SECTION 05 05 13

BLACK OXIDE FINISH FOR METALS

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\*\* NOTE TO SPECIFIER \*\* Cleveland Black Oxide; metal finishing.  
This section is based on the products of Cleveland Black Oxide, which is located at:  
836 Broadway Ave.  
Cleveland, OH 44115-2813  
Tel: 216-861-4431  
Fax: 216-861-0711  
Email: [request info (quotes@clevelandblackoxide.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Cleveland+Black+Oxide&coid=50774&rep=&fax=216-861-0711&message=RE:%20Spec%20Question%20(05051cle):%20%20&mf=)  
Web: <http://clevelandblackoxide.com>   
 [ [Click Here](https://www.arcat.com/arcatcos/cos50/arc50774.html) ] for additional information.  
CLEVELAND BLACK OXIDE SPECIALIZES IN BLACKENING OF STEEL AND STAINLESS STEEL ARCHITECTURAL PANELS, HAND RAILS, CABLE, FIXTURES & ACCESSORIES  
Commercial and Residential Applications  
Interior and Exterior Applications  
Variety of Surface Finishes and Textures (distressed, shiny & matte finish)  
Beautiful, Durable and Natural Look of Steel and Stainless Steel  
Customers come to Cleveland Black Oxide from all over the United States and Canada because of our experience with large architectural panels, handrails and other components. We work with architects and contractors and offer our expertise so their jobs go smoothly.  
We have over 75-years of Black Oxide experience and process over 10 million pounds of steel, stainless steel, brass, bronze, and copper each year.  
Panels and hand rails of course require large Black Oxide tanks.. and we have the largest Black Oxide tanks in the industry. We've designed special handling equipment and custom fixtures specifically for panels and hand rails, eliminating damage to delicate surfaces. In the event something is damaged during installation, we do offer field touch-up service.  
Utilizing our proprietary hot Black Oxide chemistry and post-process finishes, we can give your panels the look and feel you're seeking for a specific job. We are ISO 9001:2015 Certified and our processes are tightly controlled and recorded as part of your permanent job record. This means your panels will be consistent from lot to lot and job to job.

1. GENERAL
   1. SECTION INCLUDES
      1. Black oxide coating of ferrous and non-ferrous metal fabrications.
   2. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 05 50 00 - Metal Fabrications.
    2. Section 05 52 13 - Pipe and Tube Railings.
    3. Section 05 70 00 - Decorative Metal.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. Military Standards (MIL): MIL-DTL-13924E - Detailed Specification: Coating, Oxide, Black, For Ferrous Metals.
    2. Restriction of Hazardous Substances Directive (RoHS).
    3. SAE International (SAE):
       1. AMS 2485 Revision L - Coating, Black Oxide.
       2. AMS 2700 - Passivation of Corrosion Resistant Steel.
       3. AMS 2759/9 - Hydrogen Embrittlement Relief (Baking) of Steel Parts.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Product Data:
        1. Manufacturer's data sheets on each product to be used.
        2. Care and maintenance requirements and recommendations.
     3. Verification Samples: Two small-size representative finished units, with clear coating if specified. Coordinate with metal fabricator to provide sample to be coated.
  2. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
        1. Manufacturer shall be capable of coating steel components up to 30 feet (9m) long and stainless steel up to 12 feet long (4m).
  3. PRE-INSTALLATION CONFERENCE
     1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
  4. DELIVERY, STORAGE, AND HANDLING
     1. Protect from damage due to weather, excessive temperature, and construction operations.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Cleveland Black Oxide, which is located at: 836 Broadway Ave.; Cleveland, OH 44115-2813; Tel: 216-861-4431; Fax: 216-861-0711; Email: [request info (quotes@clevelandblackoxide.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Cleveland+Black+Oxide&coid=50774&rep=&fax=216-861-0711&message=RE:%20Spec%20Question%20(05051cle):%20%20&mf=); Web: <http://clevelandblackoxide.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
  1. HOT BLACK OXIDE FINISH
     1. Basis of Design: Hot Black Oxide Finish as applied by Cleveland Black Oxide. A conversion coating, formed by a chemical reaction, produced when parts are immersed in an alkaline aqueous salt solution operating at approximately 290 degrees F (143 degrees C). The reaction between the iron of the ferrous alloy and the hot oxide bath produces a magnetite (Fe3 O4) on the actual surface of the part. It is also possible to oxidize some non-ferrous metals under suitable conditions to form black oxides.
        1. Classes of Black Oxide coating per MIL-DTL-13924:
           1. Class 1: Alkaline oxidizing process (for wrought iron, cast and malleable irons, and plain carbon or low alloy steels).
           2. Class 4: Alkaline oxidizing process (for other corrosion resistant steel alloys, i.e. stainless steel).
     2. Materials To Be Coated with Black Oxide:

\*\* NOTE TO SPECIFIER \*\* Delete materials not required.

* + - 1. Wrought iron. MIL C-13924 CL 1.
      2. Cast iron. MIL C-13924 CL 1.
      3. Malleable iron. MIL C-13924 CL 1.
      4. Plain carbon steel. MIL C-13924 CL 1.
      5. Low alloy steel. MIL C-13924 CL 1.
      6. Stainless steel 200. MIL C-13924 CL 4.
      7. Stainless steel 300. MIL C-13924 CL 4.
      8. Stainless steel 400. MIL C-13924 CL 4.
      9. Copper: MIL F-495.
      10. Brass: MIL F-495.
      11. Bronze: MIL F-495.

\*\* NOTE TO SPECIFIER \*\* Typically include after coating if materials can be touched to prevent dark-colored residue from coming off on hands. Delete if not required.

* + 1. After-Coating: Clear Guard, Permalac or Sculpt Nouveau Everclear Top Coat.

1. EXECUTION
   1. PREPARATION
      1. Clean and prepare surfaces to receive black oxide using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   2. INSTALLATION
      1. Apply black oxide coating in accordance with manufacturer's instructions and approved submittals.

\*\* NOTE TO SPECIFIER \*\* Cleveland Black Oxide does offer field touch up work after installation and/or future maintenance issues.

* + 1. Touch-up installation damage, field welds or cutting with room temperature black oxide and/or Clear Guard, Permalac or Sculpt Nouveau Everclear Top Coat.
       1. Stubborn Stains and Discoloration: After cleaning apply Clear Guard or Permalac Top Coat.
       2. Scratches: After fixing scratches apply room temperature Black Oxide with a Clear Guard or Permalac Top Coat.
       3. Welding, Drilling and Cutting In The Field: After dressing fabricated area apply room temperature Black Oxide with a Clear Guard or Permalac Top Coat
  1. CLEANING AND PROTECTION
     1. Cleaning:
        1. Dust, dirt and debris must first be removed with a Swiffer type wand or very soft paint brush. Dust, dirt, or debris will abrade the surface finish if not removed.
        2. Cleaning All Finishes: Routine. Fingerprints, oil or grease marks.
           1. Mild detergent such as Dawn Dishwashing Soap and warm water. Use a soft cloth or sponge.
           2. Rinse with clean water using a soft rag or sponge, wipe dry if necessary.
           3. Follow polish lines.
           4. An enhanced appearance is achieved if cleaned surface is finally wiped dry.
        3. Polishing, All finishes: Johnson Glass Wax or similar product. Use a very soft cloth so the surface is not abraded.
        4. Do Not Use:
           1. Acidic and/or organic solvents such as commercial or industrial cleaners, acetone, alcohol, mineral spirits, bleach cleaners, etc.
           2. Abrasive material or products to wipe dirt, dust or debris off of the surface. Abrasion happens easily on flat painted surfaces. Always try a small area before proceeding on the entire part.

END OF SECTION