

# 3M™ Scotchkote™ Abrasion Resistant Overcoat 6352HF

Data Sheet

November 2015

**Handling and Safety Precautions:** Read all Health Hazard, Precautionary and First Aid, Material Safety Data Sheet, and/or product label prior to handling or use.

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<b>Product Description</b>	<p>3M Scotchkote Abrasion Resistant Overcoat 6352HF is a hard, mechanically strong top coating for 3M Scotchkote Fusion-Bonded Epoxy Pipeline Corrosion Protection Coatings. When applied in conjunction with Scotchkote FBE coating, Scotchkote coating 6352HF enhances the overall system adhesion performance in water at elevated temperatures to form a tough outer layer that is resistant to gouge, impact, abrasion and penetration. Scotchkote coating 6352HF is specifically designed to help protect the primary corrosion coating from damage during pipeline directional drilling applications, bores, river crossing and installation in rough terrain.</p> <p>3M Scotchkote Abrasion Resistant Overcoat 6352HF has increased flexibility compared to 3M Scotchkote coating 6352 while retaining properties such as impact strength and gouge resistance. Scotchkote coating 6352HF is well suited to protect mainline pipes as a result of the mechanical resistance properties and significantly improved flexibility characteristics.</p> <p>It is thermosetting, integrally bonded to the base coating and does not shield from cathodic protection. Excellent flexibility provides an added service advantage over other top coating systems.</p>
<b>Temperature Operating Range</b>	<p>Scotchkote coating 6352HF, when properly applied, should perform in a satisfactory manner on pipelines operating between -100°F/-73°C and 230°F/110°C. For temperatures between 170°F/77°C and 230°F/110°C, laboratory tests indicate that thicker coatings may improve the service capability. However, it is difficult to accurately predict field performance from laboratory data due to the wide variation in actual field conditions. Soil types, moisture content, temperatures, coating thickness and other factors peculiar to the area all influence the coating performance and upper temperature operating limit.</p>
<b>Suggested Thickness</b>	<p>Thickness requirements depend on service conditions. Normally, the following thickness is used: 8 mils/200 µm to 16 mils/400 µm of 3M Scotchkote Fusion-Bonded Epoxy Coatings 6233, 6233P, or 226N and 15 mils/380 µm to 35 mils/900 µm of Scotchkote Abrasion Resistant Overcoat 6352HF.</p>

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## Typical Physical and Electrical Properties

Physical Property (Test Method)	
<b>Impact</b> CSA Z245.20, 12.12 (Test temperature -30°C) Base Coating 15mils (381μ)/ Top Coating 5mils (127μ) Base Coating 15mils (381μ)/ Top Coating 15mils (381μ) Base Coating 15mils (381μ)/ Top Coating 25mils(635μ) Base Coating 15mils (381μ)/ Top Coating 30mils(762μ)	7 Joules  10 Joules  12 Joules  18 Joules
<b>Bendability</b> CSA Z245.20- 12.11 (Laboratory Mandrel Bend) (Test Temperature -30°C) Base Coating 15mils (381μ)/ Top Coating 25mils (635μ)  Base Coating 15mils (381μ)/ Top Coating 35mils (889μ)	2.5°/Pipe Diameter *Plant application could vary test results  2.0°/Pipe Diameter *Plant application could vary test results
<b>Hot Water Adhesion</b> 24 hours, CSA-Z245.20-12.14, 203°F/95°C 48 hours, CAN/CSA-Z245.20-12.14, 167°F/75°C	1 rating 1 rating
<b>Hardness (23°C)</b> ASTM D 2240-97 Shore D ASTM D 2583-95 Barcol	85 32
<b>Gouge Resistance</b> CSA-Z245.20 12.10-12.15 R33 Double Edge Burr Bit @ -30°C 40 Kg Load SL1 Smooth Bit @ -30°C 60 Kg Load	10mils (254μ) penetration depth  8mils (203μ) penetration depth
<b>Abrasion Resistance</b> ASTM D 4060 (CS17 Wheel, 1000 g wt, 5000 cycles)	0.26 g
<b>Cathodic Disbondment</b> <b>CSA Z245.20, 12.8</b> 28 day, 1.5V, 3% NaCl, 176°F/85°C  28 day, 1.5V, 3% NaCl, 149°F/65°C	3.2 mm  2.6 mm
<b>Dielectric Breakdown Voltage</b> (ASTM D149)	1000 V/mil

Note: The typical values in this data sheet are based on lab prepared samples on steel coated with 381 μm/15 mils of 3M Scotchkote Fusion-Bonded Epoxy Coatings 226N/6233/6233P overcoated with 381μm/ 15 mils of Scotchkote coating 6352HF. Values shown are not to be interpreted as product specifications.

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## Typical Physical and Electrical Properties Cont'd

Physical Property	Typical Value US units (metric)
Color	Brown
Specific Gravity -Powder	1.66
Coverage based on film	117 ft. <sup>2</sup> /lb/mil (0.613 m <sup>2</sup> /kg/mm)
<b>Gel Time at 400°F/204°C</b>	
6352HF-4G	9.5 seconds ± 20%
6352HF-8G	16 seconds ± 20%

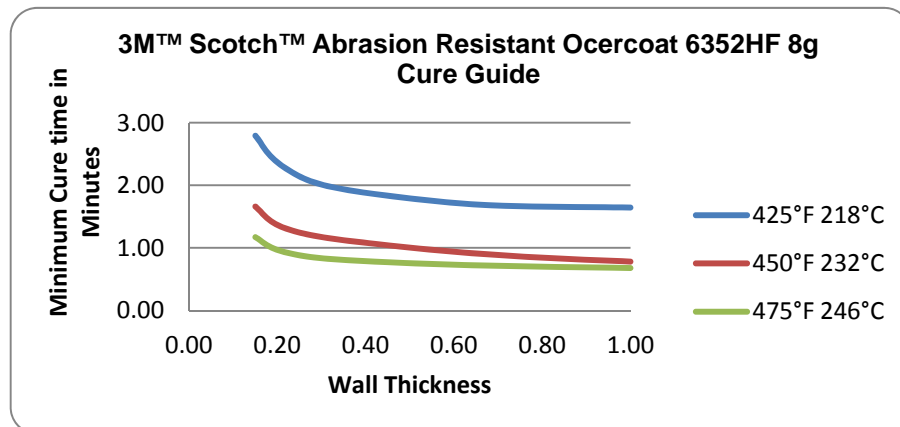
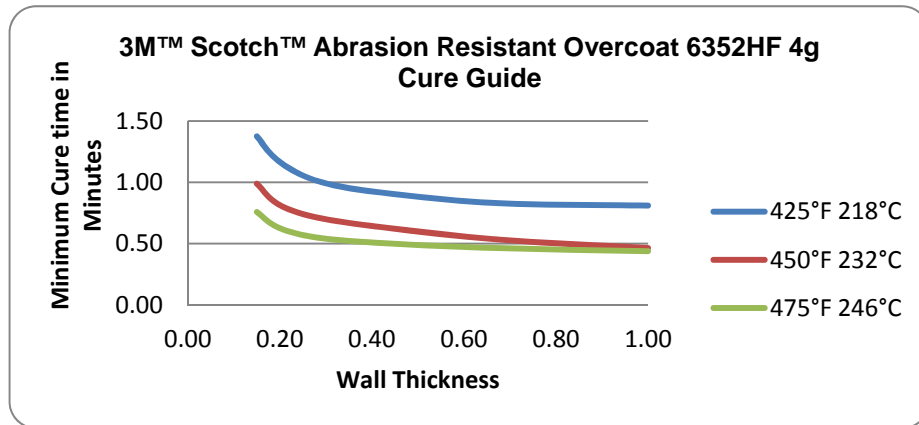
## Coating Repair

Areas of pipe requiring small spot repairs shall be cleaned to remove dirt and damaged coating using surface grinders or other suitable means. All dust shall be wiped off. 3M™ Scotchkote™ Liquid Epoxy Coating 323, 327, or 328 shall be applied in small areas to the thickness as specified. The freshly coated area shall be allowed to properly cure prior to handling and storage. Liquid epoxy shall not be applied if the pipe temperature is 41°F/5°C or less, except when manufacturer's recommended heat curing procedures are followed. Alternatively, for pinhole areas, the heat bondable polymeric 3M™ Scotchkote™ Hot Melt Patch Compound 226P shall be applied in small areas to a minimum thickness of 16mils/400 µm in addition to the parent coating. Abrade the area with sandpaper. A non-contaminating heat source shall be used to heat the area to be repaired to approximately 350°F/177°C. When the Patch Compound sticks to the hot surface, it is hot enough. While continuing to heat the cleaned and prepared area, the patch compound shall be applied by rubbing the stick on the area to be repaired in circular motion to achieve a smooth, neat appearing patch. The patch shall be allowed to cool before handling.

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## Curing Specifications

After application, 3M Scotchkote Abrasion Overcoat 6352HF shall be allowed to cure in accordance with Figure 1 or 2. The indicated temperature is that of the outer surface of the corrosion coating primer layer. A properly calibrated IR measuring device shall measure the temperature. Alternatively, an estimate of the surface temperature shall be calculated by multiplying the primer coating thickness in mils by 2 and subtracting that value from the pipe temperature in °F (thickness in microns by 0.04 and subtracting that value from the pipe temperature: 475 °F (246 °C). Estimated temperature of coating surface = 475 - (16 x 2) = 443 °F. (In °C, 246 - (400 x 0.04) = 230 °C)



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**Shelf-Life** This product has a 1-year shelf life from date of manufacture. Store in original sealed containers at temperatures less than 80°F (27°C).

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**Availability** For ordering call:  
Phone: 800 722 6721  
Fax: 877 601 1305

For Data Sheets and MSDS inquires please visit:  
[www.3m.com/corrosion](http://www.3m.com/corrosion)

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