

# STAINLESS STEEL

## InvariMatte® Black

# DATA SHEET



### Pounds Per Piece

Thickness (in.) x Width (in.) x Length (in.) x .292

### Available Sizes

Please refer to Table II. Cut lengths up to 196" are available. (Please note that hanger holes or gripper marks within 3/4" of one long edge of each sheet can be expected.)

### Fire Resistance

Since stainless steel is dimensionally stable up to 2000°F, InvariMatte® Black provides an added measure of protection in the event of a fire.

### Flatness

InvariMatte® Black is supplied to ASTM (American Society for the Testing of Materials) commercial tolerances.

### Fabrication

InvariMatte® Black is readily welded or soldered. However, exposure to high temperatures will destroy the black oxide film. Once destroyed, the film cannot be repaired. In the case of welding, a grade of welding wire more noble than the work piece should be used. While formation of a heat tint scale can be avoided in lighter gauges through use of shield gasses, care must be taken to remove this scale through chemical means, preferably a phosphoric acid pickling paste (avoid hydrochloric). Since welding will destroy the black oxide film in the heat-affected zone of the weld, the design should provide for concealed welds and joints that are either open or sealed by means of soldering.

In the case of soldering, it is necessary to remove the oxide film in the area of the solder joint. It is also advisable to use low temperature tin/lead soldering practices and avoid chloride-containing fluxes. Flux residue must be thoroughly removed after soldering.

### Product Description

*InvariMatte® Black is a non-directional, uniformly textured stainless steel finish with a thin black oxide film designed for use in architectural applications. It can be applied to roofing and wall panels, as well as coping and trim. The black chromium oxide film is produced electrochemically in collaboration with Prismatic Stainless Steel, Division of B&M Finishers, Inc. Unlike paints coatings, the finish is not reactive to ultraviolet light. InvariMatte® Black retains the corrosion resistance of the underlying T304 alloy.*

Table I		304
<b>CHEMICAL ANALYSIS</b>		
Nickel		8%
Chromium		18%
Molybdenum		
<b>TYPICAL MECHANICAL PROPERTIES</b>		
Yield Strength (psi)		50,000
Tensile Strength (psi)		96,000
Elongation in 2 inches		50%
Hardness (Rockwell B)		85
<b>PHYSICAL PROPERTIES</b>		
Density (lb./cu. in.)		.292
Modulus of Elasticity in Tension (x 10 <sup>6</sup> lb./sq. in.)		28.0
Mean Coefficient of Thermal Expansion per °F (x 10 <sup>-6</sup> )	32 - 212°F	9.6
	32 - 600°F	9.9
	32 - 1000°F	10.2
Melting Point Range °F		2550 - 2650

Table II		Size Range (inches)				
THICKNESS	WIDTH					
	.75 - 18	>18 <24	24 - 36	>36 - 48	>48 - 60	
.0291 - .075	●	●	●	●		

## Installation

Since there is a degree of variability in the appearance of the finish from batch to batch, we recommend establishing an installation technique, similar to the way shingle roofs are installed, whereby the installer works from a few different crates of panels on the job site, so as to distribute panels with certain finish attributes over a wide area, co-mingled with panels made from other sheets.

InvariMatte® Black is shipped with a high-grade UV resistant protective plastic covering designed to withstand the elements for several weeks. However, it is advisable to remove this material promptly after installation to prevent adhesive residue from remaining on the colorized stainless steel finish.

After installation is completed, any rust stains from tools or construction debris must be removed.

## Maintenance

Designed to require very little maintenance, InvariMatte® Black is durable and requires only periodic attention. It may, however, be appropriate to clean the surface to maintain its original appearance. Any detergent/ammonia solution can be effective for general cleaning. More tenacious contaminants, like adhesive residue will respond to pure acetone. Chloride-containing products must be avoided. Areas where incidental debris can collect, such as gutters, must be cleaned on a regular basis. For more information, please refer to "Cleaning Stainless Steel Finishes" in the Resources section of our website at [www.metalresources.net](http://www.metalresources.net).



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## Limited Warranty

Contrarian Metal Resources (CMR) warrants its ASTM Grades 304, 304L, 316, 316L products against corrosion for a period of thirty (30) years from the date of purchase, subject to the limitations described in this warranty and provided the material is utilized solely for architectural applications and in normal atmospheric conditions. For purposes of this warranty, corrosion is defined as through wall penetration of the stainless steel. No warranty is made regarding mechanical damage, physical damage or damage as a result of substandard workmanship after receipt of the product from CMR (including but not limited to welding, shaping, or forming using methods that are not best practices for stainless steel of the grade in question) or using inappropriate cleaning solutions. This warranty does not cover any product that has been subject to misuse, neglect or accident. Use on chemical or manufacturing facilities, which produce or use chemicals known to have a deleterious effect on stainless steel, is excluded from this warranty. Please contact CMR prior to purchase if there is any question regarding application.

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