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**Steel Heat**

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**Second**

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This second  
edition  
demonstrates

*Page 1/182*

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how chemistry  
influences the  
design of  
water

treatment  
plants and how  
it should  
influence the  
design.

Historically,  
water  
treatment

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plants have been designed from hydraulic considerations with little regard to chemical aspects. The many chemical reactions used for removal of pollutants

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from water  
simply cannot  
be forced to  
occur within  
current  
designs. This  
book re-  
examines this  
traditional  
approach in  
light of  
today's water

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quality and  
treatment.

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Will current  
water

treatment

processes be

sufficient to

meet future

demands or

will new

processes have

to be devised?

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Chemistry of

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Water

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assesses the

chemical and

physical

efficacies of

current

processes to

meet the

demands of the

Safe Drinking

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water Act,

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expert  
information to

persons

responsible

for the

production of

potable water

into the next

century.

Technicians,

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laboratory  
personnel,  
designers,  
purchasers and  
salespeople  
agree - if you  
work for a  
metals-related  
company, you  
need this  
basic  
reference for



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the non-  
metallurgist!  
ItAs written  
for beginners  
as wel as  
those who need  
to refresh  
their  
understanding  
of a  
particular  
topic. Well-

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illustrated  
and indexed,  
the book makes  
technical  
subjects easy  
to understand  
and provides a  
complete  
glossary of  
metallurgical  
terms.

Coverage of

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basic  
information on  
metallurgical  
and general  
engineering  
makes this a  
superb  
textbook.

Contents:  
History of  
Alloy  
Development

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Atom Behavior  
in Alloys  
Steels and  
Cast Irons  
Nonferrous  
Metals and  
Alloys Heat  
Treatment of  
Steel Heat  
Treatment of  
Nonferrous  
Alloys Hot and

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Cold Working  
Fabricability  
Material  
Selection  
Service  
Failures  
Corrosion  
Quest for  
Quality 20th  
Century  
Metallurgical  
Progress

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Glossary.

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What is heat  
treatment?

This book  
describes heat  
treating  
technology in  
clear,  
concise, and  
nontheoretical  
language. It  
is an

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excellent  
introduction  
and guide for  
design and  
manufacturing  
engineers,  
technicians,  
students, and  
others who  
need to  
understand why  
heat treatment

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is specified

and how

different

processes are

used to obtain

desired

properties.

The new Second

Edition has

been

extensively

updated and



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revised by

Jon. L.

Dossett, who

has more than  
forty years of  
experience in  
theat treating  
operations and  
management.

The update  
adds important  
information

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about new  
processes and  
process  
control  
techniques  
that have been  
developed or  
refined in  
recent years.  
Helpfull  
appendices  
have been

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added on decarburization of steels,

boost/diffuses cycles for

carburizing,

and process

verification.

This book is a

detailed

introduction

to mechanical

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alloying,  
offering  
guidelines on  
the necessary  
equipment and  
facilities  
needed to  
carry out the  
process and  
giving a  
fundamental  
background to

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the reactions  
taking place.

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leading

authority on

mechanical

alloying,

discusses the

mechanism of

powder

consolidations

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compaction  
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milling. Fully

updated to

cover recent

developments

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this second

edition also

introduces new

and emerging

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applications  
for mechanical  
alloying,  
including the  
fabrication of  
carbon  
nanotubes,  
surface  
protective  
coating and  
hydrogen  
storage



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technology. El-  
Eskandarany  
discusses the  
latest  
research into  
these  
applications,  
and provides  
engineers and  
scientists  
with the  
information

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they need to  
implement  
these

developments.

The industrial  
applications  
of nanocrystal  
line and  
metallic

glassy powders  
are presented.

The book also

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contains over  
200 tables and  
graphs to  
illustrate the  
milling  
processes and  
present the  
properties and  
characteristic  
s of the  
resulting  
materials.

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Guides readers through each step of the mechanical alloying process, covering best practice techniques and offering guidelines on the required

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equipment  
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Tables and  
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graphs are

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explain the

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properties and

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characteristic  
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update on the  
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including new  
chapters to  
cover new  
applications

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Steel and Its  
Heat Treatment  
Practical Heat  
Treating  
Nanotechnology  
, Materials  
Science and  
Powder  
Metallurgy  
Metallurgy for

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the Non-

Metallurgist,

Second Edition

Handbook of

Heat Treatment

of Steels

This book explains

the metallurgy of

steel and its heat

treatment for non-

metallurgists. It starts

from simple

concepts--beginning



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at the level of high-school chemistry classes--and building to more complex concepts involved in heat treatment of most all types of steel as well as cast iron. It was inspired by the author when working with practicing bladesmiths for more than 15 years. Most chapters in the book

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contain a summary at the end. These summaries provide a short review of the contents of each chapter. This book is THE practical primer on steel metallurgy for those who heat, forge, or machine steel.

An in-depth exploration of the effects of different

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steels, heat treatments, and edge geometries on knife performance. This book provides ratings for toughness, edge retention, and corrosion resistance for all of the popular knife steels.

Micrographs of over 50 steels. Specific recommended heat treatments for each

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Does a thinner or thicker edge last longer? 2) What heat treatment leads to the best performance? 3) Are there performance benefits to forging blades? 4) Should I use stainless or carbon steel? All of these questions and

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more are answered  
by a metallurgist who  
grew up around the  
knife industry.

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Federation of Heat  
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Surface

Engineering. Thermal  
processing is a highly  
precise science that

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does not easily lend  
itself to

improvements  
through modeling, as  
the computations  
required to attain an  
accurate prediction  
of the microstructure  
and properties of  
work

This edition is a  
complete revision  
and contains a great  
deal of new subject

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301 Metallurgy, cast

irons, ultra high

strength steels,

furnace atmospheres,

quenching processes,

SPC and computer

technology. Data on

over 135 additional

irons and steels have

been added to the

previously-covered

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280 alloys.  
Phase  
Transformations and  
Heat Treatments of  
Steels  
Steels: Processing,  
Structure, and  
Performance, Second  
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Thermodynamics at  
Work  
Steel Heat Treatment  
Handbook, Second  
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Encyclopedia of Iron,  
Steel, and Their  
Alloys (Online  
Version)

Metallurgy and  
Technologies  
While there are several  
books on market that  
are designed to serve a  
company ' s daily  
shop-floor needs. Their  
focus is mainly on the

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So  
physically making  
specific types of welds  
on specific types of  
materials with specific  
welding processes.

There is nearly zero  
focus on the design,  
maintenance and  
troubleshooting of the  
welding systems and  
equipment. Applied  
Welding Engineering:  
Processes, Codes and

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Standards is designed to provide a practical in-depth instruction for the selection of the materials incorporated in the joint, joint inspection, and the quality control for the final product. Welding Engineers will also find this book a valuable source for developing new welding processes

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or procedures for new materials as well as a guide for working closely with design engineers to develop efficient welding designs and fabrication procedures. Applied Welding Engineering: Processes, Codes and Standards is based on a practical approach.

The book 's four part

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treatment starts with a clear and rigorous exposition of the science of metallurgy including but not limited to: Alloys, Physical Metallurgy, Structure of Materials, Non-Ferrous Materials, Mechanical Properties and Testing of Metals and Heat Treatment of Steels.

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This is followed by self-contained sections concerning

applications regarding

Section 2: Welding

Metallurgy & Welding

Processes, Section 3:

Nondestructive

Testing, and Section 4:

Codes and Standards.

The author ' s

objective is to keep

engineers moored in

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the theory taught in the university and colleges while exploring the real world of practical welding engineering.

Other topics include:

Mechanical Properties

and Testing of Metals,

Heat Treatment of

Steels, Effect of Heat on

Material During

Welding, Stresses,

Shrinkage and

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Distortion in Welding,  
Welding, Corrosion

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Resistant Alloys-  
Stainless Steel, Welding

Defects and Inspection,

Codes, Specifications

and Standards. The

book is designed to

support welding and

joining operations

where engineers pass

plans and projects to

mid-management



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personnel who must carry out the planning, organization and delivery of manufacturing projects. In this book, the author places emphasis on developing the skills needed to lead projects and interface with engineering and development teams. In

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writing this book, the book leaned heavily on the author ' s own experience as well as the American Society of Mechanical Engineers ([www.asme.org](http://www.asme.org)), American Welding Society ([www.aws.org](http://www.aws.org)), American Society of Metals ([www.asminternational.org](http://www.asminternational.org)), NACE

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International  
([www.nace.org](http://www.nace.org)),  
American Petroleum  
Institute  
([www.api.org](http://www.api.org)), etc.  
Other sources includes  
The Welding Institute,  
UK ([www.twi.co.uk](http://www.twi.co.uk)),  
and Indian Air force  
training manuals,  
ASNT ([www.asnt.org](http://www.asnt.org)),  
the Canadian Standard  
Association

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3 (CGSB) ([www.tpsgc-](http://www.tpsgc-)

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welding designs and

fabrication procedures

Expert advice for

complying with

international codes and

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American Welding

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Welding Institute(UK)

Practical in-depth instruction for the selection of the materials incorporated in the joint, joint inspection, and the quality control for the final product.

This book serves as a

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comprehensive resource on metals and materials selection for the petrochemical industrial sector. The petrochemical industry involves large scale investments, and to maintain profitability the plants are to be operated with minimum downtime and failure of

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equipment, which can also cause safety hazards. To achieve this objective proper selection of materials, corrosion control, and good engineering practices must be followed in both the design and the operation of plants. Engineers and professional of different

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disciplines involved in these activities are required to have some basic understanding of metallurgy and corrosion. This book is written with the objective of serving as a one-stop shop for these engineering professionals. The book first covers different metallic



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materials and their properties, metal forming processes, welding, and corrosion and corrosion control measures. This is followed by considerations in material selection and corrosion control in three major industrial sectors, oil & gas production, oil

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refinery, and fertilizers.

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So

well as inspection and

maintenance repair

practices have also

been highlighted. The

book will be useful for

technicians and entry

level engineers in these

industrial sectors.

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may also be used as

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quenching and  
quenchants is a critical  
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established and  
emerging heat  
treatment process  
technology. The  
collection of up-to-  
date knowledge in this  
book is the latest  
outcome from  
continuing formal and  
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including: Thermo-  
and fluid dynamic  
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transfer during cooling  
Wetting kinematics  
Residual stresses after

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modeling and Second  
prediction of Volume  
microstructure  
transformation  
Hardness distribution  
Stress-strain and  
distortion With revised  
and updated content  
from the first edition,  
this book adds  
coverage of important  
technological

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developments.

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quenching. Presenting the most recent findings in this area, this essential piece of literature is a substantial contribution to the general field of the thermal processing of metals. It is useful not only for specialists in heat treatment practice, but also those in higher education or numerous

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book focuses on

process design,

equipment, and testing

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and Process Design

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presents the classical  
perspectives that form  
the basis of heat  
treatment processes  
while incorporating  
detailed descriptions of  
the latest advances  
since the 1997  
publication of the first  
edition. This book  
covers the basic

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principles of heat treatment and the equipment used in modern industrial settings. It also offers detailed coverage of induction heat treatment as well as important types of furnaces, heat transfer, cooling processes, computation, power supplies, laser

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treatments, residual stress and loading, microstructural analysis, and quality control. The book features thoroughly updated and new information, most notably in the chapters on vacuum heat processing, designing quench processes, laser hardening, and

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metallurgical property  
testing. Steel Heat

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design, heat treatment,  
and mechanical and  
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Heat Treatment,

Selection, and

Application of Tool

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Knife Engineering

Heat Exchanger Design

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Steel, Heat Treating,

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Heat Treatment and

Properties of Iron and

Steel

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Thermodata

Europe (SGTE) is a consortium of European and North American research groups developing thermodynamic databases and



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software to model the thermodynamic properties of metals and other materials.

Understanding these properties is critical to improving the processing of metals and their

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performance in such areas as resistance to high-temperature corrosion. This substantially revised new edition explores both the theoretical background to thermodynamic

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modelling and its  
wide range of  
practical  
applications.

These

applications

include the

analysis of hot

salt and other

types of high-

temperature

corrosion,

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understanding  
the loss of  
corrosion  
resistance in  
stainless and  
other types of  
steel, the  
processing of  
steels, as well as  
the use of  
thermodynamics  
to improve the

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functionality of materials for microelectronics and lighting applications, and in the analysis of nuclear safety issues. New case studies also illustrate applications to kinetically-

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processes such

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heat treatment of

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into one essential  
resource for  
metallurgists and  
foundry  
professionals

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who design,  
specify or  
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metal castings.

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volume guide to  
cover modern  
principles and  
processes in  
such breadth and  
depth whilst  
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practical focus, it includes: A logical, two-part structure, breaking the contents down into casting metallurgy and casting manufacture Established, must-have

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design, melting,  
molding, and  
controlled  
solidification

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need to make

successful and

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current advances  
in heat exchanger  
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enhanced figures

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effectiveness

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additional

topics--all while  
keeping the  
qualities that  
made the first  
edition a  
centerpiece of  
information for  
practicing  
engineers,

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academicians,

designers, and

manufacturers

involved in heat

exchange

between two or

more fluids. See

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the Second

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Thorough

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shell and tube  
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heat transfer  
augmentation  
methods, fouling  
control concepts  
and inclusion of  
recent advances  
in PHEs New  
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the workpieces  
to a  
predetermined  
temperature,  
keeping them at  
this temperature  
for the time  
period required,  
and cooling  
them to room  
temperature in  
an appropriate



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