



Supplier Survey for Heat Treat

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Please complete this form to be considered as a Heat Treat supplier for Kaydon Bearings Division. Please provide as much information as possible, so that we can make the best regarding your company's services.

Press <Tab> to move forward between fields, or place the cursor in the field. All fields are accompanied by instructions. Simply press <F1> to view details about the requested information. When done, please return this form to Kaydon by fax or email.

A. SUPPLIER INFORMATION

Company: <u>Your Company Name Here</u>	Parent Company: _____
Street: _____	City: _____
State: _____	Postal Code: _____
Country: <u>USA</u>	Phone: _____

We have completed the Supplier Form (2-0047-000-001)

Heat Treat suppliers may be asked to complete certain parts of this form, even if they have the required certifications.

B. KAYDON APPROVAL DESIRED FOR THE FOLLOWING PROCESSES

Check all that apply and enter relevant information

Specification	Title	Approval?	Specifications Available	Rev. #
MIL-H-6875	Process For Heat Treatment of Steel	<input type="checkbox"/>		
ASTM D3520	Magnetic Quenchometer Test	<input type="checkbox"/>		
ASTM E3	Preparation of Metallographic Specimens	<input type="checkbox"/>		
ASTM E8	Tension Testing of Materials	<input type="checkbox"/>		
ASTM E10	Brinell Hardness Testing	<input type="checkbox"/>		
ASTM E18	Rockwell Hardness Testing	<input type="checkbox"/>		
ASTM E384	Microhardness of Materials	<input type="checkbox"/>		
AMS 2750	Pyrometry	<input type="checkbox"/>		
AMS 2759	Heat Treatment of Steel Parts	<input type="checkbox"/>		

C. HEAT TREAT PROCESSES AVAILABLE AT THIS FACILITY

Check all that apply

Annealing	Carburizing	Hardening	Brazing
<input type="checkbox"/> Bright <input type="checkbox"/> Full <input type="checkbox"/> Homogenize <input type="checkbox"/> Isothermal <input type="checkbox"/> Local (flame induction) <input type="checkbox"/> Spheroidize	<input type="checkbox"/> Carbon <input type="checkbox"/> Fluid Bed <input type="checkbox"/> Gas <input type="checkbox"/> Ion <input type="checkbox"/> Pack <input type="checkbox"/> Restoration <input type="checkbox"/> Salt <input type="checkbox"/> Vacuum	<input type="checkbox"/> Conductive <input type="checkbox"/> Flame <input type="checkbox"/> Furnace <input type="checkbox"/> Induction <input type="checkbox"/> Induction-Atmosphere <input type="checkbox"/> Neutral Salts <input type="checkbox"/> Precipitation <input type="checkbox"/> Tufftriding <input type="checkbox"/> Vacuum	<input type="checkbox"/> Dip <input type="checkbox"/> Furnace <input type="checkbox"/> Marquenching/Martempering <input type="checkbox"/> Normalize <input type="checkbox"/> Press Quenching <input type="checkbox"/> Recrystallize <input type="checkbox"/> Sintering <input type="checkbox"/> Solution <input type="checkbox"/> Steam Treating <input type="checkbox"/> Temper/Stress Relief <input type="checkbox"/> Torch <input type="checkbox"/> Vacuum
Tool Steel Treating <input type="checkbox"/> Fluid Bed <input type="checkbox"/> Furnace <input type="checkbox"/> Salt <input type="checkbox"/> Vacuum	Carbonitriding <input type="checkbox"/> Carburizing <input type="checkbox"/> Ferritic Nitro <input type="checkbox"/> Fluid Bed <input type="checkbox"/> Gas <input type="checkbox"/> Salt <input type="checkbox"/> Tufftriding <input type="checkbox"/> Vacuum	Aluminum/Nonferrous <input type="checkbox"/> T-5 <input type="checkbox"/> T-6 <input type="checkbox"/> Austempering <input type="checkbox"/> Carbo Austempering <input type="checkbox"/> Cryogenic Treating (deep freeze)	Nitriding <input type="checkbox"/> Fluid Bed <input type="checkbox"/> Gas <input type="checkbox"/> Ion <input type="checkbox"/> Salt



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D. HEAT TREAT EQUIPMENT AND CONTROLS LIST

Check all that apply

<p style="text-align: center;">Furnaces</p> <input type="checkbox"/> Atmosphere <input type="checkbox"/> Electric <input type="checkbox"/> Fluidized Bed <input type="checkbox"/> Gas/Oil Fired <input type="checkbox"/> Salt Bath <input type="checkbox"/> Vacuum <p style="text-align: center;">Thermocouple</p> <input type="checkbox"/> Test Pyrometer <input type="checkbox"/> Test Thermocouple (Standard) <input type="checkbox"/> Primary Standard Thermocouple	<p style="text-align: center;">Temperature Instrumentation</p> <input type="checkbox"/> Controlling <input type="checkbox"/> Indicating <input type="checkbox"/> Flow Meters <input type="checkbox"/> Mixing Valves <p style="text-align: center;">Atmosphere Controls</p> <input type="checkbox"/> Infrared Monitoring Controlling <input type="checkbox"/> Resistance Wire Test <input type="checkbox"/> Oxygen (O ₂) Probe <input type="checkbox"/> Other:	<p style="text-align: center;">Atmospheres</p> <input type="checkbox"/> Air/products of combustion <input type="checkbox"/> Ammonia (NH ₃) <input type="checkbox"/> Argon <input type="checkbox"/> Dissociated <input type="checkbox"/> Endothermic Generators <input type="checkbox"/> Exothermic Generators <input type="checkbox"/> Helium <input type="checkbox"/> Hydrogen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Nitrogen-Based <input type="checkbox"/> Vacuum
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E. DETAILED COMPANY, PROCESS, AND FUNCTIONAL INFORMATION FOR YOUR COMPANY NAME HERE

	Quality System, Audit & Review	Yes	No	N/A	Comments
1.	Quality planning of heat treat processes is clearly defined and documented				
2.	Failure Mode and Effects Analyses (FMEA), and Control plans, are used as a basis for establishing quality programs for heat treat processes				
3.	Analysis processes are used to determine special characteristics and process parameters				
4.	The customer/end-user of the heat treat product is involved in the quality planning process				
5.	Documented changes to heat treat processes and procedures are used to review part design and process changes prior to implementation				
a.	FMEAs and control plans are reviewed and updated as part of these procedures				
b.	Customer approval is obtained before implementing changes to these procedures				
c.	Procedures are defined for updating operator instructions and visual aids for process/product changes				
6.	The following documentation exists:				
a.	Organization charts				
b.	Procedures for document control				
c.	Job descriptions for all heat treat personnel				
d.	Written procedures describing traceability measures				
e.	Work order review procedures				
f.	Written heat treat procedures describing traceability measures				
g.	Corrective action procedures				
h.	Random heat treat audit procedures				



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	Instrumentation	Yes	No	N/A	Comments
7.	Furnaces and ovens have at least one control thermocouple in each zone, and are attached to a controller and recorder				
8.	Furnaces and ovens have overtemp controllers				
9.	For refrigeration or subzero equipment (if used), equipment has at least one controller/recorder instrument				
10.	Calibration of furnace and oven controllers is performed by outside contractors? If YES, indicate their name(s) in Comments.				
	Temperature Uniformity of Equipment	Yes	No	N/A	Comments
11.	Temperature uniformity of furnaces and ovens is checked and verified on a periodic basis If YES, enter who does this in the Comments If NO, continue with #18, below.				
12.	Furnaces used <i>for final heat treating</i> of steel parts are surveyed for temperature uniformity				
a.	If YES, how often are they surveyed?				<input type="checkbox"/> Every 3 months <input type="checkbox"/> Other: <input type="checkbox"/> Every 6 months
b.	Furnaces and ovens are held within $\pm 25^{\circ}$ F				
13.	Ovens used <i>for final tempering</i> of steel parts are surveyed for temperature uniformity				
a.	If YES, how often are they surveyed?				<input type="checkbox"/> Every 3 months <input type="checkbox"/> Other: <input type="checkbox"/> Every 6 months
b.	Furnaces and ovens are held within $\pm 15^{\circ}$ F				
14.	Nine minimum test thermocouples are used to survey each furnace or oven (bath type) for temperature uniformity				
15.	In the comments, please indicate how many test thermocouples are used to survey temperature uniformity on semi and/or continuous equipment				
16.	Wire used for temperature uniformity surveys is calibrated and certified				
17.	Each furnace and oven is surveyed for at least 30 minutes				
18.	System accuracy probe checks are performed on a regular bases for equipment used for final heat treating If YES, enter the frequency in the Comments				
19.	Equipment thermocouples are calibrated				
20.	Equipment thermocouples are replaced on a scheduled frequency? If Yes, write the frequency in the Comments.				
21.	The results of uniformity surveys and equipment records (test thermocouples, equipment thermocouples, etc.) are kept on file and are available upon request				



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	Quenching Equipment	Yes	No	N/A	Comments
22.	Tanks used for quenching media provide adequate circulation				
23.	Tanks used for quenching media have temperature indicators				
24.	Baths have means of heating and/or cooling				
25.	If oil is used for quenching, the temperature is maintained between 60°F -160°F				
26.	If oil is used, it is tested each quarter per requirements of MIL-H-6875				
27.	Low alloy and carbon steels that are quenched for hardness are tempered within two hours after quenching If NO, please explain in Comments.				
	Statistical Methods	Yes	No	N/A	Comments
28.	Statistical Process Control (SPC) is utilized for special product characteristics and process parameters If NO, explain in the Comments and continue at #33				
29.	In the Comments, please describe the SPC methods used				
30.	Process verifications/capability studies are conducted on new product characteristics and heat treat process parameters				
31.	Statistical control charts are used to monitor the process				
32.	Control charts indicate that statistical control has been achieved and that process capability has been demonstrated				
	General	Yes	No	N/A	Comments
33.	Process/product monitoring and control functions and responsibilities are clearly defined.				
34.	A documented preventive maintenance program is in place for heat treat process equipment, thermocouple, and process monitoring equipment				
35.	In-house and customer quality concerns are effectively communicated to all members of the organization				
36.	A disciplined method of problem solving, such as Eight Discipline format, is used				



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F. ADDITIONAL INFORMATION FROM YOUR COMPANY NAME HERE

Please provide any additional information that you would like us to know.