

SOUTH HOLLAND METAL FINISHING

SPECIFICATIONS AND PROCESSES – December 2016

South Holland Metal Finishing is ISO 9001:2008 accredited by NQA, and is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA Accredited Certificate #0975.01). Please visit www.shmf.com for certificate copies along with our scope of accreditation and the latest updates.

The following is a listing of finishes that we are capable of producing as of the date shown above. Those finishes where formal approval has been received from an issuing authority are listed in italics; others do not require formal approval; still others could be approved should a Tier One supplier make the request. Please contact us for any specs or finishes you do not see listed below, as we may be able to process them.

ASTM

Specification	Title
A 164	Electrodeposited Zinc (obsolete--see ASTM B633)
A 165	Electrodeposited Cadmium (obsolete--see ASTM B 766)
B 117	Operation of Salt Spray Cabinet
B 633	Electrodeposited Zinc on Iron or Steel
B 766	Electrodeposited Cadmium
B 841	Electrodeposited Zinc-Nickel Alloy
B 850	Relief of Hydrogen Embrittlement
F 1137	Phosphate & Oil/ Grade 0 and 1 only)
F 1941	Electrodeposited Coatings

CATERPILLAR

Specification	Title
1E0397	Plating Zinc or Zinc Alloy
1E0475	Coating-Heavy Zinc-Iron Phosphate
1E1675	Coating –Fastener (A-F not G)
1E2257	Bake – Hydrogen Embrittlement Relief
1E2402	Oil-Corrosion Preventative

CHRYSLER

Specification	Title
PS 79	Zinc Plating
PS 80	Zinc Phosphate Coating
PS 182	Cadmium Plating
PS 754	Cad Plating over Spring Steel
PS 1207	Dichromate Surface Treatments
PS 1604	Passivation of Stainless Steel
PS 1649	Finishing Clips for Corrosion Resistance
MS 3921	Rust Prev. Gen. Serv. Oily Film
PS 4220	Zinc Plating over Spring Steel
MS 4325	Rust Prev. – Emulsifiable
PS 7187	Decorative Black Finish – 3 Layer. (Alternative is PS 12182)
PS 8814	Leach/Seal (trivalent or hexavalent)
PS 8955	Zinc Alloy Coatings (Zn-Ni)
PS 9500	Hydrogen Embrittlement Relief
PS 10509	Torque Modified Sealant for Zinc Plating
PS 10180	Zinc Nickel Alloy (Alternative is PS 12182)
PS 12182	Zinc Nickel Alloy
PS 50031	Zinc Nickel Alloy

DELPHI/ NEXTEER

Contact us for information on individual approvals to these specifications

Specification	Title
330018700	Zinc Plating
33002583	Zinc Alloy Plating
DCM 5200	Zinc Plate, Hexavalent Free Coatings
DX 550100	Zinc Nickel Alloy
DX 551200 series	Zinc Plate, Hexavalent Free
DX 551300 series	Zinc Alloys Hexavalent Free
DX 551330	Zinc Nickel Alloy Black
DX 551331	Zinc Nickel Alloy Clear

FORD Standard Finishes

We are capable of applying the following Standard Fastener Finishes. No specific approval is required for the majority of these finishes.

Specification	Title
S2	Phosphate and 72 hour Oil
S7	Cadmium Plate
S8	Zinc Plate
S9	Bright Zinc Plate
S36	Zinc Plate plus Chromate (hexavalent)
S42	Cadmium Plate plus Black
S50	Cadmium Plate dye Blue
S51	Zinc Plate dye Blue
S58	Phosphate and Dry-to-Touch Oil
S300	Plain with Lubricant
S304	Zinc Plate plus Clear Chromate
S309	Zinc Plate plus Chromate (hexavalent)
S414	Zinc Plate, Olive Drab Chromate (hexavalent)
S421	Zinc Plate, Black Chromate, Lubricant
S434	Zinc Plate, No Chromate
S437	Zinc, Trivalent Clear, TNT 15
S450	Zinc-Nickel Clear (ZinKlad 1000)
S450B	Zinc-Nickel Black (ZinKlad 1000B)

FORD Engineering Specification Finishes

Specification	Title
ESB M1P1 A	Zinc and Cadmium Plating
ESB M3P1 A	Phosphate Coatings, Zinc, Light
ESB M3P4-5 A	Phosphate Coatings, Plus Oil
ESB M3P6-9 A	Phosphate Coatings, on Iron/Steel
ESB M3P10 A	Phosphate Coatings, Zinc, Heavy
ESB M3P20 A (S2)	Phosphate and Lubricant
ESF M1P3-6 A	Zinc and Cadmium Plating
ESF M1P41 A	Zinc and Chromate Conv. Coating
ESS M1P45 A (S36)	Zinc and Chromate Conv. Coating (hexavalent)
WSA M21P28 A1 (Call for information)	
WSA M1P87 A, B	Zinc Nickel Plating over Ferrous Substrates
WSB M10P10 A1-5	Chromate Conversion Coatings
WSD M1P85 A 1-3	Zinc Plating over Ferrous Substrates.
WSD M3P35 A1, A3	Phosphate Coating, Zinc-Iron
WSD M13P7 A2	Lubricant Waxes

WSD M13P9 A1	Drive Torque Reducing Lubricant
WSD M21P17 B1-B5 (JS 500 or ZinKlad) (S 437)	Spec Finish: Zn, Class II Clear, and Lubricant
WSD M21P19 A7 (S 407)	Spec. Finish: Zinc and Dye
WSD M21P19 A14 (S 414)	Spec. Finish: Zinc & Olive Drab (hexavalent)
WSD M21P19 A19 (S 419)	Spec. Finish: Zinc, Black Chromate, Lubricant
WSK M3P1 C	Phosphate Coatings, Zinc
WSS M1P85 A1-A3 , B1-B5	
WSS M21P27 A1 (Call for information)	
WSS M21P51 (A1-A6) (S 450 and S 450B)	Zinc-Nickel Clear and Black (ZinKlad 1000 and 1000B)
WSS M21P52 (A1-A2,A4) (Zinklad)	Revised S-4367 Zinc, Class II Clear, Lubricants

FISHER GUIDE

Specification	Title
MG 3518	Corr. Finish Black Rust Prev.
MG 3530	Leach and Seal
Trivalent Chromate versions are available	

GENERAL MOTORS

Specification	Title
GMW 3044 MATSPEC APPROVED	Zinc with Trivalent Chromates
GMW 3179	Zinc Phosphate Coatings (except code B, G)
GMW 4205 MATSPEC APPROVED	Zinc Nickel Alloy with Black Coating
GMW 4700 MATSPEC APPROVED	Zinc Nickel Alloy (Type B)
GMW 16730 MATSEPC APPROVED	Zinc Nickel Alloy with Black Coating
GM 4252	Zinc or Cadmium (Obsolete)
GM 4341	Cadmium (Obsolete)
GM 4342	Zinc (Obsolete)
GM 4345	Zinc Plating (not E / _ codes)
GM 4346	Cadmium Plating
GM 4405	Passivation of Stainless Steel
GM 4435	Protective Finish – Phosphate Type
GM 6035	Special Oil (Obsolete)
GM 6183	Zinc Plating/Organic (Clear Only)
GM 6184	Cadmium Plating/Organic (Clear Only)
GM 6280	Zinc Alloy Plating (see notes) ++

South Holland is on the GM Heat Treating MATSPEC

HEAT TREATING

Specification**Title**

Neutral Hardening

English Grades 4 to 8
HRC 22 to 39Metric Grade 4.6 to 10.9 *
HRC 24 to 39

* -- Call for information on Grade 12.9, we can run some steel grades.

Case Hardening

Total Case .004 to .011"
.10 to .28 mm

Effective Case HRC 50 at .006" max *

* -- Ability to develop effective case is dependent on steel grade used

Specification**Title**

ASTM A 320

Alloy Steel Bolting Materials for Low-Temperature Service

ASTM A 325

Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile
Strength

ASTM A 490

Heat Treated Steel Structural Bolts, 150 ksi Minimum Tensile
Strength

ASTM A 574

Alloy Steel Socket-Head Cap Screws

ASTM F 568

Carbon and Alloy Steel External Threaded Fasteners

ASTM F 912

Alloy Steel Socket Set Screws

ISO 898

Mechanical properties of fasteners made of carbon steel and
Alloy steel

SAE J 81

Thread Rolling Screws

SAE J 429

Mechanical and Material Requirements for External Threaded
Fasteners

SAE J 933

Mechanical and Quality Requirements for Tapping Screws

SAE J 995

Mechanical and Quality Requirements for Steel Nuts

SAE J 1199

Mechanical and Material Requirements for Metric External
Threaded Fasteners

Stress Relieve

Most steel grades, no aluminum, brass, or copper.

South Holland operates in accordance with AIAG CQI-9, and has been audited and approved by Ford to WHTX-1 and by Chrysler to PS-1 and PS-2. We can provide heat treating to Caterpillar, Bosch, Delphi, ISO, John Deere, SAE, Toyota, Volvo, and ZF Lemforder specifications, among many others. We are on the General Motors Approved Heat Treaters List for neutral and case hardening.

JAPANESE SPECIFICATIONS

(A code number [MFZn-2KH, as an example] is needed to properly quote from most Japanese specifications)

Specification	Title
Honda HES D-2003	Electroplating (Zinc and Zinc alloys)
Mazda MES CG 310B	Plating (Zinc and Zinc alloys)
Mazda MES CG 510B	Coating for Coefficient of Friction
Nissan NES M 4040	Zinc Plating and Chromate Films
Nissan NES M 4060	Electroplated Zinc Nickel Alloy
Toyota TSH 6500G	Electroplated Zinc Coating
Toyota TSH 6524G	Electroplated Zinc (Hex Chrome Free)
Toyota TSH 6530G	Electroplated Zinc-Nickel (Hex Chrome Free)
Toyota TSH 6532G	Electroplated Zinc-Nickel High Alloy

JOHN DEERE

Specification	Title
JDS 117 & JDM 117X1	Electroplated Zinc Coatings
JDM F 10	Phosphate/Oil Protective Coatings (code A only)
JDM F 15	Electroplated Coatings for Fasteners
JDM F 21	Zinc Nickel alloys

MILITARY AND GOVERNMENT

Specification	Title
QQ-P-35	Passivation of Stainless Steel (not all methods)
QQ-Z-325	Zinc Plating (Obsolete)
AMS QQ-P-416F Amendment 3 **	Cadmium Plating
QQ-P-416E	Cadmium Plating
MIL-STD-171	Finishing of Metal and Wood Surfaces (call for info)
MIL-P-16232e	Phosphate Coatings (Type Z only)

**** If parts are not hardened above HRc 40 and brightener deviation is accepted**

VARIOUS SERVICES

BARREL: Zinc, Zinc-Nickel, Cadmium, Zn-Phosphate

JS-500, JS-600

Dura* Cad

Dura* Zinc 500 (Black and Clear)

Dyes: Red, Blue, Green

Trivalent: Yellow, Black, Clear

Hexavalent: Yellow Dichromate

Copper Stripping

V9-MD Wax

Empigard Clear, Clear Organic Top Coat

ZinKlad 96, MGL, 250, 1000, 1000B

TNT Sealer 8,12,15,18, 22 / UV Wax

Automated Vision Camera Sorting

HyproCoat 330

Passivate Stainless

Packaging, Labeling

Zinc and Cad Plating on Nylon Insert nuts

- South Holland Metal Finishing is pleased to offer MacDermid and Pavco proprietary topcoats.
- Trivalent Substitutes are available for many hexavalent chromates, contact us for details.
- South Holland can furnish Johnson/Evidrude--Bossard--Mercury Marine **Engineering Specification #4** Cadmium plating over Steel or Stainless Steel however we no longer offer a Nickel Strike
- Torque Tension Testing to JDM F15, ISO 16047, SAE/USCAR 10,11 and others.
- We can supply quotations for Zinc, Zinc Nickel Alloy, Cadmium, and Phosphate based finishes specified by: Arvin Meritor, Akebono, Autoliv, Bendix, Bobcat, Bosch, Briggs and Stratton, Dana, DaimlerBenz, Delco Moraine, DuetscheNorm, Fisher Guide, Gates, General Electric, Goodyear, Harley Davidson, Heil, Honeywell, Jacobson, JI Case, Kenworth, Key Safety, Mack, Navistar, Peterbuilt, Rockwell, Square D, Takata, Tecumseh, TRW, Valeo, VDA. Volvo, VW, Whirlpool ZF Lemforder, **and many others.**

All job shops must be adaptable to new finishes. Should you have a finish which is not listed above we would be happy to discuss the requirements for applying the finish for you. Please contact us for information at 708-235-0842.

Don Troy
Technical Director