Architectural Manufacturers Association (AAMA),1987.

Aluminum store front and entrance framing systems are available in a number of different thermally insulated designs. These systems have been designed for use where energy efficiency and occupant comfort are important considerations. Insulated framing improves the thermal performance of storefronts by reducing conductive heat loss through the aluminum and by greatly improving the resistance to condensation on the interior surfaces during extremely cold weather. Such insulated systems should always be used with insulating glass.

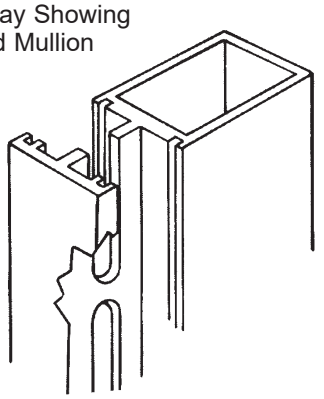
To aid the designer in his selection of the framing system, AAMA has developed standard test procedures for measuring both the thermal transmission of insulating glass and framing assemblies and their condensation resistance; AAMA Standard 1503. These tests are conducted in a two-room chamber which has a controlled cold room that simulates the exterior winter temperature and wind conditions and a controlled warm room which simulates the interior temperature and air convection. Assemblies to be tested are mounted between the cold room and the warm room. For the AAMA tests the cold room temperature is held at 18°F and the warm room at 68°F. The cold side of the assembly is exposed to a 15 mph air speed. The heat loss through the assembly is measured over a given period of time and from this the thermal transmittance, or U-value, is calculated. By means of thermocouples located at a number of points on the inside surfaces of the metal and glass, surface temperatures are measured. From a weighted average value for these temperatures the Condensation Resistance Factor, or CRF, is calculated.

The CRF makes it possible to predict at what outside air temperature condensation will begin to occur on the inside metal or glass surface for a given inside air temperature and relative humidity.

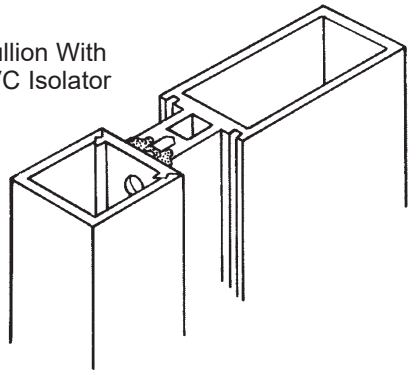
Framing systems may equal, exceed or have lower thermal performance than the insulating glass units with which they are used. It should be noted, however, that compared to glass, framing constitutes a relatively small area of the storefront. This being the case there may be conditions where framing that has a higher thermal transmittance than glass will, because of lower cost than higher performance framing, provide a cost effective store front installation. On the other hand, condensation resistance should not be sacrificed. Interestingly enough, it can often be readily achieved by framing having relatively low thermal resistance by simply designing the framing so that most of the metal is located on the inside of the building.

Thermally insulated framing systems are available in a number of different designs. These include structural gaskets, structural sealant glazing, plastic thermal separators, isolation clips, integral thermal breaks which eliminate the metal conducting paths through extrusions, and slotted mullions which reduce the conductance through extrusions.

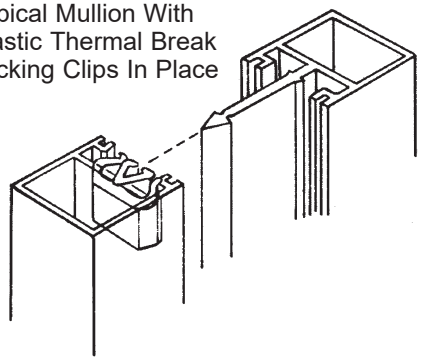
Cutaway Showing
Slotted Mullion



Mullion With
PVC Isolator



Typical Mullion With
Plastic Thermal Break
Locking Clips In Place

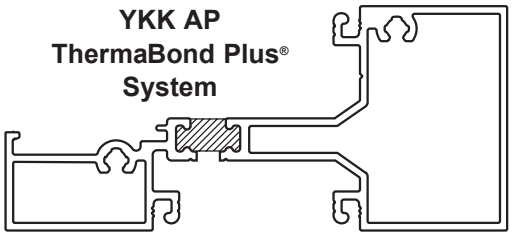


Improving the thermal performance of glazing systems has become increasingly important in recent years. Various designs that improve thermal performance are utilized by YKK AP as well as other manufacturers. Integral thermal barriers most commonly used are those produced by casting (pouring) a liquid mixture of isocyanate and a polyol in the pocket of an extrusion. The chemical reaction which occurs in the mixture cures as a polyurethane elastomer. Once the mixture properly cures, a section of aluminum is removed (debridged) to provide a thermal barrier.

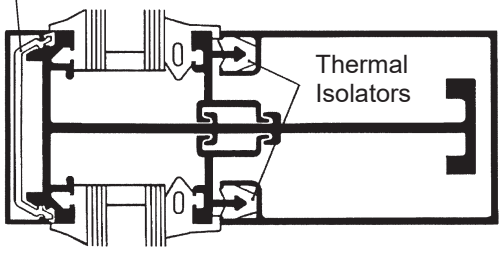
The thermal break material of typical poured and debridged systems are prone to shrinking and cracking due to the inherent differences in the expansion/contraction rate of polyurethane and aluminum. YKK AP employs a patented process, ThermaBond Plus®, to greatly improve the adhesion of the polyurethane to the aluminum extrusion. Combining science and technology, ThermaBond Plus resolves the problem of adhesion and the resulting dry shrinkage associated with typical poured and debridged systems.

YKK AP also offers MegaTherm®, an integral thermal barrier system that employs the use of 6/6 nylon polyamide glass fiber reinforced pressure extruded bars. This technology has several advantages over the more commonly used poured and debridged polyurethane barriers. It will not shrink or degrade over time. It will not crack if penetrated by screws or if weep holes are cut into it. Its lineal expansion is very close to that of aluminum, virtually eliminating creeping, thermal expansion and internal stresses. It also offers greater design versatility by allowing the use of different finish options from interior to exterior surfaces.

YKK AP
ThermaBond Plus®
System



Thermal Separator



YKK AP
MegaTherm®
System

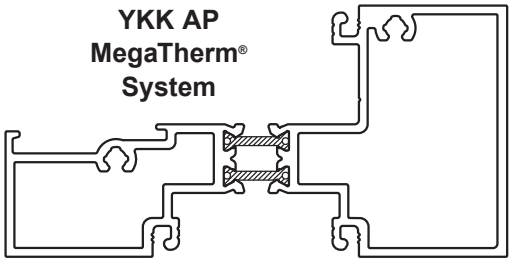
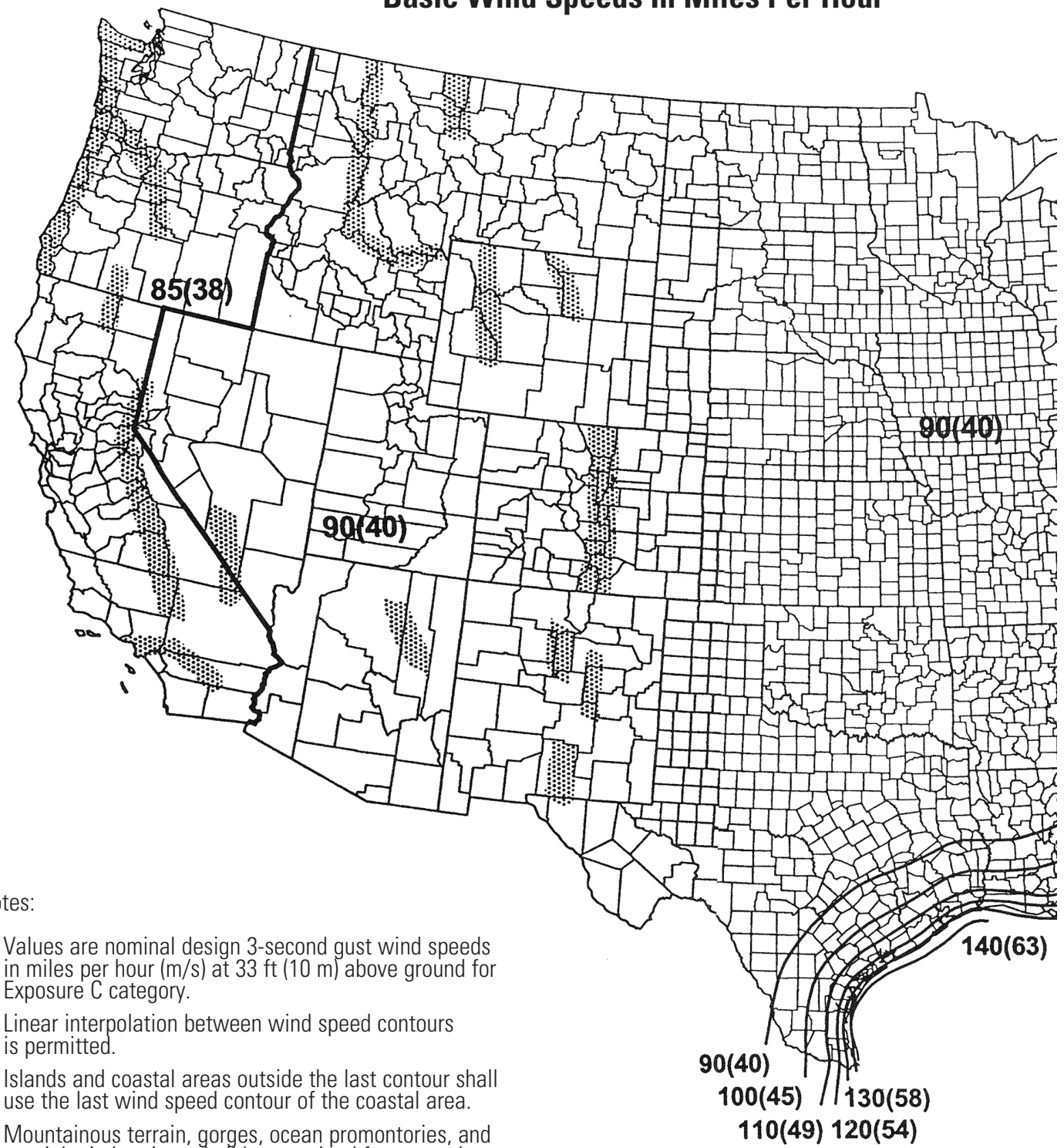


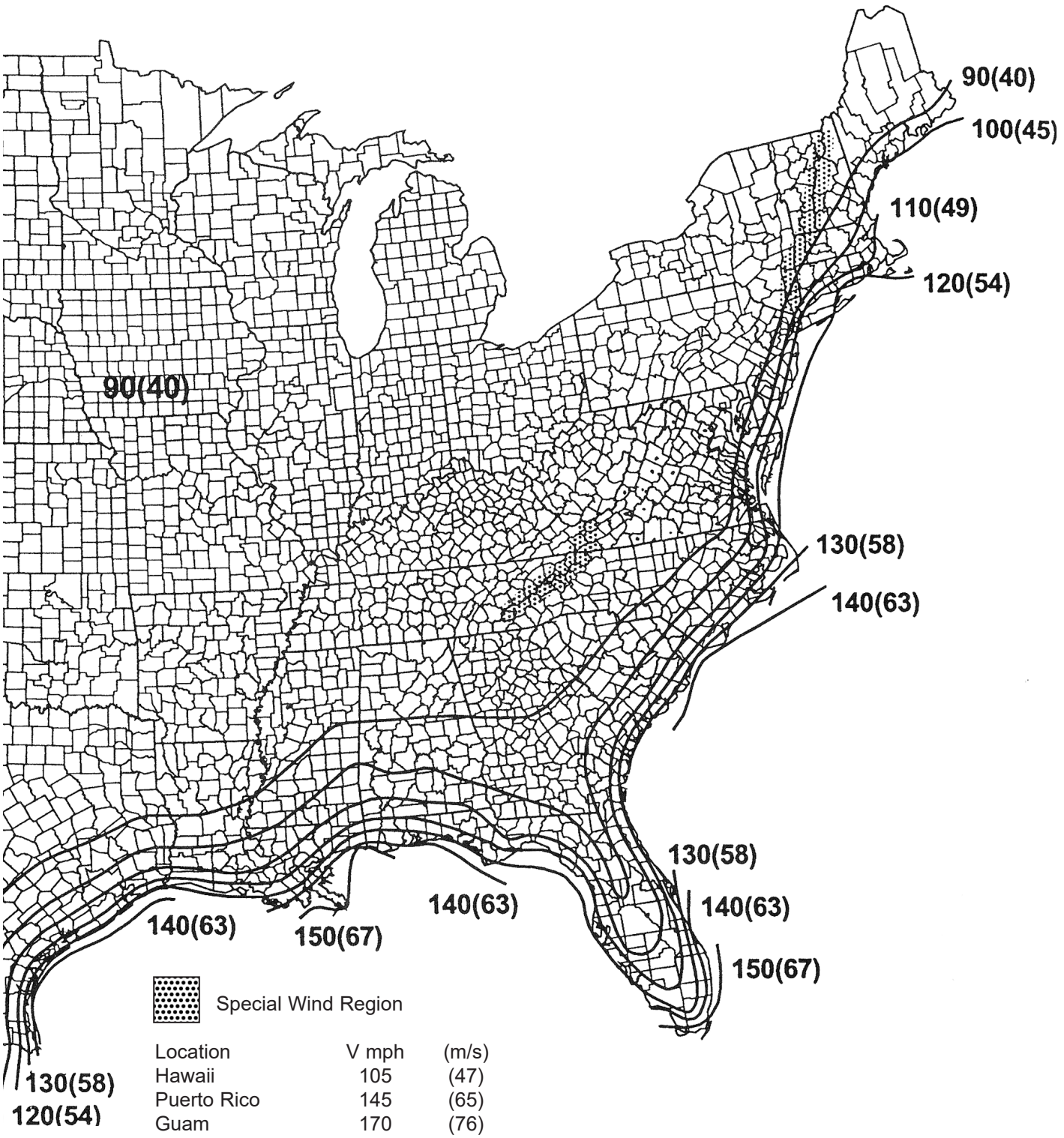
Figure 1
ASCE/SEI 7-05
Basic Wind Speeds In Miles Per Hour



Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10 m) above ground for Exposure C category.
2. Linear interpolation between wind speed contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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Location	V mph	(m/s)
Hawaii	105	(47)
Puerto Rico	145	(65)
Guam	170	(76)
Virgin Islands	145	(65)
American Samoa	125	(56)

Identification Guide

In order to properly use and easily understand this manual it is important to know YKK AP's system of identifying its products.

Example: Doors

20D

Prefix

20 = 2-1/8" stile width
35 = 3-1/2" stile width
40 = 4" stile width
50 = 5" stile width

Suffix

D = Standard Door
M = Monumental
FP = Flush Panel
H = Hurricane Impact
XT = High Performance Thermal
HL = Low Pressure Hurricane Impact

Example: Framing

YES 45 FI

YKK
Entrance
System
Nominal System Dimension 45 = 4-1/2"
Flush Glaze
Insulated Glass

Prefix

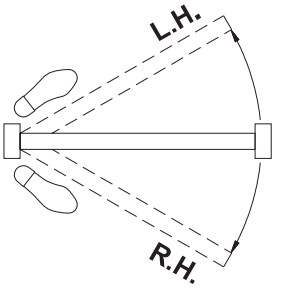
YES = YKK AP Storefront/Entrance System
YHS = YKK AP Hurricane Storefront System
YWE = YKK AP Window Wall Economy
YWW = YKK AP Window Wall
YHW = YKK AP Hurricane Wall
YCN = YKK AP Can Ribbon Wall System
YCW = YKK AP Curtain Wall
YCU = YKK AP Unitized Curtain Wall
YUW = YKK AP Unitized Wall
YSG = YKK AP Structural Glaze System
SSG = Structural Silicone Glazed
YSD = YKK AP Sliding Door System
YTD = YKK AP Terrace Door System
YFW = YKK AP Fixed Window System
YOW = YKK AP Operable Window System
YOV = YKK AP Operable Vent
YSW = YKK AP Horizontal Sliding Window
YVS = YKK AP Vertical Sliding Window
YSK = YKK AP Slope and Skylight System
ThermaShade™ = YKK AP Sun Shade System
Luminance™ = YKK AP Light Shelf System

Suffix

T = Isobar Thermal Break
TU = Urethane Thermal Break
FT = Flush Glazed Isobar Thermal Break
XT = High Performance Thermal
P = Polyamide Pressure Plate
H = Hurricane Impact
OG = Outside Glazed
IG = Inside Glazed
SSG = Structrual Silicone Glazed
FI = Flush Glazed Insulating Glass
FS = Flush Glazed Monolithic Glass
CAN = Can System Assembly
Front Set = Glass set to front of system
Cassette = Glass attached to carrier frame
SplineTech® = Screwspline Curtainwall

Handing of Doors

To determine the correct hand of a door – picture yourself standing with your back to the pivot jamb. If the door swings to the left, it is a left hand door. If the door swings to the right, it is a right hand door. There is no distinction as to the "swing in" or "swing out."



Classification of Finishes

B.H.M.A. Finishes	U.S. Standard Finishes	Description of Finish
—	US2G	Cadmium Plated
604	US2G	Zinc Plated, Dichromate Sealed
605	US3	Polished Brass
—	US3A	Polished Brass, No Lacquer
606	US4	Dull Brass
611	US9	Polished Bronze
—	US9A	Polished Bronze, No Lacquer
612	US10	Dull Bronze
619	US15	Nickel Plated, Dull
622	19D	Black Spayed, Dull
623	20	Statuary Bronze (Spray)
625	US26	Chromium Plated, Polished
626	US26D	Chromium Plated, Dull
629	US32	Stainless Steel, Polished
630	US32D	Stainless Steel, Dull
600	USP	Spray Primed for Painting
—	S1	Sprayed Bronze Finish
—	S2	Sprayed Brass Finish
—	S3	Sprayed Aluminum Finish
—	S4	Sprayed Black Finish
—	S5	Sprayed to Match US10B
—	S6	Sprayed to Match Bronze Anodized Alum.
627	US27	Natural Aluminum-Clear Lacquered
628	US28	Aluminum-Clear Anodized
		Spray Colored Lacquer (US3, US4, US9,US10)
—	A1	Bronze Anodized Aluminum
—	A2	Black Anodized Aluminum

Fraction / Decimal / Metric Equivalents

Fraction	Decimal	Millimeters	Fraction	Decimal	Millimeters
1/64	0.016	0.4	33/64	0.516	13.1
1/32	0.031	0.8	17/32	0.531	13.5
3/64	0.047	1.2	35/64	0.547	13.9
1/16	0.063	1.6	9/16	0.563	14.3
5/64	0.078	2.0	37/64	0.578	14.7
3/32	0.094	2.4	19/32	0.594	15.1
7/64	0.109	2.8	39/64	0.609	15.5
1/8	0.125	3.2	5/8	0.625	15.9
9/64	0.141	3.6	41/64	0.641	16.3
5/32	0.156	4.0	21/32	0.656	16.7
11/64	0.172	4.4	43/64	0.672	17.1
3/16	0.188	4.8	11/16	0.688	17.5
13/64	0.203	5.2	45/64	0.703	17.8
7/32	0.219	5.6	23/32	0.719	18.2
15/64	0.234	5.9	47/64	0.734	18.6
1/4	0.250	6.4	3/4	0.750	19.0
17/64	0.266	6.8	49/64	0.766	19.4
9/32	0.281	7.1	25/32	0.781	19.8
19/64	0.297	7.5	51/64	0.797	20.2
5/16	0.313	8.0	13/16	0.813	20.6
21/64	0.328	8.3	53/64	0.828	21.0
11/32	0.344	8.7	27/32	0.844	21.4
23/64	0.359	9.1	55/64	0.859	21.8
3/8	0.375	9.5	7/8	0.875	22.2
25/64	0.391	9.9	57/64	0.891	22.6
13/32	0.406	10.3	29/32	0.906	23.0
27/64	0.422	10.7	59/64	0.922	23.4
7/16	0.438	11.1	15/16	0.938	23.8
29/64	0.453	11.5	61/64	0.953	24.2
15/32	0.469	11.9	31/32	0.969	24.6
31/64	0.484	12.3	63/64	0.984	25.0
1/2	0.500	12.7	1	1.000	25.4

English to Metric Conversions

m - Meter
cm - Centimeter
mm - Millimeter
s - Second
Pa - Pascal
MPa - MegaPascal

Inches to Millimeter
In. x 25.4 = mm

Feet to Meter
Ft. x 0.3048 = m

PSI to MegaPascal
PSI x 0.00689 = MPa

PSF to Pascal
PSF x 47.8803 = Pa