



Advantages **Lubricant Engineering** for Industry

Heat Treatment Questionnaire

Customer name : Contact :

Address : Date :

1. Type of steel

1.1 Standard of steel :

1.2 Composition :

2. Type of work

2.1 Parts name :

2.2 Diameter of parts : mm.

2.3 Thickness of parts : Max..... mm. Minimum.....mm. Average.....mm.

2.4 Weight of parts :Kg

2.5 Characteristics of parts (take photos of all sides)



3. Machine

3.1 Furnace brand :

3.2 Does the furnace use gas to cover the surface ? : ☐ Don't use

☐ Use :

3.3 Type of furnace :

3.4 How many pieces are heat treated per batch ? : ☐ Single

☐ Batch : Kg./Time

Parts placement for heat treatment (Take a photo)

3.5 if it's continuous furnace. Quantity of parts that can be heat treatment :pcs./hour.

3.6 Type heat exchanger :

☐ External

☐ Internal

☐ Plate type

☐ Tube type

3.7 Heating :

☐ Induction

☐ Flame

3.8 Quenching :

☐ Immersion

☐ Shower

4. The purpose of heat treatment

4.1 ☐ Carburizing / Carbonitriding

4.1.1 Temperature Carburizing/Carbonitriding :.....°C

4.1.2 Parts temperature before quenched:°C

4.1.3 Required surface hardness :°C



4.1.4 Required core hardness :°C

4.1.5 Required hardening depth (HV 550) :°C

4.2 ☐ Quenching / Tempering

4.2.1 Hardening temperature :°C

4.2.2 Tempering temperature :°C

4.2.3 Required hardness after quenching :°C

4.2.4 Required hardness after tempering :°C

4.3 ☐ Tool steel hardening☐ Salt bath☐ Vacuum furnace4.4 ☐ Use induction or flame surface hardening**5. Quench tank**5.1 Size : m³

5.2 Agitation : m/s

5.3 Temperature of the quenchant in the tank :°C

5.4 Quenchant information

5.4.1 Type : ☐ Oil ☐ Water-base polymer solution ☐ Other :5.4.2 Additional information : ☐ Pure oil ☐ Fast quenching oil☐ Type of polymer :

5.5 Quenchant name : Quenchant brand :

5.6 Are the quenchant stored in an environment-controlled area?: ☐ Yes ☐ No



5.7 Is the quenchant exposed to oxygen? : ☐ Yes ☐ No

5.8 Some types of furnaces are directly connected to the quenching tank, allowing the workpiece to enter the quenchant under a controlled atmosphere. However, the quenching tank itself may still be exposed to oxygen.

Does your current setup operate under this configuration? : ☐ Yes ☐ No

6. Washing machine

6.1 Is this in use? : ☐ Don't use ☐ Use

If using a washing machine, fill in the following information:

6.2 Type : ☐ Immersion ☐ Spray

7. The parts cleaned before cleaned

☐ Aqueous cleaner Temperature :°C

☐ Solvent

8. The parts cleaned after cleaned

☐ Aqueous cleaner Temperature :°C

☐ Solvent

9. Customer requirements

9.1 Are there any problems with the current process? : ☐ Yes ☐ No

9.2 Are there any problems with hardness? : ☐ Yes ☐ No

Detail :
.....



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9.3 Short life of quenchant?

: ☐ Yes

☐ No

Detail :

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9.4 Parts has stains and marks.

: ☐ Yes

☐ No

9.5 Are customers interested in switching to polymer-based quenchant? : ☐ Yes

☐ No

10. Other information

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Record by :

(...../...../.....)